

NEWSLETTER

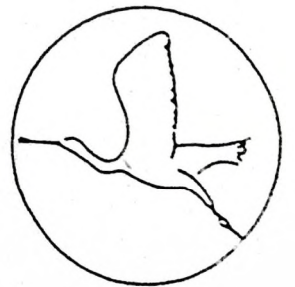
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WILDLIFE INSTITUTE OF INDIA

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EDITORIAL

This issue of the WII NEWSLETTER covers January through June, 1989. During this period, X Diploma Course in Wildlife Management continued in full swing till it came to a close at the end of April '89. In this issue, we include a report on this Diploma Course by B.K.Mishra, Course In-charge. The VI Certificate Course in Wildlife Management also got started in May '89.

Starting with this issue onwards, we will serialise: 'An Exercise in Protected Area Management Evaluation' by Kishore Rao, who made significant contribution in the evaluation process, being the Member-Secretary of the IBWL evaluation team set up by the Ministry of Environment and Forests to select the best managed National Park and Wildlife Sanctuary in India for 1985-86.

A new section: 'New Arrivals in WII Library' is included in this issue of the Newsletter, which will be continued in the subsequent issues also.

Highlights of this issue are: a field note from Dachigam in the form of a letter by M.V.Katti, two articles on the wild trek to Rajaji National Park by Jayant Kulkarni and D.Mohan, Iqbal: Conservationist of a different kind - a human interest account from Bastar by Asha Rajvanshi and Sathya Kumar's article on human-wildlife conflict based on his study in Kedarnath Wildlife Sanctuary. We also have two very informative write-ups on commercial value of wildlife resources and World Heritage Site in danger by S.K.Mukherjee. We welcome your comments and suggestions.

R N Acharya

DEVELOPMENTS AT THE INSTITUTE

REPORT ON THE X DIPLOMA COURSE IN WILDLIFE MANAGEMENT

B.K.MISHRA
Course In-charge

The X Diploma Course started on 1st August 1988 and concluded on 28th April, 1989, after 39 weeks of hectic activities. Twenty Officer trainees from 12 different states namely, Arunachal Pradesh, Assam, Haryana, Himachal Pradesh, Jammu & Kashmir, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan, Tamil Nadu, Tripura and Uttar Pradesh joined this Course.

Out of the total training period of the Course while 25 weeks were spent at Headquarters in learning the theoretical basis of wildlife management, participating in seminars and guest lectures and writing exams, the remaining 14 weeks were spent in field tours in various protected areas in the country.

The first field tour was the one-week orientation tour to Chilla in Rajaji National Park from 30th August to 6th September 1988 where officer trainees were introduced to wildlife species and their habitats, quantitative observations, collection of study materials, interpretation of wildlife signs and evidences, and bird-watching.

The wildlife field techniques tour was conducted from 28th October to 24th November 1988. Places visited during this tour were Kedarnath Musk Deer Sanctuary, Sariska Tiger Reserve and the

Keoladeo Ghana National Park of Bharatpur. During their stay in Kedarnath Musk Deer Sanctuary, the trainees evaluated the Musk Deer breeding project, discussed the problems of regeneration and visited the High-altitude plant preservation centre besides going for tracking. At Sariska, exercises on wildlife population parameters and census methods for various species were conducted along with studies on habitat analysis and evaluation, animal behaviour, visitor management, facility and interpretive resource inventory, and zoning for recreation. In Keoladeo Ghana National Park, trainees got acquainted with the intricacies of wetland ecosystem management and its conservation problems with the assistance of the local field officers and the BNHS research team. Visit to the National Zoological Park and the National Museum of Natural History at New Delhi was of much value in understanding the problems of zoo management and museum management.

The officer trainees went on their first management tour from 14th December 1988 to 10th January 1989 to Mount Abu Wildlife Sanctuary, GEER Foundation and Centre for Environment Education, Ahmedabad Zoo, Nalsarovar Bird Sanctuary, Velavadar National Park, Gir

Lion Sanctuary, Marine National Park, Wild Ass area and Desert National Park. During the second Management Tour between 27th January to 23rd February 1989, trainees visited Jaldapara Wildlife Sanctuary, Buxa Tiger Reserve, Pobitara Wildlife Sanctuary, Darjeeling and Gauhati Zoo, Kaziranga National Park and Manas Tiger Reserve. The objectives of these tours were to understand the management practices and problems in a variety of situations in a few selected areas of the country. Management problems addressed during this tour such as conservation and management status of elephants in North Bengal, ecological and legal implications of dolomite mining in Buxa Tiger Reserve, woodland encroachment in Jaldapara Wildlife Sanctuary, prescribed burning in wet grasslands, meshing of habitat values and burning procedures in different protected areas and problems in management of Indian rhino needs special mention here.

One of the major components of the Diploma Course of this Institute is the preparation of management plan which calls for the application of the entire knowledge assimilated by the trainee during the course. Management Plan tour of 4 weeks duration was conducted at the Satpura National Park and each trainee prepared a management plan of the study area separately.

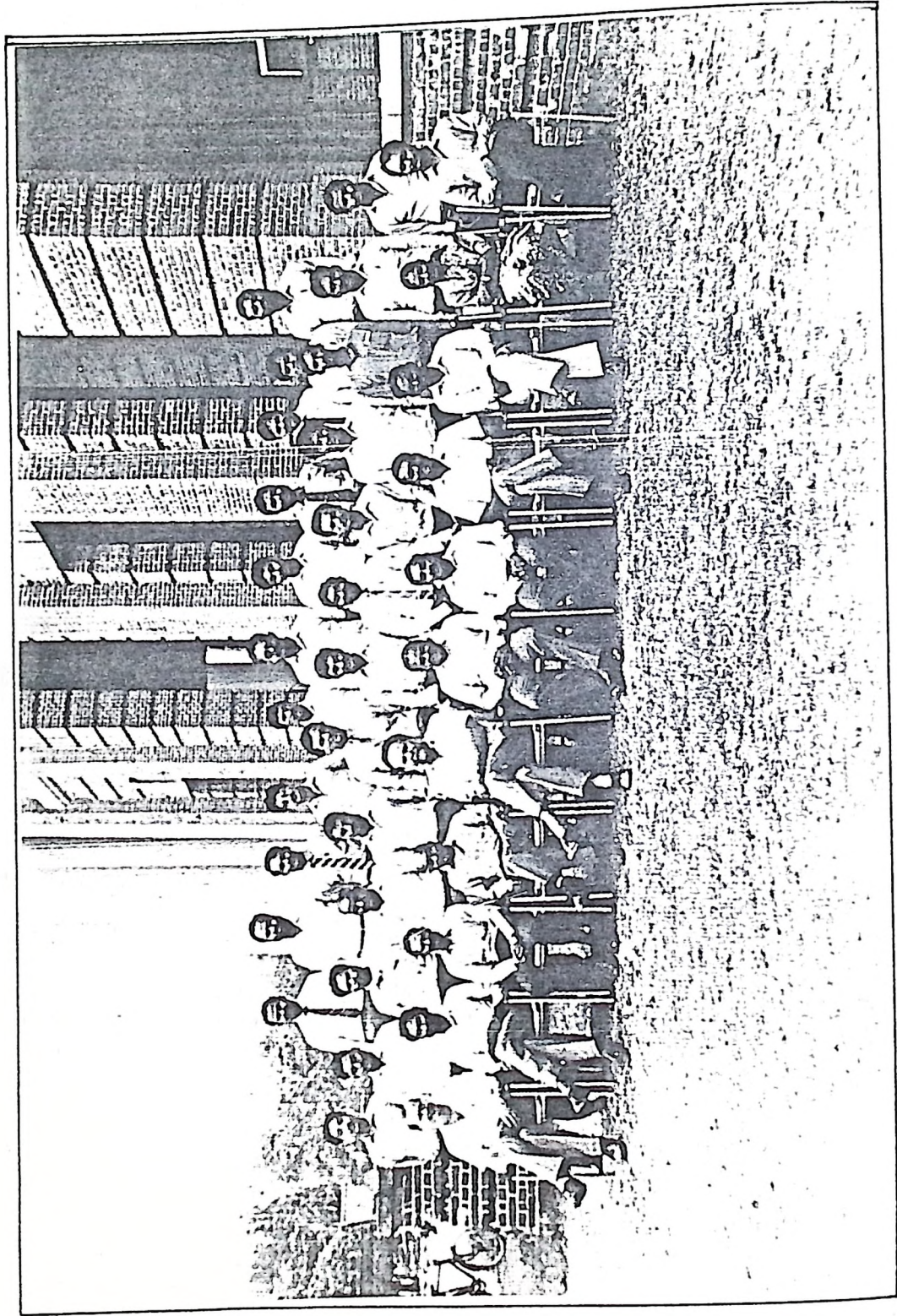
Guest Lecture programme is another integral part of this training programme. Guest Speakers with considerable experience in Forestry and Wildlife were invited from within and from outside the country to share their knowledge and management expertise with us. On various occasions the officer trainees interacted with experts like Dr. Martin Andrew, Rangeland Specialist from Australia, Dr. James G. Teer and Dr. Dowhan, from University of Texas,

Shri Mahendra Vyas, Hon. Wildlife Warden of Rajasthan, Shri M.G. Gogate, Field Director, Melghat Tiger Reserve, Shri R.C. Sahaya, Field Director, Palamau Tiger Reserve, and Prof. Shekhar Singh of Indian Institute of Public Administration, New Delhi. Besides this, the trainees participated in a number of inhouse seminars and group discussions.

All trainees successfully completed the course and in recognition, therefore, all of them received the P.G. Diploma on the 28th day April 1989. The Wildlife Conservation Gold Medal for the year 1989 was awarded to Shri G.P. Sharma, IFS, for securing the first position in the X Diploma Course in Wildlife Management. Shri Jayant Kulkarni and Shri A.K. Wankhade of this batch received the N.R. Nair Memorial Medal for the best management plan write up.

I take this opportunity to express my gratitude to various Forest Departments and individuals who facilitated the smooth conduct and successful completion of this training programme.

X DIPLOMA COURSE IN WILDLIFE MANAGEMENT
WILDLIFE INSTITUTE OF INDIA, DEHRA DUN
1988-89



FROM THE COMPUTER ROOM

Ajith Kumar

Last year saw a tremendous growth in computer hardware and software at the Institute. The hardware grew with the addition of 6 XT's, 2 AT's and a 386 multi-user system with 6 terminals (OASYS-1), all from HCL, and all with their own UPS. Another notable recent addition was an image scanner which would enhance the DTP capabilities of the Institute. Moreover, hard discs in the 2 IBM AT's are to be enhanced to 80 MB. With these additions the hardware is now fully equipped to meet the scientific and administrative demands of the Institute.

Software library also grew by leaps during the last one year, the major additions being the UNIX operating system for AOSYS-1, and the powerful text processing and data management systems under UNIX, and 03 SACIMAGE under UNIX for digital analysis of satellite imageries. Due to software and hardware compatibility problems, however, OASYS-1 still remains to be fully operational. Other major additions include SPSS/PC Advanced Statistics, DECORANA, TWINSPAN, TRANSECT and a number of other application programmes.

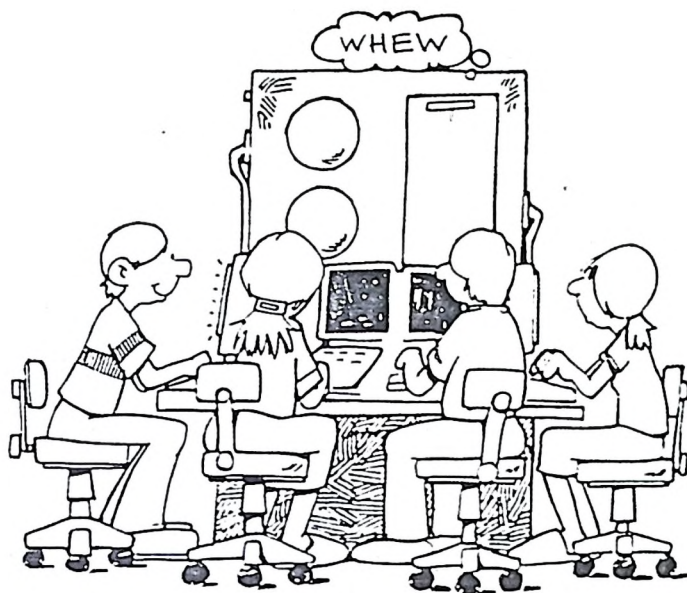
The most used word-processing package continued to be Wordstar, although the computer room recommended the more powerful Word Perfect 5.0. Old habits die hard! To the new users we recommend Word Perfect. SPSS/PC is still the most sought after statistical package probably because it is the only one fully supported by the computer room and with the full complement of manuals. Moreover, the addition of

Microsoft CHART to SPSS/PC has assured us fine quality graphics output from analysis. The use of the more specialised packages like DECORANA, TWINSPAN and TRANSECT was very low, but questions like "What is 03 DECORANA?" and "What is TWINSPAN?" were overhead in the computer room for the first time. The ecstasy in the computer room was when Wesley Sundarraj typed in the last of his 77,000 lines of data and the agony was when Ajay Rastogi found that no test can be done on his 15 lines of data that he had typed in. Meanwhile, digitisation of maps by Mr. M.K. Agarwal continues day in and day out in the computer room.

The computer system continued to be largely used for word-processing (or correspondence processing!!) mostly by the stenographers, a trend which would be strongly discouraged in the coming year, except at a few machines. It is already banned in the computer room (So faculties, please do not send your stenos to the computer room!!!). More productive use of computers, for data analysis, was largely by the JRFs, or in other words by Rajesh Thapa. The Faculty continued to be computer shy, a matter of serious concern. Among the few who made valiant attempts to break the ice are Dr. A.J.T. Johnsingh (typed six lines) and Dr. S. Choudhury (typed at least three alphabets). It is heartening, however, that many others have started saying "One of these days.....". On the cards for the coming year is a more aggressive selling of computers to the Faculty with classes, discussion of data analysis problems and, of course, working lunches. For the time being it means

that the new software- hardware system would face the acid test only during September- October when the JRFs come

home with mountains of data and thousands of questions. Till then, keep your fingers crossed.



WORKSHOPS AND SEMINARS

NATIONAL SYMPOSIUM ON NATURAL RESOURCES AND THEIR CONSERVATION (Feb. 15 - 17, 1989)

K.Sankar

This U.G.C. sponsored symposium was organized by Division of Post Graduate studies in Wildlife Biology A.V.C.College, Mayiladuthurai, Tamil Nadu. There were over 140 participants from all over India participated in four sessions. The sessions were:

1. Forestry and Floristics
2. Soil, Mineral and Water resources and Fossil Fues

3. Aquatic Resources
4. Wildlife

A paper on "Habitat utilization of some wintering Shorebirds in Point Calimere Sntuary, Tamil Nadu" was presented by me and a paper on "Human impact on Nilgiri Langur habitat in Mundanthurai Plateau, Tamil Nadu" was presented by S.F. Wesley Sunderaj and A.J.T. Johnsingh in the session on Wildlife.

SPECIAL FEATURES

IQBAL : CONSERVATIONIST OF A DIFFERENT KIND

Asha Rajvanshi

The name of M.A. Iqbal is almost synonymous with that of Asna a small village, tucked away in a quiet corner of Jagdalpur in Bastar. Once you enter the premises of Iqbal's house, its a different

manners and simple in life style, Iqbal can greet you in Hindi, English, Urdu, Marathi, Gondi and Halbi.

As we the members of Bodhghat project research team moved into his house, we saw that the only touch of decor on the bare walls of his house were a variety of bows and arrows and beaded strings which I understood were some kind of tribal ornaments that hung on one of the walls and pitchers made of gourds of different shapes and sizes adorned the other wall. We knew very little about him till then, we soon picked up the conservation sipping through the tea which he offered us.

Iqbal, a post graduate in Arts served as an auditor in Post and Telegraph department at Nagpur for over ten years prior to his deputation for two years in the same department at Bastar. These two years, brought total transformation in Iqbal's life. Bastar's tribal culture, mixed deciduous jungles and other vast natural resources fascinated Iqbal so much that he went back to Nagpur after his deputation tenure at Bastar was over, to return again to this place after resigning from his job. Before his intrusion to this alien land and his inclination to work for the welfare of tribals could arouse, even the faintest of streaks of doubt in the mind of the people of Bastar, he married a woman of Bhattra muria tribe and became woven as a strand in the tribal



story altogether. Tall, well built, unpretentious in appearance, pleasing in

fabric. Married to Kala for quite a few years, now he is a father of three young and cheerful children. His source of livelihood, Iqbal admits without any inhibitions- "is a small chunk of land and small sum of rupees two hundred from his journalistic work".

Iqbal travels a lot in different parts of Bastar, talking to the tribal folk, spreading the theme of conservation. He makes them believe that their survival is dependent on the survival of forests of Bastar and on the Indravati river. He also makes efforts to teach them how to use their resources on sustainable basis. Tribals of Bastar do not use any kind of manure for their crops. The only manure added to their fields is at the time of initial cutting and burning of trees when the land is taken under cultivation. Iqbal through simple demonstration on his own piece of land, has proved to the surrounding tribals that use of dung manure is a good substitute for any other manure and does not lead to falling of paddy crops. The Government of Madhya Pradesh has leased out small chunks of land in Bastar in the name of one tribal woman in each household. In the area leased out to Iqbal's wife, Iqbal made a small nursery to raise vegetables and other leafy materials to reduce to some extent dependence on forest produce for food. The excess after use is sold in the village market. This obviously became a good example for others who soon followed it. Iqbal admits "these people are so simple, that they do not believe following any practice till it is exemplified and I do it without any reservation".

Whenever he finds time he goes out for fishing with his village people. However, besides fishing, his purpose is slightly different from theirs'. He explains to these people that they should not fish for all the fingerlings and instead wait till

they grow big. Iqbal who would have in normal course found it difficult to make these tribals understand the more complicated issues of ecological balance, just succeeds in saving the depletion of the fish fauna by persuading the tribals. They have developed a faith in him to wait for more and bigger fishes.

His commitments for the tribal welfare are also quite strong. He often stands as a silent spectator in the weekly markets guarding the interest of the tribals who are often duped by the contractors who pay them for much less than what they deserve for their products. Under the reforestation programme of the State some of the 'nistar' forests were acquired by the Forest Department for afforestation. These nistar forests were the source of livelihood for the tribals who met their requirements for food and fuel from them. The women of the area protested against this policy of the forest department. Iqbal stood with these women and saved these forests from slipping from their hands. He told the forest department officials that he would initiate the planting of social forestry species with the help of these tribals in these areas. This naturally led to better results as each tribal not only raised the species but protected them as being their own resource. For Iqbal, people of his village alone does not make a distinct group for his favour. He also considers it important to visit the villages outside his area and extend his help in resolving their problems. I witnessed on one occasion, when he was talking to the people of the villages to be submerged by the proposed Bodhghat dam. He acquainted them to their rights to compensation, if they are to be rehabilitated. He does all this with so much ease that even the tribals who have not known him recognise the familiarity that they bear with this multilingual simpleton.

Iqbal is associated with the Bastar Society for Conservation of Nature which was formed a few years ago by some of the local people of Bastar. He actively participates in field trips and surveys with other members. He as Secretary of the Society also organises talks and discussions on conservation issues. As a writer and journalist he makes significant contributions in creating awareness about problems of the people and the environment in Bastar. He writes regularly for some State newspapers. He has been a contributor in 'State of India's Environment -Citizens Report' for the last issue. I have also read some of his articles on conservation of Wildlife species like Wild Buffalo which, he feels belong to Bastar.

Having met Iqbal in Bastar during fieldwork, I feel that our minds are more enriched now to understand, analyse and react to problems of people, and what efforts are to be made to strike a balance between their needs and resources. In a casual talk with Iqbal before I was leaving Bastar I asked him what are his further plans. He just smiled breezily. Behind his smile was a determination to preserve everything that would preserve Bastar. We too returned more confident about the future of the people who would be affected by the proposed dam to be not so grey, if Iqbal lives among them.

A WILD TREK IN RAJAJI NATIONAL PARK

Jayant Kulkarni, X Diploma Course

Dr. Johnsingh had been telling me about the trek right from the beginning, "Jayant, we must do a trek from Dholkhand to Mohand over the Shiwaliks". Due to the cold in winter and our busy schedule, the opportunity only came in April when our course was nearly over. There were seven of us; Dr. Johnsingh, Dr. Rawat, Dr. Prasad, Naganathan, Reddy, myself and Dhananjai Mohan from IFC. We finally did the trek the other way round, that is from Mohand to Dholkhand because of the tiger census in Rajaji NP ! We stayed in the Mohand FRH on the night of 21st April - a Friday and started our trek on the morning of 22nd April at 7.00 a.m.

The main aim of the trek was to have some fun while trekking through the Shiwaliks. In the process we hoped to get some idea of the wildlife in the area and know the park better. The Shiwaliks run from north-west to south-east and give off spurs which are perpendicular to the direction of the main ridge. In between these spurs lie the raos which are the bouldery beds of the streams in the Shiwaliks. Our route took us across the spurs of the Shiwaliks and the raos. We would start from one of the raos and climb up to the ridge of the spur. Sometimes there would be two or three ridges between two raos, with corresponding nallahs in between the

ridges; climbing up and down these ridges while walking from one rao to another was really strenuous. The view from some of these ridge-tops was lovely but often we were too tired to really look around. The straight line distance from Mohand to Dholkhand is 13 kilometres but with the continuous ups and downs and the zig-zag path we followed, we must have walked nearly 28 kilometres. We trekked for 13 hours in the first day. We crossed four raos and halted for the night at the fifth one, Gaj rao. On the second day we took nearly 10 hours to reach Dholkhand F.R.H. from Gaj rao. In all we encountered 8 raos including the first and the last one, and many smaller nallahs. It was rather hot during the day and the climbs were really tiring and each one of us must have lost litres of sweat. Luckily our trek was made easier by the numerous cattle paths made by cattle belonging to the Gujars. Luckily all raos had good drinking water at this time of the year so we had our fill whenever we descended to one. At most places the Gujars used to fence off a small portion of the rao to keep it free from cattle and used that water for drinking.

We carried our food with us because we knew nothing would be available on the trek except from Gujars. Puris and noodles was our staple diet and oranges proved to be very refreshing when we halted at the top of a cliff tired and thirsty. We also had a kettle and coffee was made at almost every meal. I had purchased sufficient toffees for all of us to munch on as we did the trek, but I left them behind for which I was the butt of some well-deserved jibes.

Our trek started off on a bright note when we walked through a stand of Cochlospermum gossypium within an hour of the beginning of our trek. The profusion of its golden yellow flowers was

a lovely sight. But we hardly saw them again throughout the trek. The fragrance of the flowers of Carissa opaca accompanied us right through the trek and really made its presence felt when we camped for the night at Gaj rao. We saw our first barking deer while climbing on the first ridge and our first sambar, soon after that. We were quite happy and hoped to see even more animals as we walked into the park. However, after an initial burst of animal sightings we saw very few animals throughout the day. We had to wait till the evening for seeing sambar and barking deer again.



A few of the sambars gave their characteristic pooking alarm call, before trotting away. The barking deer too gave their characteristic bark, sometimes especially when we encountered it towards evening. Our first goral we saw late in the first day, when we disturbed it as it rested in a shady depression to escape from the heat. I was a little surprised because I had imagined that goral kept to the treeless ridges and never came into the forest. We saw a pair of kaleej pheasant on the morning of the first day. Red jungle fowl were encountered every now and then but more infrequently than I had expected. One of the most magnificent birds that

we saw was a male Shaheen falcon. Its powerful flight with effortless aerobatics left us spell bound for a few minutes. At night we camped on the bed of gaj rao under bright moonlight. We were given some milk by a Gujar who also helped us by providing water and small items like sugar and salt. Some time in the night a herd of chital came to drink water but ran away in a burst of alarm calls when they sensed our presence.

We saw more chital on the second day, some near the tops of ridges contrary to what is normally expected. We also saw goral more often on the second day. As we entered the valley of Dholkhand rao there was a noticeable increase in the frequency of bird calls. We heard and saw peacocks calling for the first time on the trek and suddenly it seemed that jungle fowl started calling all around us. We reached Dholkhand F.R.H. at 4.00 p.m. and were picked up by the Institute Land Rover. While we were waiting for the Land Rover, a solitary tusker with small tusks walked across the bed of the rao. A few of us could get photographs before it smelt us and moved off.

On the whole the impression we had was that of an area with a somewhat low density of animals, our total tally was 2 wildboars, 5 barking deer, 9 gorals, 21 sambars, 23 chitals and 1 tusker. We also saw several groups of langur. We saw leopard pugmarks on four occasions but none of the tiger. We did collect an old tiger scat on the top of one of the four ridges. The reason for the poor occurrence of animals, I attributed mainly to the presence of Gujar. Many of the raos had 10-15 Gujar-deras and one dera had anywhere from 10 to God knows how many cattle and buffaloes. All along the way were cattle tracks and cattle dung. We saw many Gujars carrying away head loads of lopped branches and grass for their buffaloes

and the undergrowth and canopy showed evidence of this. Lopped trees could be seen everywhere - Anogeissus latifolia was particularly affected. My inference : more disturbance and less fodder, hence less wildlife.

Gujars, we also found were very warm-hearted hospitable people. They offered us milk, lassi (thick buttermilk), tea, sugar and salt with a flat refusal to accept any payment. We talked to one of them named Sonda about their future. He was very reticent about the rights of Gujars to live on in the N.P. - "We have been coming and living here for generations" was his argument. He also said that they would not mind moving out if, they are given more land for growing fodder for cattle at their new relocation site. They are being given 0.1 hactre, while he said that they required 3 hactres. What would be wrong about sacrificing some more land if that is going to achieve the desired objective of relocating them outside the park, was what we discussed among ourselves.

What did we gain from the trek ? We did get to know a fledgling national park better along with its problems. We saw some wildlife - sambar, goral, barking deer, shaheen falcon to name a few and saw some lovely sights. I still remember the Cochlospermum flowers. Sleeping in the rao, cooking on smoking choolahs, drinking coffee after a tiring walk was part of the overall oneness with the surroundings. Finally, the trek succeeded, I think, in bringing home to us the fragility of our natural systems and the need for concerned people to do something about it without delay, if the future generations are to see and enjoy the same sights that we saw.

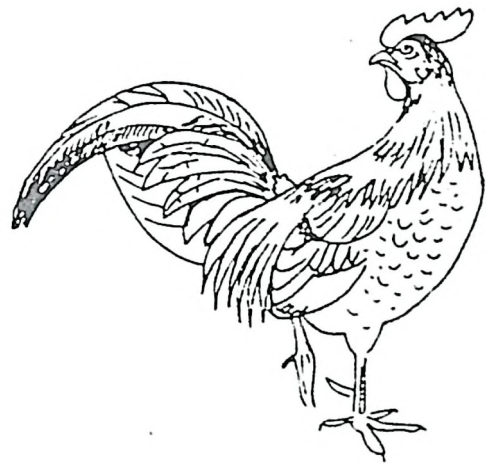
BIRDS OF THE SHIWALIK RIDGE

Dhananjai Mohan *

The much awaited wild trek through the Shiwalik hills finally materialised on the weekend of 22nd and 23rd April '89. After a good night's sleep, which most of us preferred to have on the cool verandah of the Mohand Rest House, we stepped out to board the jeep which was to take us to the starting point of the trek. However, we could not help having a good look at a pair of Goldfronted Chloropsis perched on a Ficus tree by the side of the forest rest house as their beauty was unmatched.

The trek began near Thanda sot on the Mohand Rao. A short stiff climb took us to the top of a small ridge from where I looked down to find a bird of prey sitting on a Chir Pine. The distance was long and only a patient good look through the binoculars could reveal that it was a White-eyed Buzzard Eagle. A good beginning indeed. A little ahead a small flock of small Minivets flew away to safety when they saw a row of seven unfamiliar creatures walking towards them. Now we reached a point where the ridge became very narrow and the jagged topography of Shiwalik was very clearly seen for miles. One of us moved a bit and flushed out a pair of Kaleej Pheasants from a clump of Bhabhar grass just a couple of metres below us. The pair flew diagonally down with loud flapping of wings. Dr. Johnsingh immediately jumped down to the spot from where the birds took off but could not locate a nest. On entering the Sukh Rao watershed Dr. Johnsingh pointed at a flock of small brownish birds but none of us could get a good look at them. They were probably the Rufous-bellied

Babblers. From deep down the valley one could hear the Great Himalayan Barbet and I wondered what the fellow was doing in Shiwaliks so late in April when most of its friends would be enjoying the salubrious climate of Mussoorie or around. Little further ahead we disturbed a pair of Red-billed Blue Magpies. Close to the Sukh Rao where the slope was wild Sal grew denser and under it stood a majestic Red Jungle Fowl, which didn't like seven intruders in his territory and exhibited his displeasure by making its grating alarm calls.



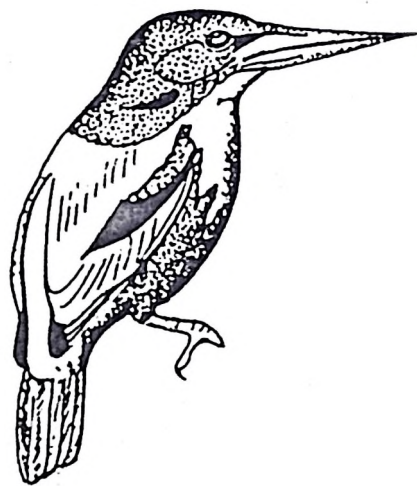
Walking past a Jamun grove on the Sukh Rao which looked fresh green because of new flush of leaves, we saw a Paradise Flycatcher. The spotless white of the adult male in the background of fresh green foliage of Jamun provided an excellent contrast and for a moment we forgot about the blistering heat of the day. The climb from Sukh Rao was along a small nulla with a trickle of water in it. The vegetation was thicker and a flock of White-crested Laughing Thrushes flew through the bushes in the 'follow the leader' style. However, as usual the birds didn't give a good view.

* D. Mohan is an IFS probationer at IGNFA, Dehra Dun.

High up from the ridge me and Jayant were looking into the Sukh Rao valley as a pair of Drongos which looked quite like the Black Drongos, were busy following one another. However, there was something in them which didn't let us move ahead. The calls were more melodious and the plumage more lustworn compared to the Black Drongo and hence there was a good possibility of them being the Bronzed Drongos at the western limit of their sub-Himalayan distribution. Soon we crossed over to another small rao in the middle of the Sukh and Chillawali Rao. Here there was a fairly dense patch of Sal, and a lot of wood pecker activity. Golden-backed Woodpecker, Lesser Yellow-naped Woodpecker and Black-naped Woodpecker were seen looking for insects in the deeply furrowed bark of Sal trees.

It was almost mid-day and we were negotiating the last ridge before Chillawali Rao which was to be our lunch point. Suddenly we spotted a Falcon soaring over the Chillawali valley.

It didn't take long for us to identify the majestic Shaheen Falcon and everybody got glued to his binocs. After gliding for some time it perched on a tree near the crest of the ridge and gave us a lovely sighting.



After having a filling lunch we relaxed by the Chillawali Rao where there was a small pool of water inhabiting a pair of

Large Pied Wagtails and a Grey Wagtail. A White-breasted Kingfisher was perched on nearby tree looking for fishes.

It was the hottest part of the day when we started for our destination, the Gaj Rao. The bird activity had nearly ceased and all that one could hear was the lazy calls of Spotted Doves or Green Barbet, the monotony of which was broken by the shrill calls of the Brainfever. Time was running out and we had to reach Gaj Rao before night fall. So birdwatching became secondary and covering the distance primary. Only sighting worth mentioning was that of a Red-breasted Flycatcher at a shady damp nulla between Chikha and Gaj Rao valleys.

By the time we reached Gaj Rao it had turned almost completely dark and the nocturnal birds had started their symphony. The calls of Longtailed Nightjar which dominated the jungle sounds were like tribals playing drums all around us. Occasionally a Franklin's Nightjar would fly just above our heads making its typical whip-lash like call. Somewhere in the distance the Brown Hawk Owl was making its bisyllable oo-uk call. The Jungle Nightjar was also heard a few times.

After dinner when we were preparing to sleep on the cool sands of Gaj Rao Dr. Johnsingh drew our attention towards the eerie booming calls of the Brown Fish Owl. We tried to look for it with the help of the torch but the Owl changed its position everytime before we could reach it. The calls sounded like somebody fiddling with the bass leads of a guitar.

Next morning the birds were as active as ever. The Barred Jungle Owlet was making the last calls heralding the end of the nocturnal phase of the jungle. Tree-Pies, Black Drongos, White bellied

Drongos, White Eyes, Parakeets, Bulbuls etc. were chirping and flying here and there filling the air with joy and freshness. However the pleasant weather was not going to last for long and by the time we reached Andheri Rao it had turned reasonably hot and sultry.

Beyond the Andheri Rao while walking on the tiny bed of a smaller rao which had small pools of water here and there, we disturbed a Orange-headed Ground Thrush which had come down to drink water. Near the ridge between Andheri and Binj Rao we again came across a flock of Rufous-bellied Babblers and this time the sighting was much better.

Soon we were on the Binj Rao where a couple of Chestnut-headed Bee-eaters perched on a dry tree were busy going after bees and flies. We didn't stop at Binj Rao and instead took shelter in the shade of a large tree by a tributary of Binj which had a trickle of water flowing through it. This was our breakfast point. A pair of Crested Hawk Eagles were lazily circling above us. From a distance the Crested Serpent Eagle made its musical whistling calls. After we had finished our breakfast a long-tailed, brown unfamiliar bird flew past and went into the foliage of a small tree. I followed and was rewarded by a splendid sighting of Sirkeer Cuckoo.

While walking on the river bed both me and Jayant were trailing behind. The area was very dry and I was not surprised to see a Bay-backed Shrike which looked unaffected by the heat of the day. On a nearby tree, a flock of small Minivets made us stop for a while as one of them looked distinctly larger and different in colouration. A careful look through the binocs revealed the rosy-pink colour of the belly, wings and rump and we knew, we were looking at Rosy Minivets.

Finally we crossed the last ridge of the arduous trek and entered the catchment of Dholkhand Rao. Here a few Crested Tree Swifts were flying around a leafless tree, possibly looking for a nesting site. It was a hot summer afternoon and everything was quiet except for the Green Barbet, Spotted Dove and the Common Iora which was making its presence felt through its long drawn whistle whee...th.

At 4.00 P.M. we reached the forest rest house, Dholkhand our final destination and with that a very interesting and adventurous trek came to an end.

Back home I prepared a checklist of the birds seen on the trek which ran into 85 species.

A LETTER FROM DACHIGAM

Dachigam/250889/1350

Dear Ajith,

By now you may have read (and dissected) my report on the work till end of July. Perhaps yours and other faculty's response is on way now and I am looking forward to it.

Between 19th-22nd last week, I went to Marsar lake in Upper Dachigam (at 3670m.) with Vasant. This is truly a remarkably beautiful country; words fail to describe what I felt on beholding the landscapes - the dense tall pine and fir forests, the meadows, the stands of silverbirch and the above - the tree line scrub and cliffs. I have got some pictures of the landscape, the flowers, the marmots, some skinks (for BC), Gujars, cattle, horses, etc. and can share these experience with you all to some limited extent. Birdwise, I managed to add only about 15 species to my list taking the total to about 130. Looking at the available literature and Price's list for Overa, I expect the maximum to be between 140-150 species. Not bad perhaps, but less than other Himalayan areas more to the east as I said in my paper.

Meanwhile, great changes have occurred in the lower valley where my transects lie. New species from higher areas are appearing almost every week and most remarkable things seem to be happening with the birds' behaviour. The avifauna no longer presents the settled regular pattern of the breeding season - the regular territories, the songs and so on which marked the period till end of July. In August, almost all territories seem to have broken down completely. Birds are moving about a great deal, often even outside their breeding habitat. There is a remarkable tendency to form large flocks even comprising 5-6 species and over 50 individuals. I am amazed to see 15-20 strong flocks of species which were only seen singly or in pairs till July. Mixed species flocks seem to be the norm for foraging - on my valley transect the incidence of such mixed flocks has gone up from zero (or an occasional one) to 7 last week - within a distance of 1000m. Imagine my chagrin when faced with such a flock - about 50 highly active small birds of 5-6 species - which I am supposed to count! I sympathise sincerely with the poor insects that face such a mob of predators.

Why is this happening? Why this increased tendency to form flocks? Is it some form of preparation for migration? Or does such behaviour reflect changes in the distribution and abundance of insect foods? It also seems that the numbers of there species has gone up - with influx of migrants on way out as well as newly fledged young. Does this influx of new comers have anything to do with the foraging behaviour? Does it have any social role for the young over? Perhaps the actual reason for such flocking is a complex of several such causes. What do you think? Also, could you suggest/send some literature on the subject.....

(Editor's note: The rest is personal)

Madhusudan V. Katti

AN EXERCISE IN PROTECTED AREA MANAGEMENT EVALUATION

Kishore Rao

Editor's Note : From this issue onwards we will be serialising K. Rao's comments on the management of 2-3 protected areas in each issue of the Newsletter.

The period between December 1988 and May 1989 was perhaps the busiest ever for me in terms of my travel schedule. Although it marked a very hectic phase, it was also one of the most satisfying and learning experiences for me. During this period I travelled to 12 major protected areas as part of an IBWL evaluation team set up by the Ministry of Environment and Forests for selecting the best managed wildlife sanctuary and the best managed National Park in the country as of 1985-1986. It was also during this period that I, as Course Director, was responsible for the organisation and conduct of two Capsule Courses in Wildlife Management which meant travel to and stay at two additional national parks - the Kanha National Park, M.P. and the Kaziranga National Park, Assam.

The IBWL Evaluation Committee constituted for the above mentioned purpose, had in addition to myself as Member-Secretary, M.Y.Ghorpade, M.P., J.C.Daniel, BNHS, U.N.Dev, Orissa and Brijendra Singh, Delhi (all regional representatives of the IBWL) as members.

The IBWL award for the best managed wildlife sanctuary and national park is given out once every two years to that sanctuary and national park which are evaluated as the best managed from

amongst the nominated ones by a committee especially set up for this purpose. Nominations of national parks and sanctuaries for the award are made by the respective state governments. The nomination is accompanied by detailed prescribed documentation which is provided to the evaluation committee. The committee then visits each of these areas and through spot visits, discussions with local officials and other people, perusal of relevant documents etc., makes an assessment of the quality of management effort and its impacts. An objective assessment questionnaire has been developed to score each of the evaluation criteria and the protected area scoring the highest marks is recommended for the award. The recommendation is submitted to the Ministry and then considered by the full meeting of the Indian Board for Wildlife.

Some of the problems in trying to make such an evaluation of field management effort are: firstly, retaining a high degree of objectivity, and secondly evaluating management effort made some two years ago -- because of the backlog we had to look at the management of 1985-86 during 1986-89. The other major problem which I as member-secretary had to face, was trying to coordinate the programme of 4 very busy people and getting them all together for each of

these field visits. Nevertheless as mentioned earlier, this was a most enjoyable and satisfying experience, and given the opportunity I would do it again.

The Committee is yet to finalise its recommendations and we propose to hold the final meeting shortly. However, as part of this evaluation exercise I had kept some notes of my own on the management status of the different areas visited by us and I would like to share these with you all. I am only hoping that in doing so there is no risk of my revealing which ones of the protected areas we consider the best managed!

Starting with this issue of the Newsletter, I will be serialising my comments on the management of 2-3 protected areas in each issue. I welcome comments from faculty members on my observations. This issue carries my notes on the Sunderbans N.P. and the Parambikulam Sanctuary.

Sunderbans National Park

The Committee spent three days (from 14-17 February, 1989) in the Sunderbans N.P. and Tiger Reserve. During this period, almost the entire core area and a substantial part of the buffer was traversed, albeit, mostly by a motor launch along the numerous creeks and rivers which criss-cross this deltaic region. The reserve covers an area of about 2585 Sq. Kms. of which about 1700 Sq.Kms is the core and the remaining is the buffer zone. This buffer zone includes the Sajnakhali Sanctuary extending over an area of 362 Sq. Kms. Human intrusion into the reserve, in the form of fishing, timber cutting and honey collection is limited to the buffer zone (excluding the area of the Sajnakhali

Sanctuary). However, honey collection is allowed over the entire buffer area (including the sanctuary) and also in the northern parts of the core zone.

Apart from enforcing protection measures (mainly against timber and fish poachers) almost the entire management effort is (rightly so) geared toward minimising the endemic problem of tiger attacks on people. Success in this direction has been only partial because no efforts are being made to deal with the causative factors responsible for this continuing problem. These causative factors include the continuing practice of honey collection inside the forests, and non-improvement of fishing gear (nets) which compels the fishermen to move upstream along the shallower parts of narrow creeks in order to be able to spread their nets in anticipation of the receding tide. It is in such situations that most attacks occur.

The casualty data reveals that fishermen and honey gatherers constitute the great majority of the tiger's victims in Sunderbans. Hence, it is these most vulnerable groups who should receive priority attention in terms of improved technologies and alternative sources of livelihood. It is learnt that only about 60 families are involved in honey gathering which is further limited only to the months of April and May. Hence, it should not be difficult to wean them away from this pattern of livelihood. It is ironical that, on the contrary, the Forest Department is encouraging the gathering of honey from these forests by buying up all the collected honey. As an alternative to gathering wild honey, apiculture should be promoted among these people. Bee boxes can be provided to the villagers (free of cost or at a subsidised price) which can be positioned at safe places on the periphery of the forests during the honey season

and moved from one place to another depending upon the flowering of major plant species. Rehabilitation of the honey collectors by providing an alternative means of livelihood could also be considered.

Likewise, the fishing nets need to be improved (possibly by increasing their height) to obviate the need for fishermen to move up the narrow creeks, since the larger nets can be staked closer to the mouth of the creeks. Obviously, this will require working closely with the Fisheries Department, but the initiative and effort will have to come largely from the tiger project authorities whose primary responsibility it is to ensure safety of human life within the project area.

Another measure which can be taken to provide immediate relief to the local people is to extend insurance cover (at the project's cost) to the registered fishermen, honey gatherers and woodcutters. This scheme, if implemented without further loss of time, can contribute positively to mitigating the prevailing antagonism against the project, which currently pays only Rs.5,000/- to the dependents of every person killed by the tiger in Sunderbans.

In terms of management effort, there is no denying the fact that the park authorities have made sincere efforts to deal with the tiger problem. Steps taken include use of electrified dummies, masks, helmets and shields, bursting of crackers, regulated group entry of labourers into the forest, use of fences and trap-cages to prevent tigers straying into villages, release of captive-bred pigs as baits to localise tigers, and constant monitoring of the movement of tigers inside and around the reserve area. A Committee for prevention of tiger straying into villages has also been constituted which includes local

politicians, village elders and other people who meet frequently to draw up strategies to avoid such tiger-human conflicts. Another positive step taken by the park authorities after the devastation caused by the 1988 cyclone is the provision of drinking water and small timber for reconstruction to the villagers. Nevertheless, the continuing attacks by tigers on humans and their livestock is no doubt the major reason for the growing antagonism of local people toward project tiger in Sunderbans, and it is precisely this problem which must receive the highest management priority.

Tourism is allowed throughout the buffer zone, which includes the northern blocks of the core area as well, and the Sajnakhali Sanctuary. However, it is only in the sanctuary area that facilities have been developed for the stay of tourists and for interpretation and education. The interpretation facility is reasonably well organised and highlights the conservation, management and research objectives and efforts. Existence of marine animal enclosures and research pools further enhances the tourism value of the place.

A research officer was in position during the period for which this assessment is being carried out and the research programme is quite well planned and executed. This has however received a set back with the tragic death of the research officer in the recent cyclone. Some studies have also been done in the area by outside researchers.

Parambikulam Sanctuary

The Committee spent three days (from 26-28 March, 1989) at the Parambikulam Sanctuary in the Palghat District of Kerala. The sanctuary, which is the

westward continuation of the Anamalai sanctuary of Tamil Nadu, has an area of about 285 sq.kms. according to some records and 274 sq. kms. in others. The boundaries therefore need verification, particularly on the northern side, refixing and if required, a revised notification. At the same time, additional areas (about 150 sq. kms.) proposed to be included in the sanctuary on the north, west and south-west sides (Neliampathy and Sholayar forests) also need to be demarcated and notified to make the sanctuary a more complete conservation unit in terms of its westward continuity with the Chimony and Peechi-Vazhani sanctuaries.

There was no management plan for the sanctuary for the period of the present assessment. However, the preparation of the first plan had been undertaken during 1986 and it was ready at the time of the Committee's visit. Unlike the proforma management plans one is so used to seeing, the plan for Parambikulam has been extremely well written, with management objectives specific to the area and management prescriptions based upon a well documented analysis of primary and secondary data. The Committee was impressed by the quality of the management plan and by the effort which had been put into its preparation.

Parambikulam sanctuary has a zonation plan which is peculiar to the area. About 89 sq. kms. in the central and eastern parts of the sanctuary are under teak plantations, which also includes about 25 sq. kms. under the Parambikulam-Aliyar Project (P.A.P) of the Tamil Nadu Government. This is a water diversion project (constructed before the sanctuary was constituted) and includes 3 dams, 3 reservoirs and ancillary structures as well as housing colonies and camps for the staff and

other workers. Because of the project and teak plantations, this 89 sq.kms. is designated as the buffer zone, while the natural forest area around this is the core zone. However, one of the management objectives is to manage the teak plantations in a manner which restores the natural mix of deciduous species. The areas so restored are proposed to be added to the core zone. Hence, it would be more appropriate to term the plantation area as the "restoration zone" instead of the buffer zone. The 25 sq. km. area under the P.A.P. could be designated as the "development zone". This is not merely an issue of nomenclature but appropriateness in relation to the management function of a particular area. The sanctuary does require buffer forests particularly on the northern, western and southern boundaries in view of estate activities, forestry operations and threats from proposed development projects in these areas. The zonation plan could be perhaps reconsidered at the time of making additions to the sanctuary on these sides.

The proposed construction of dams and roads inside the sanctuary constitute major threats to its viability and conservation. The Kuriarkutty-Karappara River Valley Project envisages the construction of 3 dams, of which 2 would be inside the northern part of the sanctuary and submerge about 1060 hectares of forests and grasslands. This would totally disrupt the vital animal movement corridor which currently exists between the Neliampathy plateau and the Anamalai hills. Likewise, because at present there is no direct access to the sanctuary for visitors from the Kerala side (approach is only through Tamil Nadu) there is a demand for direct road links to major towns in Kerala. Although such roads do exist in the form of fair-weather forest roads, the PWD,

Irrigation and Tourism departments want them to be widened and black-topped and thrown open to their staff and the general public. One such road is the Parambikulam-Kuriarkutty-Orukumban-Vazhachal road which covers a distance of some 40 kms. Opening up this road would be disastrous as it passes through the core area which has excellent moist evergreen forests. This road, if opened up, will give access to people from Chalakudy and then through NH 47 to Trichur and Ernakulam. The vehicular traffic on this road is, therefore, bound to be very heavy and clearly detrimental to the sanctuary. Similar is the case, with the Parambikulam-Chemnapathy road proposal which would also have an adverse effect on the habitat of the P.A. and make protection (including fire protection) efforts so much more difficult.

Fire protection efforts include clearing of fire lines, deploying fire-season patrols, and an early warning system by using the wireless communication network. We saw many evidences of recent fire damage, particularly in the northern parts which are most prone to fires because of private estates which abut the sanctuary on this side. We were told that several incidents of incendiarism are detected every year. The other causes of fires in Parambikulam are: minor forest produce(MFP) collection, forestry operations, tribal villages and dam settlements. A well thought out plan for fire protection has been prescribed in the new management plan which takes into account the vulnerable areas and the causative factors. Its test will however lie in its effective implementation.

M.F.P. collection by local tribals was being permitted throughout the sanctuary area during 1985-86. It is reportedly suspended presently but we gathered from statements of the field staff that

M.F.P. collection inside the sanctuary is still continuing. We were told that all PAs in the State of Kerala allowed MFP collections by the local tribals, who are paid wages for collection by the Girijan Service Co-operative Society. Impact of this activity on the P.A. needs to be investigated and the policy reviewed on that basis. M.F.P. collection should at least not be permitted within the core zones of the PAs, while it may be allowed in a well regulated manner within the buffer zones.

The sanctuary has 5 tribal settlements with a total population of 785 people occupying 32.89 hectares of land. Most of these tribals are employed in various sanctuary operations, such as mahouts, fire watchers, trackers and labourers. In addition, they also depend upon M.F.P. collection for their subsistence. Of these, the Muduvar tribals have their settlement within the core zone and attempts are being made to persuade them to move out. This tribe does not contribute to the labour force and on the contrary harvest wild cardamom and process it for sale. It is because of this lucrative business that they are reportedly reluctant to move. In the past, they also practised shifting cultivation which has since been given up. In addition to the tribals, about 560 officials and workers of the P.A. project also reside within the sanctuary occupying 70.26 hectares of land. Cattle belonging to all these settlements (said to number only about 100) have free access to grazing through the sanctuary. We were told that all cattle inside the sanctuary were inoculated against FMD every 6 months and annually for Rinderpest. As the cattle number inside the sanctuary is relatively small their stall feeding should be insisted upon. Fodder may be allowed to be collected for this purpose from designated areas.

Limited habitat improvement efforts are being made. A beginning has been made to combat the problem of Lantana and Eupatorium and some water development and soil erosion control structures have been also put up. Bulk of the effort is directed at managing the teak plantation area which constitutes the so-called "buffer zone". As mentioned earlier, one of the objectives is to return the teak areas to as near as possible the natural mix of deciduous species. Hence, selection fellings and thinning operations are being continued. Elaborate procedures have been prescribed for this purpose in the management plan and these operations are under the direct control and supervision of the P.A. authorities. It is also planned to take up underplanting of native species beneath the teak trees in areas where the natural regeneration of such species is deficient.

Gregarious flowering of bamboo in Parambikulam occurred between the years 1983-85. This bamboo was allowed to be extracted by M/s Hindustan Newsprint Ltd. The extraction operation was continuing at the time of the Committee's visit. A large number of vehicles and labourers were seen to be moving throughout the sanctuary as part of these operations. We were informed that the bamboo extraction operations would cease on March 31, 1989.

Fuelwood, in the form of dry and fallen timber is allowed to be collected throughout the sanctuary. The tribals and the P.A.P. personnel utilize the wood so collected for their energy needs. It is now proposed to establish a fuelwood depot at Parambikulam and collection got done from designated areas through the agency of the tribals on payment of wages.

Annual visitor inflow to the sanctuary is about 15,000 of whom 70 per cent are

day visitors. Visitor movement is restricted to day light hours only. There is one tree-top hut and two inspection bungalows where tourists can stay. There are no interpretation facilities or guide services at present, nor any group vehicles for the movement of tourists. The recent move to construct a tourism complex at Thunacadavu (foundation stone already laid) is ill-conceived and needs to be reconsidered. Parambikulam township, which is already a development zone, should be the site for the tourism complex rather than dispersing visitor impacts to areas presently free from them. Likewise, boating facilities should be also limited to the Parambikulam reservoir and not extended to the other two reservoirs.

Although there are no facilities/infrastructure for research within the sanctuary, nor a separate position of a research officer several studies have been conducted by scientists of the Kerala Forest Research Institute and the Kerala University in association with the sanctuary officials. More recently, as part of the management plan preparation process, vegetation analysis was done and animal distribution and densities worked out by the sanctuary staff. A study on habitat utilization patterns of larger herbivores is now planned. It will be of advantage to the sanctuary authorities if some basic facilities are developed and offered to outside researchers.

Staff numbers need augmenting and amenities in the form of accommodation, arms and vehicles provided to make the field staff more effective in their functioning.

COMMERCIAL VALUE OF WILDLIFE RESOURCE

S.K.Mukherjee

The concept of WILDLIFE as a resource system in socio- economic sense has not yet been given importance in India. The common man by and large does not associate wildlife as a resource system, on the other hand, the negative aspect of it e.g. crop depredation, cattle lifting etc. are more pronounced in people's mind and wildlife values as resource has been overlooked.

About eight years back Indian Board for Wildlife (IBWL) gave approval for setting up a Crocodile Farm as pilot project, but nothing has been done so far to utilise crocodiles on commercial basis and at the sametime meeting the conservation objectives as it is being done elsewhere. Some ideas can be had, as to how much potential commercial values crocodile have, by seeing 1988- 89 rates of crocodile-products.

Alligator mississippiensis in Florida, USA: Fresh boneless meat from wildlife alligators: \$ 5.00 to \$ 7.00 per lb.
Wet salted belly hides - \$ 43.00 to \$ 47.00 per linear foot.

(March 1989) \$ 47.00 to \$ 50.00 per linear foot.

Alligator mississippiensis in South Carolina U.S.A. Fresh meat from wild alligator - \$ 5.00 to \$ 7.00 per lb.
Salted belly hides - \$ 45.00 to \$ 46.00 per linear foot.

Caiman Crocodilus crocodilus in Venezuela (April 1989).

Dry salted Chalecos = an average of \$ 45.00 to \$ 55.00 for "Supers" (3 sq. feet or more) by end May 1989 the price for "supers" had risen to \$ 75.00.

Crocodylus johnsoni in Queensland, Australia.

Wet salted hides = \$ 5.21 per cm. width.
Fresh meat = \$ 15.33 per Kg.

Crocodylus porosus in Queensland, Australia.

Wet salted hides = \$ 8.43 per cm. width.
Fresh meat = \$ 15.00 per Kg.

WORLD HERITAGE SITE IN DANGER

S.K.Mukherjee

The Manas Wildlife Sanctuary covering an area of 2837 square kilometres in Assam State is also managed as Tiger Reserve, and recently notified as

Biosphere Reserve. This is one of the natural site proposed by India for listing in UNESCO's World Heritage site under the Convention concerning the Protection

of The World Cultural and Natural Heritage (The World Heritage Convention).

The Manas Wildlife Sanctuary was selected for listing in the World Heritage site because of its unique biological diversity. The area represents tropical semi-evergreen forests, tropical moist and dry deciduous forests, grassland and aquatic flora. There are about 543 species of pteridophytes and angiosperms, out of which 374 are dicots and 139 monocots. Rare plants like Reinwardtia indica, Desmodium motorium, etc. are also found there.

Fauna of this area is also unique. In this area, 60 species of mammals, 31 species of birds, 42 species of reptiles, 7 species of amphibian and 54 species of fishes and 103 species of invertebrates have been recorded. Of these, 21 species of mammals, 10 species of birds and 3 species of reptiles are in Schedule-I of Wildlife (Protection) Act of 1972.

Usha Rai (Times of India) reports in the Times of India of 12th August, 1989 that the proposal of C.C.F. (Wildlife), Assam for Army assistance or patrolling and combing operation in Manas to combat systematic vandalism by Bodo miscreants, was discussed at highest level in the Government of India and was turned down. The Report also says that if Bodo militants are not flushed out there may be nothing left in the sanctuary.

Situation is really grave. Under Articles 4 & 5 of the World Heritage Convention, India is committed to give full protection to such World Heritage site. Also Article 11(4) of the Convention requires the World heritage Committee to prepare a list of the World Heritage sites which are threatened by "serious and specific danger". it is not known if "Bureau" of

the World Heritage Committee has taken note of the onslaught on Manas by Bodo militants and helplessness of the park officials.

It is also noteworthy that the operational guidelines of the World Heritage Convention stipulate that the World Heritage Committee shall delete properties from the list in circumstances as given below:

Where property has deteriorated to the extent that it has lost those characteristics which determined its inclusion in the World Heritage List.

If media reporting about Manas is true then probably Manas has substantially lost its characteristics which qualified Manas for its inclusion in the World Heritage site.

No site has yet been deleted, or even proposed for deletion from the list since December, 1975 when World Heritage Convention came into being. It will be a shameful day for all of us if Manas is delisted from the World Heritage site.

Editor's Note : Manas Sanctuary has now been added to the 1989 register of the World's Threatened Protected Areas maintained and updated annually by the IUCN's Commission on National Parks & Protected Areas (CNPPA) and the Wildlife Conservation Monitoring Centre (WCMC).

HUMAN - ANIMAL CONFLICTS AT KEDARNATH WILDLIFE SANCTUARY

Sathya Kumar

The Kedarnath Wildlife Sanctuary is one of the largest protected areas in the Indian Himalayan ranges. Covering an area of 967 square kilometres in the Garhwal Himalaya it lies in the northern catchment of the river Alaknanda. This Sanctuary is very well known for its scenic beauty, places of pilgrimage, floral, faunal, ecological and hydrological values. However, like the other Himalayan regions, this is also threatened by the enormous pressures from the people. In this article, I present an account of people and wildlife conflicts.

The local people have left no place unexplored and no resource unexploited in these regions. Poverty and illiteracy has been the only wealth accumulated by most of the people who treat the Himalayan forests as their own. Their main occupation is agriculture and livestock rearing. Their dependency on the forests increases day by day. Almost all developmental projects for the upliftment of the hill people have not been planned keeping the the hill people in view, hence these projects have failed to solve the purpose.

There are about 182 villages in and around the Kedarnath Wildlife Sanctuary of which 51 are situated in the best wildlife areas. The 79 summer settlements inside the sanctuary brings in a large population of livestock during summer especially in the alpine meadows. People collect leaves, grass, firewood, bamboo, medicinal herbs etc. from the sanctuary area. A major threat to the trees arises in the form of fresh firewood

collection which are stored for the winters. Grass collection and bamboo cutting is an everyday affair. For instance, the Trishula block forests in the southern boundary of the sanctuary is pressurised by the people of the nearby 12 villages. On an average 8 people per day enter this area, of which 5 collect grass, firewood and 3 collect bamboo. There are about 65 cattle, 57 buffaloes and 306 goats or sheep. Over 10,000 pilgrims and tourists visit this area during summer (May-Oct). Other problems include man-made forest fires, especially during summer every year and hunting of wildlife for their meat and poaching for other animal products like " musk ". Evidences of 3 muskdeers poached were found in the Rudranath area of the Sanctuary during May '89. A total of 201 registered, licensed self and crop protection guns with the villagers residing in and around this protected area is rather threatening the existence of wild animals. During winters, the people chase animals to areas with more snow depth to kill wild animals. The following is an account of traps laid and animals poached in Kedarnath Wildlife Sanctuary during the year 1988-89.

DISTURBANCES TO WILDLIFE AT KWLS (1988-89)

Traps for Khalij Pheasants	14
Fishing	5
Traps for large mammals	6
Carrying arms inside KWLS	6
Poisoning leopard kill	1
<u>Animals poached :</u>	
Musk deers	3
Gorals	4
Sambar	1
Wildboar	1
Black bear	1
Vultures	6

Animal Mortalities
(during Winter '89)

Goral	9 +
Sambar	2 +
Serow	4 +
Himalayan tahr	2 +
Wildboar	2 +

Leopards and black bears have always been a major cause of trouble for the local people, as livestock lifting and wounding people is frequent. Wildboars, deer and primates raid crop fields and orchards. The following tables summarise the problems caused by wildlife to the people.

department would help in better administration and control of poaching. All developmental projects have to be planned carefully in view of the local peoples' needs. The best management strategies and ecodevelopmental measures have to be evolved for the betterment of the people and wildlife of these areas before this unique ecosystem loses its identity.

**HUMAN CASUALTIES BY WILDLIFE AT
KEDARNATH WILDLIFE SANCTUARY (1988-89)**

Animal	Wounded	Killed	Total
Leopard	11	3	14
Black bear	21	3	24
Wildboar	5	-	5
	37	6	43

**HUMAN - ANIMAL CONFLICTS AT
KEDARNATH WILDLIFE SANCTUARY (1988-89)**

Leopard kills (n = 218 in 115 cases)

Cattle	104
Buffalo	5
Goats & sheep	54
Mule	1

Compensation paid for 61 cases.

- 54 leopards in KF Division.
- 3 leopards in the study area.
- 4 cattle kills in the study area.
- 2 man eating leopards at KWLS
(Koteshwar & Gouchar)

A complicated situation has always been prevailing in these areas and hope for possible compromises had always remained far. Educating the people of these areas on the importance of forests and wildlife might help in preventing the plunder of forests and saving wildlife. The attitude of these people towards the forest department must change for a better understanding and co-operation. Improvement of the infrastructure and sufficient amount of funds for the forest

NEW ARRIVALS IN WII LIBRARY

- Simmons, I.G. The Ecology of Natural Resources. Edward Arnold Publication. 2nd Edition. 1986.
- Galbraith, Ian and Patrick Wiegand. Landforms An Introduction to Geomorphology. Oxford University Press. 1988.
- Matley, Ian M. The Geography of International Tourism. Scientific Publishers. 1987.
- Valdiya, K.S. Kumaun Land and People. Gyanodaya Prakashan. 1988.
- Warren, A. Conservation in Perspective. John Wiley & Sons. 1983.
- Acharya, Ram. Tourism and Cultural Heritage of India. RBSA Publications. 1980.
- Danda, A.K. Family Planning: An adaptive strategy. Inter-India Publications. 1983.
- Hearn, J.P. & J.K. Hodges. Advances in Animal Conservation. Clarendon Press. 1988.
- Williams, Gareth. Techniques and Fieldwork in Ecology. Bell & Hyman. 1987.
- Loveless, A.R. Principles of Plant biology for the Tropics. Longman. 1986.
- Lal, J.B. India's Forests: Myth & Reality. Natraj Publishers. 1989.
- Goudie. Environmental Change. Oxford University Press. 2nd Edition. 1983.
- Bolin, Bert. Green House Effect, Climatic Change and Ecosystems (Scope 29). John Wiley & Sons. 1987.
- Srivastava, A.K. Social Class and Family Life in India. Chugh Publication. 1986.
- Chaphekar, S.B. Human Impact on Ganga River Ecosystem. Concept Publications Company. 1986.
- Pielou, E.C. Biogeography. John Wiley & Sons. 1979.
- Baumol, W.J. & W.E. Oates. The Theory of Environmental Policy. Cambridge University Press. 1988.
- H.R.H. The Prince of Wales. Atlas of Man. Omega Books. 1987.
- Hammit, William E. Wildland Recreation Ecology and Management. John Wiley & Sons. 1987.
- Wehrli, Robert. Environmental Design Research. John Wiley & Sons. 1986.
- Khushoo, T.N. Perspectives in Environmental Management. Oxford & IBH Publication Company. 1987.
- Beebe, William. The Book of Naturalists. Princeton University Press. 1988.
- Kikkawa, Jiro. Community Ecology. Blackwell Scientific Publications. 1986.

WORKSHOPS AND SEMINARS (Continued)

DISCUSSION FORUM ON WILDLIFE AND PEOPLE

R.N.Acharya

A discussion Forum on Wildlife and People was organised by the Institute on 27th and 28th April, 1989. Scientists, Wildlife managers, forest officials, sociologists, economists, NGO activists from different organisations and faculty and trainees of WII participated in the discussions. The Forum was organised in the following three sessions:

- a statement of the conservation problem (need for more PAs, problems of the people in PAs, people's need for resources).
- a series of brief position papers on issues crucial to the debate (i.e. population growth, resource dependency, etc.).
- a presentation of possible solutions.

Prof. Sekhar Singh (IIPA, New Delhi) emphasized that consumption unit should be the basis of analysis of the problem instead of growth in population. He said that there is a bias in the population growth - that, it is the poor who are adding "unproductive population" by having 5-10 children each. His view was that reducing the population will not solve the problem of rapid imbalanced consumption of natural resources.

Dr. R.P. Tyagi (Centre for Parliamentarians on Population and Development, New Delhi) correlated

growth rate, birth rate, death rate and various determinants of population growth. In Dr. Ravi Chopra's (People's Science Institute, Dehra Dun) presentation, status of women was said to be important for control of population growth. Prof. J. Bandhopadhyay (Research Foundation for Science and Technology, Dehra Dun) stated that direction of agricultural change has direct relevance for survival of protected areas. He also emphasized that social forestry is increasingly leading to idling of labour which leads to exploitation of forest resources and increased unemployment.

Mr. J.B. Lal (FSI, Dehra Dun) highlighted the rapid decline in the forest cover, the causes and consequences of this. He said that fundamental principles of ecology should be respected and adhered to. He was for taking into account grass land in the forest cover analysis.

Mr. H.S. Panwar, (Director, WII) emphasized that resource productivity has to be raised and resource utilization has to be rationalised. His other significant contribution was that "Ecodevelopment" is the best possible solution to the conservation problem in the light of dependency of the people on the resources of the protected areas. He viewed that "individual benefit" approach of the plains should not be followed in rural development programmes around

the protected areas. He favoured, among others, improved dryland farming, micro-minor irrigation, contour bunding, sericulture, horticulture, soil conservation, pasture development, improved livestock etc. He said that grassland development should be on the priority of social forestry and wasteland development programme. He also pointed out that area specific development programmes should be adopted in place of the existing type.

Mr. Kishore Rao (WII) presented the problems of people living in and around protected areas, their need for the forest resources and the consequent threats to wildlife conservation.

Mr. R.N. Mathur (CCF, Social Forestry, M.P.) discussed the problems of wastelands and the potential for their development.

Dr. W.A. Rodgers (FAO Expert, WII) analysed various dimensions of Protected Area management. He emphasized that conservation can be more fruitful when people know the benefits of conserving them.

Dr. E. Barucha (Pune) pointed out that lack of proper awareness about wildlife conservation among the people is a big impediment towards any solution of the problem.

Dr. S. Kulkarni (Centre for Tribal Conscientization, Pune) presented the problems of tribal people living in and around protected areas and their changed lifestyles vis-a-vis forest resource consumption.

These are only some of the highlights of the key presentations, the details of the proceedings will form part of a report to be published shortly by WII.

WORKSHOP ON ELEPHANT MANAGEMENT

R.N.Acharya

A workshop on elephant management was organized by the Wildlife Institute of India under the auspices of the Ministry of Environment and Forests, Government of India at Dehra Dun on 6th May, 1989. The workshop discussions focussed on an overview of the elephant management issues, various problems of elephant management in India, and objectives of elephant conservation in India. The presentations on elephant management

problems were taken up regionwise which had representatives from respective states within each region. Key participants in the workshop included the following:

Shri A.G. Oka (Inspector General of Forests, New Delhi), Shri H.S. Panwar, Shri V.B. Sawarkar and Dr. A.J.T. Johnsingh (WII, Dehra Dun), Shri N.D. Bachketi (Retd. I.G.F. Dehra Dun),

Shri B.K. Patnaik (Director, Rajaji National Park), Shri P. Padmanabhan (CWLW, Tamil Nadu), Dr.V. Krishnamurthy (Tamil Nadu), Shri M.K. Appaiya, (CWLW, Karnataka), Shri P.N. Surendran (CWLW, Kerala), Dr. D.K. Lahiri Choudhury (West Bengal), Dr. L.A.K. Singh (Orissa), Shri B.N. Jha

(CWLW, Bihar), Shri S.B. Lowalekar (Madhya Pradesh), Shri P.C. Das (Assam), Shri G.S. Mandal (West Bengal), Shri S. Deb Roy (CWLW, Assam), Shri G.S. Thapliyal (Arunachal Pradesh), Shri Bonny (Meghalaya) and Shri L.L. Murrey (Nagaland).

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NEWSLETTER

27.10.89

पुस्तकालय Library

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Wildlife Institute of India, Dehra

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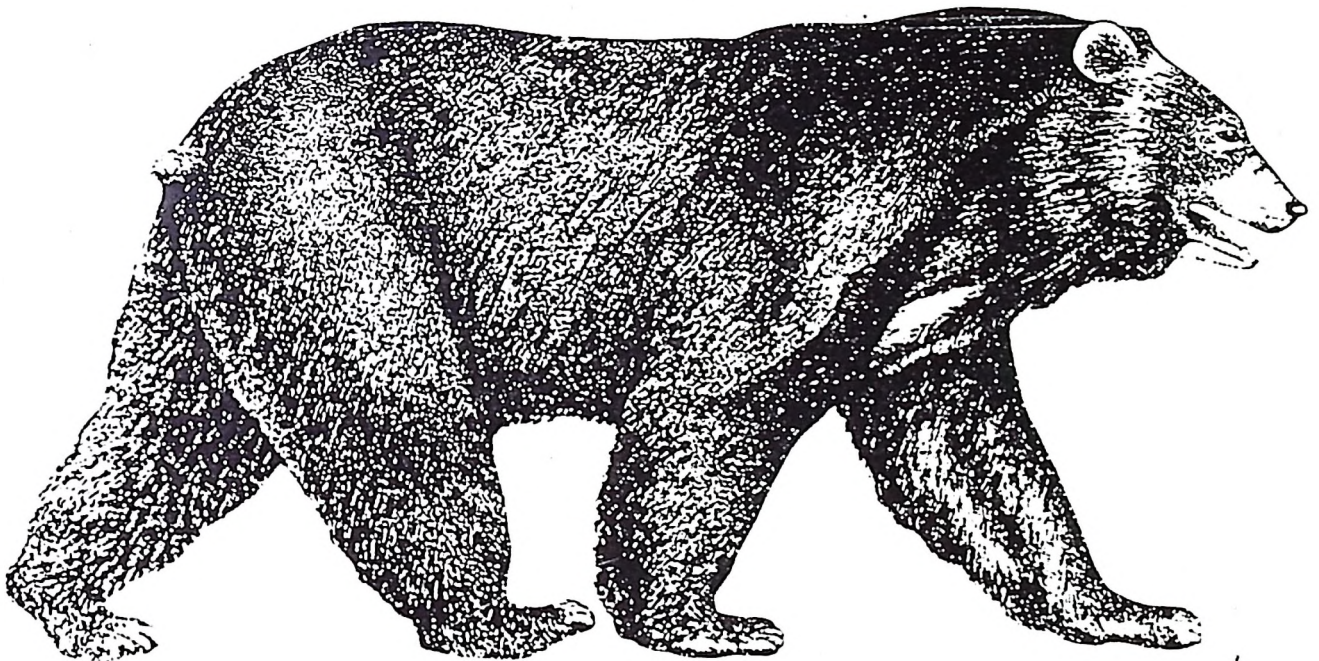
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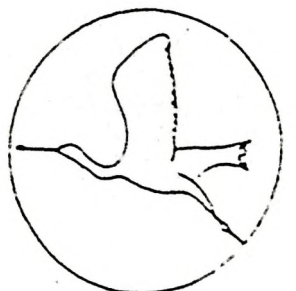
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WILDLIFE INSTITUTE OF INDIA

VOL. 4 NOs. 4 & 5
JULY - OCTOBER, 1989.



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EDITORIAL

In this Issue of the WII NEWSLETTER we cover July through October, 1989. It was a very hectic period indeed. The VI Certificate Course in Wildlife Management started in the first week of May '89 and concluded at the end of July '89. This Issue includes a report on this Certificate Course by the Course In-charge. The XI Diploma Course in Wildlife Management got started in the month of August, '89. The Officer trainees of this Diploma Course and M.Sc. Wildlife (Prev.) students went on Orientation Tour in September, '89, a report is included in this issue.

Another important activity which picked up during this period is the WII-Fish & Wildlife Services collaboration for faculty development. In this programme, a number of experts viz. Dr.S.H.Berwick (Systems Approach), Dr. Donald Hunter (Systems Approach), Dr. Joseph L. Fox (High Altitude Ecology - Transhimalaya), Dr. Paul Krausman (Field Research Methods), Dr. Louis Sileo (Wildlife Health), Dr.J. Dein (Wildlife Health) and Mr. Tom D.Thomas (Wildlife Interpretation and Education) have interacted/interacting with the identified WII Faculty Members (as per the area specialisation).

During this period, the Institute organised two workshops such as Rajaji Systems Workshop and Workshop on Wildlife Health, reports of these are included in this Issue. The Annual Research Seminar was organised in October '89, in which all Research Fellows, Faculty Members, visiting experts of U.S. Fish & Wildlife Services, M.Sc. Wildlife students and Diploma trainees participated. The six best presentations were commended as per the decision of the Research Advisory Committee which also met at this time and reviewed the progress of different research projects of the Institute.

We are continuing with out serialisation of Kishore Rao's 'An Exercise in Protected Area Management Evaluation' in this issue of the Newsletter. This part discusses Kalakad sanctuary, Namdapha National Park and Palamau National Park.

Highlights of this issue are Ruchi Badola's 'Corridor in Peril', M.V.Katti's 'Close Encounters', 'Comments on Nergis Dalal's Article by S.K.Mukherjee and G.S.Rawat's 'After Birds and Black Bears'. An interesting inclusion in this issue is Prof. Paul R. Krausman's '42'.

R N Acharya

DEVELOPMENTS AT THE INSTITUTE

REPORT ON THE VI CERTIFICATE COURSE IN WILDLIFE MANAGEMENT

R.N.Acharya

Course-In-Charge

The VI Certificate Course in Wildlife Management commenced on 1st May, 1989 with 26 officer trainees from 16 states and Union territories namely, Andhra Pradesh, Arunachal Pradesh, Assam, Goa, Gujarat, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Meghalaya, Punjab, Sikkim, Tamil Nadu, Uttar Pradesh and West Bengal. One participant left the course due to personal reasons.

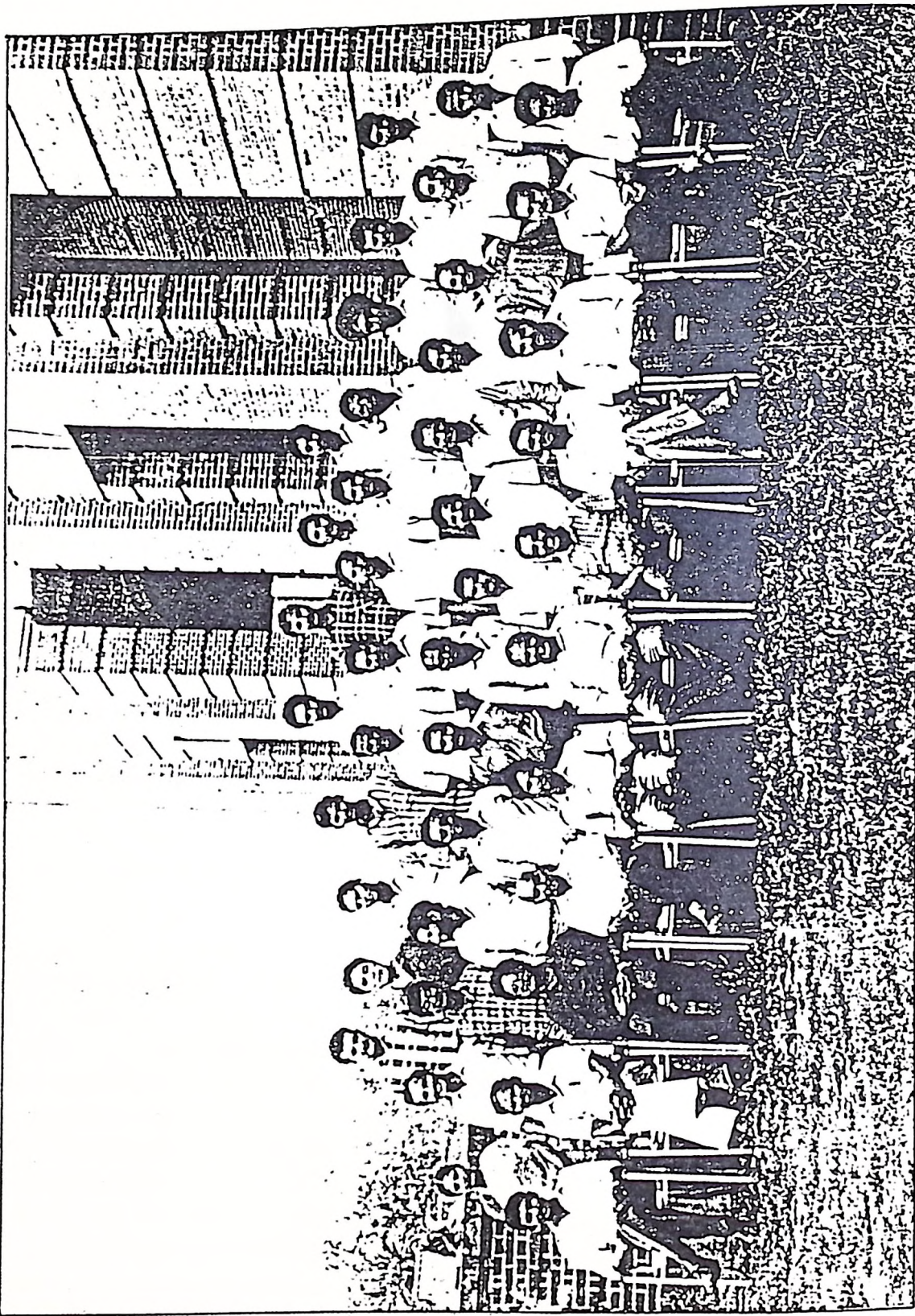
The whole curriculum of the course was of 13 weeks duration out of which class room lectures of 8 weeks and field tours were of 5 weeks. The class room lectures emphasized the theoretical aspects of wildlife discipline by covering its major components such as wildlife biology, wildlife management and wildlife extension, education, socio-economics and law. All teaching inputs as far as possible were supported by practical demonstrations, open discussions, film shows, video clips and slide programmes.

Inbuilt into the course was two field tours--providing direct demonstration of use of latest techniques and developing the art of wildlife management. The "Orientation-cum-technique tour"

conducted in Chilla part of Rajaji National Park from 26th May to 6th June 1989 was the first among this. The objective of this tour was to provide field orientation to the trainees toward interpreting animal evidences and behaviour and train them how to keep records and data. Various field methods like animal capture, animal estimation, census, habitat evaluation and impact assessments were also demonstrated to the trainees.

Apart from these, the trainees were also exposed to different methods for estimation of crop density, vegetation and habitat mapping, estimation of weeds by two step method, identification and quantification of wild animal feeding signs on vegetation etc. The use of remote sensing and aerial photography in wildlife management was also covered. They were exposed to various conflict areas and use and erection of modern wildlife barrier like electric fencing. The ongoing Institute research project using radio-telemetry for determining elephant movement and habitat utilization to develop improved management strategies was shown to the trainees. They were also shown Motichur-Chilla corridor. In

VI CERTIFICATE COURSE IN WILDLIFE MANAGEMENT
WILDLIFE INSTITUTE OF INDIA, DEHRADUN
May - July 1989



(Photo: Trainees & Faculty Members)

addition to these, tourism, interpretation, human activities and pressure assessment were also exposed to the trainees.

The trainees went on their second tour i.e., Management Tour from 26th June to 15th July 1989 to various National Parks and Sanctuaries viz., Dudhwa national Park, Katerniaghat sanctuary, Kishanpur sanctuary, National Zoological Park, National Museum of Natural History, Ranthambhore National Park, Sariska National Park and Keoladeo National Park in Uttar Pradesh, Delhi and Rajasthan. The objective of this tour was to familiarise the Range Officers with various problems in different National Parks and Sanctuaries and provide them with a comparative overview of the approaches adopted for their solution. Management of the swamp deer and reintroduced rhino, importance of key habitats were also exposed to the trainees. They interviewed villagers and staff of the protected areas to get a first-hand feeling of the problems related to peripheral areas and areas in the vicinity of the parks. Man-eating, cattle lifting, crop damage, rehabilitation problems etc. came up for discussion and debate.

During this tour, the trainees were acquainted with the modern management techniques and principles of Zoological Park in Delhi. They were also exposed to tourism management and interpretation in Delhi Zoo and Sariska. The techniques of nature interpretation and conservation education were demonstrated to the trainees at the National Museum of Natural History. Importance of wetland management, park authority and local people relationship, water management, fire management anti-poaching operations, wireless network etc. were also exposed to the trainees.

After each tour trainees wrote their tour

journals, with proper guidance from the faculty members. The tour journals reflected their grasp of the field situations. Apart from regular lectures, a number of popular lectures on different topics by various faculty members of the Institute and by visiting experts were organised. Among them Dr. Louis Sileo, visiting scientist of U.S. Fish & Wildlife Services, Shri B.J. Pathak from Sasan Gir are a few to name. Wildlife film shows organized were educative and helped in breaking the monotony of routine classes.

At the end of the teaching inputs specified for the course, performance of the trainees were assessed by written theory examination containing three papers and practicals i.e. two tour journals.

All the 25 officer trainees have passed in the examination. Following trainees got distinction through award of prizes:

Wildlife Conservation Silver Medal
"Top Trainee" - Shri H.S. Jayaraman

Institute Prize for Best Practical
Wildlifer
- Shri J. Ramanan

Institute Prize for Wildlife Management
- Shri J. Ramanan

I take this opportunity to express my gratitude to various Forest Departments and individuals who facilitated the smooth and successful completion of the VI Certificate Course in Wildlife Management.

VI CERTIFICATE COURSE - MANAGEMENT TOUR

U. Sridharan

Visiting Dudwa, Ranthambore, Sariska and Bharatpur National Parks during rains is said to be not much rewarding due to the poor sighting of major animals and the bad condition of roads. However, after two weeks of my joining the Institute, in June end, I had an opportunity to visit these parks as tour in-charge of VI Certificate Course in Wildlife Management.

Contrary to the belief, the trip was much rewarding although we could not see a tiger fully. In all the places, the management training exercises relating to the buffer zone, core area, villages around, grazing pressure, tourism management and other management problems were carried out. Besides these observations on the electric fencing in Dudwa, zoo management and maintaining museum exhibits in Delhi, Socio-economic survey in Ranthambore, Water hole management in Sariska, changes in the vegetation composition and the animal use in the erstwhile village sites in Ranthambore and Sariska were note worthy.

The jungle experience was simply marvelous, the long elephant ride in Dudwa was in fact exciting. Because of the tall green grass, we did not see many animals but we saw many species of birds including a Crested Serpent Eagle, the most common eagle in the country. In the rhino enclosure area the trainees had an opportunity of seeing the reintroduced rhinos getting acclimatized to its new place. We missed the swamp deer in Dudhwa but in Kishanpur, in one of the jheels named Jhadithal we

had a spectacular sight of about 325 Swamp deer along with resident ducks and several storks. It was a thrilling sight.

In any season, Ranthambore is a feast for the eyes, Rajasthan forest department kindly permitted us to see the wildlife and management programmes in the park. The animals are habituated to the presence of human beings in a jeep so we can see them at a close quarters. We saw herds of chital, sambar, nilgai and wild boar but inspite of our tremendous efforts we could only hear a tiger in the evening. The jheel in front of the Johimahal rest house with several birds and crocodiles was simply captivating. In Sariska and Ramthanbore the courtship display dancing of the Peacock was spectacular. Their number was so many and we could see a Peacock dancing at every 300 m intervals approximately.

In Bharatpur the opening batsman in the heronry was Openbilled stork. The species had arrived in hundreds when we reached there on 14th July. Some of them had started even incubating, anticipating good monsoon and food.

Altogether, the tour was educative, exciting and refreshing. The trainees also learned a lot regarding management aspects which made the tour a grand success.

XI DIPLOMA COURSE AND M.Sc. (PREV.) WILDLIFE ORIENTATION TOUR

G.S.Rawat

The officer trainees of XI Diploma Course in WLM and the students of M.Sc. (Prev.) Wildlife Science, visited Chilla, Rajaji National Park for Wildlife Orientation tour during 8-16 Sept. '89. Chilla was selected because it is accessible during rainy season, has many management problems such as weeds, Gujar and local peoples' pressures, developmental projects e.g. power channel and it also has populations of elephant, tiger, leopard, goral, chital, sambar, wildboar, barking deer etc. Of course, one can see most of these species much more easily during summer months when they aggregate near Ganges. The orientation programme started with the introduction to Rajaj (Siwalik) ecosystem. Following were the day-to-day programmes:

Visit to Dugadda Sot, familiarization with flora, tracks, pugmarks, pellets, calls, feeding signs, antler rubbing, wallows. An exercise on tiger pugmark tracing was done. A natural salt lick was seen. The day ended with slide show on 'World Conservation Strategy' and discussions.

The class was divided into five groups and all the groups were asked to walk in different habitat types for bird watching. Later the bird data were compared. In the afternoon traps and mistnet were set and capture techniques were discussed. In the evening there was a slide show on "Lord of the Jungle" followed by a discussion.

The officer trainees and M.Sc. students were divided into three groups and taken in three different directions for elephant tracking. Field assistant of Elephant Research Project and Gujars were of much help in the elephant tracking. Two groups saw a herd of 12 elephants. On

another occasion all of them saw a huge tusker. A leopard kill was located by the third group with the help of jungle crows and three wildboars were also seen feeding on the carcass, a young chital doe. That afternoon we walked along Sunni Sot valley identifying vegetation and birds. In the evening there was a slide show on "Genetic conservation".

We treked to Nilkantha area. The objective of which was to study the change in vegetation, impact of pilgrims and impact of villages near park boundary. In the evening wildlife biology inputs were summed up.

Forestry and Wildlife Management practices were discussed in the forenoon and in the afternoon the class went to Chilla-Laldhang road. The class was told about the habitat and waterhole management issues. Damage problems with particular reference to elephant feeding were discussed. A slide show, "Habitat and animal diversity of India", followed this.

We also visited Gujar Dera in Sunni sot, and assessed human impact. Then we went to Pathri resettlement site and discussed on the issues involved in resettlement of Gujars.

The Director, WII visited Chilla. The class was taken to Sunni Sot ridge which gives a vantage point for seeing Motichur- Chilla corridor area. The corridor management and impact of developmental projects on the National Park were discussed. This was followed by a visit to Binjrao aquaduct. In the afternoon objectives of management of PA with reference to Rajaji was discussed. The class returned to Dehra Dun.

WORKSHOPS AND SEMINARS

RAJAJI SYSTEMS WORKSHOP

B.K. Mishra

The Wildlife Institute of India has an ongoing collaborative project with the U.S. Fish and Wildlife Service on Faculty development with a view to acquiring specialised training in different aspects of wildlife science. One of the subject area under this collaboration on which expert training is being acquired by some of our faculty members is that of Systems Analysis. The systems crowd of trainees identified 'Rajaji' as the example system for learning methods of systems modelling. Beyond learning theory and acquiring encoding proficiency, a one-day training workshop primarily for the faculty and research staff of this Institute was organised on 21st September 1989 to understand the system's structure, data requirements, links and currently perceived systems behaviour against which to compare later simulation runs.

Eighteen participants who embodied a range of both knowledge and benefits attended this workshop. Steve Berwick, the systems specialist of the US Fish and Wildlife Service demonstrated both the protocol and how to facilitate. This workshop generated the basic model structure of Rajaji wildland system. The subsectors were issued to the participating systems trainees for depiction and encoding using STELLA. Data requirements and gaps were also identified during the model construction. The completed Rajaji subsector models will be critiqued, amended and linked together. Behaviour of the system will be explored and policy tests conducted at a later stage.

WORKSHOP ON WILDLIFE HEALTH

Dr. F. Joshua Dein

WII-FWS Project Expert
on Wildlife Health

On September 26 through 28, 1989, a workshop on Wildlife Health and Disease Monitoring was held in the convocation hall and laboratories at the FRI. In attendance were research and veterinary

officers from national parks and State departments, representatives from the Indian Veterinary Research Institute (IVRI), veterinary college faculty, United States Fish and Wildlife Experts, Wildlife

Institute faculty and students.

The workshop was opened by Shri H.S.Panwar, Director of the Wildlife Institute. Director Panwar expressed his concern on the serious effects that diseases can have on wild populations, as he related his experiences with a rinderpest outbreak, while Director of Kanha National Park. As he encouraged the attendees to continue their activities, he voiced support for the incorporation of disease investigation and wildlife health monitoring in all management programmes. These remarks were followed by a keynote address by Dr.Lou Sileo, WII-FWS project expert, who provided a broad overview of the history, rationale and future of wildlife health studies.

Dr.Allan Rodgers, FAO wildlife expert then discussed an observational system of condition assessment that can be incorporated into any field project. Following this presentation, I gave an introduction to physiological assessment of wildlife health, using analyses performed on samples collected from live animals.

Following a box lunch, the stress syndrome in wild animals was the topic of a paper given by Dr.R.M. Bhardwaj, Professor and Head of the Department of Medicine, Haryana Agricultural University. Dr. Sileo then returned to the podium to describe necropsy findings in wild birds. The next presentation, Disease Investigations in Wild Birds, was given by Dr. Julie Langenberg from the School of Veterinary Medicine, University of Wisconsin. Dr. B.M. Arora, Head, Centre for Wildlife Conservation, Management and Disease Surveillance, IVRI, Izatnagar, followed with a discussion of diseases of free-living wild animals in India. After each group of papers, a period of time was offered for

questions and discussion stimulated by the preceding talks.

The following morning emphasized practical demonstrations. Dr. P.K. Malik, WII Veterinary Scientist, Dr. Sileo and Dr. Dein performed a necropsy on goat showing techniques of post-mortum examination and collection of samples for further analysis. Associated remarks on the value of the biological information collected from these investigations were added by Dr. Rodgers. The next demonstrations were provided by Dr. S. Choudhary, WII Scientist and Dr.Malik on the use of immobilization equipment.

Continuing on the theme of the morning, Dr. G.L. Koul, Director, IVRI, Mukteshwar, provided detailed information on collection, preservation, and transport of tissues, blood, serum, lumph and faecal samples for diagnosis of bacterial, viral and parasitic diseases. This was followed by a presentation by Dr.A. Chakrabarti on necropsy findings in zoo animals.

The next demonstration, by Drs. Malik, Dein, and Sileo, was of sample collection techniques from a chital which had been immobilized at the WII deer park. Post-capture complications and cautions were also discussed at this time.

Early the next morning the participants travelled to Rajaji National Park for wildlife viewing. Some were given the opportunity to make their observations from a better vantage point, the top of an elephant! Those on the ground were not very successful, but enjoyed many worthwhile conversations during the walk. Before leaving the group gathered for talk about continuing national dialogue on wildlife health that had begun during the Workshop. It was agreed that meetings should be held on annual basis to discuss experiences and common

problems. It was also suggested that a newsletter be circulated to keep those interested in the subject informed. Drs. Arora and Dein volunteered to work on one edition, to be published before the end of the year. All participants were encouraged to submit brief items about their programs or findings.

During informal conversations, upon returning to the FRI, it was apparent that the attendees found the Workshop informative and worthwhile and were looking forward to future interactions. Thanks and appreciation were given to Dr. Malik, the Workshop organizer, and to those who gave presentations and demonstrations.

ANNUAL RESEARCH REVIEW SEMINAR

P.K.Mathur

Research Coordinator

The Annual Research Review Seminar is being organised by the Institute since the year 1987. The objectives of conducting the Seminar are to provide opportunities:

- (i) to each researcher to interact with his/her other colleague research fellows and the faculty during his brief stay (20-25 days) at WII, prior to the Seminar days; and
- (ii) to facilitate the Research Advisory Committee (RAC) of the Institute to review the progress of each ongoing research project.

The Annual Research Review Seminar was conducted on 5 & 6 October 1989 in the Convocation Hall of the Forest Research Institute. The members of the RAC reviewed the progress and the work of the seventeen ongoing research projects based on presentations by

seventeen research fellows and two faculty members. Dr. R.V. Singh, Director General, Indian Council for Forestry Research & Education, Dehra Dun; five US Wildlife Scientists, WII faculty including the FAO Expert, Officer Trainees of XI Diploma Course, all the research fellows and the M.Sc. (Wildlife) students also attended the three sessions of the Seminar held on 5 & 6 October 1989. Briefly, these presentations were related to:

1. Two studies in High altitude (Ladakh & Kedarnath) dealing mainly with the Snow-leopard and Himalayan ungulates.
2. Three studies relating to the terai grasslands (Dudwa NP & Kaziranga NP), dealing with the Swamp deer, wild buffaloes and monitoring of reintroduced rhinos.

3. Three studies relating to the Shiwaliks, mainly with reference to elephants, Rajaji-Corbett corridor and aspects of human dimensions (Gujars, etc.).
4. One study in Sariska TR on large herbivores and habitat aspects.
5. One study in Haryana on crop damage problems by nilgai and blackbuck.
6. Two studies in Gir NP & WLS dealing with the Asiatic lion, ungulates and habitat aspects.
7. Two studies in Rann of Kutch with reference to the Asiatic Wild Ass and socio-economic aspects.
8. Three studies on aquatic ecosystem dealing with otters, dolphins and turtles and monitoring of introduced crocodiles.
9. One study on an endangered species (Grizzled Giant Squirrel) in the South India.
10. One study relating to the strengthening of the National Wildlife Database.

In general the Committee appreciated the significant improvement in the quality of research work and presentations utilising computer based analysis of data and computer aided maps. The overall progress and quality of each presentation was considered very satisfactory.

Considering that the Research Review Seminar is an annual feature, the RAC decided to recognise the best five presentations to encourage young scientists. Based on presentations by seventeen researchers, the following six

researchers were selected for the award as two researchers tied for the fifth place. Announcements were made in alphabetical order. The award winners (1989) in alphabetical order are:

1. Mrs. Ruchi Badola, JRF
2. Mr. Ravi Chellam, SRF
3. Mr. Raghunandan Singh Chundawat, SRF
4. Miss Bitapi Das, JRF
5. Mr. S.A. Hussain, JRF
6. Mr. Sathya Kumar, JRF

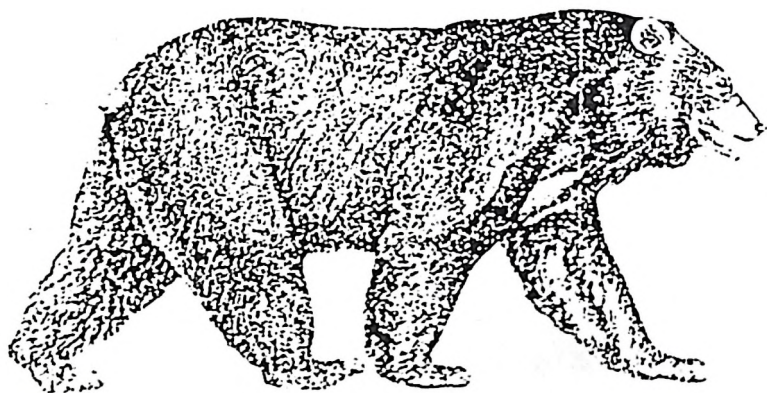
The prize value for each winner will be Rs.500/- to be given in the form of books of choice and a Certificate.

SPECIAL FEATURES

AFTER BIRDS AND BLACK BEARS *

G.S. Rawat

Lower Dachigam was lush green and bubbling with bird activity when we reached Laribal camp on the afternoon of 9th May, 89. A strongfooted warbler screamed from a mulberry bush, a verditer flycatcher from an elm branch dived in the air for an insect and a pair of greenbacked tits was gaily busy building their nest. All along the valley there were a variety of grasses, buttercups, strawberries, barberries, raspberries, Willows, mulberry, wild plums and cherries. Many of them were in flowers and others in buds.



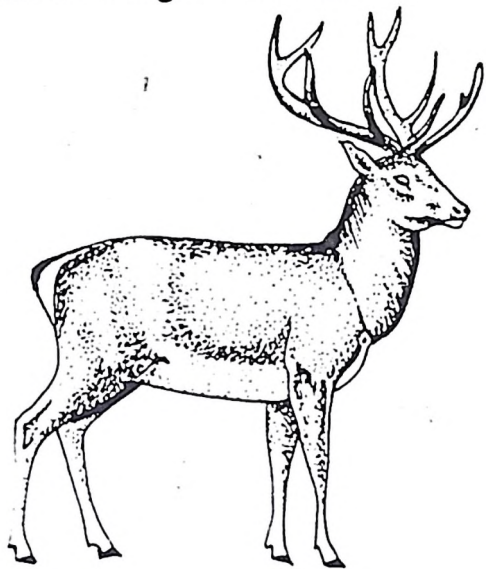
Dr. Johnsingh and myself had gone to Dachigam to supervise the initial work of three M.Sc. students, who are working for their dissertation - Madhu on birds, Vasant on movement pattern of black bears and Nima on black bears' food habits. At Srinagar Janab Wani, CWLW of J&K told us that black bears had just started coming out from their

'winter sleep'. After tea, we dumped our luggage in the log hut and went for a walk. Soon we saw two hungul does crossing the road. Dachigam is known mainly for this endangered deer. The path took us to a heavily used water hole. Nearby we saw a year old dry carcass of a wild pig which, which we were told, was the 'last wild boar of Dachigam'.

Summers in Dachigam are usually wet. The night temperature on 9th went down to 3^oC. During the next two days we extensively surveyed all the proposed transect routes of the students covering all habitat types (grassy slopes, valleys, scrubs, broadleaf and conifer forests), botanizing, birding and looking for black bear signs etc. On the third day we planned a three day trek to upper Dachigam (Gretnar) to see the altitudinal change in vegetation, bird communities and bear signs. But due to bad weather we postponed it till the next day. To our great distress, it started drizzling on the next morning also. Our guide came at 0700 hrs and told us that if we want to visit Gretnar, we must leave Laribal irrespective of weather conditions. Since, we were more worried about our sleeping bags and cameras, we decided to wait till that afternoon. Meanwhile, we went to check a nearby slope where we had seen two black bears feeding on 'some thing' previous day. We found that the bears had removed moss

* This article was inadvertently left out in the last issue of the Newsletter. (Editor)

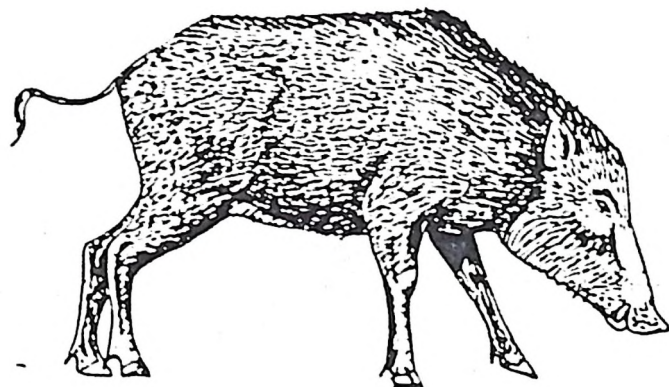
cushions from a wet rock (for insects ?) and had also eaten tender shoots of *Heracleum* and *Chaerophyllum*, both belonging to carrot family. An old carcass of hangul had also been tried !



Towards lunch hours weather seemed to be better. We decided to leave immediately after lunch leaving the message for our guide to follow us if he desires. Perhaps he thought that we were too lazy for a trek ! After 8.5 kms journey we reached Pahlipur, located at the confluence of Dachigam and Dagwan rivers. Loaded with our sleeping bags and provision for two days we could do the walk in 90 minutes. In Pahlipur rest house we got a room with a fire place and BNHS trappers who had come there for the bird migration study, helped us by giving dry wood and bringing water.

Next morning it was exceptionally clear. We had to travel a distance of about 12 kms (one way) over an altitudinal gradient of about 800 m. The path initially took us through steep climb heavily covered with treacherous pine needles. After a kilometer and half, we were in the broadleaf forest of horse chestnut and maples with heavy undergrowth of *Parrotiopsis*. We saw several species of warblers, and tits. This forest terminates in a saddle shaped ridge (Sangri ridge), south of which are mainly grassy slopes. The

ridge gives a panoramic view of Sangri village and adjoining valley, full of orchards and cultivation. After walking about 4 kms along the ridge, we entered the forest of hazel nut, fir and spruce. This forest is very rich in humus, several species of medicinal herbs and wild mushrooms. We encountered about 20-25 mushroom collectors mostly in rags. They were collecting morel (*Morchella esculenta* var.) a highly favoured and costly mushroom. We sadly realized that even in the mountain fastness wildlife and its habitat are not safe as the poverty stricken villagers are all around. Felled trees were common all along the route. At about 2400-2500 m the forest floor was devoid of herbaceous vegetation because snow had just melted few days before. At Gretnar Rest House (2600 m) Kabir, the Chowkidar welcomed us with namkin tea. Birch an indicator of sub-alpine habitat had just started at this altitude. We saw black-and-yellow grosbeak, streaked laughing thrush, some finches and heard repeated calls of several koklas pheasants. Kabir told us that occasionally Himalayan musk deer, serow and brown bears are seen in the forest above Gretnar. We returned to Pahlipur in the evening and reached lower Dachigam next day.



Following two days were spent in looking for more bear feeding signs, bird

watching and discussions. In total, we listed about 65 bird species including little pied flycatcher (*Muscicapa westermanni*) which has not been reported from Western Himalaya so far. Dr. Johnsingh and Madhu have sighted this bird in Garhwal. I have seen it both in Garhwal and Kumaon hills. We sighted 3 black bears and about 30-35 hanguls during our stay. But I was fascinated more by the variety of wild fruit-bearing herbs, shrubs and trees of Dachigam valley, which make this place

a favourable habitat for a variety of birds and black bears. The rich valley intermixed with extensive grassy slopes, of course, makes this place a special habitat for hangul.

We had the plan to go to Leh from Srinagar on 17th. But due to bad weather the flight got cancelled and for the next two days we could not get an alternate flight. This ended our brief sojourn in Kashmir.

CLOSE ENCOUNTERS

Madhusudan V Katti

Snakes in the Grass

22nd July, 0915 hrs.

Having just finished my transect through the Pine forest near Pahlipora (8 km inside Dachigam National Park), I'd climbed on to the grassy ridge below which the transect ends. I intended looking for the axe I had dropped somewhere here two weeks earlier while cutting the transect. The grass had grown quite high now, almost 1 metre in places, so my chances of finding the axe were low. I thrashed through the grass trying to reconstruct my movements on the ridge on the previous occasion. As I was parting the grass with my stick and hands, I suddenly froze: barely a yard from my searching hand, I could see the gleaming- copper scaled body of a

snake! Closer examination revealed the Himalayan pit vipers - a mating pair at that! The dimorphism in colour was quite striking - one a dark coppery brown while the other quite gray - something noticed earlier in another pair of vipers by my colleagues. Then hoping to photograph the mating more clearly, I worked my way to another angle and slowly pushed my camera closer. Suddenly, the pair separated and slithered away in the grass. Seeing them so unconcerned (nuptial bliss?!) had not felt any fear till then. But now, as they disappeared in the undergrowth, one of them in my direction, and barely a couple of metres away, I was unnerved. I ran down the ridge and after a few paces, paused. A rustle - and a couple of feet from my left foot, I saw a third viper!! Three of them within a few metres of each other - I'd had

enough of the ridge! The axe forgotten, I hastily got back into the Pine forest - with its safe bare ground. That was my last visit to that ridge!

Let sleeping Bears Lie!

2nd September 0850 hrs.

Again I'm on one of my transects. This one, through very dense *Parrotiopsis* (a shrub species, 3-4m. tall), is in two segments, 50m. apart. Having finished the first part, I was hurrying over to the tree-stump that marked the start of the next one; quite nonchalant and looking down for good footings on that steep rocky slope. About 10 m. from the stump, I looked up, and froze (quite regular, these ice-cream impersonations, you might say!). From just behind the stump, a black furry face was looking at me. Evidently I was interrupting someone's siesta! The cuddly face, the rounded ears - it looked (afterthought!) quite a teddy. Motionless, we both stared at each other: waiting for the "blink". Controlling a sudden tendency on the part of my muscles to vibrate (quite strange actually, this loss of motor control), I hastily went over the various advice "experts" and "veterans" had given on how to tackle a charging bear. Unfortunately, most of the tricks involved an important piece of equipment which was missing - a good stout stick; all I had was a one foot long and half inch thick twig - useful, no doubt, against spider-webs across my trail, but a bear...??! As the staring match dragged on for almost a minute, I contemplated the strategies open to me: "HAWK" or "DOVE"? as the game theorist would say. Then I "blinked"; being a confirmed "Dove", I decided to attempt a quiet retreat, and slowly withdrew my right foot. The bear rose, and unhurriedly

advanced upon me; this was not the belligerent charge of a monster, but a reasonable animal getting up to deal with a minor irritant. Then I got into my bluff: letting out two blood-curdling yells (my blood more than my adversary's, I daresay), I waved my "magic wand" frantically. Startled, the bear rose up on its hindlegs to its full height (about 5 feet). Showing off the white "V" on its breast, it looked quite a handsome, if somewhat puzzled creature. A second later, it turned, and fled for its life!! My sudden "Hawk" display had worked! And my limbs burst into a new trembling - in relief now. I still wonder what the bear thought of the whole thing after it had paused for breath. I made it a point to always carry a heavy stick thereafter - the muscles quivering with fatigue not withstanding!

A Brash Stag

20th September, 1830 hrs.

In the deepening gloom of dusk, I lay by the roadside (the only metalled road in the park), hiding in the grass. My objective: to count bears (for my colleagues). No, no..., there was no waterhole in front of me; just a narrow trail of mud across the road. Before the audience starts pulling at its collective hair (which no writer can allow), let me begin at the beginning (well, where else?). At the start of September, one of the two big Oak patches in the valley had come into fruit; and my colleagues (Vasant and Nima) studying the bears' habits had discovered that a large number of them used a regular trail to commute between their day-time resting areas (the same *Parrotiopsis* scrub!) and the Oak patch in fruit. This trail went right across the valley, and the metalled road where I now lay in wait. Having

thus filled in the background, let me return to where I started. As I said, I waited in the grass for the first bear to arrive; that would not be till atleast another quarter of an hour, for it was still quite light. Then, in the stream below the road, I heard a clatter of rocks - something was definitely coming on the trail. Scanning the bushes eagerly, I suddenly saw an antler sticking out. Gradually, a big Hangul stag came out on the road, not quite on the bear trail. It was a truly magnificent stag, in the full bloom of youth, with a 5/6 pointed antler (I was too stunned to count) spread over a metre wide at the tips. And further accelerating my heart beat, it started walking down the road towards me! It walked with a swagger, its head high with the heady feeling of rut, a picture of handsome strength and arrogance. And o what a fool, I had no camera! Some 3 metres from me, it seemed to notice something amiss, some strange body in the grass. Still nonchalant, it turned to investigate. What a sight! While admiring the beauty of the beast, a tiny fear poked its head

at the back of my mind; I remembered friend Diwakar being charged by a Blackbuck bull in Sariska not so long ago. This massive stag now towered over me: those hard antler points on that big head, backed by the solid muscular pillar of a neck; to be gored by something like that ... I grabbed my stick!! The stag, panicking at this sudden movement, jerked around, and stumbling, fled up the road, disappearing up the canal bank above the road. It barked twice, while I could still see it through the vegetation, and then disappeared. As I sat recovering from this wonderful encounter, a faint "ungulate" odour lingered in the air, reminiscent of cattlesheds, but not quite the same. I rued my hasty action. More than that, I was surprised by the nonchalance and imprudent carelessness of the stag. What a heedless thing to do - walking on the road like that! Had I been a leopard (or a poacher for that matter) I could easily have bagged this large chunk of meat! The wages of maximizing reproductive success?! Later that evening I heard the first rutting calls of the year.

COMMENTS ON NERGIS DALAL'S ARTICLE IN THE TIMES OF INDIA (SUNDAY REVIEW)

S.K. Mukherjee

Wildlife trade is big business, and off-take from wild natural resources if allowed unchecked and unregulated, then survival of the species in concern becomes threatened.

Fur trade in India was allowed unchecked and unregulated prior to enactment of Wildlife (Protection) Act of 1972 when for the first time control on trade and taxidermy was introduced.

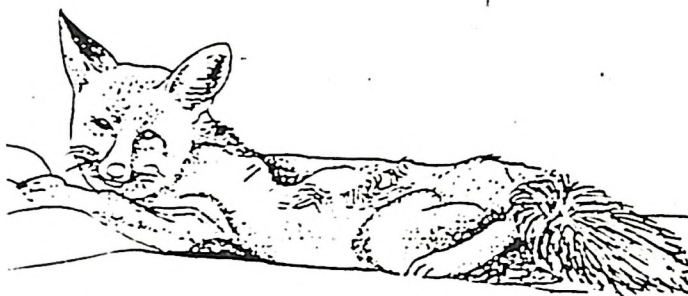
With the introduction of Wildlife (Protection) Act, 1972 trade both in internal market and also for export on spotted cats, otter, etc. was stopped. With this check, trade shifted to uncontrolled species like Jackal and Foxes which were listed in Schedule V (vermin) of Wildlife (P) Act, 1972 and rate of off take was such that common species and foxes became rare and by 1977 Government of Rajasthan uplisted jackal from Schedule V to I and Government of India put all species of foxes and jackal from Schedule V to Schedule IV.

State of Jammu & Kashmir did not adopt Wildlife (P) Act, 1972 and decided to bring their own Act drawn on the same line as that of Wildlife (P) Act of 1972 and from 1st January, 1979, Wildlife (P) Act, 1978 of Jammu & Kashmir was brought in force. It is noteworthy that in J&K most of the furriers and artisans were working and they were required to take licence to trade on wildlife items. Almost at the same time Government of India stopped export of all wild pelt or articles made out of it. The J&K wildlife traders made lot of hue and cry and Government of India sent a high power team for on the spot study of the situation and by 1980 it was decided to allow export of articles made out of pelts of following species:

- Jackal
- Jungle Cat
- Desert Cat
- Civet Cat
- Hill Fox
- Desert Fox
- Red Fox

against the declared stock of skins/pelts and for which quotas were given. it remained a misty as how the quotas were fixed. The quota released by the Commerce Ministry was not fully utilised

in 1980 and unutilised quotas were carried forward in the subsequent years.



In 1983 while working in Department of Environment, I studied this problem along with Prof. L.M. Nath then Regional Representative of IBWL and submitted detail report to Government of India and recommendations made to GOI include following:

- a. Immediate stoppage of export of fur articles as traders were adding to stock of skin declared by illegal means;
- b. Allow import of pelts on easy terms with 100 re-export as value added items to provide job to artisans;
- c. To examine if fur marketing could be taken by state of J&K to provide job to artisans.

Following submission of the report GOI took up the matter with State Government of J&K and export of fur artisans was finally stopped from April, 1985. The other proposals were not

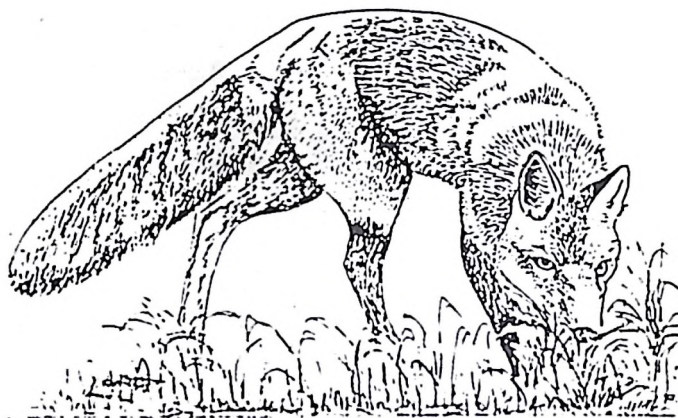
acceptable to traders of J&K. However, possibility of having fur farm in J&K was examined by both J&K Govt. and Fauna and Flora Preservation Society, UK sent their experts to study the problem and they submitted their. Problem was also studied by Wildlife Institute of India and one Dr. Cocrane submitted his report to the Institute and in turn to GOI (Report is available in WII Library). Both the consultant work independently at different time but interestingly they arrived to same conclusion which conforms to my report submitted to GOI in 1983.

I wonder, where Ms. Nergis Dalal was in all those years! Concept of farming is not new - Poultry, duckery, goataryand pigry, etc. are all come under farming concept but no one ever talks about them no sentiments, reservation, etc. are ever expressed. Number of farmers in different strains of rabbits, karkool, lamb, pashmina goat, etc. for production of wool, pelt and meat - no one has ever raised voice against them.



The species which were under consideration for fur farming in J&K was some strains of rabbits, silver fox and karakool lamb and these species do not attract the provisions of Convention on Trade in Endangered Species of Flora

and Fauna (CITES) and CITES there are set procedures for farming of endangered species for commercial purposes on which Zimbabwe, PNG, Australia, etc. are farming and marketing crocodile products, etc. therefore, it is not understood on what context India delegation opposed the fur farming proposal.



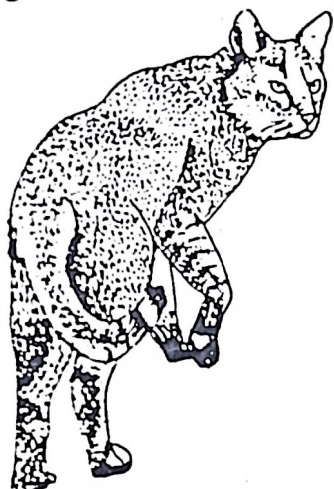
During 1986-87 even in Planning Commission subject of fur marketing in J&K was discussed in consultants with Ministry of Environment & Forests and species funds were provided but to the best of the knowledge and information the project was not taken up because the furiers were not interested in that they wanted to continue with trade on wild species to make money and become richer and richer, the plea of providing job to artisans was probably a hoax.

Artificial fur is getting more popular but still there are crazy people who are ready to pay any value for wild products who are thereto satisfying their lust. I wonder if Ms. Dalal has ever seen the fur stock in market of Srinagar and has ever bothered to know from whose back it comes from.

ALL IN THE FAMILY

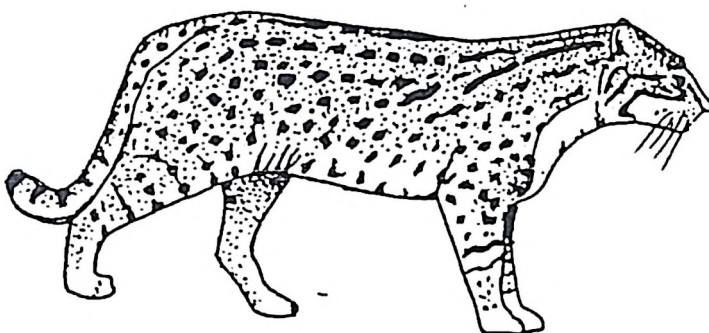
Shomita Mukherjee

This was the 12th day since I had seen a cat in Keoladeo National Park and was returning to my room feeling somewhat dejected, when suddenly Mr. Bholu Khan (forester) came running to tell me he had sighted a fishing cat at the canal near the barrier a few minutes ago. Earlier, he had mentioned this cat to me but I never came across it. I ran behind him, along the canal and there it was - a large fishing cat sitting at the edge, concentrating hard at something in the water. We thought it was a lovely opportunity to see it fish but unfortunately it sensed our presence and ran away. The previous month, I had seen a jungle cat in the same area around the same time. I decided to spend a night at the canal and wait for the cats.



The next night all prepared with 2 torches, I sat at the canal. The fishing cat was sighted at around 10 pm the previous night and I expected it to come there around that time. A few minutes after 10 pm I saw an animal came down to the canal and cross over to my side. Being a moonlit night, and from the outline and gait, I could easily see it was a cat. It continued walking toward me. I was trembling with excitement and when

it was just a few meters from me I flashed both the torches. I was surprised to see it was not last night's fishing cat but the grey tabby (feral cat) from the lodge. It of course ran away on seeing me.



This meant that 3 species of small cats came to the same area, around the same time but on different days. What's even more interesting is that all 3 cats have one kitten each.

One night I saw the jungle cat with her kitten sitting on a mound of mud near the cycle shop close to the canal. The next night I went to the same mound but this time it was the tabby with her kitten. Bholu has seen the fishing cat and her kitten resting in the same area.

Although since then the 3 species of cats have been seen several times in these areas, I've never seen them together. I wonder what happens if they decide to go to the canal or the mound on the same day at the same time!

FORESTS, FLORA AND FAUNA AND BIOLOGICAL DIVERSITY

Editor's Note: This is part of the recommendations made by a National Conference on the Environment held at the Forest Research Institute, Dehradun during December 15-17, 1988. The Conference was sponsored by the Implementation Committee for the Commemoration of the 40th Anniversary of India's Independence and the Jawaharlal Nehru Centenary. The objective of the Conference was to discuss Indian achievements in the environment sector in the last 40 years and to identify the strengths and weaknesses of existing policies, and to make recommendations regarding future policy options on the basis of this.

Priorities

Forest resources should be managed keeping the following order of priorities in view:

- i) National needs of long term ecological stability relating to conservation of soil and water regime and preservation of biological diversity and the gene pool of relatives of cultivated plants and domesticated animals.
- ii) meeting the basic needs of food, fuel, fodder, small timber, manure and other forest produce and livelihood and employment for people living in and around forest areas.
- iii) Production of commodities for urban and industrial uses after meeting local demands. There should be no subsidized supply of such commodities and the urban-industrial sector should be encouraged to meet its requirements from private lands in the plains.

Classifications

Forest lands should be functionally classified, to minimize possible conflicts of interests, into:

- i) Conservation areas,
- ii) Community lands, and
- iii) Multiple use areas.

The current pattern of land classification is based on legal arrangements that have come to be established in relation to controls. The classification grounded in use potential with a focus on community management rather than ownership should be superimposed on this structure.

Technology

The technologies employed should take into account existing indigenous knowledge of the people and build upon it to generate site specific prescriptions, instead of transplanting centrally developed generic technologies. However, centrally developed technology may at times be necessary.

Planning

The formulation of the management plan should be an open and participatory process with a free flow of information amongst different segments of society involved in managing the conservation areas and managing and using the community lands or the multiple use areas. The choice amongst management options should be based on the following criteria:

- i) The need for conserving soil and water regimes,
- ii) the need to conserve biological diversity,
- iii) maintenance of biomass productivity on a long term basis with provision of adequate alternatives in lieu of the restrictions on use by local communities that may have to be imposed,
- iv) the need to meet the basic requirements of local communities, and
- v) the need to promote local community self management. Planning and management of forest areas should only be undertaken as part of a more comprehensive watershed management plan to introduce sustainable landuse portion on all private and public lands in these sensitive areas. Watershed Development Authority may be constituted to plan landuse, collaborate with local village level institutions in implementing the operative changes recommended for a sustainable landuse in and around forest areas.

Approach

Forestry should be the main plank of anti-poverty programmes in districts with substantial tracts of forest and uncultivated lands.

Management

The Forest Department would continue to play a major role, with exclusive responsibility in the protection areas, a facilitative and supportive role in community lands and a cross-sectoral nodal role in multiple use area. The usefulness of Forest Corporation should be examined.

Forest Panchayats should be set up in community areas on the following principles:

- i) single village user groups,
- ii) predominant representation for weaker sections and women in the management with reporting and accountability to the whole community.
- iii) equitable, one family - one share of the produce, and
- iv) community ownership of forest and pasture lands. Appointment of honorary forest guards from the voluntary sector should be considered.

In the multiple use areas there should be an open process with adequate arrangements for monitoring implementation, to check further loss of natural forests and grasslands, and to ensure effective regeneration and sustainable development.

Information technology should be an integral part of the functioning of the Department.

Forests have to be closed to grazing, grasslands should be identified, rejuvenated and scientifically managed and some device evolved to stabilize the population of cattle.

Institutional Development

Effort will have to be made for building up community institutions with specific legal arrangements for sharing benefits, sharing authority in management and to incorporate the concept of user responsibility along with user rights.

The main motivating factor for community involvement, including voluntary agencies is the benefit that the community derives from such land, and the expertise of voluntary agencies. This has to be clearly recognised in the formulation and implementation of the action plan.

Reorientation of the Forestry Service

Before the Forestry Service can come to play a central role in rural development in the forested regions, attitudes and abilities of its personnel need to be reoriented to perform the new tasks. This requires special inputs in:

- i) Initial and in-service training to provide the social perspective and to impart the required organizational skills,
- ii) added appreciation of needs of specific areas such as watershed, tribal tracts, and rehabilitation, and

- iii) appropriate change in the reporting and monitoring system to reflect the new role expected from the personnel.

Amendments to Forest Policy and Forest Conservation Act:

The whole approach sketched above envisages the establishment of community institutions to manage community lands on a sustainable and self-supporting basis. The Forest Panchayats would have to levy appropriate charges in the form of cash, kind or services to enable them to effectively manage and enhance the resource base on the community lands to meet their own needs. The focus of our efforts in the coming days should be on building up such institutions with the active involvement of voluntary organizations.

Provisions of the Forest Policy, including Forest Conservation Act, relating to the role of the community in the management and use of forest produce e.g. the curtailment of rights and levy of additional charges and fees, should be appropriately interpreted in the spirit of these recommendations, while formulating the guidelines for implementation. The National Forest Policy as recently announced should be subjected to a national debate. Guidelines issued by Government of India will be critical in reconciling conflict of interpretation and will help to prioritize actions.

AN EXERCISE IN PROTECTED AREA MANAGEMENT EVALUATION

Kishore Rao

Editor's Note: From last issue of the Newsletter (Vol. 4 Nos. 1, 2 & 3) onwards, we are serialising K.Rao's comments on the management of 2-3 protected areas. This is second in the series. The serialisation will continue in the next issue also.

Kalakad Sanctuary

The Committee visited Kalakad Sanctuary in the Western Ghats of Tamil Nadu from 20-22 March 1989. This 224 Square kilometres sanctuary is the southern most P.A. on mainland India and also represents the southern most range of the tiger in the country. Together with the contiguous Mundanthurai sanctuary it constitutes the 17th tiger reserve under Project Tiger. Although the sanctuary was not part of a tiger reserve during the period for which the present assessment is being done, any future effort of this nature must consider the Kalakad-Mundanthurai conservation complex as a whole because of the existing ecological continuity and because of largely similar objects of management. There are proposals to increase the area of the sanctuary by about 86 square kilometres by adding the Veerapulli R.F. and other smaller areas.

Although the P.A. has only sanctuary status it goes to the credit of the management to have stopped all forestry operations and to have suspended minor forest produce and grazing concessions.

The only existing sources of disturbance are in the form of four privately-owned enclosures covering a total area of about 140 hectares and seven blocks covering about 70 hectares which had been leased for cardamom cultivation prior to the area being made into a sanctuary. Under the project tiger scheme, Rs.80 lakhs have been sanctioned for acquiring the 4 private holdings, while the leases of all the cardamom blocks would expire by 1995. Vacated estates are seen to be quickly invaded with weeds, chiefly lantana, and management will have to contend with this problem.

Potential sources of disturbance include proposals for construction of a total of some 13 dams in the Kalakad-Mundanthurai reserve. Within Kalakad the proposed dam on the Pachyar river near Thalaiyanai would submerge about 110 acres of the sanctuary, including the entire visitor complex which has been constructed there. The other proposal is for a dam on the Kodimudiar river which too would submerge a part of the sanctuary area. The value of these forests in sustaining agriculture in the surrounding flat lands is obvious as one heads towards Kalakad. Numerous

streams which originate in these forested hills support lush green crops of paddy, sugarcane and banana. The Pachyar dam is intended to stabilize flow to 15 irrigation tanks which the river feeds. Hence, the tangible benefits of protecting catchment forests can be readily demonstrated in this area. However, at the same time it must be ensured that such developmental projects do not jeopardize the very values that are sought to be protected. Hence, all such project proposals need to be jointly inter-departmentally reviewed to assess likely adverse impacts on conservation objectives. For example, stabilization of stream flow into the 15 irrigation tanks can perhaps even be achieved by desilting them instead of constructing the Pachyar dam.

Although zoned into the three traditional management zones, there appears to be some difficulty in limiting intended management to their respective zones. In other words, field staff were not quite clear about the distinction between these zones and about the differences in management approaches. Although a tourism zone (13 Square kilometres) has been identified, the network of trekking routes and trails (10 routes; distances ranging from 4-15 kilometres) pass through both the core and buffer zones. These routes have been well laid out but must be watched to ensure that the overall volume of use does not cross acceptable limits. There should also be no question of widening some of these trails into motorable roads.

Greater management effort needs to be directed toward managing the Nambikoil area in the southern part of the sanctuary. This area is heavily visited due to the presence of a temple, and the incidence of illicit grazing and cutting is also reportedly high in this region. Additional field staff and a better

communication system in the form of a wireless network would make protection enforcement more effective. Considering that the area does not have an extensive network of roads, procurement of Mules for patrolling duties should be seriously considered. This would facilitate movement into presently inaccessible areas as well.

Other management efforts include fire protection and habitat management. As part of the latter check dams and wiers have been constructed to check erosion and create water bodies. Regeneration of native vegetation is also being aided by clearing weeds and preventing them from overtopping the seedlings. Contour walls have been built over more than 2 kilometres distance in the sanctuary. The only reason for taking up this work appears to be the availability of funds under the drought relief scheme! Apart from acting as barriers to the free movement of animals these walls are also a gross eye-sore. In this context, an artificial water hole recently constructed is also worthy of note. It resembles a swimming pool more than anything else and has high walls on 3 sides (at least 2 feet high!) and a slope on only one side. It offers an excellent example of how not to develop artificial sources of water for wild animals. However, the last 2 mentioned works do not relate to the assessment period and were executed in subsequent years.

Research and monitoring aspects need to be given greater attention by the management authorities. Considering that the sanctuary has several endemic species, particularly of plants, management ought to know what is happening to them. A vegetation monitoring system requires to be put into place as soon as possible. Presumably, these will now get initiated under the Project Tiger scheme but during the

assessment period or before there have been no efforts in this direction. Some students are doing independent research on the fauna and flora in Kalakad and it goes to the credit of the sanctuary authorities to provide them with some facilities (accommodation in the form of log houses and rest sheds) for this purpose. Some studies have been conducted in the past on the Lion tailed Macaque (as part of a larger study) and on the Nilgiri Langur (in the Mundanthurai area) both endangered primates of great value to the sanctuary, but there is little evidence of management recommendations of such studies having been incorporated into the new management plan.

Tourism facilities have been quite well developed. There is a Museum, a well-stocked Library, an Orchidarium, a dormitory and a watch tower at the tourist complex at Thalayanai. There are well described trekking routes and trails with details given in a brochure for the information of tourists wishing to undertake this activity. The development of a small group of well-informed guides should be considered who can interpret the faunal and floral values of the tropical evergreen forests and the other features of the sanctuary.

Protection and habitat management efforts are reportedly suffering owing to inadequate field staff. Staff numbers must therefore be augmented urgently.

Namdapha National Park

The Committee visited Namdapha National Park (and tiger reserve) from 10 - 13 February, 1989. The park, with an area of 1985 square kilometres, is one of the most outstanding wilderness areas in the country which can still boast of vast

expanses of virgin forests. The scenery is spectacular and the diversity of plants and animals truly mind boggling. This high level of biodiversity corresponds to an amazing range of altitudinal variation within the park from 200 to 4500 metres above M.S.L. Of the total area, 177 square kilometres is the buffer zone which was earlier excluded from the park as it had two settlements. These settlements -- Haldibari village and a camp of Assam Rifles at Firmbase -- have since been moved out of the area. The buffer zone also corresponds to the tourism zone of the park. The addition of the buffer zone has greatly strengthened the boundary constitution of the park on the western side (north of the Noa Dihing River), and the Deban River now forms the boundary on this side. The other boundaries too have been very soundly constituted.

The management plan for the park has been drawn up but is yet to receive Government approval. However, management actions conform to prescriptions contained in the plan. Approval of the management plan should be expedited and adequate resources provided for its implementation. Traditional habitat management/development works are not prescribed in the plan nor are they required in an area which is intrinsically very rich and largely free of biotic disturbances. There are no forestry operations, grazing or other rights of collecting timber or MFP within the park. Small areas which were erstwhile settlements and clearfelled in the past have been rehabilitated by protection and planting up with indigenous species. Water is not a limiting factor and in addition to the many rivers and streams there are some natural pools as well. Fire is also not a problem as the area is predominantly a wet evergreen forest. The few patches of grassland that may be susceptible to

fires are protected by cutting fire lines and by fire watchers during the dry winter months.

Enforcement of protection measures is not a problem. The field staff (86 Nos.) are considered adequate for the next 4-5 years. However, facilities for staff are grossly inadequate. The field staff in this park perhaps work in one of the most inhospitable and remote forest areas and hence, deserve appropriate compensation. Some of the measures which can be taken in this regard are: provision of special pay, free family accommodation in Miao or elsewhere to keep their families, permanent structures as camp quarters (in place of the present bamboo-walled thatch huts), and some means of increased mobility, particularly for periodic transportation of supplies and rations.

The Committee strongly supports and endorses the proposal of the Field Director to acquire Mules for patrolling duties and for transportation of materials inside the park as there are no roads linking the 15 camps. The Project Tiger Directorate in the G.O.I. is urged to allocate funds on a priority basis for purchase of mules and construction of permanent patrolling camps.

Although during the assessment period (1985-86) the wireless communication system consisting of 7 fixed stations and 15 mobile sets is reported to have been operational, the system was out of order at the time of the Committee's visit. A proper wireless communication system is critical to an area where other means of communication are lacking. Urgent steps should therefore be taken to make the system functional as early as possible.

The authorities have put up a successful conservation defence against two development projects (a hydel project

and another dam) inside the national park. As a result, both these project proposals have now been shelved. The only other disturbing factor which remains is the PWD camp and gangs of workers for making and maintaining the only road which exists inside the park -- the Miao to Vijaynagar (M-V) road. This fairweather road is presently motorable only up to a certain distance beyond which it is prone to severe landslides. This road provides a link to three villages (Gandhigram, Ramnagar and Vijaynagar; total population about 6,000) at the eastern end of the park on the Burma border. However, owing to the poor condition of the M-V road, a regular air drop of essential supplies is made to these villages. Hence, there seems to be little value in investing so much time and effort on building and maintaining the M-V road. This activity is also a source of constant disturbance in an otherwise tranquil ecosystem.

Regulation of tourism is not a management problem as the number of visitors to the area is very low owing to its relative inaccessibility and because entry into the state itself is restricted due to inner line regulations. The area open to tourists is in the buffer zone and follows the road from Deban to Haldibari to Bulbulia. It is proposed to maintain a bridle path from Bulbulia to Ranjijheel to firm base and then to the 34 mile point on the M-V road. Most visitors venture out only up to Deban and very few undertake the trek to Bulbulia. Access to this tourism zone is further restricted to the times when the Noa Dihing river is fordable. Hence, tourism as presently organised cannot pose any threat to the park.

There is a proposal for a second tourism zone, which is much before Deban (at the 10 mile point) with provision of some basic accommodation and elephant rides

to take tourists up to a natural pool where it is possible to sight animals. The Committee supports this idea as it would satisfy the bulk of the casual visitors who come to Namdapha and also because even going up to Deban at times is not possible due to the frequent landslides. The interpretation and information centre (with a mini zoo) at Miao is well organised and managed.

A research officer is in position and some basic research has been undertaken. However, there is no long term research programme nor any periodic monitoring of the vegetation dynamics. Hence, research effort needs to be better focused. The captive breeding programme and facility for the endangered White Winged Wood Duck at Miao has achieved noteworthy success. The programme which has been undertaken in collaboration with the Wildfowl Trust (U.K), WWF India and the Assam Valley Wildlife Society is being managed very well and offers a model for other similar captive breeding efforts. The programme should now progress to its next logical phase i.e., rehabilitation of the captive-bred birds into the wild. There are 20 ducks in captivity at present.

Surveys for birds and small mammals have been conducted in the park by scientists from the Smithsonian Institution (USA), U.S. Fish & Wildlife Service, and the Z.S.I. Hence, lists of birds, mammals and snakes found in the area have been prepared. A reasonably good herbarium collection is being maintained. A study on the ecology of the Hoolock Gibbon has been initiated.

Relations with local people are reported to be by and large good. 80% of the workers have been employed from the local villages.

Palamau National Park

Palamau National Park and Tiger Reserve was visited from 23-26 May 1989. Palamau has not yet been declared a National Park even though the preliminary notification declaring intention to do so was issued as long back as September 10, 1986 and the prescribed procedure for investigation and determination of claims has long been completed. The matter is said to be pending with the District Collector, Daltongunj. Only an area of about 232 square kilometres (out of the total reserve area of 1026 square kilometres) is proposed to be declared as the "Betla national park", the final notification for which needs to be expedited. Although listed under the "national park" category in the nominations for the IBWL award, but in view of the "proposed" park status and that too for only a part of the sanctuary, the Committee considers it appropriate to evaluate Palamau under the "sanctuary" category.

Although as mentioned above, Palamau Tiger Reserve has a total area of 1026 square kilometres, only 213 square kilometres is the core zone and the remaining 813 square kilometres is the buffer zone. Almost the entire buffer zone area is outside the administrative control of the Field Director, Project Tiger and is controlled by the respective territorial DFOs. The buffer zone in the west falls under the Garhwa South division, in the east under Latehar division, and in the central and southern sides under Daltongunj South division. These 3 DFOs are responsible for forest protection, minor forest produce collection, bamboo and timber extraction, grazing and maintenance of roads in the buffer zone. The Field Director cannot

influence any of these activities in the buffer zone and is responsible only for wildlife protection and water development. All areas of the buffer zone, with the existing staff, should be therefore brought under the control of the Field Director, Project Tiger. Only the DFO of South Daltongunj division is presently under the control of the Field Director.

A large number of villages "pepper-pot" the buffer forests. Impacts of grazing, fire and forestry working are clearly visible. Most of these forests are degraded, open and infested with weeds in the undergrowth. However, some pockets away from the villages are still in fairly good condition. There is very little evidence of wildlife in these areas. Bamboo and timber coupes are being worked at 4 and 30 years rotation respectively. The rotation for selection fellings of miscellaneous and sal forests is however higher. In some parts, gap planting and underplanting with bamboo and *Gmelina* spp. constitute the other forestry operations in the buffer zone.

Grazing regulations prescribed in the working plans for the buffer forests (compartments closed for 3 years and opened for grazing in the 4th year) are no longer being followed and grazing takes place throughout the buffer. In fact, we came across a herd of 25 cows grazing inside the core area as well. Buffer zone forests are also subjected to intensive MFP collections, such as sal seeds, lac, tendu leaves, mahua and *Bauhinia vahlii* leaves. During our travels inside the sanctuary we encountered a tribal family gathering tendu leaves inside the core area. On interrogation they confessed that they knew they were inside the core but continued to collect as the quality of the forest was better here.

There is no doubt that the forest of the core zone are in excellent condition but in addition to the occasional cases of illicit grazing, cutting and poaching, the major problem is that of fires. Extensive areas in the buffer and core zone forest were found burnt. However, records of the last few years show the total area burnt annually as averaging only between 10 to 15 square kilometres. If this be so it may not be a cause for worry. But having covered almost all major parts of the reserve during our 4-day stay we felt that the area damaged by fire was much greater than that. We were informed that most fires resulted from acts of incendiarism by the local people. One day, during our stay we saw two villagers fleeing after setting fire to the forest by the side of the road close to Betla. Although there exists a fairly good system for fire detection--consisting of 14 fire watch towers located on vantage points, a light signalling system, and fire patrolling parties consisting of about 100 seasonal labourers employed during the fire season-- there is practically no equipment provided for fire fighting. This aspect needs to be given priority attention if the response to a fire incident is to be quick and effective.

The first management plan written for the reserve expired in 1978-79. The second plan has only now been prepared covering the period 1987-88 to 1996-97. There was no plan for the intervening period which also includes the period of the present assessment. However, prescriptions of the first plan were reportedly being followed during this period.

Poaching is another problem with which the reserve management has to contend. Being predominantly a tribal area, the local people are habituated to killing wild animals for the pot. Young tribal boys moving around the sanctuary with

catapults for hunting birds is a common sight. Water holes are vulnerable points for poaching. Hides are built (from local rocks and boulders) overlooking these water holes and country-made weapons used to shoot deer and pigs. We were witness to one such hide being demolished near a water hole in the core zone. Piggery, poultry, duckery and pisciculture schemes if started in the buffer zone villages will greatly contribute to meeting the protein needs of the tribals and ease the pressure on the wild resource.

Incendiarism and poaching (including illicit grazing & MFP collections) are symptomatic of the growing antagonism of the local people to the tiger reserve. They view the proposed national park status as an attempt to further curtail their activities and think that the existing grazing and fuelwood concessions in the buffer zone will be withdrawn. This, we were told, has been clarified to them as not being true. At the same time, cases of crop damage by wild animals, chiefly elephants, and loss of livestock to wild predators, are on the increase. The compensation given for crop damage is only Rs.100/- per hectare, for cattle killed it is 50% of the market value and for the loss of human life it is Rs.10,000/-. Some ecodevelopment measures initiated in the seventies have not been sustained. Eventhough the project employs a sizeable number of local villagers every year for fire and crop protection work, the villagers largely view it as not being of any benefit to them. This is a situation which cries out for ecodevelopment measures. However, for any such project to be planned and implemented, a prerequisite is that the buffer areas are also brought under the administrative control of the Field Director of Palamau.

The present F.D. bears out the soundness of this approach as he has spoken to several villagers to get their feedback on the kind of development they foresee for their areas. Based on these consultations he has proposed the construction of a small dam and irrigation channels for the *Mundu* group of villages at a cost of Rs. 2.5 lakhs. In return, the villagers have assured that no grazing will be done in the forest areas and some have already started harvesting fodder to stall feed their cattle. It is such projects which need to be given priority financial and administrative support if the prevailing interface problems are to be resolved.

There are three forest villages (*Kujrum, Ramandagand Latoo*) in the core area of Palamau. In all, there are 58 households with a total human population of about 550 and an equal number of cattle. The villagers of these three villages are willing to move out of the reserve and have given their consent in writing as well. The total cost of the relocation scheme is Rs.23 lakhs and funding for this purpose has been extended under the Project Tiger scheme by Government of India for the last two years. The resettlement site has been selected in the Saryu Range of Pailapathar Protected Forest (P.F) where each family is proposed to be given a house site and garden, a house constructed and 2 hectares of developed agriculture land. A perennial water source is also proposed to be dammed for irrigation, a tubewell and school building provided and grazing allowed in the nearby P.F. However, the state government has not sanctioned the scheme so far as a result of which funds have lapsed in the last two financial years. It is learnt that the matter is pending within the Forest Department for no apparent reason, even

though the people are willing to move, they have seen and agreed to the rehabilitation area, and the local revenue authorities have assured their full cooperation in this effort.

There is a good network of roads which facilitates patrolling work. However, the wireless communication system is outdated and needs to be replaced. Only 5 or 6 fixed stations (out of a total 10) are in working order and there are frequent breakdowns. None of the mobile sets (5) are at present functional. As spare parts are no longer being manufactured for this old model equipment by B.E.L. maintenance is becoming a major problem. The F.D. mentioned that since the last 2 years they are trying to get a new frequency allotted from the Wireless Advisor (Govt. of India) but with no success. Requests to the Director (P.T.) G.O.I. to intervene and expedite this have also proved infructuous. As a result protection work is seriously hampered and the reserve HQ is not in easy contact with the interior camps. Likewise, vehicular and arms support are proposed to be provided to the field staff to make them more effective.

A dam is proposed to be constructed on the Auranga River close to Betla which is part of the proposed national park. About 800 hectares of the park area (and 3 or 4 villages) will be submerged as a result of this dam and adversely impact the resident elephant population's movement pattern. The submergence area includes a "chicken's neck" of about 2-3 kilometres width through which the elephants move seasonally between Betla in the north and Baresand area in the south. Already, this corridor is very narrow and the elephants move out into the adjacent crop lands and cause damage. Further attrition of the "chicken's neck" area as a result of the

dam construction and consequent submergence will greatly aggravate the problem of depredation by elephants on human life and property in the adjacent villages, leading to calls for capture/culling of the elephants. The dam is being opposed but no final decision has yet been taken. The Committee strongly recommends that alternative sites for locating the dam should be carefully investigated and a complete assessment done of the likely adverse environmental and social impacts before a final decision is taken in this matter.

Noteworthy resource management work has been done in Palamau. In particular, water conservation and development efforts have proved very successful. Contour trenching and check-damming have undoubtedly contributed to improving the water regime and raising the water table. As a result, dry season availability of water is prolonged and with some desilting and deepening, most of the water holes now retain water almost the year round. Water sources are well dispersed through, with atleast one for every 5 to 10 square kilometres of the area.

Bamboo has recovered in many areas due to protection from fire and grazing. *Lantana* control efforts are very cost effective and yielding good results. Uprooting and cutting back for 3 successive years has succeeded in clearing up dense growth of *lantana*. The average cost per hectare is reported to be only Rs.500/- which is much lower than in similar efforts in other PAs.

Palamau is perhaps the only protected area which still allows tourists to view wild animals by spotlight at night. Although the tourism regulation says visitors will be allowed into the reserve between sunrise and sunset, a large

number of tourists arrive only after sunset and they are taken into the park for viewing animals with spotlights. The park authorities should stop this practice forthwith. There are no group vehicles for the use of tourists but limited elephants are available. Visitors can move around in their own vehicles but must be accompanied by a 'guide'. The tourism zone is well demarcated and travel routes well laid out. However, it may become necessary in the near future to regulate the movement of tourist vehicles, by limiting the numbers allowed in at a given point of time and/or by making some routes one-way, so as to avoid overcrowding and minimise impacts.

Palamau offers an excellent opportunity for cultural resource interpretation which is a sadly neglected aspect in our wildlife reserves, although many are rich in such resources. The Palamau Fort which has a fascinating history remains completely neglected and in a state of disrepair being fast overrun by vegetation. At present it is not being looked after by either the tiger reserve authorities or the archaeology or any other department. Considering the history associated with it and the fact that it lies within the sanctuary area, the wildlife authorities would do well to promote it as an attraction for the visitors, put up interpretive signs and exhibits and detail some staff who could interpret the remains and the history to tourists. This could also form one of the themes for the visitor centre which is under construction at a cost of Rs.9 lakhs. Yet another cultural theme could revolve around the tribals of the area, their arts and crafts and their way of life. A proper and well trained education and extension wing needs to be developed under the charge of an education/interpretation officer which can handle various visitor information services as

well as handle village extension/ ecodevelopment/nature education work.

Despite being one of the first areas to be included under Project Tiger, Palamau does not have a research programme or any research staff in position. Even the posts are yet to be created. There are also no facilities for outside researchers to conduct studies nor has any effort been made to involve them in such an effort in spite of the fact that there are colleges at nearby Daltongunj and universities at Ranchi with Botany and Zoology Departments.

What is the answer to the great question of life, the Universe, and Everything? This is the question that was assigned to the super computer Deep Thought in Douglas Adam's book *The Hitchhikers Guide to the Galaxy*. After researching and contemplating the question for 7,500,000 years Deep Thought finally come up with the answer. the answer to the ultimate question was 42!

This answer had very little relevance to the question and created quite a stir among those that posed it. The *researchers* challenged Deep Thought but the computer responded with assured confidence*that (42) quite definitely is the answer. I think the problem, to be quite honest with you, is that you're never actually sure what the question is.*

The pursuit of knowledge about wildlife resources is a commendable, and necessary, profession if mankind is to live in harmony with the natural world. So far we have not fared very well and have caused the demise of more creatures than we have preserved. *Nature was a million years, or more, in developing a species..... Man, with all his wisdom, has not evolved so much as a ground squirrel, a sparrow, or a clam* wrote Aldo Leopold in the 1915 United States Forest Service Game and Fish Handbook.

One of the tasks for wildlife researchers should be to attempt to unlock the puzzle of wildlife populations: what makes them tick, how many are there, what habitats do they use, what do they eat, what eats them, how do they reproduce, and on and on. To be more efficient in this task, the trek into the

field should be paved with specific and definite question that can be answered from sound hypothesis formulation. If not, at the end of 1-4 years of research the answer could be 42!

Looking back I often think the most difficult task was in knowing the right question to ask.

Paraphrased from some great philosopher whose name eludes me at the moment.

Paul R. Krausman

Professor, Wildlife Ecology,
WII-FWS Project.

RESEARCH AND PROJECTS

CORRIDOR IN PERIL

Ruchi Badola

The Rajaji and Corbett Parks are linked by a narrow stretch of forest. The linking corridor starts from Rawasan reserve forest in the west and runs up to the Kalagarh forest division in the east, covering a length of approximately 40 kms. The width varies from 5-13 kms. Viability of this stretch of forest is crucial for the maintaining the low range of the north western elephant population in India. But unfortunately this forest strip has shrunk considerably in the recent past due to the pressure from the local people and their cattle living within and in the neighbourhood.

The Gujars and the Bhotias are the nomadic tribes living inside the forest corridor. The Gujars are the pastorals and lopping of trees for their buffaloes forms the major landuse. The Bhotias rear large herds of sheep which graze freely inside the forest. These people have a fixed pattern of migration. During the summer months (April-Oct.) they migrate up into the upper reaches of the Himalayas. During the winters they come down to the corridor forest. But slowly, with the passage of time, the Gujars are losing their migratory instruct. Some families don't migrate at all while in other cases only part of the family migrates. This is primarily due to the fear that once they leave the forest, they will not be allowed to come back again. This has further intensified the pressure on the corridor forest.

In addition to the Gujars and the Bhotias there are the villages all along the northern and southern boundary of the forest. A survey of 166 villages around and 11 villages inside the forest corridor (with a human population of 85,000 plus cattle was done and it was found that 104 villages were depending on the resources of the corridor forest in some way or the other.

On the basis of the survey, it was found that the northern Hilly villages were more dependent as compared to the southern villages. This is probably due to the fact that these villages are economically less developed in the absence of any industries adequate infrastructure, proper generation of agricultural and horticultural products etc. The main profession is agriculture and rearing of cattle. Terrace farming is done. Methods of cultivation are centuries old, modern methods of farming, use of chemical fertilizers improved quality of seeds, etc. have not yet found their way here. Return from the land is therefore poor, barely meeting basic domestic needs of the people. The villages are totally dependent on wood for fuel as there is no alternate resource available and neither are they in a condition to purchase any. The domestic animals are also grazed in the forest.

The picture is different in the southern villages. The southern part of the

corridor forest form the foothills and is a plain, fertile area. The villages are situated on road heads and are economically more advanced. Fuel resources other than wood like Kerosene stove, LPG and biogas plants are quite popular. Their dependency on the corridor forest is more in nature of 'Habitual' or traditional dependency.

Although the dependency of the people on the corridor forest has not yet been quantified, it can be said by looking at the condition of the forest that the utilization is greater than production. Shortage certainly exists and signs of habitat degradation are appearing, weeds are invading the areas where excessive lopping and grazing has taken place, thus

decreasing the chances of species regeneration.

The situation calls for quick and prompt action, if the revival of this forest link is to be effective then the pressure due to the local people and their livestock has to be eliminated. The research project titled *Study of inter-relationships between village eco-systems and elephant corridor - Habitat in the forests linking Rajaji and Corbett National Parks with a view to devising compatible management strategies* aims at understanding the degree and extent of dependency of the people on the corridor forest and ultimately at finding out viable alternatives for these people so as to mitigate pressure on this forest stretch.

NEW FACES

The following three new Research Fellows joined the Institute, during this period.

Imran Ahmad Khan is an M.Sc. in Wildlife Ornithology from A.M.U. Aligarh.

He will be working in the Research project: "Introduction and Monitoring of Sangai (*Cervus eldi eldi* McClelland) in Pabitora Wildlife Sanctuary, Assam".

Katragadda Vallika Devi - She worked for Ph.D. in the department of Life Sciences, Bhavnagar. The title of the Ph.D. thesis is "Ecosystem Analysis of Grasslands near Bhavnagar". The subsystems studied are climate, soil and plan community.

She will be working in the research project: "Environmental impact assessment of Narmada Sagar Project - Study of impact on vegetation with attendant aspects of wildlife habitat compensatory measures".

Chiranjeev Bedi has done M.A. in Economics (J.N.U.) and was associated with 'Kalpavriksh', an environmental organisation based in Delhi.

He will be working on the research project: "Study of the rural ecosystem of Masinagudi village in the Mudumalai Wildlife Sanctuary with a view to evolving a model ecodevelopment plan to ensure compatibility between the village community and the sanctuary".

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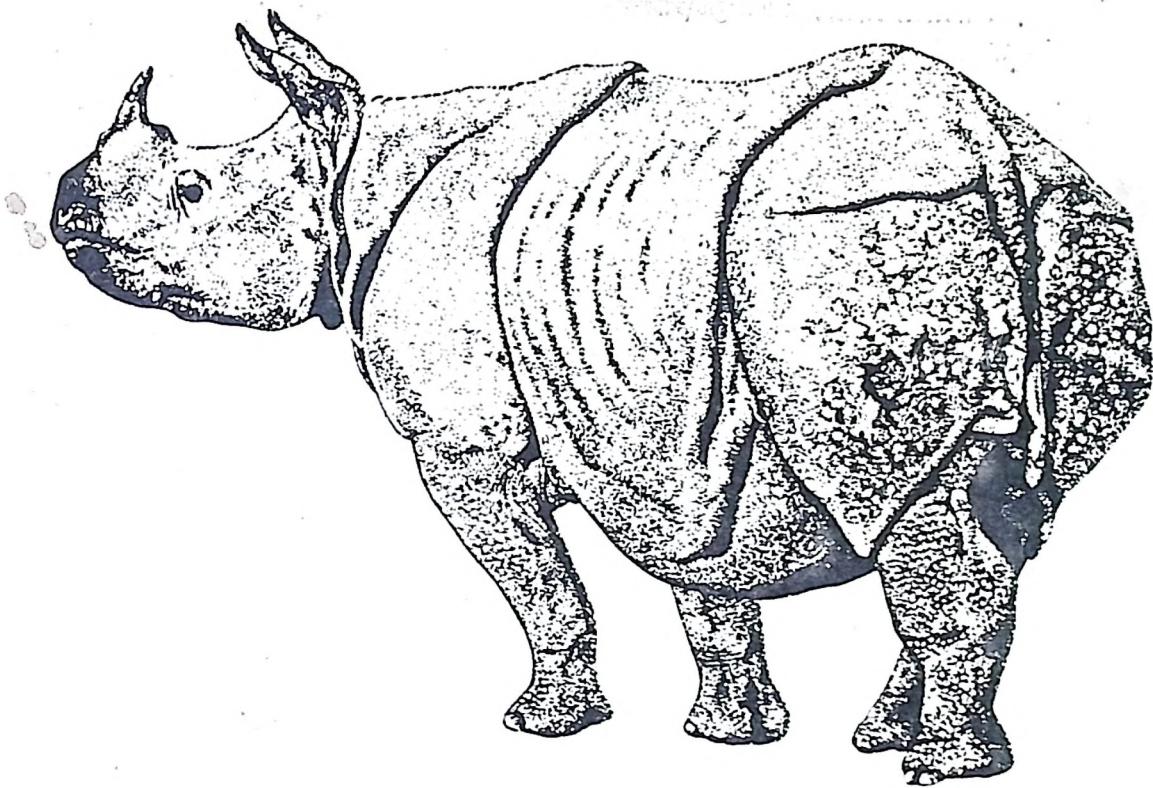
- Gracey, J.F. *Meat Hygiene*. 8th ed., Bailliere Tendam, London, 1986. Vol.III, (Balkema Publishers) Brook Field, 1988.
- Kirk. *Current Veterinary Therapy, X small animal practice*. W.B. Saunders Co., London, 1989. Wigley, T.M.L. *Climate and History Studies in past climate and their impact on man*. Cambridge University Press, London. 1985.
- Howes, John R. *Rapid Assessment of Techniques for Coastal Wetlands in the Philippines* (Asian Wetland Bureau), Philippines, 1987. Cheesman, C.L. *Telemetric Studies of Vertebrates*. Academic Press, London. 1982.
- Howes, John R. *Rapid Assessment Techniques for Coastal Wetland Evaluation*. Interwader publication No.24, (Interwader Publication), Kuala Lumpur, 1987. Hudson, Norman, W. *Soil and Water Conservation in Semi-arid areas* *FAO Soil Bulletin - 57 (FAO) United Nations*. 1987.
- Silvius, Marcel J. *Evaluation of Wetlands of the West Coast of Peninsular Malaysia and their Importance for Natural Resource Conservation*. Interwader Publication. Kuala Lumpur, 1987. *FAO The Dynamics of rural poverty*. (FAO) United Nations. 1986.
- Lambert, Frank. *The status of the white-winged wood duck in Sumetra, Indonesia: A Preliminary Assessment Report*, No.4. Interwader Publication, Kuala Lumpur. 1988. *FAO Small-scale fish landing and marketing facilities*. FAO Fisheries technical paper 291, (FAO) United Nations. 1988.
- Parish, Duncan. *Need for Coastal Wetland Planning in SE Asia*. Interwader Publication, Kuala Lumpur. *FAO Committee in Forest Development in the Tropical Forestry Action Plan*. (FAO) United Nations. 1985.
- Parish Duncan. *Importance and Status of Wetlands in Asia*. Interwader Publication, Kuala Lumpur. Morrison, W. Ivan. *The Ruminant Immune System in Health and Disease*. Cambridge University Press, London. 1985.
- Damen, M.C.J. *Remote Sensing for Resources Development and Environmental Management*, Clutton-Brock *A Natural History of Domesticated Mammals*. Cambridge Uni. Press, London. 1987.
- Austin, C.R. *Reproduction in Mammals: 5 Manipulating Reproduction*. Cambridge Univ. Press, London. 1986.

- Blaxter. *People, Food and Resources*. (Cambridge Univ. Press), London. 1989.
- Roling, Niels. *Extension Science: Information Systems in Agricultural Development*. Cambridge Univ. Press, London, 1988.
- Ellis, Frank. *Peasant Economics: Farm Households and Agrarian Development*. Cambridge Uni. Press, London. 1989.
- Brent, K.J. *Rational Pesticide Use: Proceedings of the Ninth Long Ashton Symposium*. Cambridge Uni. Press, London. 1987.
- Grove, R.H. *Ecology of Biological Invasions*. Cambridge Uni. Press, London. 1986.
- Hill, Dennis, S. *Agricultural insect pests of the Tropics and their control*, 2nd ed. Cambridge Uni. Press, New York. 1987.
- Norman. *The Ecology of Tropical food crops*. Cambridge Uni. Press, New York. 1984.
- Chakravarty. *Development Planning: The Indian Experience*. Oxford Univ. Press, New York. 1987.
- Conrad, Jon, M. *Natural Resource Economics: Notes and Problems*. Cambridge Uni. Press, New York. 1987.
- Collinson. *Introduction to World Vegetation*, 2nd ed. Unwin Hyman, London. 1988.
- Crown Prince Hassan bin Talal. *The Encroaching Desert: The Consequences of Human Failure*. Zed Books Ltd., London. 1986.
- Olson, Gerald, W. *Soils and the Environment: A Guide to Soil Surveys and their Applications*. Chapman & Hall, New York. 1981.
- Monga, Pradeep. *Rural Energy Alternatives in the Hilly Areas. (Social Forestry and Biogas Systems)* Today and Tomorrow Printers & Publishers, New Delhi. 1988.
- Wynne-Edwards, V.C. *Evolution through Group selection*. Blackwell Scientific Publications, London. 1986.
- Gradwahl, Judith. *Saving the Tropical Forests*. Earthscan Publication Ltd., London. 1988.
- Ghosh, P.K. *Ecophysiology of Desert Vertebrates*. Scientific Publishers, Jodhpur. 1988.
- Davies, R.G. *Outlines of Entomology*, 7th ed. Chapman & Hall, London. 1988.
- Singh, Pramod. *Problem of Wasteland and forest Ecology of India*. Ashish Publishing House, New Delhi. 1989.
- Salm, Rodney, V. *Marine and Coastal Protected Areas: A Guide for Planners and managers*. Ashish Publishing House, IUCN, Switzerland. 1984.
- Allaby, Michael. *Ecology Dacts*. Hamlyn Publishing Bridgi Hour, Middlesey. 1989.
- Bandyopadhyay, Jayanta. *The Indian Drought 1987-88: The Ecological Causes of Water Crisis: What to do*. Third World Science Movement, Malaysia. 1987.

NEWSLETTER

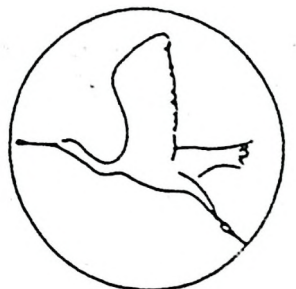
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FROM THE DIRECTOR'S DESK

Dear Friends,

Responding to a demand from many of our colleagues working in the field, we have with this issue of the Institute's Newsletter decided to widen its circulation to cover major protected areas in the country. The bimonthly Newsletter was initially envisaged as an in-house magazine of the Institute. It has over the four years of its publication, helped provide a forum for communication among the faculty, the trainees, students, and researchers about the work being done at the Institute as well as to write about their ideas and observations on wildlife conservation. As far as field officers are concerned, the circulation presently covers only the Directors of tiger reserves, the chief wildlife wardens and the current batch of officer trainees to our regular diploma, certificate and capsule courses in wildlife management.

On the request of our past trainees and several field professionals, with this issue we are circulating our newsletter to the managers of all major national parks and sanctuaries and to all our past trainees. We are experiencing some difficulty in covering the latter category as we do not have the current addresses of all our former trainee officers. I would request the chief wildlife wardens and others to help us by providing these addresses which then could be added to our regular mailing list.

We also solicit contributions to the newsletter from field professionals in the form of articles, observations, management issues, developments, research and so on. A perusal of our Newsletter will give you an idea about the range of topics which are covered.

Also, with this issue we are covering yet another category of wildlife professionals--the wildlife health and disease specialists. This idea was mooted at a recent (September 26-28, 1989 Dehra Dun) Workshop on Wildlife Disease & Health Monitoring jointly organised by the WII and the U.S. Fish & Wildlife Service. We do hope that this will promote exchange of information between field personnel and such specialists including the organisations where they work. We will gladly include material on wildlife health in the Newsletter, and subject to receiving enough contributions from interested individuals, look forward to this becoming a regular feature.

I am sure you will understand that the size of the publication and the need to maintain consistency in presentation would require us to select and edit the material we receive. We will presume this liberty comes to us with the material.

This widening of circulation of the Newsletter and the request to our field colleagues to contribute material, derive from our innate urge to be more effectively useful in field conservation. We are confident that your cooperation in realising this will be forthcoming.

I take this opportunity to extend our very best wishes to all our readers for a very happy and prosperous New Year and a renewed commitment to the cause of conservation.


(H.S. PANWAR)

DEVELOPMENTS AT THE INSTITUTE

CAPSULE COURSE IN WILDLIFE MANAGEMENT FOR SENIOR LEVEL FOREST OFFICERS

Kishore Rao

The first capsule course in wildlife management for senior level forest officers was conducted at the Ranthambhore National Park, Rajasthan from 13-17 November, 1989. Although 18 nominations had been received for the course only 10 finally participated. This was attributable to the announcement of the elections to the Lok Sabha and some State Assemblies which required senior officers to remain at their headquarters for administrative reasons.

The 10 officers represented the states of Haryana (1), Uttar Pradesh (1), Arunachal Pradesh (1), Assam (2), Gujarat (1), Rajasthan (2), Tamil Nadu (1) and Maharashtra (1). One officer was of the rank of Chief Conservator of Forests (WL) while the rest were of the rank of Conservator of Forests. In addition, the Field Directors of the Ranthambhore and Sariska Tiger Reserves participated in most of the sessions of the course.

To accord with the job responsibilities of senior forest officers policy, planning and administrative aspects of wildlife conservation were emphasised in this capsule course. Various management strategies and approaches to deal with the current field problems were also discussed. Much of the course delivery was through interactive discussions in which the participants as well as the faculty and invited resource persons participated fully.

Additional discussion sessions were scheduled in the evenings when issues such as the 1988 Forest Policy, the National Mission on Wastelands Development, and the Development of State Wildlife Organisations were discussed. Daily field trips into the national park and its surrounds formed important components of the course.

Topics dealt with in the capsule course included: Overview of the conservation scene in India; Management strategies and approaches; Development planning for wildlife sector; People's participation; People & wildlife issues; Eco-development; Management planning for PAs; Biogeography project of WII; Research & Monitoring; & Wildlife Law. One of the sessions was exclusively devoted to participant led discussions and the topics covered in this session were: Nilgai & Blackbuck overabundance in Haryana; Tribals, shifting cultivation and elephants in NE India; Lion management issues; and Gujar rehabilitation in Rajaji National Park.

In addition to Shri H.S.Panwar, Director WII, the other faculty members who participated in the conduct of the course were: Dr.W.A.Rodgers, Shri S.K.Mukherjee & Shri V.B.Sawarkar. I was the Course Director and Dr.B.K.Mishra provided valuable assistance in the conduct of the course. Besides the WII

faculty, the following guest faculty helped with the different subject areas of the course:

- (i) Prof. Shekhar Singh, IIPA, New Delhi.
- (ii) Shri Kailash Sankhala, Retired CWLW, Rajasthan.
- (iii) Shri R.P.Kapoor, D.I.G.F. National Mission on Wasteland Development, G.O.I.
- (iv) Shri S.S.Bisht, Deputy Director, Wildlife Preservation (Northern Region) G.O.I.
- (v) Shri F.S.Rathore, Field Director, Sariska Tiger Reserve, Rajasthan.

Shri J.S.Nathawat, Field Director and Shri Y.Sahu, Assistant Field Director, Ranthambhore Tiger Reserve provided valuable information and

logistical support in the conduct of the course.

An evaluation of the course conducted to elicit participants' feedback on the last day revealed that the course had been very successful in meeting its objective of providing a better understanding of and solutions to some of the current issues in wildlife conservation. The participants rated the utility of the course as very high and recommended that it be offered on a regular basis. Some even suggested increasing the duration of the course to two weeks. However, WII already offers a two week capsule course for ACF & DCF level officers which is open to other senior officers as well. In fact, some CFs have even opted for the 12 day course in preference to the shorter 5-day course. The next 12-day capsule course is scheduled to be held from 8-19 January, 1990 at Dehra Dun with field trips to the nearby Rajaji & Corbett National Parks.

WII-FWS PROJECT NOTES

The Wildlife Institute and the United States Fish and Wildlife Service (USF&WS) are cooperating on a five year project on faculty development. The Wildlife Health (WH) component of the programme started in July 1989 with the arrival of Dr. Louis Sileo, Wildlife Pathologist at the National Wildlife Health Research Centre (NWHRC) in Madison, Wisconsin. In addition to assisting with various WII projects, Drs. Sileo and P.K.Malik, WII Scientist, organised a Workshop on "Wildlife Health and Disease Monitoring". Dr. Joshua Dein, NWHRC, Animal Care Officer arrived in September and also participated in the workshop. Below are some of the activities of the project:

- Dr. Louis Sileo taught wild animal sampling methods for Wildlife Health Monitoring and Disease Investigations to Dr. P.K. Malik. Necropsy techniques were also demonstrated to M.Sc. (Wildlife Biology) students and workshop participants. Sample collection, storage and despatch techniques for clinical and histopathological examinations were outlined.
- Malik, Sileo, B.C. Choudhury and Hussain surgically implanted a radio transmitter in an otter at the National Zoo, New Delhi.

- Wildlife Department of Haryana were assisted in wild animal translocation.
- The use of Immobilizing equipments and drugs was demonstrated in the capture of feral cattle population at Bharatpur National Park .
- Dr. Josh Dein and P.K. Malik developed a planning document for wildlife health programme for the next five years.
- Conducted an experimental study on the use of the anesthetic agent, Telazol in captive chital population at WII. In the initial study it has been observed that it is a very suitable drug for immobilization of wild ungulates. This drug has less induction time and recovery is obtained in 1 1/2-2 hours.

Dr. P.K. Malik

"OUR ENVIRONMENT - OUR FUTURE"
A REPORT ON THE EXHIBITION HELD AT
PRAGATI MAIDAN, NEW DELHI
IN NOVEMBER 1989

R.N. Acharya

The India International Trade Fair '89 held at Pragati Maidan, New Delhi in the month of November had the focal theme as "Environment". Accordingly, the Ministry of Environment and Forests organised an Exhibition entitled "Our Environment - Our Future" in which the Wildlife Institute of India actively participated. Earlier, it had also participated in the National Agriculture Fair in March-April, 1989.

However, this time the WII participation was stronger and more effective for which the Institute was awarded a Certificate of Appreciation by the Ministry of Environment and Forests, Government of India. The exhibition was inaugurated on 3rd November '89 by H.R.H. Prince Phillip, and the then Prime Minister Shri Rajiv Gandhi. Shri H.S. Panwar, Director of the Institute explained

about the exhibits to the visiting dignitaries. The exhibition was open till 29th November 1989.

Thousands of school children, college students, eminent persons from different walks of life and general public visited the exhibition. The trainees of XI Diploma Course also visited the exhibition. The total number of visitors will run into several lakhs. A large number of these visitors showed a lot of interest on wildlife and its conservation. The exhibits were interpreted to the visitors by faculty members and staff of the Institute who were on duty exclusively for this purpose. A number of video films on wildlife and environmental conservation were also shown to the visitors.

The main thrusts of the WII pavilion in the exhibition were:

- (i) Biogeography of India and the protected areas of the country (by a huge 3-D relief map illuminated from inside, picture panels, transslides etc.);
- (ii) Ecodevelopment in Park-side areas (by 2 dioramas depicting the before and after situation);
- (iii) "Project Tiger" - A success story in wildlife conservation (by Picture panels); and
- (iv) Research and training inputs for better conservation of natural resources (by Picture panels and transslides).

The Institute decided to utilize the various exhibition materials like relief map, dioramas, transslides, exhibits, picture panels etc. even after the exhibition is over as these will be very useful for interpretation at the Institute. Accordingly, the exhibition materials were designed and fabricated. After the exhibition was over, a large number of the transslides, both the dioramas and the illuminated relief map are now exhibited at the Institute building (FRI main building). It is also planned that the exhibition materials will be shifted to the Institute campus at Chandrabani where a permanent Interpretation Centre could be developed using these materials.

**TECHNIQUE TOUR - FOR THE TRAINEES OF
XI DIPLOMA COURSE IN WILDLIFE MANAGEMENT
AND STUDENTS OF M.SC. (WILDLIFE SCIENCE)
1989-91.**

S.P. Goyal

Proper training in various wildlife techniques forms a key component in wildlife management/wildlife biology courses at the Institute, to provide park personnel with the basic data for scientific management of the protected areas.

Thus, the techniques tour for the trainees of XI Diploma course was conducted at following places:

- 1. Kedarnath Musk Deer Sanctuary
22.10.89 to 27.10.89
- 2. Indian Institute of Public
Administration and Delhi Zoo
30.10.89 to 01.11.89
- 3. Sariska Tiger Reserve
02.11.89 to 15.11.89

- 4. Keoladeo National Park
17.11.89 to 18.11.89

Technique tour-cum-field practical examination for the M.Sc. (Wildlife Science) 1989-91 students was also held at Sariska Tiger Reserve (STR) from 02.11.89 to 27.11.89.

At Kedarnath, trainees estimated the population of mountain wild ungulates by drive count and on permanent transects used by the Institute research scholar Mr. Sathya Kumar. Estimated figures of wild ungulates, especially the Musk Deer, were compared with the data obtained by Dr. Micheal Green, who had earlier studied the Musk Deer for his Ph.D.

in KMDS. The trainees also studied the Oak regeneration and genealogy of animals at the Musk Deer Farm. Finally, suggestions were elicited from the trainees for the better management of KMDS.

At IIPA, Prof. Sekhar Singh gave lectures to the trainees on the management of protected areas. Then trainees visited the Delhi Zoo and discussed the management aspects with officials.

Sariska Tiger Reserve has dry deciduous vegetation types of the Aravali ecosystem and is inhabited by a number of wild animals from Tiger at the top of the food chain and various ungulate species like nilgai, sambar, chital, four-horned antelope etc. Orientation walk on the first day made the trainees to familiarize themselves with various vegetation types, plant species and animals.

Initial few days were spent on quantifying the habitat components and major emphasis was laid on quantification of vegetation like tree density, browse availability and grass abundance. Later on, trainees correlated the vegetation data with respect to animal use.

A number of exercises were planned to estimate sambar, nilgai and chital density in different habitat types. The exercises were road side monitoring, total count and King census. The Kalighati valley of the STR was found to be more densely populated by all the three ungulate species than other areas. The trainees compared the density figures of this year with those of the last three years and analysed the trend in fluctuation.

An exercise on dung as an indicator of habitat use by animals was also conducted and the pros and cons of the methods in population estimation

of a species were discussed.

The need of behavioral science in the management of wild animals and how to record behavioral observations were also discussed. The Trainees made behavioral observations on common langur and peafowl using focal animal and scan sampling techniques. The trainees were demonstrated how to record health conditions of wild animals and its significance.

Shri H.S. Panwar, Director, talked on census of larger cats by using pug marks. The trainees made the tracing of tiger pug mark and the Director discussed the precautionary measures required while interpreting the tracing for census.

To quantify the impact of grazing, herbage availability was studied on both the sides of a stone wall built by Forest Department between a village (Haripura) and reserve boundary. A number of specific problems of the reserve viz. lack of regeneration of *Zizyphus marutiana* and porcupine damage were quantified.

The trainees examined the signage of the reserve and prepared a pamphlet of the reserve for the tourists. Tourists were interviewed about their inclination towards wildlife.

On a few occasions, the Field Director of the STR Shri Fateh Singh shared his long experiences in wildlife management with trainees and talked about the traditional methods of poaching.

The field practical examination for M.Sc. (Wildlife Science) students was conducted on 27th November, 1989.

During their two days at the Keoladeo N.P. trainees were given an idea about the functioning of a wetland ecosystem. This was done in collaboration with the scientists of the BNHS Ecological Research Centre.

The trainees also learnt about wetland study methods, population estimation of wetland birds and water management in the park. Shri K.L. Saini, Director, KNP, gave a talk on overall management of KNP.

Dr. W.A. Rodgers (FAO expert), Dr. A.J.T. John Singh, Dr. S.N. Prasad, Dr. G.S. Rawat, Shri B.C. Choudhury, Dr. B.K. Mishra and Shri U. Sridharan provided inputs for the technique tour.

We are extremely thankful to officials at Kedarnath Musk Deer Sanctuary, Sariska Tiger Reserve, Keoladeo National Park and Delhi Zoo for their support in the smooth conduct of the techniques tour. We are also thankful to Prof. Sekhar Singh, IIPA for delivering a talk on protected area management issues.

WORKSHOPS AND SEMINARS

FIFTH INTERNATIONAL THERIOLOGICAL CONGRESS (ITC), 22-29 AUGUST 1989, ROME, AND MOUNTAIN UNGULATE CONFERENCE (MUC), 4-6 SEPTEMBER 1989, CAMERINO, ITALY

A.J.T. Johnsingh

More than 500 leading mammalogists (Theriology = Science of mammals) from all over the world assembled in the ancient city of Rome from 22 to 29 August to exchange recent advances in the study of mammals. International Union of Biological Science had organised this conference with financial assistance of numerous agencies from Italy. Prof. Luigi Boitani, from the University of Rome spent nine months exclusively on making arrangements for this congress and eventually he said that this is the best contribution he could make for the conservation of mammals.

Eminent mammalogists/biologists such as Drs. John F. Eisenberg, David C. Mech, Robert M. May and Richard M. Laws were in the congress. Everyday programme started with poster

viewing, followed by a plenary session, lunch (very heavy) which made few of the participants drowsy during the afternoon oral presentations. I presented a paper (Johnsingh A.J.T. and Panwar, H.S. Elephant Conservation in India - problems and prospects) in the "Mammal Conservation problems in the developing world". Various IUCN/SSC specialist Groups also met in Rome and I attended the meeting of the Asian Elephant Specialist Group and the Cat Group and could brief the participants about the role of the Institute in the conservation of the Asian Elephant and lion. The gaiety and glamour of Italian life found its way in the parties, all-day picnic trip to the Presidential Reserve of Castel Porziano (where wine flowed like water) and the banquet. As

usual the congress turned out to be a place to exchange ideas and foster friendship.

I had a five day gap between ITC and MUC and Dr. Sandro Lovani, Chairman Caprinal Specialist Group, chief organiser of MUC had arranged a trip for me and Ranger Nurbu from Ladakh (friends of Nurbu had helped him this trip to Italy and subsequent tour in Europe) to the Abruzzo mountains along with a group of other participants. The mountains in the past had wolf, red deer, roe deer and chamois. The trigger happy Italians had wiped out the wildlife in most of the areas and now attempting reintroduction of roe and red deer in some pockets. We spent three days in the mountains but saw no mammal but the scenery was grand. This made an Israeli participant to comment that the stage is beautiful but the actors are missing.

Camerino is a small medieval town of forts and churches with a population of 6000 people. The conference was conducted in the university of Camerino. When compared to ITC, MUC was miniscule with 50 participants. This and the serenity in Camerino

created a much more relaxed atmosphere for discussions and fostering friendship. The eminent person among the participants was Dr. Valerins Geist who enthused everybody with his cheerfulness and profound knowledge on mountain ungulates and deer. I presented a paper (Johnsingh, A.J.T., Goyal, S.P. and Rawat. G.S. Conservation status of goral (Nemorhaedus goral) in India with special reference to Rajaji National Park) which won the award instituted by Oasis Wildlife magazine, Italy for the best presentation in Conservation and management session. Raghu Chundawat, Snow leopard Research Fellow was the co-author of two papers on Himalayan ungulates which were presented by Dr. Joseph L. Fox. All these helped us to hoist WII flag atop the conference.

One thing I realized in Rome was that several conservation agencies in the world do not even know of the existence of WII. Research and publications and participation of WII faculty in International forums is bound to change this scenario in the years to come.

ESCAP WORKSHOP ON ROLE OF TRAINING IN MANAGEMENT OF CRITICAL ECOSYSTEMS IN ASIA AND PACIFIC REGION

H.S. Panwar

I participated as a resource person in a regional workshop supported by the U.N. Economic and Social Commission for Asia and the Pacific (ESCAP), the World Bank and the UNDP in collaboration with the WWF-USA. The workshop was aimed at ascertain-

ing the types and levels of training required and identifying countries in the region where efforts through a small project could be addressed on priority, so as to meaningfully contribute to the management of critical ecosystems. The workshop

was held at Bangkok and Khao Yai National Park, Thailand from 27th November to 2nd December, 1989.

From the meagre resources assigned at this stage for the proposed project, it was apparent that it could address only basic conservation management and conservation education aspects in a couple or three countries of the region. It was a good strategy, therefore, to use the forum to assess the overall training requirements and to emphasize that for sustaining the quality of training at an affordable price, good centres should come up within the region itself. Further, such centres, besides catering to the basic training requirements should devote an all out effort to faculty development right from the beginning. The experience of the Wildlife Institute of India was emphasized as

a promising example, where nearly 15 years of initial training and concerted indigenous faculty development in the latter years have brought it to an advanced stage in meeting training needs at all levels. The forum did provide a means of informing countries and international agencies operating in the region of the training programmes of Wildlife Institute of India and their relevance and availability to such countries. It was some measure of satisfaction to perceive appreciation by the participants of the developmental course taken by the Wildlife Institute of India and the progress achieved. It should help in motivating the countries to send their students to Wildlife Institute of India and the international agencies to support such training, including from the proposed project.

**INDIA-PAKISTAN CONFERENCE ON
THE ENVIRONMENT HELD AT LAHORE (PAKISTAN)
DECEMBER 13-15, 1989**

S.K. Mukherjee

INTRODUCTION

The India-Pakistan Conference on Environment (IPCE) was jointly organized by IUCN-Pakistan and Centre for Science and Environment (CSE-India). It was the result of many years of hard work on part of environmentalists on both sides of the border. Scientists, NGOs, NGIs and concerned officials who share a concern for the deteriorating state of the environment in the region believed that better channels of communications between India and Pakistan could lead to mutually agreed solutions to the environment

crises. It is for the first time that eminent environmentalists, scientists, economists, lawyers, natural resource managers and specialists, NGOs and media representatives got together on a bilateral level to identify and discuss areas of mutual concern.

The Conference was inaugurated by Senior Federal Minister, Begum Nusrat Bhutto. During that time the Minister of State for Agriculture, Dr. Mahbubur Rahman and State Minister for Environment Syed Qasim Shah were also present. They all expressed concern over the

environmental crises of the region and called upon the experts from India and Pakistan to sit together to find out workable solution to the environmental problems hindering the attainment of the goals of sustainable development. It was also stressed that Pakistan Government would make every endeavour to help the experts of the region to come closer and find solutions collectively for the betterment of the people of both the sides.

The Secretary General of SAARC, Shri K.K. Bhargava was also present and speaking on the occasion said that SAARC leaders have expressed their deep concern over the fast and continuing degradation of environment and the regular occurrence of floods, drought, landslides, cyclones, etc. in the region during the Kathmandu Summit. He said ecological problems, environmental degradation and natural disasters did not recognize national boundaries. A regional approach, therefore, could be more than an advance on the current fragmented national efforts in this field. An integrated regional approach could also achieve economy of scale, sharing of one another data, knowledge and research experience and optimum utilisation of scarce resources.

Speaking on this occasion, the Chairperson of CSE, Mrs. Kamla Choudhury said development had destroyed environment and made the poorest sector of society dependent on common resources. She said the coming generations would be deprived off even the marginal life style enjoyed by the present ones if the environment was not protected.

PARTICIPATION

Delegates from India and 56 delegates from Pakistan took part in the discussion. Justice P.N. Bhagwati and Dr. M.S. Swaminathan (President of IUCN) could join the Conference

only on 14th and 15th December, 1989. There were many observers present throughout the Conference period. Though the organisers of the Conference had requested Shri H.S. Panwar, Director, Wildlife Institute of India, Dehradun and myself to participate in the Conference, Shri Panwar could not go because of some unavoidable reasons. However, he prepared a paper entitled "Management of Protected Areas in India with Special Reference to Project Tiger" which was read and presented by me.

THE CONFERENCE

The Agenda and work programme was open and there was no formal adoption of the same by the Conference.

The inaugural session was followed by the key note addresses "The growth of Environmental consciousness" one was delivered by Dr. Parvez Hassan, Deputy Chairman, IUCN Environmental Law Commission and other by Shri Anil Agarwal, Director, CSE, India.

Dr. Parvez Hassan made a detailed review of the state of Government and public awareness of environmental issues in Pakistan, noted the signs of increased Government concern for these matters over the past 12 months and pointed out the common issues faced by India and Pakistan in this field. He made number of suggestions for close coordination between the two countries in order to promote not only exchange of information and experiences but also to evolve a mechanism for common approach to identical problems. The most important thing, however, he said, was to raise public awareness of environmental issues so that concerned citizens could exercise due restraint on agencies, official and non-official that were responsible for degradation of natural environment.

Shri Anil Agarwal said India's

environmental movement was wholly rooted in the country's culture and its social and political systems. He gave the example of well-known "Chipko Movement" to demolish the argument that concern for environment was a luxury that poor people could not afford or that it was contrary to the demands of development. The environment, he said, must not be viewed in a narrow sense of human being and when one studied the environment one found a way to study people, to know them better. The reason the environment movement in India had gained strength was that the democratic system offered the people possibilities of mobilising themselves and waging sustained campaigning for the protection of their environment. Beside, the courts had enlarged the common citizen's right to challenge projects considered harmful to ecology.

WORKING SESSIONS

The participants gave their viewpoints on various issues on four discussion sessions. The different persons who gave their viewpoints on different subjects are as given below:

Subject	Speaker
1. Mountain	Shri Shoaib Sultan Khan (P)
2. Forest	Ms Ameneh Azam Ali (P)
3. Women & Environment	Ms Khawar Mumtaz (P)
4. Forest Management in India	Shri N.C. Saxena (I)
5. Women and the Environment	Ms Madhu Sarin (I)
6. Desert Ecosystem	Shri Arif Hassan (P)
7. Rivers & dams	Dr Junaid Ahmed (P)
8. Plight of dam oustees	Shri Anupam Mishra (I)
9. Desertification of tropical forests	Shri N.D. Jayal (I)
10. Environment and media	Shri Saneeye Hussain (P)
11. Strategies for sustainable development	Shri Ayub Qutub (P)
12. Environmental journalism	Ms Kalpana Sharma (I)
13. Sustainable development	Shri Bhanwarlal Kothari (I)
14. Legal rights	Shri N.C. Mehta (I)

15. Urban centres	Dr Akhtar Hameed Khan (P)
16. Protected areas	Shri A.L. Rao (P)
17. Management of protected areas	Shri S.K. Mukherjee (I)
18. Migratory species in India	Shri Prakash Gole (I)
19. Project Tiger	Shri R.L. Singh (I)
20. Environment education	Shri K. Sarabhai (I)
21. Peoples' movement in Western Ghat	Shri K. Malhotra (I)
22. Science and people	Dr M.K. Prasad (I)
23. Environment laws/legal rights.	Justice P.N. Bhagwati (I)

In every session there were number of questions and queries which the speaker answered and discussions were meaningful. Time was the constraint in every session.

After the Panel discussions the participants divided themselves into seven groups and discussed in detail issues of mutual interest and pointed out the areas of collaboration and exchange of information etc. The groups were:

- a) Urban centres and environment
- b) Forests
- c) Desert
- d) Environmental Education
- e) Rivers and Dams
- f) Migratory species and protected areas

EVALUATION SESSION

On the concluding day of the Conference each group gave their brief considering the overall situation and areas of mutual interest and concern. They are briefly as follows :

A. Present structure of Governmental Organisations and Non-Governmental Organisations is to be given new look for implementation of developmental works :

- Built heritage sites are to be looked carefully;
- Planning from grass root level is to be encouraged;

- Sharing of experiences by both the countries.

B. Forester's views were not taken during decisions making processes for the management of country's soil, water and biodiversity. This needs careful examination:

- Interest of local people should not be sacrificed for urban developments;
- Scientific management of social forestry and farm forestry has not been practical and therefore, community management approach is to be considered;
- Role of women in forest conservation was highlighted;
- Sharing of experiences was urged;
- Joint commission for environment, forests and wildlife was recommended for regional planning and development in this field;
- Under aegis of IPCE study tours, training seminars and workshops should be arranged for mutual benefits.

- C. - Water harvesting techniques needs further study;
- Post-evaluation of small and major dams should be undertaken;
 - Problems of salinity and waterlogging needs further study in view of local responses;
 - Developed methods of flood warning systems be used;
 - Inter-country pollution by rivers and drains is to be studied jointly;
 - Riverine forests, corridors linking forests and wildlife habitat and management of wildlife needs attention;
 - New methods of evaluation of forest values be considered;

D. - Both the countries are member

of Ramsar Convention on Migratory Species and CITES and closer ties between the authorities of the countries for regional approach was urged;

- It was also urged that Indo-USSR agreement for protection of migratory birds be enlarged to include Pakistan for range country approach;
- Exchange of information, literature including special studies report, newsletter, monograph, etc.;
- Transfer of technology in the field of wildlife research;
- Exchange of information, animals, etc. for captive breeding and management of threatened and endangered species;
- Training of personnel in specialised field of wildlife management availing fellow-ship/scholarships from IUCN, SAARC, etc.;

- E. - Sharing of experiences in the field of environmental education;
- Exchange of literature and other media method for environmental education;
 - Exchange of A.V. programmes, etc.;

CLOSING SESSION

The Conference was formally closed in the afternoon of 15th December, 1989. The closing session was chaired by Dr Javed Jabbar, Minister of State for Science and Technology, Government of Pakistan. Syed Qasim Shah, Minister of State Environment and Urban Affairs Division, Government of Pakistan was the Chief Guest.

Dr M.S. Swaminathan, President of IUCN, Dr Akmal Hussain, Member Prime

Minister's Committee on Economic Policy, Pakistan, Syed Babar Ali, IUCN Regional Councillor Pakistan and Shri Anil Agarwal, Director, CSE, India spoke on this occasion and overview of areas of mutual cooperation in the field of environment was expressed.

Shri Anil Agarwal from India and Ms Aban Marker Kabraji from Pakistan were identified as nodal persons for future cooperation works.

Shri Ashok Sain, Member from Indian delegation thanked on behalf of all

Indian delegation and organisers of Conference, Governments of India and Pakistan and all those were concerned for the success of this Conference.

CONCLUSION

There is no doubt that overall this was a highly successful Conference. The level of participation and debate was of a high order with keen interest.

MEETINGS ANNOUNCEMENT

We have received notice of the following meetings:

17-18 January, 1990

International workshop on the role of zoos in Wildlife Management, Sakkarbagh Zoo, Junagarh, 362 003, Gujrat.

Contact: Mr. P.P. Raval
Zoo Officer.

23-27 May, 1990

The 32nd "International Symposium on Diseases of Zoo and Wild Animals" in Eskilstuna, Sweden.

Contact: Konferensservice
Stadshuset
S-631 86 Eskilstuna
Sweden.

6-11 August, 1990

The VIth "International Conference on Wildlife Diseases" in Berlin, GDR.

Contact: Prof. Dr. Rudolf Ippen
AM Tierpark 125
Berlin - Friedrichsfelde
GDR 1136

Please, send any other meeting announcement for inclusion in the Newsletter.

SPECIAL FEATURES

COMMENTS ON THE BIOSPHERE RESERVES PROGRAMME IN INDIA

Kishore Rao

Introduction:

There is considerable misconception about the Biosphere Reserves concept and about the manner in which it should be implemented in India. Some of the questions which are frequently raised in this connection are: What are the objectives of biosphere reserves? Under what legislation will they be set up? Who will manage them? How are they different from national parks and wildlife sanctuaries? And so on. This confusion needs to be dispelled before any definitive action can be taken to implement the programme at the field level. Failure to do so is precisely the reason why the programme, even after all these years, has been practically a non-starter in our country.

Unfortunately most people, including those charged with the implementation of the biosphere reserves programme, do not seemingly understand the concept in its entirety. Depending upon the interest group they represent, usually one or the other of its multiple roles gets emphasized such as the research role or the purely protection role. What is often not realised is that it is a holistic conservation and area development programme which aims at effective conservation of bio-diversity and ecological processes while providing for sustainable utilization of resources in the wilderness and rural ecosystems, leading to the economic well being of the local people.

Without going into history it may be briefly stated that the biosphere

reserves programme has evolved out of the need for developing a coordinated world-wide network of protected areas serving conservation, research and education needs, and at the same time functioning as demonstration areas for sustainable development. Consequently, certain basic principles underlie the creation and management of biosphere reserve: These are:

- i) The sites selected for designation as biosphere reserves should be biogeographically representative;
- ii) They should provide for long-term in situ conservation of genetic diversity;
- iii) They should form part of an international network for research, education and information exchange;
- iv) They should serve multiple functions, including sustainable development of the region where they are located, therefore, a zonation pattern should be established for their management.

A biosphere reserve is thus basically one of the several categories of protected areas available to achieve conservation objectives, although its management emphasis is distinct from the others. However, conventional

protected areas such as national parks or wildlife sanctuaries could, and in many cases do, form part of a biosphere reserve to meet the goals of gene pool and biodiversity conservation. In fact, a biosphere reserve that does not have a protected core area cannot function as a true biosphere reserve. Likewise, a national park that has no concern for the sustainable development of the surrounding area cannot be a true biosphere reserve. A protected area having these attributes and functions becomes a proper biosphere reserve only when it joins the international network of research, monitoring and information exchange.

Biosphere Reserves and other PAs:

The biosphere reserves programme is quite recent (1976) in comparison to the conventional protected area programme (1872). Consequently, as in many other countries, India too had already established an extensive network of protected areas covering most areas meriting conservation attention. In a systematic exercise by the Wildlife Institute of India (Planning a Protected Area Network in India, Vol.I & II - W.A.Rodgers and H.S.Panwar, 1988), this network has been reviewed with reference to an established biogeographic classification and some additional protected areas have been recommended to cover the presently poorly protected provinces and biomes. Hence, it is but natural that when the biosphere reserves programme is sought to be initiated, it would overlap some of the existing national parks and sanctuaries. But the latter would only form a part of the former. Biosphere reserves are therefore very large areas as compared to national parks and sanctuaries.

A perfect analogy in this context is the introduction of the Project Tiger programme in 1973 which too covered many existing protected areas. This

does not mean however that no new areas, which are not already constituted into national parks or sanctuaries, can be identified as biosphere reserves e.g. The Thar Desert and Great Nicobar. But such examples would be relatively few. Existing protected areas would constitute the nuclei around which most biosphere reserves would be developed. It is rather convenient for us that an existing legislation (Wildlife (Protection) Act, 1972) provides for the establishment of protected areas, and just as the absence of a specific legislation did not constrain the establishment of tiger reserves, the lack of a separate legislation for biosphere reserves should not hinder the implementation of this programme in India.

The MAB Approach:

One of the major factors militating against effective conservation in our country is the biomass resource dependency of the people living within and adjacent to the protected areas. Having degraded the natural resource base of their village commons these people turn to the nearby forests of the protected areas for meeting their needs of fuel, fodder, pasture, small timber, building material and other minor forest produce for their sustenance. At the same time, wild animals raid their crop fields which abut the boundaries of the protected areas, and also pose a threat to humans and livestock when they enter the forests. The solution therefore lies in resolving such conflicts and this can be achieved only when management attention is extended beyond the legal boundaries of the protected areas so that land use and development planning here can be influenced to accord with conservation considerations. Biosphere reserves make this extension possible because their various functions are

specially distributed through a zonation plan, and the buffer and the multiple use areas are important zones which cater to local human needs.

The experience in wildlife conservation through national parks and sanctuaries has been that effective conservation cannot be ensured without mitigating the interface conflict by providing viable alternatives to the people through an ecodevelopment approach (Ecodevelopment = ecologically sustainable economic development). However, in the schemes of wildlife conservation, the allocations are rather low and do not permit implementation of ecodevelopment measures in the surrounds of protected areas. On the other hand the biosphere reserves programme has the ability to providing such inputs. It is thus easy to see that a biosphere reserve is a logical extension of a protected area unit under wildlife conservation. This can easily be realised in the field by a zonation strategy. In our country there is intimate interspersed of human habitation throughout the wilderness and it is only such a zonation strategy that can usher successful conservation.

The functional zonation plan is one of the greatest strengths of the biosphere reserves concept. Every biosphere reserve must have one or more strictly protected core zones to achieve well defined conservation objectives. This core zone may correspond to a national park in the Indian context.

The core is surrounded by the buffer zone which should be clearly delineated and may have the legal status of a sanctuary or reserved forest. Only activities compatible with the protection of the core area may be allowed in this zone such as tourism, research and education. The

buffer zone calls for innovativeness in management approaches as this is also the zone where regulated traditional resource utilization (grazing, fuel, water, M.F.P.) by the people could be allowed.

Beyond the buffer lies the multiple-use zone, also referred to as the 'outer buffer' or the "transition zone". This zone contains largely man-modified ecosystems or village lands belonging to the local communities. Although it may not be feasible or necessary to cover this zone under the protected area legislation it may be declared as a "closed area" if considered appropriate to protect certain wildlife values. The boundaries of this zone should be clearly delineated in order to better focus management (ecodevelopment) inputs. The extent of this zone can be determined by estimating the region of impact around the protected area i.e. the villages which influence and are in turn influenced by it.

Integrated Resources Management:

A cooperative management effort is called for in the multiple use zone, with the lead being taken by the biosphere reserve's management authority and with inputs from relevant rural development agencies, researchers and the local people. The aim should be to develop and demonstrate methods for sustainable resources development while maintaining compatibility with the reserve's objectives. It is particularly with reference to the management of this zone that the most doubts are raised and rightly so because very little experience exists on bringing about such horizontal integration among divergent development interests. Biosphere reserves provide the opportunity to develop strategies for such co-ordinated and holistic area development programmes. The

formation of such a multiagency management committee is unique to the biosphere reserve approach and this is what distinguishes it from the conventional protected areas such as national parks and wildlife sanctuaries.

Moreover, if the benefits of the biosphere reserve are to accrue to the people of the region as a whole then planning for the development of the multiple use zone has to be included in the overall management plan for the biosphere reserve and development benefits should be channelized through the reserve authority. The manager of the reserve should bring together the legally established multiagency coordinating group consisting of the rural development agencies, local people, voluntary organisations and the scientific community to plan and oversee the implementation of the ecodevelopment plan for this zone. Benefits must flow directly from the reserve to the people so that the prevailing acrimonious relationship due to deprivation of park resources yields to one of cooperation in the overall conservation effort. Therefore administrative and managerial control of the biosphere reserve should remain with the state wildlife organisation.

Wildlife Management in Biosphere Reserves:

A common misconception in relation to the core zone of a biosphere reserve is that it should have no management intervention other than strict protection enforcement, monitoring of ecological conditions and non-destructive research. This is not entirely true. If management input is necessary to maintain the biological diversity which is sought to be conserved, then the biosphere reserve concept allows such management to take place. But this has to be consistent with the recognised,

specific conservation objectives. For example, if the rich species diversity, which is a unique characteristic of Manas Sanctuary, is a conservation objective, and management input such as periodic burning of some of the grasslands is necessary to maintain endangered species such as the pygmy hog, hispid hare and the rhinoceros, then even if such areas form part of the core zone of the biosphere reserve it will not preclude such management input. The biosphere reserve approach considers humans as part of the biosphere unit and aims at also preserving samples of natural communities which have resulted from millenia of human interaction with nature. Therefore, some communities may have to be maintained at the secondary and successional stages through management intervention e.g., Kanha meadows, terai and shola grasslands.

Having understood this inherent flexibility it is easy to appreciate that the biosphere reserves Programme is not inconsistent with the existing wildlife conservation policy in India as has sometimes been alleged. On the contrary, if implemented in its correct spirit, the programme will significantly contribute to the success of wildlife conservation efforts because of the emphasis given to the management of the buffer and multiple use zones. Although, to some extent, this approach has been adopted in the management of tiger reserves and a few national park there is in fact a need for managing all protected areas as biosphere reserves. This will not only assure better success in conservation but also enable local people to derive the benefits of such conservation.

Besides, with its emphasis on research and monitoring, the biosphere reserves programme can provide the much needed fillip to the development of field research programmes covering management,

biological as well as socioeconomic aspects of wildlife and protected area conservation. This has hitherto been a sadly neglected part of our conservation programme. The programme visualises the establishment of local and national level committees to plan, coordinate and undertake research within the biosphere reserves.

The Future:

With some biosphere reserves having been already designated in India, wildlife professionals must rise to the challenging task of implementing this novel concept. This would no doubt entail proper training and suitable orientation of the forest and wildlife officials to enable them undertake the job of planning for the

management of these reserves and then implementing the management plans so as to realise the multiple benefits that biosphere reserves promise. Success in conservation will lie more in the effort made immediately outside rather than within the protected area itself and biosphere reserves, through the coordinated multiagency approach to integrated resources management in such areas, can lead to stable and compatible land use systems. Likewise, the joint management and resource sharing strategy advocated under this programme can considerably assuage the antagonistic feelings of the local people toward wildlife conservation efforts.

Note: This brief paper incorporates the comments and suggestions made by Shri H.S. Panwar, Director, WII and Dr. W.A. Rodgers, FAO Expert on an earlier draft.

SOME RAMBLING THOUGHTS

Tom Thomas^{*}
International Education Specialist

It has now been several weeks since my return to the United States after spending five rewarding weeks at the Wildlife Institute of India. I have had time to think about what happened, what we accomplished, and have decided to write this time about the role of the research scholar and how their material might be more strongly emphasized to strengthen the abilities of the field manager. Perhaps I will have the opportunity to discuss other aspects of interpretation in a later article.

First let me say I was impressed with the program and its objectives as well as the interest and dedication of staff and participants to the programs which are offered. India is fortunate to have an educational institution designed to train individuals in the protection and

conservation of the country's rich natural resources and particularly the flora and fauna. Like India, every country of the world must continue to emphasize and study these problems if environmental ethics and conservation principles are to have an effect on life as we would like to have it.

Perhaps the "effect on life" is the key to that last statement for without people the natural scene would take care of itself reaching some sort of balance without the interference of man. We know this is not the case as people have had a continuing effect on the land, positively in some cases and in many situations we have seen a most detrimental effect in terms of a balanced ecosystem.

As a result, the reflections and thoughts I have had on my experience at WII as a communications and interpretive specialist must include a strong emphasis on the effect man has had on the environment and how can this be given more emphasis in the program. At present there is highly qualified research and statistical study being conducted by the research scholars at WII. My concern is whether this data and these statistics are being fully and effectively used in classroom presentations. The objective would be to strengthen the presentation of this material on man and his environment in such a way as to assist field managers and wildlife specialists in implementing appropriate management policies and regulations.

There is no doubt in my mind that the staff and the research scholars are all genuinely dedicated to the preservation and conservation of native species including man, but the problem remains on how best to communicate and enlist the support of people living within the protected area, park neighbors, and the visiting public. I believe the answers are at hand and we need only to take advantage of them.

As I think back I recall presentors saying things like "Let me close with my favorite picture of a tiger", or "These people simply do not understand why they can no longer utilize the resources within the protected area", and "This is one of the advantages of the turtle in the Ganges River"! Each of these comments, although paraphrased by me as I didn't write them down at the time, indicate an interest and a need for educating the public on the values of protecting our ecosystems for man, for the flora and fauna, and for the renewable/non-renewable resources.

It seems to me that following the scientific presentation of each research report the committee should ask the presentor how the material presented could be best utilized in a public presentation or written for a popular journal.

I saw an article written by one scholar as he presented his study of the snow leopard in an exciting and educational format. Sharing his own physical difficulties in doing the study, plus using the statistics and facts in an interesting and understandable way, the article presented the plight of the leopard and offered logical reasons for protecting it. This is one element of what research is all about and is an example of using the results for public education. The place for this to begin is with the staff assisting the research persons in this rewrite and then utilizing the results in the classroom. The objective is to simplify and explain the scientific findings so the participants can take the message back to their area and use it as a management and educational tool.

I have perhaps oversimplified a complex and difficult problem, for we know the public will not be educated overnight nor will they easily give up traditions which have been a part of their lives for generations. We, however must begin somewhere and if we slowly begin to reach individuals through proper utilization and understanding without total conflict with culture or tradition the results should begin to have an effect on generations to come. I believe the Institute is already doing some of this but a stronger emphasis with a unit approach would be more effective. As we integrate more interpretive and communication skills the results should soon begin to make a noticeable difference.

* WII-FWS Project Expert on Wildlife Interpretation and Education.

AN EXERCISE IN PROTECTED AREA MANAGEMENT EVALUATION

Kishore Rao

Editor's Note: From the issue of the Newsletter (Vol. 4, Nos. 1,2&3) onwards, we are serialising K.Rao's comments on the management of some protected areas. This is third in the series. The serialisation will continue in the next issue also.

Melghat Sanctuary

Melghat Sanctuary and Tiger Reserve was visited from 27th to 31st January, 1989. The reserve has an impressive size - about 1597 Sq.kms. with 448 sq. kms as the core (including two satellite cores) and 1171sq. kms as the buffer. National park status has been sought for the core, (preliminary notification was issued in November, 1987) while the rest of the area would continue to remain a sanctuary. Upgradation of the core to national park status needs to be expedited.

There is no management plan for the period under review. The last plan covered the period 1973 - 1979. A new plan has now been prepared for the period 1988 - 1998. It is understood that prescriptions of the old plan were being followed in the interim.

The core area is effectively protected and managed. All strategic entry points have locked gates and the roads and wireless communication network allow for efficient patrolling and response to various management needs. Major management inputs, in addition to protection enforcement, consists of fire protection, water resources

development and weed suppression. Efforts made in this connection have yielded positive results which are reflected in the general status of fauna and flora.

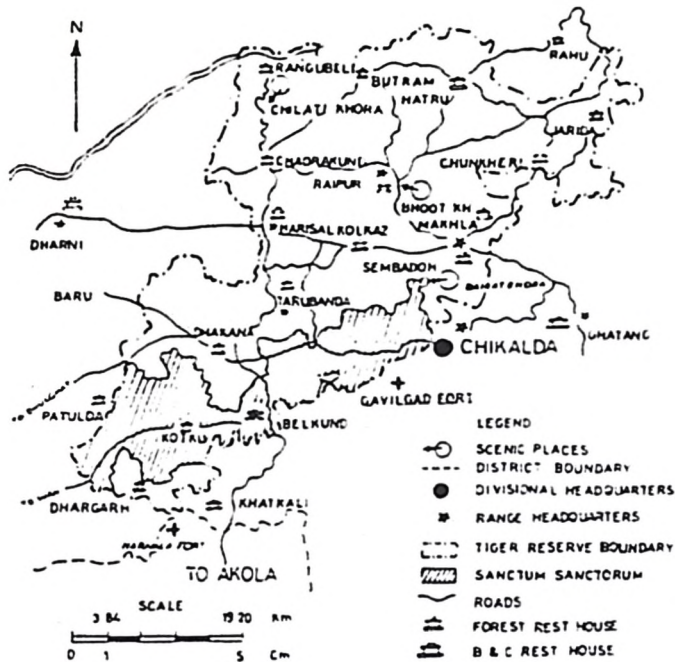
About six villages located close to the core area boundary are proposed for relocation. Another village located in the tourism zone is also proposed to be partly shifted for development of a meadow. Plans have been drawn up to shift and rehabilitate these villages in alternative locations. This aspect should be given high priority and adequate budgetary support provided under the Project Tiger scheme to implement these plans. The Field Director (P.T) has already started negotiations and discussions with the representatives of these villages on selection of alternative sites and on the other terms and conditions of the rehabilitation programme. We were witness to one such meeting in which representatives of the seven villages, the Revenue S.D.O, the District Settlement Officer and the Field Director (F.D) participated. This meeting was a fine example of an effective communication and extension strategy through which the reasons for village relocation were explained, the plans for rehabilitation were outlined and the

villagers' choice for rehabilitation sites elicited. The Field Director has also arranged for a team of villages to be taken to the Kanha National Park in Madhya Pradesh to study the village relocation programme which has successfully been implemented there.

Hence, the Committee strongly recommends that the buffer zone areas along with the staff and infrastructure should be immediately brought under the direct administrative control of the Field Director, Project Tiger and the overall control of the Chief Wildlife Warden. Timber operations have been suspended for the current financial year in the buffer zone. We recommend this to continue for all areas falling within the tiger reserve.

Considerable effort has gone into planning and implementing water and soil conservation measures and these have by and large yielded positive results. However, some of the structures built as artificial water ponds are highly inappropriate and design modifications were suggested on site to improve these. Fire protection is always a difficult task particularly in such a dry deciduous habitat having a large human population. Nevertheless, fire protection is well organised with an early warning system consisting of fire watch towers and a wireless communication network. Considering the average area which is subject to fire damage annually, the fire problem can be said to be under control.

MELGHAT TIGER RESERVE



The buffer zone has a population of some 16,000 people and about 20,000 cattle living within 54 villages. In addition there is a large population of migratory cattle which makes use of the sanctuary's resources. Therefore, the buffer zone calls for a high level of management inputs for controlling and regulating land use and product extraction practices chiefly, forestry operations, grazing, MFP collection and agriculture. Unfortunately, the Field Director does not have any control over these practices as the buffer zone areas are part of three separate territorial divisions, each headed by a D.C.F who do not report to the Field Director. There is no doubt that this overlapping jurisdiction militates against achieving of the project objectives.

Tourism management plan is still under development. No tourism is allowed inside the core area. Tourist traffic is limited to Chikaldara and Semadon. A museum-cum-interpretation centre exists at the former place while a larger facility is being developed at the latter. The move to introduce a toy train in the animal orphanage at Chikaldara is inappropriate and should be dropped. Tourist traffic to Melghat is not very heavy and it does not pose a problem for management at present. Existing and planned regulations and facilities are considered adequate to deal with

this aspect. An innovative scheme for training local tribal youth to work as guides is being implemented and the Committee witnessed the commencement of one such training programme. It is expected that this effort will make a significant contribution in enlisting the support of the local communities and lead to better appreciation among them of the management objectives of the reserve.

In addition to the other habitat management practices mentioned earlier, efforts at suppression of lantana by cutting back and planting with bamboo is yielding successful results. However, the practice of planting up of gaps (including meadows) with fruit plants needs rethinking with reference to the recognised objectives which inter alia include maintenance of meadows and returning an almost uniform crop of teak (resulting from past forest management) to as near the natural diversity of tree species as possible.

The sanctuary has a fairly well defined research programme and committed and competent research staff. The research programme is being given a further impetus and direction by the current Field Director. However, resources allocated for research can be better utilised if studies such as the one dealing with "Food Habits of Tiger" are not accorded priority. Similar work has been done at several places in the country and a good reference collection of slides of cuticular structure of the hair of prey species now exists. Hence, there is little value in duplicating this effort.

MANAS SANCTUARY

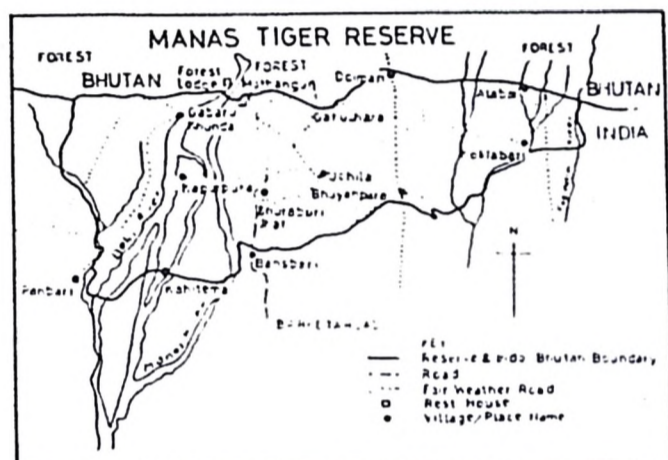
Manas Sanctuary was visited by the Committee from February 6-9, 1989. The sanctuary has more schedule I

species within it than any other protected area in the country. On account of this it has been listed as a World Heritage Site (natural) under the UNESCO's Convention for the Protection of the World's Natural and Cultural Heritage. The core area (legally notified as sanctuary) comprises an area of 391 Sq. kms. Combining adjacent R.F. areas over which the Field Director has control, the area of the Manas Tiger Reserve comes to 518 Sq.kms. A notional 2837 Sq.kms. is often claimed as the total area of the tiger reserve but in the absence of any wildlife management input into the R.F. areas which comprise this larger area, the present evaluation is limited only to the sanctuary area. Moreover, the status of the habitat and wildlife of these reserved forests is understood to be of dubious quality being subject to large scale encroachments, cultivations, clearfelling and plantation systems of forestry working, and extensive grazing by domestic livestock. Besides, the entry for the award is only in respect of the Manas Sanctuary and not the tiger reserve. However, the sanctuary cannot be divorced from its regional context and the health of the surrounding areas is critical to its own well being.

The overall conservation value of these adjacent forest areas is enormous. They have the potential of constituting an extended conservation unit if protected and managed properly, from Jaldapra and Buxa in the west, through Ripuchirang, Manas (including the Bhutan portion) and Barnadi to Sonai Rupa, Nameri and Pakhui in the east. However, if recent developments are any indication, this might well remain as mere wishful thinking. The Committee wishes to place on record its deep concern over the unfortunate incidents which have recently occurred in Manas due to the activities of the Bodo agitationists, and over the fact

that part of the reserve is virtually under their occupation and control. The Committee urges the Central and State Governments to find an early solution to this problem before the outstanding universal values of Manas are irretrievably lost. After having successfully weathered the threat posed by the "damning" development of the Manas-Sankosh Link Project, it would be indeed a pity if the current events were allowed to reverse conservation gains of the past more than half a century.

Manas does not have a current management plan. The earlier plan (which was the first plan for the sanctuary) covered the period 1973-74 to 1978-79. We were informed that a new plan was under preparation but were neither shown the draft document nor the outline. We were further informed that prescriptions of the first plan were being largely followed at the moment. Poaching (particularly of rhinos) still continues to be a major problem and takes up bulk of the management effort. Protection enforcement measures, including distribution of patrolling camps (41 Nos.) and wireless and road communication systems, have been effectively organised. Water is not a limiting factor except in a few areas where water development works have been undertaken. There is no major weed problem but spread of *Mikania* needs to be monitored and if required, further spread should be checked.



The core area is effectively protected and managed which is reflected in the condition of the habitat and in the abundance and diversity of wild animals. However, the same cannot be said of the buffer forests, particularly in the western side where tree felling and grazing continue. Areas along the southern boundary are also subject to heavy pressure, chiefly from cattle grazing. It is in such areas that taking up of ecodevelopment projects would be most relevant and produce tangible results in resolving interface conflicts. It is reported that although some plans were drawn up in this direction, they could not be executed for want of funds. This aspect should be given the high priority it merits, and adequate finances provided for this purpose.

Tourism needs to be better planned and managed. In particular, tourist use of the Manas river around Mathanguri is a highly disturbing practice. This use is mainly by day visitors for picnicking purposes. They cook, eat and bathe along the banks of the river in many small groups. It is understood that on new year day 1989 as many as 320 bus loads of day visitors used this area as picnic ground. The fact that they are inside a wildlife sanctuary is only incidental and of secondary importance. A sign put up by the sanctuary authorities at this place reads - "Picnic Area" which further serves to promote such use. The entire area is littered with garbage and other waste matter which attracts Pariah Kites in large numbers to the area. It is strongly recommended that picnicking should not be allowed along the river front within the sanctuary. However, as it is a recreational activity traditionally associated with Manas, steps should

be taken (if and when conditions permit) to develop an alternative site as a picnic area with facilities such as a day shelter, toilets, cafeteria and boating facilities to attract tourists and divert the pressure from Manas. Although the Committee did not look at any alternate site, the Manas river front near Panbari Range could possibly be a good choice as it is immediately adjacent, but outside the sanctuary. It was also learnt that with the construction of an ITDC lodge it is now proposed to demarcate a tourism zone near Bansbari for use of day visitors so that the core zone can be freed from such casual visitor use. This proposal should be implemented well in advance of the ITDC lodge being commissioned.

Despite the floral and faunal richness and diversity in the area, the sanctuary does not have a research programme nor any facilities

and staff for this purpose. The post of Research Officer has not been filled up so far. Some studies have been done by researchers from within and outside the country and based on their recommendations grassland management is being done to favour two of the endangered species of the area viz. pigmy hog and hispid hare. The Bengal Florican is also currently under investigation by a BNHS team of scientists. Vegetation monitoring plots (as recommended for tiger reserves) have also not been laid out so far.

One of the highlights of our visit to Manas was an hour long meeting with His Majesty the King of Bhutan who was camping in the Bhutan Manas at that time, and learning of the Committee's visit invited us for breakfast. Discussions with him covered a wide range of topics but centred mostly on conservation issues.



SPECIAL SECTION ON WILDLIFE HEALTH

USE OF FORTWIN INJECTION FOR THE SEDATION OF ZEBRA

Dr. R.M. Bhardwaj
Prof., Dept. of Vety. Clinics,
H.A.U. Hissar

A Zebra suffering with impactive sandycolin was brought to veterinary clinics, College of Veterinary Sciences, Hissar. The animal was sedated with 5.0 ml of fortwin injection 1/m. The induction time was 20 minutes. The mineral oil and luke warm water anema was given soon after the animal was sedated and repeated twice at three hours interval. The effect of fortwin lasted for about four hours and it had to be re-injected with 3.0 ml of fortwin. The animal passed impacted faecal mass in about 8 hours and was subsequently given 500 ml of mineral oil orally. Complete recovery was obtained in 12 hours with no untoward effect of fortwin.

SOME BIOLOGICAL STUDIES IN SWAMP DEER (Cervus duvauceli duvauceli) AT DUDHWA NATIONAL PARK

Drs. B.M. Arora, S.N. Kausik, N.N. Pathak & P.N. Bhat
Centre for Wildlife Conservation, Management and Disease Surveillance,
IVRI, Izatnagar

A study on population, food and feeding behaviour and disease problem of the swamp deer undertaken by IVRI during 1985-87 revealed a rising trend of 12.4% in 1985-86 and 27.2% in 1986-87 with an overall increase of 42% during 1985-87. The overall increase in males and fawns over the entire study period was 43.0 & 150 percent respectively.

Animals grazed/browsed in the early morning hours and in the evening. Nutritional analysis of grass samples vis-a-vis determination of chemical composition of faecal samples of deer grazing the same pasture revealed mean crude protein content in faeces of swamp deer to be almost similar to that of mixed grasses of the area. Analysis of 41 grass and legume samples revealed that crude protein content of herbage ranged from 2.8% to 15.4% on drug matter basis.

Prevalence of pasitic infection was found in 30.6% of 119 total faecal samples examined. Flukes (Fasciola gigantica and Amphistome sp.) and lung worm (Muellerius capillaris) infections were detected frequently. Schistosoma sp. infection was detected in one sample. Moneizia sp. (Cestode) was found in 2 faecal samples. The findings confirmed that free ranging swamp deer are efficient reservoir hosts for wide variety of parasitic fauna and their obvious

clinical effects can be marked under certain impaired ecological conditions. A blood tinged faecal sample of a swamp deer collected following a herd in the park yielded E. coli Serotype 099., Faecal samples of 2 swamp deer demonstrated acid fast bacilli, indistinguishable from organisms of paratuberculosis. These findings alluded that the habitat has been exploited by some infected livestock.

BEAR CUBS IN CAPTIVITY AT DACHIGAM NATIONAL PARK

Dr. Mir Mansoor

Wildlife Veterinarian, Dept. of Wildlife Protection,
J & K Government, T.R.C. Srinagar-190 001

One Himalayan Black bear cub in captivity went off feed and exhibited incoordination of movements at the age of five months. The cub was kept on oral and I/v fluid therapy and also the liver tonics was included in diet. Body temp. next day went to 104 degree F. Antibiotics were given but the animal died due to Gastro-hepatitis.

Another brown bear cub at the age of 8 months developed alopecia. It was thought that animal is suffering from some parasitic infection. A thorough examination for external and internal examination was negative. Vit.B complex was given orally to the cub but the condition did not improve. At last it was decided to give broad spectrum anthelmintic-Fenbendazole at the rate of 10mg/kg body wt. Surprisingly the cub gradually started hair growth and the animal is quite healthy now.

HOMEOPATHY IN ANIMALS

Dr.P.R. Barahate

Sanjay Gandhi National Park, Bombay

In Homeopathy diseases are classified on the basis of symptoms that occur in various diseases. Surgery may also be avoided in many cases i.e. Dystokia, effects of vaccination and temporary lameness in animals. Every patient is treated individually according to the symptoms of ailments. There are no prescribed rules for selection of potencies, ordinarily low potencies 3x, 6, 6x or 30 are used in acute cases and in chronic cases, high potencies such as 200, 1M, 10M, 50, are used at long intervals. Medicines are given to animals when they have been without food for sometime, say 30 minutes before they are fed. As a general rule ten drops of tincture may be given for larger animals and 5 drops for small animals like dog & sheep etc. A distinguished Veterinary Surgeon, Dr. Haycock says of Homeopathy "It cures diseases more quickly, it does so without leaving any injurious effects upon the constitutional powers, it saves more lives and it costs less".

RESEARCH AND PROJECTS

RHINO RE-INTRODUCTION PROGRAMME IN DUDHWA NATIONAL PARK/ TIGER RESERVE IN U.P., INDIA - First Step Towards Success

Dr. S.P. Sinha

Under the Rhino Re-Introduction Programme in 1984-85, a total of 9 (nine) rhino's were translocated from Assam (Pobitara Sanctuary) and Nepal (Chitwan N.P.) to Dudhwa National Park (now the 16th Tiger Reserve of India).

stressful abortion and another due to an accident in which she was seriously wounded. This happened after the translocation of animal in Dudhwa N.P. later in December, 1988, out of remaining two males (bulls), one died of hemorrhagic septicemia



The main aim of this programme is to re-introduce and to re-establish a viable rhino population in its former range. Although rhino's were present in Dudhwa area and its adjacent plains until 1870's. The last rhino was shot in 1878 in Pilibhit district.

During translocation operation two female rhino's (cow) died due to

after number of prolonged territorial fights with the other bull. In 1974, it was reported that 15 rhinos died of hemorrhagic septicemia in Kaziranga N.P. (Laurie.,et. al. 1983).

Earlier in September, 1987, one carcass of rhino calf was found in decaying condition but exact cause of death was untraceable.

These initial setbacks disheartened many people who started thinking that this unique project in the history of conservation movement of India, may not be successful.

When the breeding takes place in a translocated wild population, it clearly shows the adaptability of the species and suitability of the habitat.

On 2nd february, 1989, fortunately, it was 'Park Day' of Dudhwa National Park. A rhino calf was sighted with its mother Hem Rani. This was the first sighting of a calf. Here each rhino is known by their respective names and by prominent identification marks. The newly born female calf was named Mandakani (nick name 'Mona'). This gift was like a 'Nature's trophy for the park on the eve of Park Day. Later, on 19th May and 24th May, 1989 two more newly born calves were sighted with their mothers Rapti and Naraine.

Till a calf attains 6 months of age, there are chances that it could fall an easy prey to tigers. Such cases are reported in Kaziranga N.P. and in Chitwan N.P. (Nepal). Considering

all these factors a 'Mini Nursery Fence' (M.N.F.) was designed and erected in a area of 2.5 sq. km. within the large rhino enclosure, covering all the habitat types mostly preferred by the rhinos. Both cow and her calf were localised in the electrically fenced area. finally, on 10th Sept., '89 they were released from the mini fence.

Undoubtedly this project is only one of its kind in our country and for the first time rhino was re-introduced into its former range after a lapse of more than 100 years. In Africa, white and black rhinos were re-habilitated in north-west Zimbabwe in 1975 and before that black rhinos were released in Narobi N.P., Kenya in 1966.

The present existing rhino population of nine (6 adults and 3 calves) is not a viable population in an area of 25 sq. km.. So there is a urgent need to consider the translocation of more rhinos to Dudhwa to achieve the objectives of this project, which is to establish an additional rhino population in order to improve the conservation status of the species.

THE ASIATIC WILD BUFFALO (Bubalus bubalis Linn.) IN THE ASSAM STATE: POPULATION GENETICS AND ECOLOGY FOR ITS MANAGEMENT

P.D. Muley

Name of Other Institution/
Organisation Involved in The Project:

Animal Sciences, Kerala Agri-
culture University, Trichur.

1. Assam Forest Department.
2. Centre for Advanced Studies in Animal Genetics and Breeding, College of Veterinary and

Objectives:

- (i) To identify different, categories of genetic contamination in the population and

characterize each categories based on morphological traits,

- (ii) To further confirm these identified categories based on electrophoretic studies of isozymes, proteins and nucliec acids,
- (iii) To study the sociology and interaction amongst different herds of identified categories,
- (iv) To make detailed studies on mechanics of genetic contamination,
- (v) To conduct ecological studies for the better understanding of preferred habitat, feeding and breeding aspects of identified categories,
- (vi) To evaluate the impact of present management practices (mainly burning of grassland) on the habitat of wild buffalo; interaction amongst different wild herbivores, and
- (vii) To examine the different aspects of competition with domestic stock and possible hazards of disease spread.

Study Area:

Manas Tiger Reserve, Kaziranga National Park and other Protected areas in Assam having wild buffaloes makes the study area. Presently intensive field studies at Kaziranga N.P. are being carried out.

Methodology and Progress of Work:

A reconnaissance visit to Manas T.R. and Kaziranga N.P. was made during February, 1989 to April, 1989. During this survey, data on population structure of wild buffaloes as well as domestic

buffaloes kept at different cattle camps (Khuties) on the northern boundary of Kaziranga N.P. were recorded. Preliminary data collected on sighting records and habitat use suggested that wild buffaloes prefer short grasslands around lakes (beels). Herd size of wild buffaloes varied from solitary bulls to a herd of 45 individuals, average herd size was 13 individuals based on total 25 sightings of different herds. All eight cattle camps around Kaziranga were visited. Data on domestic buffaloes was collected through interviews of their owners. The data revealed that in the case of domestic buffaloes calves are born in almost equal sex ratio. Adult males are not maintained in these camps and males are sold at the age of 2-3 years. Kuti owners confirmed that domestic she buffaloes mate with wild bulls. Mating season stretches over November to February and after a gestation period of about ten months, calving occurs between August to November.

Possible sites of intensive studies were identified. I visited WII during April-May, 1989 to report on my findings based on the reconnaissance and to discuss methodology. I also gave a presentation based on his reconnaissance visit. I re-visited Kaziranga N.P. during June-August, 1989 and continued data collection, sighting records of wild buffaloes, and first hand information regarding impact of flood on species under consideration and other wild animals. On 7 September, 1989 a joint meeting of WII research team & Dr. J.Cheeran, Dr. G. Mukundan, Dr. Raghunandan all of Kerala Agriculture University was held at Dehra Dun to discuss the collaborative aspects of setting up a field laboratory for electrophoretic and cytogenetic studies.

EVALUATION OF MUGGER CROCODILE RESTOCKING BY MONITORING AND LONG-TERM MANAGEMENT IMPLICATIONS

V. Vijay Kumar

Introduction

Crocodile conservation project began in the country during the year 1975, with the objective of increasing the depleted crocodile population in the country. Several states took up this project using the strategy of collecting eggs in the wild, hatching them by eliminating the high risk of nest and hatching predation in the wild.

In the state of Andhra Pradesh historically the Indian Mugger Crocodile (Crocodylus palustris) and the Estuarine Crocodile (Crocodylus porosus) occurred. However, the saltwater crocodile became extinct in Andhra Pradesh by 1940s. Even the mugger crocodile was a highly depleted species by the mid 1970s. the state with two major rivers Krishna and Godavari and their numerous tributaries however had several suitable mugger habitats and also two mangrove areas in the Krishna and Godavari delta for the salt water crocodile.

Initiating the State Crocodile Conservation Project in 1976, to this date Andhra Pradesh have reintroduced 264 mugger crocodile in six different suitable mugger habitats in the state.

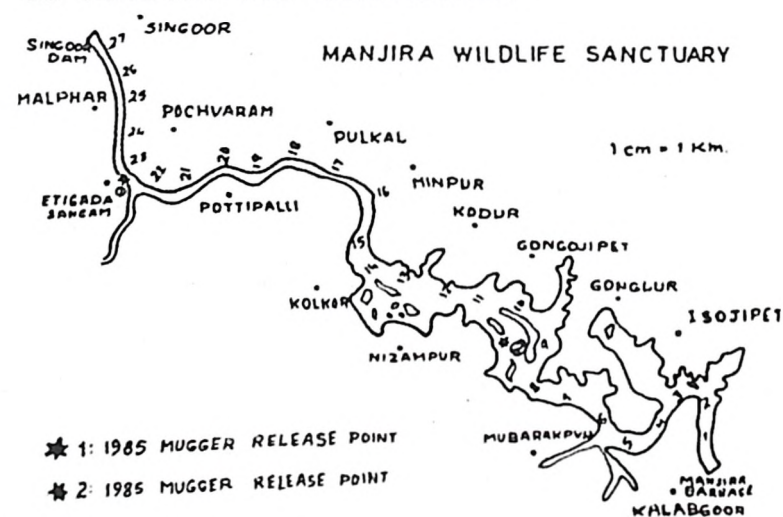
In all these locations, the A.P. Forest Department field personnels headed by a biologist were monitoring the released populations and their survival rate following release.

In 1984 the Wildlife Institute of India involved in this monitoring exercise through its centre at Hyderabad. With the suggestion of Crocodile Research Centre of the WII, the A.P. Forest Department stopped collection of wild laid eggs from the year 1984. From 1984 to 1986, the monitoring exercises expanded and covered activities of nesting success, dispersal of released stock, survival etc. and noted the decreasing sightings of introduced stock in some of the release locations.

In 1986, a full scale research project on monitoring of reintroduced crocodile was initiated and the work began in January, 1987, concentrating in three out of six reintroduction sites.

Study Area

The study area selected were distinctly different in nature as far as habitat was concerned.



1. Manjira Wildlife Sanctuary: The intensive study area was a reservoir, on the river Manjira a tributary to Krishna river. This location being a reservoir provided no opportunity for the reintroduced crocodiles to migrate downstream. However, since the initiation of this research project and now, one more dam has come across the river Manjira making the study area a closed water body.

2. Ethipothalla Wildlife Sanctuary: The second study area located on the Eastern boundary of Nagarjuna Sagar Srisailam sanctuary, below a 70 feet water falls on the Chandravanka, tributary of Krishna river. Here the introduced muggers had the opportunity of going downstream into the Krishna river - 3 Kms downstream of release point below the falls.

3. Siwaram Wildlife Sanctuary: The third study area was a open stretch on the river Godavari. Here the released mugger had the option to move both downstream and upstream.

Mugger Population in Each Area at the Beginning of The Study:

	Manjira			Ethipothalla			Siwaram		
	AD	SA	JU	AD	SA	JU	AD	SA	JU
Known Natural Population (From A.P.Forest Dept. Survey Reports)	7	5					7	5	
No. Introduced		10 (1985)		8 (1977-78)			7 (1985)	8 (1985)	
Total Population During 1985	7	5	10	8			7	12	8

In Manjira, at the beginning of my study period that is September, 1986 the total population of mugger was

estimated to be 7 adult, 5 sub-adult and 10 juveniles.

In Ethipothalla, where all mugger were introduced as sub-adults during 1977-78, have commenced breeding since 1981 were adults at the beginning of this study.

At Siwaram, assuming that no mortality or dispersal took place the population would have been 7 adults, 12 sub-adults and 8 juveniles.

So in all the study areas all size class muggers were expected to be present.

Population Trend

Even though population surveys were conducted both in winter and summer, data for maximum sightings during any particular summer count are given here. No data for hatchlings are included here. Summer survey reports for 1987, 1988, 1989 are given here.

Year	Manjira			Ethipothalla			Siwaram		
	AD	SA	JU	AD	SA	JU	AD	SA	JU
1987	7	3	1	6	2	2	7	1	1
1988	7	3	0	6	2	1	6	1	0
1989	7	2	3	5	3	1	6	3	1

Except for Ethipothalla, where sub-adult and juveniles size-classes have appeared in the population, in Manjira and Siwaram they show a decline. However, the adult population appears to be stable both in Manjira and Siwaram. the absence of juveniles and sub-adult size-classes in Manjira sanctuary made me survey the upstream areas of Manjira river, where earlier surveys have not reported major populations. In a survey of 32 Kms upstream of the release of Manjira indicated the following:

Upstream (Singor) Survey Reports

Year	Hatchlings	Juveniles	Sub-Adults	Adults
1987	3	2	4	9
1989	11		1	11

At E.P. falls, sightings of six adults in both the 1987 and 1988 appearance of sub-adults and juveniles did not call for checking of downstream. However, the summer 1989 results now necessitates a check on the downstream. The sub-adults and juveniles population in E.P. falls though small indicates an increase in the population.

In Siwaram, the population tends to be decreasing even though successful hatching of 3 nests have been confirmed every year.

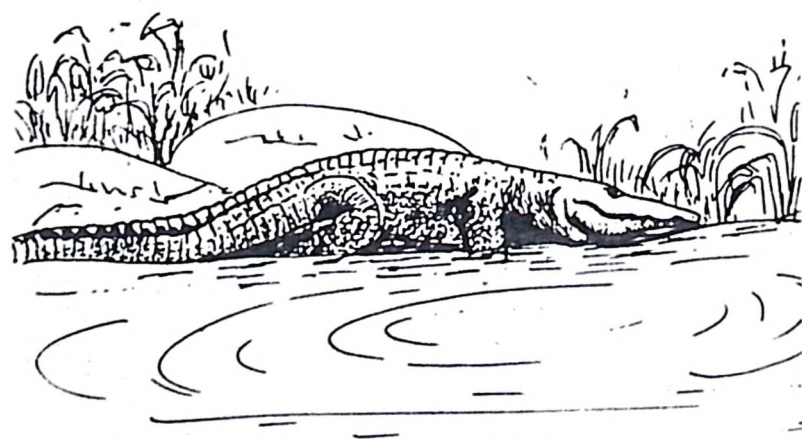
Conclusion

From the results, it can be said why the resident adult size-classes have remained constant and are breeding successfully where as the re-introduced sub-adults and juveniles tend to have migrated. In the study area Ethipothalla, even though the sub-adults have an option of moving downstream they have remained close to the release point perhaps due to the absence of resident territorial adults. At Manjira, the re-introduced populations are believed to have migrated upstream as reflected in the survey reports of the upstream population.

At Siwaram also the re-introduced stock are not being observed. It is not known whether they have migrated towards downstream or upstream.

However, as an experiment six fluorescent colour painted juveniles and sub-adult muggers were released into Manjira in may, 1989 and intensively monitored every alternative night. Five of these have moved 4.5 kms. upstream from the release point even after facing an early monsoon flood. The smallest individual (80 cm.) has been recorded downstream 6 kms. from the release point.

It is intended to monitor these six muggers for another six months at the main study area with attempts to capture some individuals upstream to confirm whether these individuals are the released ones at Manjira, it is also planned to carry out survey both upstream and downstream of Siwaram to confirm the migration of re-introduced stocks.



SELECTIONS FROM "THE WALL CREEPER"

(The Wall Creeper is a recently started wall magazine by the students, trainees, faculty and staff members of the Institute)

RECENT PUBLICATION

Rodgers, W.A. 1989: The natural history and mortality rate of M.Sc. students. International Genocide Quarterly 12:1-15.

The author is well known for his strong stand on human population control in the Third World. He is also founder-President of the International Fascists Association. This paper is based on his two years of experimentation and observation and is sure to count as a key contribution to the growing field of Genocide in the coming years.

(Contributed by the students of the final year M.Sc. Wildlife Biology course who are desperately trying to complete their dissertations in the face of stiff quality control by Dr. Rodgers).

THE TREE TOAD

A tree toad loved a she toad
that lived up in a tree.
She was a three-toed tree toad
but a two-toed tree toad was he.
The two-toed tree toad tried to win
the tree toad's friendly nod.
For the two-toed tree toad loved the ground
the three-toed tree toad trod.
But vainly the two-toed tree toad tried
he couldn't please her whim.
In her tree toad bower, with her V-toe power
the she toad vetoed him.

- Anonymous

(Contributed by Dr. J.H. Desai)

in intimate terms with the black heads and pimples on
th your girlfriend's face. She will love you like poison for
this
Wildlife photography: Thanks to training and
can education imparted to our wildlife in sanctuaries this
is fast becoming like group photography. Tigers have
been taught to pose before the cameras of dollar
paying tourists but are now claiming modelling fees
in the form of one fat tourist per session. The matter
is being negotiated
new Glamour photography: Flesh photography with or
years without the use of flash
it on Holiday photography: Here you specialise in taking
of your family smiling happily in front
- has been much



LETTER TO THE EDITOR

October 31, 1989.

Dear Editor,

About six months back I received a press clipping featuring an article from Mrs. Nargis M. Dalal and you wanted comments on the article which I did. The current issue of Institute Newsletter (Vol.4, Nos.4 & 5) has given the abridged version of my comments for which I have two comments to make:

- (i) for those who have not read the article of Mrs. Dalal probably this will not make much sense and, therefore, some background information should have been given by the editor because this feature was not written exclusively for the Institute Newsletter.
- (ii) I've also noticed that there are a number of editorial and typographical errors; they are as under:

page-17 b. 100 percentage sign is missing.

page-17 c. "marketing" to be replaced with "farming" and "up" is missing.

page-17 "artisans" was to be replaced with "articles were".

page-18 line-3 after J&K "and Govt. of India" is to be added.

Missing of some line after "submitted their" Page-18 line 6.

page-18 line-11 consultant worked (in place of work).

page-18 line-18 "are all" to be deleted.

page-18 second-last paragraph "fur marketing" is to be replaced with "fur farming" and "consultants" to be replaced with "consultation".

I'll appreciate if the next issue of your Newsletter clarify this issue for the benefit of other readers.

With thanks,

Cordially yours,

Sd/-

(S.K.Mukherjee)

Note: The omission is regretted -- Editor.

NEW ARRIVALS IN THE LIBRARY

- Adams, M.E. Agricultural Extension in Developing Countries. English Language Book Society, England 1987.
- Anderson, R.S. Hour of the Fox. Vistaar Publications, New Delhi 1988.
- Alvares, C. Damming the Narmada. Natraj Pub., Dehradun 1988.
- Bhasin, Veena. Himalayan Ecology Transhumance and Social Organisation: Gaddis of H.P. Kamla-Raj Enterprises, Delhi 1988.
- Blaxter, K. People Food and Resources. Cambridge Uni. Press, London 1989.
- Cheeseman, C.L. Telemetric Studies of Vertebrate. Academic Press, London 1982.
- Chandler, C. Fire in Forestry Vol.II. John Wiley & Sons, New York 1983.
- Chib, S.S. This Beautiful India. Light and Life Publishers, New Delhi 1980.
- Clutton-Brock, J. A Natural History of Domesticated Mammals. Cambridge Uni. Press, London 1987.
- Damen, M.C.J. Remote Sensing for Resources Development and Environmental Management Vol.III. Balkema Publishers, Brook Field 1988.
- Ellis, F. Peasant Economics: Farm House Holds and Agrarian Development. Cambridge Uni. Press, London 1989.
- FAO The Dynamics of Rural Poverty. FAO, United Nations 1986.
- Gibbs, A. Pests and Parasites as Migrants. Cambridge Uni. Press, London 1985.
- Gittleman, J.L. Carnivore Behavior Ecology and Evolution. Chapman and Hall, London 1989.
- Gracey, J.F. Meat Hygiene. 8th Edition. Bailliere Tindall, England 1986.
- Heath, E. Anatomy and Physiology of Tropical Livestock. Longman Scientific & Technical, England 1988.
- Henderson-Sellers, Ann. Contemporary Climatology. Longman Scientific & Technical, England 1988.
- Huntingford, F.A. Animal Conflict (Felicity Huntingford & Angela Turner). Chapman & Hall, London 1987.
- Ives, J.D. The Himalayan Delimma: Reconciling Development and Conservation. Routledge, London 1989.
- James, N.D.G. The Forester's Companion. 4th Edition. Basil Black Well, New York 1989.
- Jones, G.E. The Conservation of Ecosystems and Species. Croom Helm, London 1987.
- Kirk. Current Veterinary Therapy X Small Animal Practice. W.B. Saunders Co., London 1989.
- Lockyer, Keith. Critical Path Analysis and other Project Network Tech-niques 4th

- Edition. English Language Book Society, England 1987.
- Loveless, A.R. Principles of Plant Biology for the Tropics. Longman Group, England 1986.
- Mason, C.F. Otters: Ecology and Conservation. Cambridge Uni. press London 1986.
- McNeely, J.A. Economics and Biological Diversity. IUCN, Switzerland 1988.
- Miller, R.N. Plant types 2 Mosses, Ferns, Conifers and Flowering Plants. Hutchinson & Co. London 1985.
- Mohammad, Ali. Water Resources Policy for Asia. A.A.Balkema 1987.
- Morrison, W.Ivan. The Ruminant Immune System in Health and Disease. Cambridge Uni. Press, London 1986.
- Moss, B. Ecology of fresh Waters: Man and Medium. 2nd Edition. Blackwell Scientific Pub. London 1988.
- Nadkarni, M.V. The Political Economy of Forest use. Sage Publications, New Delhi 1989.
- Read, H.H. Introduction to Geology Vol.I: Principles. Macmillan Publishers, London 1985.
- Read, H.H. Introduction to Geology Vol.II: Earth History. Macmillan Publishers, London 1985.
- Roling, N. Extension Science: Information Systems in Agricultural Development. Cambridge Uni. Press, London 1988.
- Sawant, P.R. River Dam Construction and Resettlement of Affected Villages. Inter-India Pub., New Delhi 1985.
- Scheffe, H. The Analysis of Variance. John Wiley & Sons, New York 1959.
- Sheppard, P.M. Natural Selection and Heredity. English Language Book Society, England 1975.
- Silvertown, J.W. Introduction to Plant Population Ecology. 2nd Edition. English Language Book Society, England 1987.
- Simmons, I.G. The Ecology of Natural Resources 2nd Edition. Edward Arnold, London 1981.
- Sinha, A.K. Geology of the Higher Central Himalaya. John Wiley & Sons, New York 1989.
- Tewari, A.K. (ed.) Desertification: Monitoring and Control. Scientific Publishers, Jodhpur 1988.
- Tewari, R.N. Wasteland Development and Environmental Management through Community Forestry. Natraj Pub., Dehradun 1983.
- Thompson, D.B.A. Ecological Change in the Uplands. Blackwell Scientific Publications, London 1988.
- Tiwari, S.K. Readings in Indian Zoo-geography An Atlas of Indian WL Vol.2. Today and Tomorrow's Printer & Pub., New Delhi 1984
- Watson, J. Geology and Man: An Introduction to Applied Earth Science.

Webster, C.C. Agriculture in the Tropics. 2nd Edition. English Language Book Society, England 1980.

Wigley, T.M.L. Climate and History Studies in Past Climates and their Impact on Man. Cambridge Uni. Press, London 1985.

Wild, . Alan. Russell's Soil Conditions and Plant Growth 11th Edition. English Language Book Society, England 1987.

Williams, C.N. Tree and Field Crops of the Wetter regions of the Tropics. English Language Book Society, England 1987.

Yadava, P.S. Grassland Vegetation: its structure, function, utilization and Management. Today & Tomorrow printers and Pub., New Delhi 1986.