



उत्तराखण्ड शासन

Quarterly Newsletter



## BRAHMAKAMAL

उत्तराखण्ड जैवविविधता बोर्ड  
UTTARAKHAND BIODIVERSITY BOARD

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*From the Editor's Desk*

The arrival of monsoon reminds me of the monsoon hitting the mountains of Uttarakhand setting the stage for one of the biggest human and ecological tragedies of India in June, 2013. The cloud burst over the sacred mountains brought about the death and destruction of unprecedented scale over the region which was revered by pilgrims and tourists. In the elemental fury of water erosion and falling of hills, the State of Uttarakhand became a graveyard of hundreds of human life. This incidence may be perceived as monumental reminder of the fact that how nature's rage compensates the callousness of human beings.



**Dhananjay Prasad**  
Deputy Director  
Uttarakhand Biodiversity Board

It was not co-incidental that on February 26, 2013, a division bench of Uttarakhand High Court at Nainital ordered the removal of structures built illegally within 200 meters of the Ganga embankment. In response to the Courts intervention order, nothing much was done by the Government. On June 16, 2013 (just three and half months later) the rivers of Ganga, Yamuna, Bhagirathi, Alaknanda and Mandakini cleansed their own banks sweeping away the constructions along its encroached banks and the job was accomplished furiously.

Some of the environmentalists claim that the catastrophe tragic loss of human lives was "no act of God" but "man made". Whatsoever may be the reason, the disaster that rocked the region may be perceived as an alarming bell in terms of nature hitting back for years of destruction by human beings.

The article "Biodiversity & Health" is the key feature of this edition in which effort has been made to highlight the degree of co-relation between the two.

**"Biodiversity Conservation.... An art of living with nature."**

## Colours of Monsoon



## Biodiversity & Health

**Dhananjay Prasad**  
Deputy Director



*"Nature has been making biologically active compounds and conducting its own 'clinical trials' on them since the existence of life on earth."*



Health means many things to many people. Often it means an absence of illness, but according to WHO, health does not just mean freedom from illness, but a state of complete physical, mental and social well being. As a matter of fact, health comes from a settled state of mind, largely promoted through a pleasant living environment. Health of human beings at large depends on "Healthy Biosphere" in which ecosystems function effectively producing a range of services that support people. Although there is growing scientific evidence of the connections between biodiversity and human health, these linkages are not well known and widely acknowledged. Not only that, the relationship that exists between human beings and the rest of the biosphere has been handled poorly.

People depend on biodiversity every day in ways that are not understood clearly. As a matter of fact, biodiversity interacting with non-living parts of the environment forms functional ecosystem which provide services and benefits to people. Often people anticipate good health until they fall ill - without knowing why. In fact, human health depends upon ecosystem services (e.g. production, purification and protection of fresh water, soaking up of Carbon dioxide and producing Oxygen, food items and fuel) that are requisites for good human health and sustainable livelihood. Biodiversity change can have significant direct human health impacts if ecosystem services become inadequate to meet human needs.

Former Director-General of WHO in his foreword to the Millennium Assessment Synthesis Report on Health (2005) expressed the linkage between the health and biodiversity in following words:

*"Nature's goods and services are the ultimate foundations of life and health, even though in modern societies this fundamental dependency may be indirect, displaced in space and time, and therefore poorly recognized. Health risks are also a result of broader pressure on ecosystems, from depletion and degradation of freshwater resources to the impacts of global climatic change on natural disasters and agricultural production. The potential for unpleasant surprises, such as emergence and spread of new infectious diseases is now much greater"*

There are growing scientific evidence of the connections between biodiversity loss, ecosystem degradation and poor quality human health, as well as the health benefits that we can derive from biodiversity. The links are complex and our understanding is far from complete, however current findings indicate that biodiversity loss and ecosystem disturbances may have significant consequences for human health in both developing and developed countries. The link between the ecosystem and human health is becoming more widely acknowledged, but indicators to measure these links remain difficult to quantify. Yet it has now been realized that healthy people could not thrive unless they were in a healthy environment, a functioning biosphere supported by biodiversity.

The impact of biological diversity on human health has not yet become a part of our discussion because most of us do not understand the full magnitude and implication of its loss. As a result, we have not been able to develop a sense of urgency about addressing it. Although biodiversity provides us with a number of "Ecosystem services" which includes **Provisioning services** (food/fuel/medicines); **Regulating services** (purifying air & water/mitigating floods/detoxifying soils); **Cultural services** (that meet our aesthetic, spiritual, and intellectual needs) and **Supporting services** (which make possible all other ecosystem services like pollination/nutrient cycling/photosynthetic capture of the sun's energy), but we don't correlate these services with our health care.

**"Biodiversity Conservation - An art of living with nature"**

Nature has been providing us medicines to treat our diseases and relieve us of our sufferings since ages. Despite great advancement in modern medicine, most of the prescribed medicines used today are still derived from or patterned after natural compounds extracted from plants, animals and microbes. Like human beings, all other organisms also need to protect themselves against infections and diseases. Nature has been making biologically active compounds and conducting its own “clinical trials” on these compounds since the existence of life on earth. Because of the remarkable similarity of living things at the genetic and molecular level, several plants/animals/microbes have natural medicinal properties that are also effective against human diseases. There are several examples to demonstrate as to how human beings are an integral part of the natural world and that our health depends on the health of other species and proper functioning of its ecosystems.

The New York Times, in one of its article titled “Man-made Epidemics” (published 15 July, 2012) reported the outbreak of Hanta virus in several parts of the world, Ebola hemorrhagic fever virus in Africa and West Nile virus in Texas being linked with biodiversity in direct/indirect ways.



Deforestation can affect the emergence and spread of human infectious diseases in other ways as well. Loss of forest means loss of habitat and food for some species that serve as reservoirs for human diseases. The original outbreak of Nipah virus infections in Malaysia provides an example. Fruit bats such as the Malayan Flying Fox, driven from the forest by deforestation, were drawn to Mango trees at the edges of pig farms. There they transmitted Niph virus present in their saliva and their excrement to the pigs, which in turn, infected 257 people, killing 105 of them. The large size of new pig farms in Malaysia may have contributed to the outbreak of Niph virus infections in people.

Many avenues of research could be used to illustrate the contributions that various animals/plants/microbes have made to our knowledge about how our bodies function in health and disease. One research area that has paved the way for our understanding of many diseases and for developing treatments for them is that of genetics. Medical research has always relied on other species to understand human physiology and treat human disease. The use of animals in medical research has made possible innumerable medical advances including anesthetics for surgical procedures, insulin for diabetes; heart and lung bypass machines for open heart surgery, vaccines for meningitis and polio and countless other vaccines. In fact, all human /veterinary medicines must be tested in laboratory on animals for its toxicity, dosing and efficacy before use.

When we become ill from an infection, we tend to believe that we caught it from another person, who in turn caught it from someone else. But this belief is often not true as about 60% of the human infectious diseases are caused by a **pathogen**. Pathogens present in other



'Vector' - Mosquito  
Photo source: google

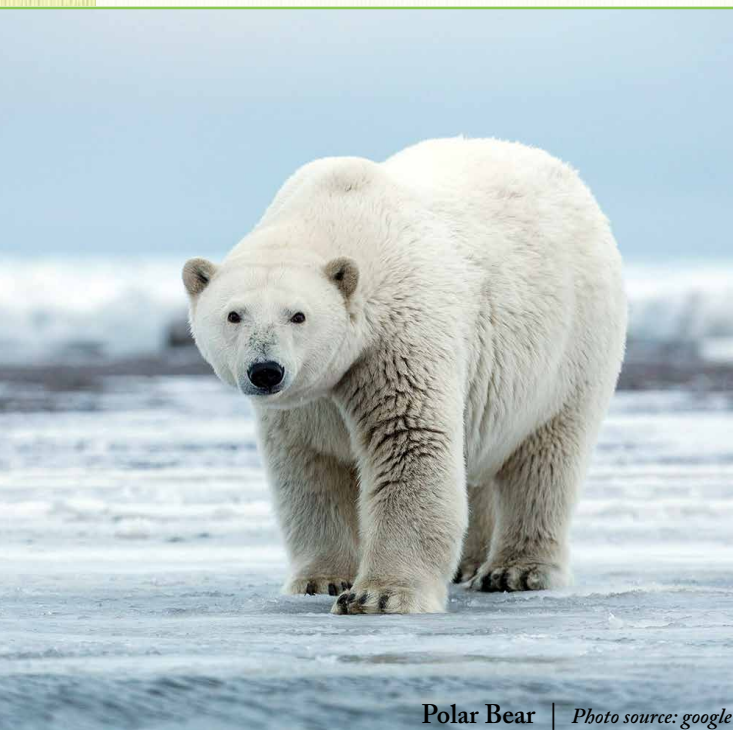


Photo source: google



organisms enter our bodies in a variety of ways. One of the most common ways is when ‘**vectors**’ like mosquitoes or ticks, transmit pathogens by injecting them into us. Other organisms called ‘**hosts**’, where pathogens multiply and are available for transmission, are involved in these vector-borne diseases. All these organisms including the pathogens depend for their survival on the healthy functioning of the ecosystems. As a result, ecosystem disruption and the loss of biodiversity have major impacts on the emergence, transmission and spread of many infectious diseases. As some species are more competent vectors of transmitting infections than others, similarly some species are better hosts than others. For many diseases, only a few species are competent hosts. Greater animal diversity in a particular area is generally associated with a greater proportion of incompetent hosts available for vectors to bite. In such a situation, pathogens are “diluted” in hosts which disable them to pass on to new vectors, thereby interrupting the infection cycle and reducing the chance of human infection. The “**dilution effect**” was first discovered in the cases of Lyme disease in USA/ Europe, wherein, a common vector-borne disease spread by Ticks caused serious heart, joint, and central nervous system ailments. *Later, it was established that people are at greater risk for getting Lyme disease in or at the edge of fragmented forests and other degraded habitats, which favour mice (highly competent hosts for Lyme). In contrast, intact forests having greater vertebrate diversity have more incompetent hosts, could sustain fewer infected ticks resulting into less disease risk.*

Let us also not forget that significant medical and pharmaceutical discoveries have been made through the understanding of the earth’s biodiversity over millennia. Biodiversity change, especially loss at species level, will inevitably limit discovery of potential treatments for many health problems. Following the millennium ecosystem assessment, the concept of ecosystem services has become widely accepted in policy discussions on biodiversity.



Polar Bear | Photo source: google

#### THE MYSTERY OF HIBERNATION

Polar Bear (*Ursus maritimus*) a threatened mammal, unlike other mammals does not lose bone mass despite periods of 7 months or more of hibernation/immobility. Humans lose more than 1/3 of their bone mass when immobile for that long. If we knew how the bears accomplished this, we could perhaps synthesize new, more effective medicines to treat osteoporosis, a disease that cause 7.5 lakh deaths each year worldwide.

Polar Bears don’t urinate during several months of hibernation and yet don’t become ill. If we do not get rid of urinary wastes from our bodies for several days, we cannot survive. If we understood how hibernating bears did this, we might be able to develop better treatments for kidney failure. Additionally, Polar Bears become massively obese prior to entering their dens and yet do not develop Type II diabetes, unlike humans.

Polar Bears hold the key to figuring out the treatment and prevention of osteoporosis, kidney failure, and obesity-related Type II diabetes - three human diseases that kill millions each year and cause enormous human suffering, a knowledge that may be lost if we lose the polar bears.

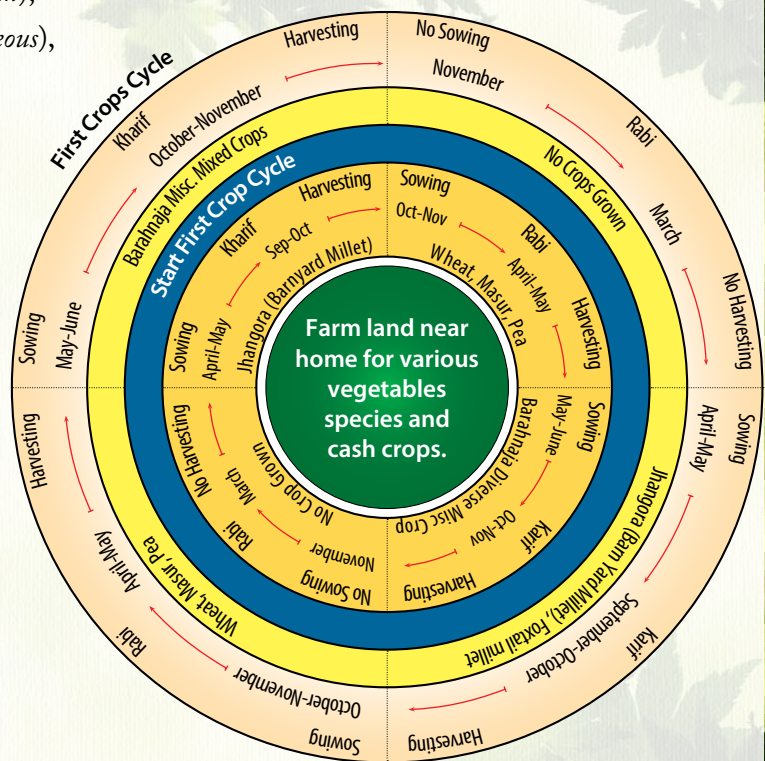
People perceive the loss of biodiversity/ecosystems as intangible & abstract events and hardly understand what ‘impoverishment of nature’ has to do with their daily lives. The challenge before us is to convince the policy-makers and the public at large that our lives are not only connected to every animal/plant/microbe present on this planet but we are also dependent on them for the goods and services they provide. We have to appreciate the fact that damaging biodiversity means creating hardships for ourselves as our lives and health depend on the richness of biodiversity and we have no choice but to preserve them millions each year and cause enormous human suffering, a knowledge that may be lost if we lose the polar bears.

## In Focus : Traditional Agro-Farming in Uttarakhand

'Barahnaja' is a traditional agricultural practice indigenous to the Garhwal region of the State of Uttarakhand. The term 'Barahnaja' translates to '12 Grains', however, the actual practice involves over 20 crops including grains, pulses, vegetables and spices. This practice involves the sowing of a mixture of crops into a single plot of land. The members of the 'Barahnaja' family include the following species:-

1. Rajma (Kidney beans, *Phaseolus vulgaris*),
2. Urad (Black gram, *Vigna mungo*),
3. Mung (Green gram, *Vigna radiata*),
4. Kulath or Gahat (Horse gram, *Marcotyloma uniflorum*),
5. Marsa/Ramdana (Amaranth, *Amaranthus frumentaceus*),
6. Mandua (Finger millet, *Eleusine coracana*),
7. Jhangora (Barnyard millet, *Echinochloa frumentacea*),
8. Bhatt (Soyabean, *Glycine soja*),
9. Sunta/Lobia (Cow pea, *Vigna unguiculata*),
10. Ogal/Kuttu (Buck Wheat, *Fagopyrum esculentum*)
11. Jowar/Jonyala (Sorghum, *Sorghum vulgare*)
12. Makka (Maize, *Zea mays*)
13. Raiyas/Naurangi (Rice bean, *Vigna umbellata*)
14. Ragadvans (Adzuki bean, *Vigna angularis*)
15. Gurunsh (Adzuki bean, *Vigna angularis*)
16. Tor (Pigeon pea, *Cajanus cajan*)
17. Bhangjir (Perilla, *Perilla frutescens*)
18. Til (Sesame, *Sesamum indicum*)
19. Jakhya (Tickweed, *Cleome viscosa*)
20. Bhang (Hemp, *Cannabis sativa*)
21. Sanwa (Barnyard millet, *Echinochloa spp.*)
22. Kakhari/Khira (Cucumber, *Cucumis sativus*)

BARAHNAJA - CROP CYCLE



(Source: Dr. Vijay Jardhari)

A mix of these crops are sown under the Kharif Crop Cycle across various regions in the State of Uttarakhand. Traditional agriculture has always played a crucial role in the livelihoods of the farmers of our Himalayan State. Increasing demand for agricultural produce has catalyzed the implementation of modern agricultural practices, with the use of high yielding species, chemical fertilizers (Urea, DAP) and pesticides, increasingly replacing traditional agricultural practices. However, farmers of Uttarakhand still recognize the importance of the traditional organic way of farming, and are becoming more and more aware of the risks of chemical use. As such, the relevance of 'Barahnaja' is now more than ever.

The farming communities in Uttarakhand are rich in traditional knowledge and techniques pertaining to agriculture. The practice of 'Barahnaja' which has been perfected over generations also makes a lot of sense. Unlike mono-cropping, which provides the farmer income once a year, the traditional mixed cropping holds a significant advantage. Since the maturity periods of these crops vary, different crops are harvested at different times, it helps in retaining soil moisture. Also, such practices do not suffer from the risk of crop failure due to natural calamities, as is the case with mono-cropping. The farming method plays an important role in preserving the various varieties of seeds indigenous to the region. The use of indigenous methods of maintaining soil fertility through increased soil faunal diversity (earthworms, etc.) along with the use of neem as a natural pesticide is both economically viable as well as environment friendly.

## PBR & BCP of Bastiya



As a component of the UNDP-GEF Project on 'Mainstreaming conservation of Medicinal Plants' 07 Medicinal Plant Conservation areas were established in Uttarakhand - namely - Kandara (Uttarkashi), Gangi (Tehri Garhwal), Mandal (Chamoli), Mohan (Almora), Jhuni (Bageshwar) and Khaliya (Pithoragarh). Uttarakhand Biodiversity Board engaged the services of 06 NGOs to assist in the formation of Biodiversity Management Committees (BMCs) in the Gram Panchayats involved in the management of the 07 MPCAs and in the preparation of People's Biodiversity Register (PBR) & Biocultural Community Protocols (BCPs) in the 07 Areas. The completed PBRs and BCPs have been submitted to the Uttarakhand Biodiversity Board.

The preparation of **People's Biodiversity Register (PBR)** for the Bastiya Gram Panchayat was carried out by the Biodiversity Management Committee (BMC) of village Bastiya, Tanakpur, district Champawat constituted under the provisions of the Biological Diversity Act, 2002 and Biological Diversity Rules, 2004. The process was facilitated by Uttarakhand Biodiversity Board with the collaboration of SMPB, Uttarakhand under UNDP-GEF-MoEF Govt. of India Project "*mainstreaming conservation, sustainable use and cultivation of Medicinal Plants in Policies and Practice of Forestry Sector in Three Indian States*". Necessary technical assistance to the Biodiversity Management Committee (BMC) was extended by the Institute of Himalayan Environmental Research and Education (INHERE), Masi, district Almora, Uttarakhand – a non-governmental organization working as a Technical Support Group.

The Gram Panchayat Bastiya is situated at an altitude of 1563 feet from sea level at 29°07.395' N and 80°05.103' E. The area experiences the climate similar to that of tropical and temperate zone. As many as 119 families with a total population of 696 reside in this Gram Panchayat. The total area of the village is 33.6086 ha.

Several globally significant Medicinal Plant species of higher Himalayas are available in the surrounding forest areas of Bastiya Gram Panchayat. Due to this reason, a part of the area of Bastiya has also been declared as '*Medicinal Plant Conservation Area*' (MPCA) by the Govt. of Uttarakhand.

A number of meetings were organized by the Biodiversity Management Committee seeking the involvement of local people in the documentation of biological resources in the area. With active technical assistance from the INHERE team, along with the expertise of local knowledge holders and the State Level Expert Committees, information on a large number of bio-resources pertaining to agriculture, domestic, wild and urban biodiversity and associated traditional knowledge were documented, through transit walks, observation, interviews, and focus group discussions. All information was compiled in formats prescribed by the National Biodiversity Authority.

In addition to the People's Biodiversity Register (PBR), a Bio-cultural Community Protocol (BCP) has also been prepared by the Biodiversity Management Committee (BMC) of Bastiya, highlighting the unique and traditional aspects of the community and defining the terms of Access and Benefit Sharing agreements with the people of Bastiya in the future.

The Peoples' Biodiversity Register (PBR) thus prepared has been approved by the Biodiversity Management Committee (BMC) of Bastiya Gram Panchayat under the condition that it will be updated regularly.

## Biodiversity in Hinduism

Hindu philosophy has always had a humane and dignified view of the sacredness of all life, and that humans are but one link in the symbiotic chain of life and consciousness. Throughout the long history, Hindus have shared a fascination with and respect for, nature and animals and has rightly been called up as an "Environmental friendly Religion". No religion, perhaps, lays as much emphasis on environmental ethics as does Hinduism.

**The Vedas, Upanishads, Puranas & Smriti, Mahabharata, Ramayana, Bhagavad Gita** contains the earliest messages to live in harmony with nature preserving environment and forbidding man from exploiting nature. It teaches to recognize the divine prevailing in all elements including plants and animals. Evergreen trees have been regarded as symbols of eternal life and to cut them down was to invite the wrath of the Gods. Groves in forests are looked upon as habitations of the Gods. Animals have been revered too. **Kamadhenu** was the wish-fulfilling cow, whose offspring's are all the cattle on earth. But the greatest honour given to animals is their elevation as the vehicles of the Gods, like Lord Shiva rode the bull, Vishnu the eagle, Brahma the swan, and so on.

**'Mata Bhumi Putroham Prithivyah'** is the Vedic hymn to the Earth in Atharva Veda, which means 'Earth is my mother, I am her son.' Mother Earth is celebrated for all her natural bounties and particularly for her gifts of herbs and vegetation. Her blessings are sought for prosperity in all endeavors' and fulfillment of all righteous aspirations. "Mahabhutas" i.e. the five great elements namely **space, air, fire, water, and earth** - are the foundation of an interconnected web of life. Hinduism recognizes that the human body is composed of and related to these five elements, and connects each of the elements to one of the five senses. The human nose is related to earth, tongue to water, eyes to fire, skin to air, and ears to space. This bond between our senses and the elements is the foundation of our human relationship with the natural world. **Ayurveda**, the science of life, which is a complete health and medicine system, is based on nature and its regenerating forces. In **Charak Sanhita**, destruction of forests is taken as destruction of the state, and reforestation an act of rebuilding the state and advancing its welfare. As per **Varah Purana**, one who plants one Peepal, one Neem, one Bargad, ten flowering plants or creepers, two Pomegranates, two Oranges and five Mangoes, does not go to hell.

The Rig Veda is a celebration of nature, and its hero is the 'God of Rain'. Nature has been beautifully described in Rig Veda as:

*"Nature's beauty is an art of God.*

*Let us feel the touch of God's invisible hands in everything beautiful.*

*By the first touch of His hand rivers throb and ripple.*

*When He smiles the sun shines, the moon glimmers,*

*The stars twinkle, the flowers bloom.*

*By the first rays of the rising sun, the universe is stirred;*

*The shining gold is sprinkled on the smiling buds of rose;*

*The fragrant air is filled with sweet melodies of singing birds,*

*The dawn is the dream of God's creative fancy."* (Rig Veda 1.6.3)

In our arrogance & ignorance, we have destroyed the environment, polluted the oceans, made the air un-breathable and decimated wildlife. But the seers constantly exhort us that, while we work for own salvation, we must also work for the welfare of all beings.



Photo source: google

*"I bow my head in  
reverence to our  
ancestors for their sense  
of the beautiful in nature  
and for their foresight  
in investing beautiful  
manifestations of with a  
religious significance."*

*Mahatma Gandhi*



Photo source: google

## Colours of Monsoon



*"Rain is grace, rain is the sky descending to the earth; without rain, there would be no life" - (John Updike)*

Every year in the period of July to September, most of India is drenched by rain, which comes from moist air masses that move in from the Indian Ocean. These rains and the air masses that bring them, are known as monsoons. However, the term monsoon refers not only to the summer rains but to the entire cycle that consists of both summer moist onshore winds and rain from the south as well as the offshore dry winter winds that blow from the continent to the Indian Ocean.

There is no seasonal phenomenon more awaited in India than the monsoon rains. As almost half of the world's population lives in areas affected by the monsoons of Asia and most of these people are subsistence farmers, dependent on timely rainfall to ensure a good crop yield, yet simply the respite from the incessant heat that it provides is enough to make eyes look up at the sky, praying for a sign of the dark clouds.

*"In mountain after mountain, as you're faced  
With flowered Kakubha and the gladdening sight  
Of peacocks screeching and their watching eyes:  
I call this favour from you: Cloud, despite  
Such joyful welcoming, pass on in haste."*

**Meghduta by Kalidasa** (Transl. Colin John Holcombe)

In perhaps one of his greatest literary works in Sanskrit, poet Kalidasa describes how a Yaksha exiled from his home in Mount Kailasa in the Himalayas by King Kubera, convinces a cloud to deliver a message to his wife by describing the beautiful sights the cloud will see in its journey to the mountains. It is the beauty of nature that the poet alludes to, something that we all experience as the rains somehow seems to paint entire landscapes in green.

Monsoon is the season of water, giving withered and thirsty flora and fauna a chance to flourish again. It is a season of creation of life in all forms, a season of celebration and of satiation.

Monsoons are responsible for over 90% of India's water supply. Too much rain brings floods, landslides, shuts down infrastructure in cities and creates an environment for epidemics. Too little rain causes drought and famine as crops wither and water bodies dry out. Owing to the observable change in climate, extreme events such as the recent intense rains leading to floods and devastation in the Himalayan valley are going to become more prevalent. In a nation with so many lives revolving around rainfall, it is imperative to have a better understanding of monsoons and try and adapt to its changing pattern.

## Biodiversity News

### Is the world approaching a sixth mass extinction event? Scientists confirm signs!

Going by the rate at which the world is losing out its biodiversity and the ecosystem, scientists are worried and they say that a mass extinction isn't very far.

A new study published last week in Science magazine confirms that in the world's oceans, threats of extinction are not apportioned equally among all species - rather, the larger ones, in terms of body size and mass, are uniquely imperilled e.g. sharks to whales, giant clams, sea turtles, tuna etc. These losses in the ocean are paralleling what humans did to land animals some 50,000 to 10,000 years ago, when around half of the big-bodied mammal species on Earth, like mammoths, mastodons, saber-tooth cats and the like were wiped out.

The underlying problem for the researchers, however, is the fear that if all the top predators of the food cycle are wiped out, it can cause a population explosion among the species they used to prey upon, which can have large devastating effects on the entire ecosystem. The current study underscores that ecosystem risks are not being principally driven by a changing climate yet. But as climate change worsens, it will compound what is already happening.

The research is heartening for those who care about ocean conservation, precisely because human-driven large animal extinctions in the sea are not as advanced as they are on land, there is still a huge amount of biological life that we can save.

### Polythene ban from 2<sup>nd</sup> October

The Union Ministry of tourism has decided to ban polythene bags from monuments protected by the Archaeological Survey of India (ASI) from October 2<sup>nd</sup> 2016. Visitors will not be allowed to carry food packaged in plastic wrappers inside the monuments. They will be permitted to carry water bottles only. Vendors selling eatables will also not be allowed to enter within a 100 m radius of the ASI protected monuments like Red Fort, Khajuraho, Tajmahal etc. No penal provision has been made initially for two months but such decision may be taken later.



Photo source: google

### 292 Districts of India use 85% of fertilisers

The Standing Committee on Agriculture in its 29<sup>th</sup> report has submitted that about 292 districts of India, which is 42 percent of the total districts of the country, consume 85 percent of the fertilizers used across the country. In the report, it has been highlighted that increased use of fertilizers has led to the loss of soil fertility. The report also highlights discrepancies in the use of fertilizers on the basis of chemical ratios. The current consumption ratio of Nitrogen, Phosphorus and Potassium (NPK) is 6.7:2.4:1.0 where as the desirable ratio is 4:2:1. The committee has recommended the formation of a Pesticide Development Authority to ensure balanced use of fertilizers



### Uttarakhand pulled up by NGT over inaction in Rajaji National Park

National Green Tribunal has pulled up the State government of Uttarakhand for not submitting crisis management plan for prevention of forest fires in Rajaji National Park. This National park, which is also a tiger reserve, is well known for Asiatic elephants. Issuing show cause notices to the answering respondents, the court remarked - "we are shocked that everybody is taking the issue so casually".



Photo source: google

## Biodiversity News

### Year 2015 Warmest Year on Earth: Says WMO

Global Warming along with El-Nino has made year 2015 as the warmest year since 1850 – says World Meteorological Organisation (WMO). It has further added that the period 2011 – 2015 has been the world's warmest period having extreme weather events making it worse. Preliminary estimate based on data from January to October 2015 shows that the global average surface temperature for 2015 was 0.73 degree centigrade above the 1961–1990 average of 14 degree centigrade. The year 2015 is continuing the trend of rising temperature worldwide since 1998. Before this, year 2014 was the world's warmest year on record with temperature at 0.61 degree centigrade above the 1961–90 average. WMO Secretary General calls it a bad news for the planet.

### New Frog species discovered in Western Ghats

A team of scientists during field visit discovered unknown tree frog in hill forests of Western Ghats, Kerala. The frog belongs to *Rhacophoridae* family and has been named *Ghatixalus magnus* after its large size, making it the biggest known tree frog in Western Ghats. In the latest issue of international taxonomy journal, *Zootaxa*, the scientists described it as the largest known rhacophorid species in peninsular India.

### Rare Plant Species found in Kerala

The scientists at the centre for Medicinal Plants Research, Kottakal in Kerala discovered a rare plant species named *Chlorophytum palghatense* at the Dhoni hills in Palakkad district of Kerala. This new species found in the grasslands of the Palamala hills is a perennial herb endemic to the grassland ecosystem at a height above 6000 ft. The plant flowers and fruits between September to November. This plant shows affinity with *C. Sharmae* that is widespread in Munnar but shows many morphological differences.

### Inching toward extinction: Only 5000 of the world's largest gorillas left on Earth!

The existence of rich biodiversity is etched in the functioning of the universe and is key to the survival of human beings on earth. However, due to selfish motive of mankind, animals are fast reaching the rungs of extinction and the latest species to fall victim to this are the world's largest gorillas.

Officials at the International Union for Conservation of Nature's global conference in Honolulu confirmed that the majestic species of Eastern Gorillas (*Gorilla beringei*) now faces the risk of disappearing completely, with just 5,000 left on Earth. As per IUCN updated Red List (the world's most comprehensive inventory of plant and animal species), four out of six of the Earth's great apes are now critically endangered, "only one step away from going extinct," which includes the Eastern Gorilla, Western Gorilla, Bornean Orangutan and Sumatran Orangutan.

As per IUCN Director General – "War, hunting and loss of land to refugees in the past 20 years have led to a devastating population decline of more than 70 percent". One of the two subspecies of Eastern gorilla, known as Grauer's gorilla (*G. b. graueri*), has drastically declined since 1994 when there were 16,900 individuals, to just 3,800 in 2015.



Photo source: google



Photo source: google



Photo source: google

## *Legal Information: Access & Benefit Sharing by Indian Entities*

1. Access and Benefit Sharing (ABS) is one of the three objectives of Convention on Biological Diversity (CBD) as well as Biological Diversity Act, 2002. Under Sec 7 of the Biological Diversity Act (B.D. Act), it has been provided that no Indian entity shall obtain any biological resource for commercial utilization or bio-survey and bio-utilization for commercial utilization except after giving **prior intimation** to the concerned State Biodiversity Board.
2. Furthermore, under sec 24 of B.D. Act, it has further been provided that on receipt of the information in prescribed form, the State Biodiversity Board, in consultation with the local body concerned and after making such **enquires** as may deemed fit, by order, **prohibit or restrict** any such activity, if it is of opinion that such activity is detrimental or contrary to the objectives of conservation and sustainable use of biodiversity or equitable sharing of benefits.
3. ABS is a process by which the user agencies (Indian entity) utilize biological resource for commercial purpose by means of taking **prior informed consent** (PIC) from the concerned State Biodiversity Board/local bodies and share the benefits as per the provisions of ABS Guidelines (issued by National Biodiversity Authority) by signing mutually agreed terms (MAT).
4. Compliance of ABS is mandatory for all the commercial users of biological resource without any exception (traders as well as manufacturers) which is complied by the process of PIC and MAT. Some of the important definitions as well as provisions of B.D. Act which are as under:
  - i. **“Biological Resources”** means plants, animals and micro-organism or parts thereof, their genetic material and by-products (excluding value added products) with actual or potential use or value, but does not include human genetic material. **[Sec 2(c) of the act]**
  - ii. **“Value added products”** means products which may contain portion or extracts of plants and animals in unrecognizable and physically inseparable form. Any product for qualifying as value added product must satisfy two conditions – (i) It is unrecognizable and (ii) physically inseparable. **[Sec 2(p) of the act].**
  - iii. **“Commercial utilization”** means end uses of biological resources for commercial utilization such as drugs, industrial enzymes, food flavours, fragrance, cosmetics, emulsifiers, oleoresins, colours, extracts and genes used for improving crops and livestock through genetic intervention (excluding conventional breeding or traditional practises). **[Sec 2 (f) of the act]**
5. **Standard Operating Procedure (SoP) for compliance of ABS**
  - i. Indian entities intending to obtain any “biological resource” for commercial utilization or bio-survey and bio-utilization for commercial utilization must give prior intimation to the concerned State Biodiversity Board in prescribed form (Form-I and Form-A) along with the prescribed fee in favour of Member-Secretary, Uttarakhand Biodiversity Board, Dehradun. **[Sec 7 & 24 of the act]**
  - ii. On receipt of an intimation, the State Biodiversity Board may, in consultation with the local bodies concerned and after making such enquires as it may deem fit, by order, prohibit or restrict any such activity if it is of opinion that such activity is detrimental or contrary to the objectives of conservation and sustainable use of biodiversity or equitable sharing of benefits arising out of such activity. **[Sec 24 of the act].**
  - iii. No order of restriction/prohibition shall be passed without giving reasonable opportunity of being heard to the affected person. **[Sec 24 of the act]**
  - iv. The access and benefit sharing (ABS) amount is calculated on the basis of the regulations/guidelines notified by National Biodiversity Authority/Govt. of India on 21.11.2014 named as **“Guidelines on Access to Biological Resources and Associated knowledge and Benefit Sharing Regulations, 2014”**.
  - v. After the calculation of ABS as per the regulation/guidelines, the commercial users of “biological resource” are communicated regarding the payment of ABS to be made and invited for ABS negotiation. Every effort is made to address and resolve the objections raised by the commercial users (traders/manufacturers) as per the existing

provisions of act/rules and regulations/guidelines.

- vi. The calculated ABS amount to be paid by the commercial users (calculated on the basis of guidelines) is communicated and the objections are invited. After removal of objections, payment of ABS is made by the user agency as per mutually agreed terms.
  - vii. An agreement of ABS (prescribed format) is signed between the authorized representative of commercial user and the State Biodiversity Board making payment of calculated ABS amount simultaneously. This duly signed agreement is deemed to be the approval for access to biological resource and a valid document/certificate of ABS compliance.
  - viii. The above procedure is followed every year starting from the financial year 2014-15 onwards.
6. In the Guidelines for the regulation of ABS, traders as well as manufacturers of biological resource have also been covered as commercial users. Broadly, most of the industrial units use one or more bio-resource from traders for the purpose of manufacture of finished goods. The biological resource whether procured directly from the source of origin or indirectly purchased from the traders, fall within the purview of the act. Therefore, traders, organizations, departments, undertakings, Industrial units, individuals etc. involved in the commercial utilization of bio-resource or bio-survey and bio-utilization for commercial purposes must comply with the following:
- i. Should furnish prior intimation in prescribed (Form-1 & Form-A) to the concerned State Biodiversity Board.
  - ii. They must comply with the obligation of sharing of benefits (ABS) by signing an agreement with the concerned Board in-lieu of commercial utilization of "Biological Resources".

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## About the Board

Uttarakhand Biodiversity Board is an autonomous statutory body, constituted by the Government of Uttarakhand as provided under Sec 22(1) of the Biological Diversity Act, 2002. The functions of the State Biodiversity Board as provided under section 23 of the Biological Diversity Act, 2002 are:

1. Advise the State Government, subject to any guidelines issued by the Central Government, on matters relating to the conservation of biodiversity, sustainable use of its components and equitable sharing of the benefit arising out of the utilization of biological resources.
2. Regulate by granting of approvals or otherwise request for commercial utilization or bio-survey and bio-utilization of any biological resource by Indians.
3. Perform such other function as may be necessary to carry out the provisions of this act or as may be prescribed by the State Government.

## APPEAL

*Readers are invited to contribute articles related to the conservation of biodiversity, best practices for its sustainable use and anything related to save our planet "Earth". Please make your contribution for such a noble cause.*



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**"Biodiversity Conservation - An art of living with nature"**