E-NEWSLETTER OF W.I.I.

Nature is our Password, Conservation the Creed

Monsoon 2012

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- YETI 2012

G.S Bhardwaj

V. Deepak

Finally they found me...

Venated Gliding Frog *Rhacophorous pseudomalabaricus*

Current Protected Area Network of India

Position as on August 3, 2012

National Parks: 102; Area 39918.54 sq km, (1.21%)
Wildlife Sanctuaries*: 516; Area 120158.13 sq km, (3.66%)
Conservation Reserves: 49; Area 1515.60 sq km, (0.05%)
Community Reserves: 4; Area 20.69 sq km, (0.0%)
Total Protected Areas: 671; Area 161612.96 sq km, (4.92%)

*New Wildlife Sanctuary for Kerala:
Kottiyoor
(Total Area 30.3798 sq km;)

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Around the Campus

Training workshop on "Mainstreaming biodiversity in impact assessment" for Indian Forest Service Officers, Dehra Dun, *August 27–28, 2012.* The objectives of the workshop were: (i) improving the mechanisms for mainstreaming biodiversity in the impact assessment for sound decision making and long-term gains for conservation; (ii) improve better appreciation of the issues and conflicts related to developments in ecologically sensitive areas; and (iii) review options for professionalizing EIA for positive outcomes for biodiversity. A total of 26 Indian Forest Service officers participated in the workshop. The workshop was sponsored by the Ministry of Environment and Forests.

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VIII-Internal Annual Research Seminar (IARS) and XXVI Annual Research Seminar (ARS)

VIII-Internal Annual Research Seminar (IARS), *September 14, 2012.* The IARS was chaired by Shri Vinod Rishi, Former, ADG (WL), MoEF, Govt. of India, New Delhi. During the IARS, a total of 15 presentations were made in six technical sessions viz., Status Survey and Landscape Level Studies; Avifaunal Studies; Population Genetic and Phylogenetic Studies; Coastal and Marine Biodiversity Studies; Physiology, Reproductive Biology and Conservation Breeding Studies, and Biodiversity Data Publishing and Demonstration. The presentations were based on recently initiated and ongoing research studies and were made by research fellows of the Institute. In addition, 11 poster presentations were also made by the researchers. The oral presentations and posters were evaluated by the panel of judges. The following were adjudged as the 'three best' oral and poster presentations. The concerned research personnel were awarded book prizes:

Best Presentation Awards

I **Supriya** Relationship between phylogenetic divergence and divergence in sperm morphology in Himalayan passerines.

II **Mousumi Ghosh** Biodiversity data sharing: digitizing and making camera- trap data available to aid conservation.

III **Lakshminarasimha, R.** Conservation of western tragopan *(Tragopan melanocephalus)* through captive propagation.

Poster Presentation Awards

I **B. Navaneethan, and Manas Manjrekar** Ranging patterns and habitat use of reintroduced gaur *(Bos gaurus)* in Bandhavgarh Tiger Reserve, Madhya Pradesh.

II **Shivam Shrotriya** Status and distribution of wolves in the Himalayas.

III **Manish Bhardwaj** Butterfly (*Lepidoptera: Rhopalocera*) diversity, distribution and conservation in the Gangotri landscape, Uttarakhand.

Vinod Verma

XXVI Annual Research Seminar (ARS), *September 17-18, 2012.* Prof. R. Sukumar, Chairman, Training, Research and Academic Council (TRAC), chaired the Seminar. A total of 18 presentations were made in five technical sessions, viz., Ecology of Large Carnivores; Patterns in Faunal

Vinod Verma

Distribution and Diversity; Conservation and Development Interface; New Initiatives; and Monitoring and Management of Large Carnivores. The presentations were based on the ongoing or completed research studies and were made by research fellows and faculty members of the Institute.

About 225 delegates attended the ARS that included the Principal Chief Conservators of Forests, Chief Wildlife Wardens and other senior officials representing State Forest Departments, delegates representing NGOs, scientists, conservationists, wildlife experts, faculty members, researchers, M.Sc. students and officer trainees of the Post Graduate Diploma Course.

A panel including eminent scientists and wildlife managers evaluated the relevance and quality of research by the presentations made. The presentations made by the following researchers were adjudged the 'best five presentations' made during the XXVI Annual Research Seminar of the Institute and researchers were awarded the book prize.

Best Presentation Awards

I **Tapajit Bhattacharya** Spatial database on carnivores and their prey in Khangchendzonga Biosphere Reserve, Sikkim.

II **Subhadeep Bhattacharjee** Assessment of habitat utilization patterns of the reintroduced tigers *(Panthera tigris)* in Sariska Tiger Reserve, Rajasthan.

III **Manjari Roy** Assessing the applicability of techniques for population estimation of tiger *(Panthera tigris)* in the Sunderbans, West Bengal.

IV **Bipin C. M.** Reintroduction of cheetah *(Acinonyx jubatus)* in India.

V **Kausik Banerjee** Identifying drivers of human-lion coexistence in Gir landscape, Gujarat; and **S. Harikrishnan** Species richness, density and distribution of insular herpetofauna in Andaman Islands.

In the concluding session, Dr. R. Sukumar, Chairman - TRAC complimented all the presenters of the ARS and congratulated WII for selecting a wide array of subjects including genetics, demonstration of new techniques and also for the new initiative of poster presentations. Considering the pan-India presence of WII's research, he suggested that WII's database needs to be used to do more conceptual synthesis in ecology, which is crucial for publications in high impact factor journals and emphasized on more collaboration on conceptual issues. He also urged WII to take up more research studies on vegetation (habitat) ecology. Being a premier institution of the country in the field of wildlife research and training, WII should extend its mandate in policy making decisions. With spilling over species from the PAs into the human dominated landscapes, WII should address more human-wildlife conflict issues to address conservation challenges. He suggested WII to become a part of MoEF's network of long-term ecological monitoring.

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Banj oak (*Quercus leucotrichophora*) forests: Life line for the Himalayan region

-Gajendra Singh

Oaks are an important group of trees found in the sub-tropical, temperate and sub-arctic regions, represented by 600 species all over the world. In the Indian Himalaya region, oaks form an important element of moist temperate forests between 1000 to 3500 m asl. There are more than 35 species of oaks in the India, of which five species namely, *Quercus glauca* (Phaliyant/Harinj), *Q. leucotrichophora* (Banj/Ban), *Q. lanuginosa* (Rianj), *Q. floribunda* (Tilonj/Moru) and *Q. semecarpifolia* (Kharsu) are found in the State of Uttarakhand (Western Himalaya). All the oaks in the State are evergreen, slow growing, long lived (>200 years) with round dense canopy, which start producing fruits (acorns) by the age of 20 years.

Importance of banj oak forests for the Himalayan region: Of the various oak species in the Western Himalaya, Quercus leucotrichophora (Banj/Ban) is a common tree species found between 1000-2500 m in temperate regions of the central and western Himalaya. It is most abundant and wide spread around 2000 m and less, where it exhibits 80% dominance and between 2000 to 2500 m it may share dominance with *Q. floribunda,* above which it generally disappears. A recent investigation revealed that, in Uttarakhand there is only 1284.60 km^2 area available under banj oak forests (5.24% of forest cover and 2.40% of geographical area), of which 774.93 km^2 area falls within reserve forests (RF) and 509.66 km^2 lies outside. Banj oak trees normally attain a height of 12-18 m and a diameter of about 50 cm but large trees can be 30 m tall and have a DBH of 1.5 m. It grows well on variety of geological formations and is frequently found on clayey soils formed from shale parent material as well as in micaceous sandy soils formed from mica-schist parent material.

Although commercial importance of banj oak tree is limited but it is often found to be a keystone species for other species. It has several traits that allow it to dominate the hardwood stands of the Himalayan forests. These include the very pronounced coppicing powers of younger trees, the longevity of trees, adaptability to a wide range of edaphic conditions and the heavy shade and wide spreading crown of mature trees that prevent most other species from invading. Perhaps the greatest weakness of banj oak tree is its utility to the local people.

The villagers of the Himalaya depend heavily on these oak forests for their subsistence lifestyle. The economy of the region is primarily agricultural, and hill agriculture is heavily reliant on forest inputs. The strongest component of this dependence is the relationship of the local people with the banj oak species. Some villagers refer to this tree as the *kalpavriksha* of the Himalaya, alluding to the mythical tree of heaven that fulfils every human desire. Banj is the primary source of fuel wood, animal fodder and fertilizer for much of the region. The hill economy depends on agriculture and animal husbandry and both of these activities use this species heavily. Banj leaves make a good animal fodder, which is especially important in the winter, when little else is available. Banj leaves litter, when mixed with dung and urine of buffalos, cows, and goats and composted, makes an excellent fertilizer. The high nutrient concentration and easy availability of banj leaf litter makes it the most commonly used raw material for compost. Therefore, the collection of fodder is the first step that turns the wheel of the agriculture economy of the village community. The high specific gravity and good burning properties make banj one of the most favoured fuel wood of the region. In addition, to its importance for fuel wood and fodder,


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banj is regarded as being beneficial to conservation of soil, water, native flora and fauna by providing the ideal habitats to them. Banj trees also improve the surficial moisture availability through hydraulic lift, a process by which water absorbed by deep rooted trees is released into the upper soil. This phenomenon provides ecologically significant quantity of water to shallow rooted plants.

The Himalayan banj oak forest has a rich and diverse wildlife and is a summer home for numerous bird species from the Indian plains. Its major associates that make oak forests a better habitat are *Rhododendron arboreum* (Burns), *Lyonia ovalifolia* (Anyar), *Myrica esculenta* (Kafal), *Q. floribunda* (Moru), *Alnus nepalensis* (Utis) and *Sinarundinaria falcata* (Hill bamboo- Ringal). An enormous number of valuable medicinal and aromatic plants are confined to this region. The fruit production from the banj oak forested zone provides all of India with apples, pears, peaches and other temperate fruits. In the Western Himalaya, eight species of ungulates are present of which six species occur in this zone. They are the Himalayan tahr (*Hemitragus jemhalicus*), Serow (*Nemorhedus sumatraensis*), Himalayan goral (*Nomorhedus goral*), Sambar (*Cervus unicolor*), Barking deer (*Muntiacus muntjak*) and Wild pig (*Sus scrofa*). The presence of bharal or blue sheep (*Psuedois nayaur*) and Himalayan musk deer (*Moschus chrysogaster*) is not confirmed from banj oak zone. Other than the ungulates, primates *viz.,* Rhesus macaque (*Macaca mullata*) and Common langur (*Semnophithecus himalayanus*) are common in the region and are often seen feeding on acorns of banj oak. Himalayan black bear (*Selenarctos thibetanus*), Common leopard (*Panthera pardus*), Red fox (*Vulpes vulpes*) and Himalayan yellow throated marten (*Martes falvigula*) are fairly common in banj oak forests. Three pheasants *viz.,* Himalayan monal (*Lophophorus impejanus*), Kalij (*Lophura leucomelana*), Koklas (*Pucrasia macrolopa*) and two partridges Hill partridge (*Arborophila torqueola*) and


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Black partridge (*Francolinus francolinus*) are important birds to banj oak forests. Other than these, 203 species of birds have been recorded from banj oak forests of the Himalayan region.

As a retreat from the intense summer heat of the plains, the region has significant social value. Theses oak mountains also claim a special role in Hindu mythology and religious belief, as indicated by the profusion of temples and pilgrimage destinations. For all of these ecological, economic and socio-religious values, the oak forests of the Himalaya play a central role.

Causes of degradation of banj oak forests: The Himalayan people have been subsisting on the Himalayan natural resources for millennia, but in recent few decades with better access to global market, over population and increased demand of socio-economic development, local people's dependence on natural resources has increased immensely leading to rapid degradation. The major causes of banj oak forest degradation are as follows:

- Excessive and unmanaged lopping/logging and grazing in banj oak forests by the local inhabitants.
- Lack of other fodder species (especially >1800m asl) diversity in and around villages and near banj oak forests.
- Fragmentation of banj oak forests resulting from conversion into orchards formation and horticulture activities.
- Regular forest fire for raising grasses in banj-pine mixed area.
- Invasion by pine into the banj oak forests subsequently changing the ecology of oak forests is one of the major causes of forest degradation.

Simple mitigation measures to restore the banj oak forests: Human beings have always had a strong connection with oak forests. Throughout history, the oak has been a symbol of permanence, strength and courage. Simple mitigation measures can help to restore these magnificent forests in the Himalayan region.

- Sustainable utilization and plantation of important fodder tree species, which can act as buffer for oaks *e.g., Ficus roxburghii, F. clavata, F. nemoralis, Celtis australis* and *Grewia optiva* and shrubs such as *Sinarundinaria falcata, Debregeasia longifolia* in the fringes of agriculture and barren fields can help in the conservation of neighboring village forests (banj oak) and need to be promoted.
- Tussock forming native grasses *e.g.,* Khor and Naipier should be promoted at large scale by the local people and plantation of these species in barren and open pastures need to be undertaken.
- Wastelands in the village surroundings and river banks should be effectively used for raising valuable hill bamboo (ringal) and grass (khor) species, which will not only help in soil conservation but also fulfill the needs of the local people. These activities will help in reducing pressures on the adjacent forests and also enrich the resource base for the local people.
- Scattered and young seedlings / saplings of Chir-pine need to be removed from the dense banj oak forests and no banj trees below a diameter (at breast height) of 30 cm must be lopped.
- By and large, the local communities in the State of Uttarakhand are well aware of values of banj oak. Banj forests have degraded rapidly wherever the communities are not organized and Van Panchayats (VPs) lack management inputs. Uttarakhand Forest Department has recently allocated sufficient funds to strengthen VPs. Under this scheme the local communities need to be organized for conservation and management of forests including the degraded banj oak patches.
- Village and school level awareness programs for local communities should be organized by the forest department and NGO's working in the area every year and should involve resource persons, researchers and teachers for better conservation program at grass root level.

The future of the banj oak forests of the Himalaya – be it preservation or destruction – will probably be determined largely by the local inhabitants. For the long-term management and sustainability of the "Life line of the Himalaya" collective efforts by the ecologists, researchers, local communities and management authorities are needed before it is too late.

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"I ask people why they have deer heads on their walls. They always say because it's such a beautiful animal. There you go. I think my mother is attractive, but I have photographs of her."

— Ellen DeGeneres