from the events, and it is certain that it will go long way in my career. The message is that if you are a student at the early stage of involvement in landscape ecology or if you are a manager in search of a science that can influence policy making, one such meeting would be worth attending. Log on to www.wetlands.org/iale, www.cof.orst.edu/org/usiale, www.calmit.unl.edu/usiale2002 and www.zoo.utoronto.ca/US-IALE_2003, if you are keen to know more on these organizations and events. Though the practical utility of the landscape ecological principle in research and decision-making is at infancy in our country, it is all set to become a strong force in the days to come!

Brown bear research and conservation in Scandinavia

A.J.T. Johnsingh

We stood on a road which went through a clear-cut. The 'we' included about 40 bear biologists from different parts of the world participating in a three-day field visit to a brown bear study site in Dalarna county in southcentral Sweden. We were on our way to the XIV International Bear conference in Steinkjer, Norway, planned for 28th July to 3rd August 2002. Tree growth around the clear-cut, dominated by pine (*Pinus sylvestris*), spruce (*Picea abies*) and birch (*Betula* spp.), indicated the type of forest that would have occurred there in the past. A short walk through the clear- cut indicated the abundance of food for brown bear (*Ursus arctos*): blue berries (*Vaccinium myrtillis*), cranberries (*V. vitis-idaea*), and crow berries (*Empetrum hermatrophroditum*). Also present were raspberry (*Rubus idaeus*) and mountain ash (*Sorbus aurcuparia*), which is a favourite browse of moose (*Alces alces*). Moose is the largest deer in the world and a prey of brown bear. There were several dome-shaped mounds of *Formica* ant colonies (*Formica rufa / F. aquilonia / F. pratensis*).

While exploring the clear-cut I spotted a French-made Colibri (= Hummingbird) helicopter on Ajtomaki hillock, about three kilometres away. Soon Dr. Jon Swenson, leader of the team and the Scandinavian Brown Bear Research Project, announced that a four-year-old female brown bear, which already had a radio-transmitter implant, was in the Ajtomaki area and soon the biologists in the helicopter would try to tranquilize the bear and bring it to the clear-cut. A few minutes later, the helicopter droned and took off from the hilltop. We all stood in a group and followed its movements, and Sven Brunberg, Field Leader based in Noppikoski, with a hand-held radio, began his contact with the darting team in the helicopter. Soon the message came: the female is located in a clear-cut ... it tries to run into the adjacent forest ... it is prevented from doing so ... it is darted with Tiletamin – Zolazepam 250 (mg) + Meditomidine 5 (mg)... soon the bear will be brought to the people waiting. When the helicopter landed, the bear was put on a mattress in an open area for everybody to see, and to carry on with the examination and measurements.

Picturesque Mellansion lake. *(Photo: A.J.T. Johnsingh)*

The original plan was to do an operation and remove the implant, but since it was getting late, it was decided not to remove the implant, but put a radio-collar on it as originally planned. Jon Swenson said that because the mother of this young female (75 kg) had already been collared as part of the 20-year on-going project, the study team knew the den where it was born and thus its exact age. After observing the way the measurements were being taken, and taking photographs, we left the area, enabling the study team to revive and monitor the bear further.

The next day, our dinner was on the banks of the Mellansjon Lake. The waters were still; in the light of the setting sun, long shadows of the trees on its west bank fell across the waters, and birch trees on the eastern bank glistened as if painted with silver. The lake looked picturesque. Eight Canada geese (*Branta canadensis*), an introduced species in Scandinavia, alertly watched us from a distance beyond the range of the shot gun. One volunteer of the brown bear project with his radio-tracking gear listened to the signals of the radio-equipped bears, and said that the young bear collared the previous day was active not far away in the forests to the west of the lake.

The Scandinavian Brown Bear Research project was started in 1984 with the radio-collaring of a yearling female bear in northern Sweden. In the next year, radio-collaring was started in south-central Sweden. This study has immense significance, as it started when the bear population was increasing after they were nearly exterminated in Sweden and Norway, as a result of an effective campaign to eliminate their predators. Sweden stopped killing of bears at the end of the 1800s and saved the bear. Norway stopped its extermination programme in the 1970s, but the bear had already become extremely rare even in the early 1900s. In the 1930s, a population of about 130 bears, confined to four areas in the mountainous portions of the northern half of Sweden, began to increase, and the rate of increase has been relatively high since the mid 1970s.

Thus Norway and Sweden are experiencing a relatively new phenomenon regarding bears: the natural recolonization of bears in areas where they had been extinct for several human generations. The people did not have experience living with bears, and many questions arose about the relationship with this 'new species' which is capable of endangering the lives of people and reducing the availability of moose, an

Epilobium angustifolium fire weed. *(Photo: A.J.T. Johnsingh)*

important game species in Scandinavia. The 'new species' is itself a sport species that could be hunted and managed. In Norway, the situation was more critical because a system of sheep-raising using free-ranging unguarded sheep had been promoted as a way to redistribute economic resources from the central urban areas to rural mountainous areas. It became quickly obvious in Norway that these bears were successful and sometimes wanton killers of livestock, which could stall the Norwegian Government's programme of encouraging sheep farming.

The primary goals of the study are to document basic ecological parameters of the Scandinavian brown bear, such as home range size, habitat use and selection, diet, population densities, reproductive and mortality rates. The study also looks at several management-oriented questions such as predation on moose, the relative danger that bears pose for people, the development and testing of monitoring methods, depredation on sheep, and effect of hunting on population trend and genetic status of the population. Although much research has been carried out on bears in North America, it was unclear how much of the North American results were applicable to Scandinavian conditions. In addition, no North American studies, at that time, were conducted on increasing bear populations. The objectives of the Scandinavian research are primarily guided by the orientation of funding agencies, but the study has attempted to answer vital ecological questions. Foremost among these has been the impact on the population as a result of disruption of social organization through the death of resident adult males (as a result of hunting), and female strategies to defend their young from infanticide. Other aspects studied are the social organization and parent-offspring conflict among young females that settle in their mother's home range, dispersal of male and female bears, mate selection (using telemetric observations of males and females together during the breeding season, the paternity of the resulting cubs from DNA fingerprinting), and how bears utilize important food sources (moose, ants and berries) that occur with high temporal and spatial variation in the landscape. Life history traits (growth and reproduction) in relation to ecological parameters (primarily population density and food availability) and anthropogenic pressures (primarily hunting) are also included in the studies.

The study areas are close to the northern and southern edges of the range of the Scandinavian brown bear population. Brown bears in north-eastern Norway are part of a different population, which is shared with Russia and Finland. The Russian population, though fragmented, is reported to range between 100,000 and 120,000 animals, the largest in the range of the brown bear, the total population of the species being about 160,000. The Finland population is about 800.

The study has radio-marked virtually all the adult bears (about 40) within the northern study area (8000 km²) in Norrbotten County in Sweden, encompassing mountainous national parks and adjacent forested land. In the south, the study has radio-marked about 50-60% of adults (about 60) in 13,000 km² of intensively managed boreal forests in the counties of Dalarna and Gavelborg in Sweden, and Hedmark County in Norway. The methods are to capture bears in spring using helicopters, and follow the radio-marked individuals. In addition to recording body weight and other measurements (e.g. length of body, length and width of cranium), the study collects blood and tissue samples for disease and genetic studies. Initially, the radio-equipped bears were located once a week, and later twice a month. Helicopter hiring for immobilization and radio-tracking consumes a major portion of the annual budget of the project, which is close to US$ 300,000.

Earlier, all yearlings were radio-marked and followed, but subsequently, due to the availability of sufficient scientific information on males, only females are being radio-collared and followed. In addition, the study collects information on body weight and other measurements, tissue and hair samples, one first premolar tooth from the upper jaw, and reproductive organs of all hunter-killed bears in Sweden. Till date, the study has radio-marked 316 of the 384 immobilized bears, and in the capturing season in spring 2002, there were functioning radio-transmitters on 118 bears. Thus, this is absolutely the largest brown bear study in Eurasia, and one of the largest in the world. The study cooperates with several other brown bear research projects in Finland, Slovenia, Croatia, USA and Romania, and with the eminent French geneticist Prof. Pierre Taberlet.

Den of Heros, 12-year 215 kg male. *(Photo: A.J.T. Johnsingh)*

Colourful Sami man. *(Photo: A.J.T. Johnsingh)*

The results of this long-term study, done with the assistance of many immensely motivated students and volunteers, are vital and interesting. The results could be broadly divided into scientific and management-oriented. One finding of general scientific interest is the disruption of male social organization for about two years, followed by the death of adult males. This affects the population by increasing the mortality of male cubs (killed by immigrating and resident males), and the resultant increase in the proportion of yearling females. The study has documented that females with cubs try to avoid meeting potential infanticidal males. These results have important consequences for the management and conservation of several species that show sexually-selected infanticide.

The study has shown that an increase in growth rate of the population can increase dispersal rates and promote gene flow between isolated bear populations. This finding has great conservation significance, as most of the large mammal species across the globe live in isolated populations, and the chances of their survival will be greater if there is genetic exchange between the often inbred sub-populations. The genetic results based on mitochondrial DNA suggest that brown bears colonized Scandinavia from the east and the south, after the last ice age nearly 10,000 years ago. The two study populations have shown the two highest population growth rates yet recorded for brown bears, r= 0.13 in the north and 0.15 in the south. Demographic variance was high in both the populations, and environmental variance was low. Because of the favourable rates of reproduction and survival, relatively few adult females (> 1 year old, 8-10 individuals) would be sufficient to ensure survival with 90% probability for 100 years. This finding has great significance for bear conservation in Norway, where only small viable populations can be maintained because of free-ranging sheep. The goal in Norway is to have reproducing populations in five small areas along the border with neighbouring countries. Two of these areas should have "viable populations", defined as a minimum of eight adult females.

The project with data on 2778 female bears, number 3 of 11 projects in amount of such data collected, across the range of the brown bear, document the pattern of reproductive senescence in brown bears. This valuable information from Sweden has contributed to the data on 4275 radio-collared free-ranging female bears already compiled by Charles C. Schwartz and other grizzly / brown bear biologists from 20 study areas in Alaska, Canada and continental USA. The data show that female bears seldom breed before they are four years old, and peak reproductive performance spans ages 8 through 17, following a decline until death. This large sample did not have females beyond age 28 with litters.

The Scandinavian study has found, for the first time in a solitary carnivore, that females wander during the mating season, apparently in search of mates. Another interesting finding is that moose in areas where bears are just arriving, are more vulnerable to predation than experienced moose in areas with long established bear populations. The study has also recorded that ants (*Camponotus herculeanus, C. ligniperda* and *Formica* spp.) are an important part of the diet of brown bears in Scandinavia, being an important food source when other food items are scarce, and providing about 20% of the annual energy intake.

Management-oriented results of the study are also many. The study has estimated the population of brown bears for Sweden (a minimum of 1000) and Norway (ca. 50 animals shared with Sweden, Finland and Russia), and is in the process of establishing stable hunting levels that the population can sustain, leading to the Action Plan for the Conservation of brown bear in Scandinavia and Europe. Although the management of legal hunting is of utmost importance to the status of Scandinavian bear population, the results of the study suggest that illegal hunting is very common in the northern study area within the reindeer husbandry area. It is also a significant factor in the south.

Brown bears and black bears hibernate for half a year or more, without eating, drinking, urinating or defecating. Interestingly, polar bears switch from a normal state to a slowed-down, hibernation-like condition for weeks on end at any time of year when there is dearth of resources, while black and brown bears do this only in winter. The Scandinavian study found that in the southern study area, the presence of roads and occupied houses had a relatively small negative effect on the use of the

Reindeer (*Rangifer tarandus*) farming in Norway leads to conflict with brown bear. *(Photo: A.J.T. Johnsingh)*

Red berries of *Sambucus racemosa*. *(Photo: A.J.T. Johnsingh)*

area by bears, but the effect of human disturbance was greatest on denning bears. Nine percent of the denned bears in the south changed den sites during winter, due to human disturbance. Pregnant females that had changed dens had a significantly higher loss of cubs in the den or soon after leaving the den than those that had not. Females with cubs are sometimes killed, and the study discovered that cubs in the north can survive without their mother after mid summer, and that survival, growth and reproduction of a few orphaned cubs that the study followed, was not different from non-orphaned cubs. The recommendation of the study was that orphaned cubs found after mid summer should be left where they are found.

Studies focusing on predation on moose have shown that bears took almost 25% of the calves born, in an area with a good moose population (ca. 70 moose/100 km²) and a high density of bears (2.0-2.5/100 km²). Calves were killed mostly in the first four weeks of life, and cows that lost calves had a 50% greater probability of producing a calf the next year than cows that had not lost their calves. Bears killed very few adult moose, and such predation was in more in a spring with deep snow conditions. .

The finding that there were 2 mitochondrial DNA lineages in Scandinavia, presented a potential management problem. The southern lineage was closely related to the few remaining isolated and endangered populations in Spain and France. The southernmost brown bear sub-population in Scandinavia was found to be the only viable population in this lineage in the world, and should therefore receive special management if it is genetically unique. In addition, the extreme bottleneck (about 130 bears in 4 surviving populations around 1930) and the low genetic diversity found in the mt-DNA sequence suggested that the genetic diversity in the nuclear DNA of brown bears in Scandinavia was low. However, an analysis of 19 microsatellite loci from 380 brown bears from all over Sweden and southeastern Norway, showed a surprisingly high level of genetic heterozygosity and a high level of gene flow. The high diversity may have been promoted by the founder effect in the four surviving populations, and reintroduction of genes lost in one sub-population by immigrating males from another sub-population where the genes had been conserved. The four sub-populations showed genetic structuring, but the genes were not in Hardy-Weinberg equilibrium (i.e., gene frequencies did change across generations, basically because of movement of bears between populations. A population gene pool is said to be in Hardy-Weinberg equilibrium when the proportion of animals having any particular gene does not change across generations), suggesting that gene flow is occurring, now that the sub-populations are in contact once again. The study recommended that managers regard the Scandinavian brown bear population as one evolutionarily significant unit, but four management units.

Brown bears pose a certain threat to people. The study examined this threat by analyzing 114 meetings between bears and bear researchers in Scandinavia, reviewing the historical literature in Sweden and Norway, examining the circumstances surrounding 7 injuries in Scandinavia during a 20-year period, and comparing results from Scandinavia with those from other parts of the brown bear's range. The major conclusion is that the Scandinavian (and European) brown bear is the most non-aggressive brown bear in the world. The only really dangerous attack can be caused by a wounded bear, but surprising a female with cubs, or a bear guarding a carcass, can lead to aggression. These findings have led to the publication of a brochure explaining how people should act when they meet a bear.

In summary, the study found that the Scandinavian brown bear differs from the much better studied North American brown bear in many respects. It has a higher reproductive rate, has longer dispersal distances (perhaps because they often disperse into unoccupied area), is less predaceous on adult moose, eats more ants, and is less dangerous to people. Thus, it probably was a good decision by managers to fund such an intensive and long-term study on the Scandinavian brown bear, rather than trying to rely mostly on results from North America. The Scandinavian brown bear seems to be demographically and ecologically more similar to the brown bears in Central and Southern Europe than those of North America. Therefore, many of the results of the Scandinavian study might be

Large and impressive churches in conspicuous places. *(Photo: A.J.T. Johnsingh)*

Soul-soothing eternal resting site.
(Photo: A.J.T. Johnsingh)

applicable to other parts of Europe.

We learnt about the findings of the study by reading through a summary report "Project description and important results" by Jon Swenson and Finn Sandegren, and by participating in the two-day discussion held in Wardshuset Noppi, Dalarna county, Sweden. Noppikoski is surrounded by a vast expanse of forests with miles of well-maintained roads and marked trails leading to beautiful forester cabins, excellent fishing waters and breathtaking views. A profusion of several species of golden yellow flowers, patches of fireweed (*Epilobium angustifolium*) in bloom, conspicuous white flowers, clumps of purple flowers of *Calluga vulgaris* and a golden yellow carpet of reindeer lichens (*Cladonia arbuscula*) made it seem like the entire wilderness was a manicured garden.

The field visits gave us a brief first-hand experience of the study. Vagaries of nature, with alternating murky weather and brilliant golden sunlight, made our field trips exciting. Twice we walked through boreal forests to see two dens, one used by Griffel, a twelve-year-old female, which had given birth to two cubs and weighed 93 kg in spring 2001, and the other by Heros, a 12-year-old male who weighed 215 kg. Both the dens were in *Formica* ant-hills. One participant crawled into the den of the female, and two into the male den. We learnt that dens were seldom reused by the bears; dens were within the home range of the occupants; and older females stayed in the den for longer time. As we walked, I realized that the boreal forest floor, with its numerous bogs laden with lichens and mosses and other characteristic vegetation, is not an easy place to walk – every step needs to be placed carefully. But there were many opportunities to pick and eat berries. However, I wondered how such a large animal could accumulate sufficient fat to enable it hibernate for 6-7 months by feeding mostly on berries, moose calves, and *Camponotus* ants. On 27th July, as if to escape the gloomy weather of Noppikoski, after breakfast we started our six-hour drive to Steinkjer, five hours through Sweden and the last one hour through Norway. The landscape in Sweden was undulating, with vast stretches of forests, numerous lakes where people were busy fishing with rod and line, and neatly ordained human settlements with well-maintained lawns, flower gardens and vast croplands. The National flag of Sweden, blue with a golden cross, proudly fluttered atop most houses. Churches, large and impressive, stood on hill-tops as if to assure the people that the pagan religion of the yesteryears, which even demanded human sacrifice, is no more and people can pursue their life peacefully in their 'promised land'. The landscape in Norway, with mountains, waterfalls and streams, was totally different and even more exciting. Large empty wooden corrals indicated that we were in semi-domesticated reindeer country. All along, Jon Swenson, with enormous enthusiasm, acted as our guide and enriched our knowledge and experience.

Steinkjer, with a population of about 20,000 people, is a municipality of 2000 km². The terrain is mountainous, with the Trondheim fjord, which is connected with the North Sea, abutting its northern end. The municipality is drained by three rivers; Guldbergaunet, where I stayed, is on the left bank of the Steinkjer river, and a 1.5 km path along the left bank led to the Conference Centre. The river banks had a dense growth of trees, and conspicuous among them were the mountain ash and elderberry (*Sambucus racemosa*) with bunches of attractive red berries. Steinkjer River, although it flows through the town, was totally devoid of garbage. It has a good run of Atlantic salmon (*Salmo salar*) in summer when rains are good. Other fishes found in the river are sea trout (*Salmo trutta trutta*, which is anadromous) and brown trout (*Salmo trutta*, which is a completely freshwater species). Merganser (*Mergus merganser*) and mallard (*Anas platyrhynchos*) ducks peacefully fed in the river unafraid of the pedestrians, joggers and cyclists going along the paths on the banks of the river.

The conference with nearly 200 participants from about 37 countries was one of the finest I have ever attended. It had entertainment, content and field visits. Our field trip during the conference was to Raudberget (Red rock mountain), which gave an opportunity to trek through boreal forest and talk to the sheep farmers afflicted by bears. Our team was led by Ole Jakob Sorensen, Professor from Nord–Trondelag University College, Steinkjer. Ole Jakob toiled for a year, with several other Norwegian colleagues, to make the conference a success. Ole Jakob is a good woodsman: hunter, birdwatcher and angler. Our bus journey took us past Snasa Lake, and along the banks of Sand Valley River with excellent spruce plantations and 3000-4000-year-old elm tree (*Ulmus glabra*) patches. Three moose stood on the river bank and watched our bus going past. Our destination was Lierne Muncipality, which has free ranging sheep and as a result suffers heavy predation by bear. Our walk through the boreal forest dominated by spruce was short but educative: tracks and pellets of moose were abundant, we saw the remains of a black grouse (*Tetrao tetrix*) possibly killed by a goshawk (*Accipiter gentiles*), heard the call of a three-toed woodpecker (*Picoides tridactylus*), a woodpecker of the old-growth boreal forests, and discovered that cloudberry (*Ruby chamaemorus*), a coveted fruit of Scandinavians, grows well only in special habitats: bogs where snow stayed till late into summer. Dense growth of moss, lichens and fungi on tree trunks and tree stumps indicated that the area had not been burnt for at least 200 years.

We discussed about the bear predation problem with two farmers. One was Arnodd Lillemark, Mayor of Lierne Municipality, who has given up maintaining free-ranging sheep for milk cattle. He keeps about 15 cows, and

sells nearly 100,000 litres of milk every year. The other farmer was Reidar Kjelvik living in Murumoen farm on the shore of Muru Lake. We sat in the shade of a pine-birch forest on a hill slope and listened to his story of failure in sheep farming. After spending many long years as a lumberman in Sweden, Reidar bought the farm with the aim of leaving a prosperous sheep farm as a legacy to his daughter. Twenty years ago, he had 200 ewes, which he grazed on the slopes of Hartkjolen mountain across the Muru Lake. Bear predation was so serious that he now had only 28 ewes kept in an area protected by an electric fence close to his barn. Even here, his sheep are threatened occasionally by bears. Reidar cried as he finished telling us of his unsuccessful career as a sheep farmer. The mournful cries of a loon (*Gavia arctica*) over the waters of the lake gave a touch of sadness to the whole episode, and we had few words to console him. Reidar's wife, as brave as a person could be, kept a cheerful face, and in broken English thanked us for our visit and sharing their problems.

On the day I departed from Steinkjer, the weather was dry, and for the first time I noticed countless seeds of fireweed floating in the air. I remembered the words of Canadian Professor Val Geist, a renowned authority on wild ungulates, who once told me that in Canada, in the past, native Indians timed some of their activities with the phenology of the fireweed. For example, they chose the end of the seeding season to go and hunt moose, which would be in last stages of velvet with a good deposit of fat. Times have changed now, and bulls in velvet antlers are no longer hunted. Norwegians, who have a strong tradition of hunting, fishing and collecting mushrooms and berries from the forest, start hunting moose for a month from the last week of September, when all the bulls are in hard antler. One disturbing report which we received when we were talking to the people of Lierne Municipality was that in one or two locations, the women stopped going to the forest to collect mushrooms and berries when there were reports of bears with cubs. In Norway, the women introduce the children to the forest by taking them along with them on their berry and mushroom picking expeditions. It will be a sad development if women stop going to the forest and thereby deny the opportunity for the children to learn the ways of harvesting the valuable resources from the forest. As a result of good breeding and protection in Sweden, Norway is bound to have more bears in future. In spite of the best efforts by the Government to encourage people to have more livestock-guarding dogs and electric fences, Norway is bound to have more farmers like Reidar losing out to the bear and other carnivores such as wolves (*Canis lupus*), lynx (*Felis lynx*) and wolverines (*Gulo gulo*), which are also slowly increasing in number and expanding their range. This return of carnivores, nevertheless, should not deter the Norwegian women from collecting delicacies from the forest and introducing their children to the joys and thrills of forests, as the long-term study has clearly demonstrated that the Scandinavian bear is less dangerous to the people than brown bears elsewhere. If the women remain in noisy groups when they wander through the forest, they will be safe in Scandinavian bear country. Along with their children, they will continue to have opportunities to collect mushrooms, berries and watch alarmed moose stampeding through the undergrowth.

Human-Bear Conflict and Acceptance of Bears to the Society

Naim Akhtar

There were four participants from India in 14th IBA conference held at Steinkjer, Norway between July 28-August 3, 2002. In fact, this conference was followed by 3-day field trip in Sweden, organized by Jon Swenson, leader of Scandinavian brown bear project. Days in Sweden were memorable not only for beautiful landscape sceneries and candle light dinners but also for the field demonstration of brown bear radio collaring exercise. As compared to Norway, Sweden has large areas of conifer forests and high population of brown bear (*Ursus arctos*), moose (*Alces alces*), lynx (*Felis lynx*), and rein deer (*Rangifer tarandus*). There is regular practice of wild animal harvesting for three month in a year, for which the Government issues licenses to hunters for hunting limited number of wild animals. Norway and Sweden is well known for sheep-bear conflict because brown bear is the only major predator there. Farmers leave their sheep for grazing in forest for six months mainly during summer season, which is also the period of bear peak activity and lots of sheep lifting and killing occur during this period. Possession of arms is legal and availability as well, is very easy in Norway and Sweden and farmers kill many wild animals either in self defense or while protecting their sheep. As far as acceptance of brown bear is concerned, Norwegian farmers do not like this animal and by and large Swedish people don't hate this species. One of the reasons perhaps may be that Norway is smaller in size and has more farmers than Sweden.

Keeping this fact in mind, the Organizers of 14th International Bear Association planned to conduct a workshop on "Human dimension in bear management" and invited Dr. Barie K. Gilbert from Utah State University, USA; Dr. Piotr I. Danilov from Institute of Biology Karelian research Centre, Russia, Dr. Isac Goldstein from Venezuela, Dr. Vemund Jaren and Anders Biarvall of Directorate for nature management, Norway and Dr. N.P.S. Chauhan of Wildlife Insitute of India, Dehradun, India for participation and deliberation. The broad topics of the workshop were (a) What disputes around man-bear encounters exist, and how would those develop given a possible rise in the bear population? (b) What acceptance limits exist in the society towards bears living

Indian bear ecologist in an international arena. *(Photo: H.S. Bargali)*