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Role of Panchayat in “Biodiversity Conservation”



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SOME FACTS!!

What factors are responsible for this rapid loss of biodiversity? What would need to be done to significantly slow this trend?

- *BIODIVERSITY contributes to many aspects of human well-being, for instance by providing raw materials and contributing to health.*
- *Human actions, however, often lead to irreversible losses in terms of diversity of life on Earth and these losses have been more rapid in the past 50 years than ever before in human history.*
- *India has a rich and varied heritage of biodiversity, encompassing a wide spectrum of habitats from tropical rainforests to alpine vegetation and from temperate forests to coastal wetlands.*
- *India contributes significantly to latitudinal biodiversity trend. With a mere 2.4% of the world's area, India accounts for 7.31% of the global faunal total with a faunal species count of 89,451 species.*
- *India has two major realms called the Palaearctic and the Indo-Malayan, and three biomass, namely the tropical humid forests, the tropical dry/deciduous forests, and the warm desert/semi-deserts.*
- *India has ten bio-geographic regions including the Trans-Himalayan, the Himalayan, the Indian desert, the semi-arid zone(s), the Western Ghats, the Deccan Peninsula, the Gangetic Plain, North-East India, and the islands and coasts.*

Articles are invited on the topic of **“Role of Panchayat in Biotechnology”** for the next issue of this Newsletter **“PANCHAYAT”**

Editorial

Biological diversity is essential in supporting human life, and is central to the relationship between man and nature. An appreciation of the importance of biodiversity world-wide is crucial; the well-being and prosperity of human society, along with the earth's ecological balance, directly depend on the extent and status of biological diversity. Throughout the world, the vital role of biodiversity, and the need for its protection, has now been recognized.

We are learning more every day about the answers to this question, which has moved closer to the forefront of our collective psyche as new environmental challenges emerge. Biodiversity is the incredible, dizzying variety of life that surrounds us, including all of the earth's plants, animals, their habitats, and the natural processes that they are a part of. It has become clear that biodiversity is the cornerstone of our existence on Earth. It is also important to conserve biodiversity for the sake of our own curiosity and aesthetic appreciation.

In parallel with human development and economic expansion has come a greater reliance on products and resources originating from the world's biodiversity. However, this increase in the extent and range of use of biodiversity has generally not taken into account natural regeneration rates of biodiversity, and thus over-use has resulted in the degradation of natural systems and loss of components of biodiversity. Over the last century this process has been accelerated due to rapid industrial and agricultural development, resulting in greater use of natural ecosystems including forests and grasslands.

As in other countries of the world, the situation regarding biodiversity degradation and loss are critical in parts of Armenia. Thus, issues relating to biodiversity and sustainable use are recognized as being of crucial importance as we enter the new century. Biodiversity is the life support system of our planet- we depend on it for the air we breathe, the food we eat, and the water we drink. Wetlands filter pollutants from water, trees and plants reduce global warming by absorbing carbon, and bacteria and fungi break down organic material and fertilize the soil. It has been empirically shown that native species richness is linked to the health of ecosystems, as is the quality of life for humans.

The connections between biodiversity and our sustainable future appear closer and closer the more we look. We literally need to conserve biodiversity like our lives depend on it!

The basic intent of this paper is to urge us citizens of all nations, private conservation organizations, conservation agencies of state and national governments, to put conservation of biodiversity on the radar screen for immediate attention. I hope that this document "PANCHAYAT" would be read with interest by all concerned and will also be helpful to those working in the field of biodiversity conservation.

Dr. Desh Bandhu
President

WHAT IS BIODIVERSITY

Short for biological diversity, biodiversity includes all organisms, species, and populations; the genetic variation among these; and all their complex assemblages of communities and ecosystems. It also refers to the interrelatedness of genes, species, and ecosystems and their interactions with the environment. It is the totality of genes, species, and ecosystems of a region.

As we know that biology is the study of living organisms or living things. It is a combination of two words 'bios' which means life and 'logos' means happening. It deals with all aspects of life in which different types of species involved. As environmental science is a vast field which deals with all types of living things such as plants, animals or insects etc. There are different branches of environmental science one of them is biodiversity. The study of variation of different living organisms such as plants and animals in a specific area for the sake of food, living, and shelter is called as biodiversity.

Biodiversity has emerged as a scientific topic with a high degree of social prominence and consequently of political importance. To the extent that scientists wish to see programs to conserve biodiversity implemented, they must be aware of the political aspects of the problem and be prepared to make the compromises that are necessary when one enters into the political arena.

The variety of life on earth and its biological diversity is commonly referred to as biodiversity. the number of species of plants, animals and microorganisms, the enormous diversity of genes in these species; the different ecosystems on the planet such

as deserts, rainforests and coral reefs are all part of a biologically diverse earth.

The need to compromise with public opinion is well recognized by NGOs (non- governmental organizations) and other groups which practice environmental activism, and often the result is a political agenda that has only a tenuous connection with scientific reality. An example is the issue of avoiding unnecessary suffering to animals – although most scientists believe that clubbing animals to death is actually less painful than most other forms of slaughter, there is widespread public opposition to the clubbing of cute white harp seals but relatively little concern about how other types of seals, which are usually ugly and grey, and domestic cattle are killed.

Scientists are familiar with the pressure to treat experimental animals, such as pretty white experimental mice, in a humane fashion, and yet few voices are raised against the incredibly cruel methods used to exterminate rodents when they are seen as pests. Conservationists face similar issues – just as campaigns against cruelty to animals often deal more with the human appeal of the animal than with its actual suffering, so species loss is often seen more in terms of the attractiveness of the species to humans than any biological factors. This is a practical reality that we have to address, and if we hope to accomplish the kinds of conservation goals that many scientists support, we need to understand how to integrate these with the often irrational processes that go into the formulation of public policy.

Types of Biodiversity:

In biodiversity on the basis of variation and distribution, four types are evolved which deals with living species separately. The types of biodiversity vary from place to place. These types are as follows

Genetic Diversity:

It is a type of biodiversity which deals with the living organisms genetically i.e. variation in the genes of the species and the genetic makeup of species differ from each other to produce a new generation is categorized as genetic diversity.

Species Diversity:

The change happening in the variety of different types of living organisms present in different places in the same geographical area is referred as species diversity.

Ecological Diversity:

As we know that ecology is the study of different communities among their environment so, it is that branch of biodiversity which deals with variation in the ecological area or environment such as desert, forests, grassland, streams and coral reefs etc. is known as ecological diversity.

Functional Diversity:

Functional diversity is that type of biodiversity which is the study of different types of chemical processes of species for their survival on the land. These processes include such as energy flow and cycling of matter etc.

THREATS TO BIODIVERSITY

The loss of biodiversity is a significant issue for scientists and policy-makers and the topic is finding its way into living rooms and classrooms. Species are becoming extinct at the fastest rate known in geological history and most of these extinctions have been tied to human activity.

Habitat loss and destruction, usually as a direct result of human activity and population growth, is a major force in the loss of species, populations, and ecosystems.

Alterations in ecosystem composition, such as the loss or decline of a species, can lead to a loss of biodiversity. For example, efforts to eliminate coyotes in the canyons of southern California are linked to decreases in song bird populations in the area. As coyote populations were reduced, the populations of their prey, primarily raccoons, increased. Since raccoons eat bird

eggs, fewer coyotes led to more raccoons eating more eggs, resulting in fewer song birds.

The **introduction of exotic (non-native) species** can disrupt entire ecosystems and impact populations of native plants or animals. These invaders can adversely affect native species by eating them, infecting them, competing with them, or mating with them.

The **over-exploitation** (over-hunting, over-fishing, or over-collecting) of a species or population can lead to its demise.

Human-generated **pollution and contamination** can affect all levels of biodiversity.

Global climate change can alter environmental conditions. Species and populations may be lost if they are unable to adapt to new conditions or relocate.

IMPORTANCE OF BIODIVERSITY

The diversity of life enriches the quality of our lives in ways that are not easy to quantify. Biodiversity is intrinsically valuable and is important for our emotional, psychological, and spiritual well-being. Some consider that it is an important human responsibility to be stewards for the rest of the world's living organisms. Diversity breeds diversity. Having a diverse array of living organisms allows other organisms to take advantage of the resources provided. For example, trees provide habitat and nutrients for birds, insects, other plants and animals, fungi, and microbes.

Humans have always depended on the earth's biodiversity for food, shelter, and health. Biological resources that provide goods for human use include:

Food—species that are hunted, fished, and gathered, as well as those cultivated for agriculture, forestry, and aquaculture;

Shelter and warmth—timber and other forest products and fibers such as wool and cotton;

Medicines—both traditional medicines and those synthesized from biological resources and processes.

Biodiversity also supplies indirect services to humans which are often taken for granted. These include drinkable water, clean air, and fertile soils. The loss of populations, species, or groups of species from an ecosystem can upset its normal function and disrupt these ecological services. Recent declines in honeybee populations may result in a loss of pollination services for fruit crops and flowers.

Biodiversity provides medical models for research into solving human health problems. For example, researchers are looking at how seals, whales, and penguins use oxygen during deep-water dives for clues to treat people who suffer strokes, shock, and lung disease.

The earth's biodiversity contributes to the productivity of natural and agricultural systems. Insects, bats, birds, and other animals serve as pollinators. Parasites and predators can act as natural pest controls. Various organisms are responsible for recycling organic materials and maintaining the productivity of soil. Genetic diversity is also important in terms of evolution. The loss of individuals, populations, and species decreases the variety of genes—the material needed for species and populations to adapt to changing conditions or for new species to evolve.

Ecosystems support a rich diversity of species which interact with their surrounding environments to produce a number of benefits; these include:

- Air and water purification
- Provision of many of man's necessities such as shelter, food, fuel and building materials
- Stabilization of the Earth's climate
- Detoxification of waste products
- plant pollination
- Weather and environmental control through floods and fire
- Control of erosion; disease
- Source of many medicines
- Nutrient recycling

WHY IS BIODIVERSITY LOSS A CONCERN?

Biodiversity provides many key benefits to humans that go beyond the mere provision of raw materials. Biodiversity loss has negative effects on several aspects of human wellbeing, such as food security, vulnerability to natural disasters, energy security, and access to clean water and raw materials. It also affects human health, social relations, and freedom of choice. Society tends to have various competing goals, many of which depend on biodiversity. When humans modify an ecosystem to improve a service it provides, this generally also results in changes to other ecosystem services. For example, actions to increase food production can lead to reduced water availability for other uses. As a result of such trade-offs, many services have been degraded, for instance fisheries, water supply, and protection against natural hazards. In the long term, the value of services lost may greatly exceed the short-term economic benefits that are gained from transforming ecosystems.

Unlike goods bought and sold in markets, many ecosystem services are not traded in markets for readily observable prices. This means that the importance of biodiversity and natural processes in providing benefits to humans is ignored by financial markets. New methods are being used to assign monetary values to benefits such as recreation or clean drinking water. Degradation of ecosystem services could be significantly slowed down or reversed if the full economic value of these services were taken into account in decision-making

Over the last century, some people have benefited from the conversion of natural ecosystems and an increase in international trade, but other people have suffered from the consequences of biodiversity losses and from restricted access to resources they depend upon. Changes in ecosystems are harming many of the world's poorest people, who are the least able to adjust to these changes.

The interconnectedness of climate, biodiversity and human wellbeing

Biodiversity is important in ecosystems and for the provision of ecosystem services including climate regulation. It can therefore play an important role in reducing climate change and its impacts, and protecting and improving societal wellbeing. However, there is growing concern that efforts to address climate change may have the unintended consequence of exacerbating biodiversity loss, and so reduce future options for responding to climate change.

Climate, biodiversity and human wellbeing are inextricably linked (Figure). Over the past few hundred years, human activity has significantly changed the face of the planet. As a consequence

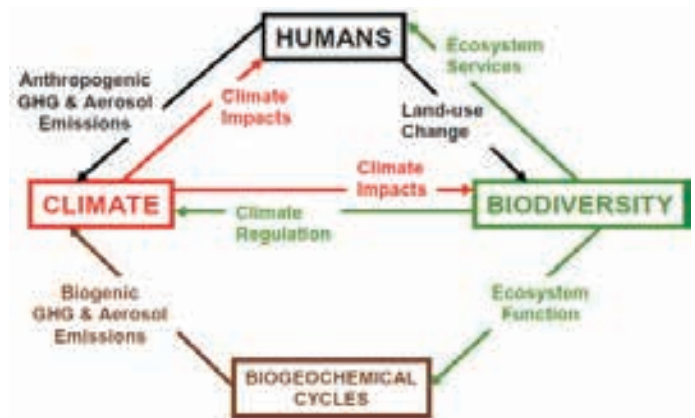


Fig. : Links between Biodiversity, Climate Change and Human Well-being

we are changing the earth's climate, species are disappearing at a faster rate than ever before, and many of the ecosystems on which humans and other species depend for their basic survival are being degraded or used unsustainably.

Over the last 50 years humans have changed ecosystems more rapidly and extensively than in any comparable period of time in human history.

The implications of these changes are only now beginning to be understood. Anthropogenic climate change provides a compelling example of the profound effect human activities can have on natural systems and of the consequences of these impacts for human wellbeing. Even if greenhouse gas emissions were to cease immediately, temperatures would continue to rise for at least 30 years, and sea levels for the next 100 years. Action must be taken now to prepare for the impacts that are inevitable over forthcoming decades. Efforts must be targeted to reducing the vulnerability of those human populations and ecosystems most at risk.

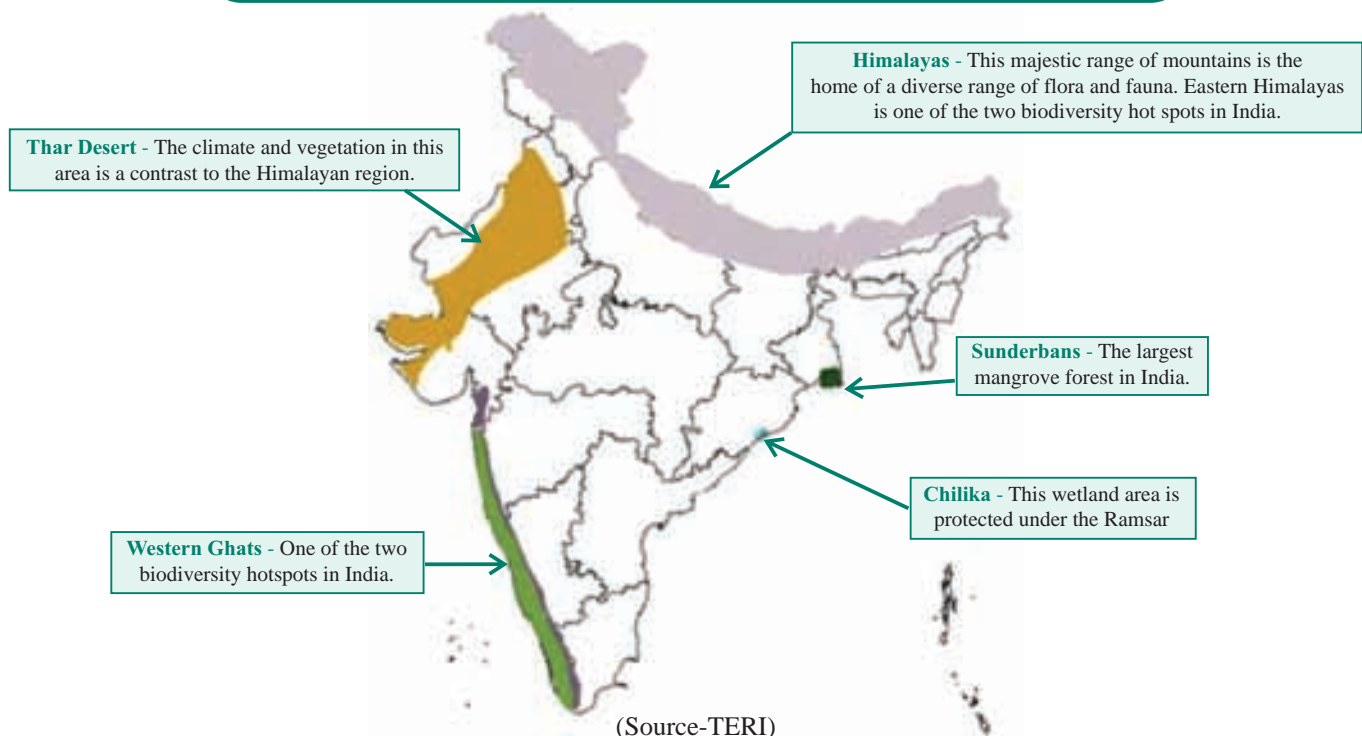
Because ecosystems collectively determine the biogeochemical and biophysical processes that regulate the earth system, the potential ecological and climate consequences of biodiversity loss are arousing significant scientific interest. Continued biodiversity loss may compromise the long term ability of ecosystems to regulate the climate, may accelerate or amplify climate warming, and could lead to additional, unforeseen, and potentially irreversible shifts in the earth system.

Biodiversity loss and ecosystem degradation should be of major concern to decision-makers around the world. However, recognition of the critical nature of this problem, and of the potential opportunities of biodiversity management for meeting climate change policy objectives, has been slow to appear outside of the biodiversity community.

The interdependencies of biodiversity, ecosystems, human livelihoods and the climate system make it possible to address biodiversity loss, ecosystem degradation, sustainable development, and climate change and its impacts, together. However, there is also growing awareness that win-win-wins will not always be possible, and trade-offs may be necessary. To realise the potential co-benefits, and to ensure trade-offs are as equitable and ecologically sustainable as possible, new decision-making and implementation frameworks are required.

The international community has a critical role to play in this, and in supporting the capacity building and resources required for implementation. National governments and local communities also have their part to play. The messages are simple; climate change is unequivocal. Both mitigation and adaptation will be required to address the risks posed by climate change. Biodiversity and human wellbeing are inextricably linked and climate regulation must be central to the development of adaptation and mitigation programmes.

INDIA : A TREASURE OF BIODIVERSITY



India is known for its rich heritage of biodiversity. In biological diversity parlance, India is one of the **17 mega-diverse countries in the world**. With only 2.4% of the world's area, India accounts for 7-8% of the world's recorded plant (about 45,000, of which approximately 15,000 are of known medicinal value) and animal species (about 91,000). India's ten bio-geographic zones possess an exemplary diversity of ecological habitats like alpine forests, grasslands, wetlands, coastal and marine ecosystems, and desert ecosystems. India has four out of thirty four global biodiversity hotspots, which is an indicator of high degree of endemism (of species) in India. About 5,150 plant species and 1,837 animal species are endemic to India. India's biodiversity includes wild relatives of agricultural crops and domesticated animals. India has 16 major types and 251 subtypes of forests. The large mosaic of distinct agro-ecosystems has contributed to diverse cropping pattern and systems across the country.

India is one of the 12 mega biodiversity countries in the world. The country is divided into 10 bio-geographic regions. The diverse physical features and climatic situations have formed ecological habitats like forests, grasslands, wetlands, coastal and marine ecosystems and desert ecosystems, which harbor and sustain immense biodiversity. Biogeographically, India is situated at the tri-junction of three realms - Afro-tropical, Indo-Malayan and Paleo-Arctic realms, and therefore, has characteristic elements from each of them. This assemblage of three distinct realms makes the country rich and unique in biological diversity. The country is also one of the 12 primary centres of origin of cultivated plants and domesticated animals. It is considered to be the homeland of 167 important plant species of cereals, millets, fruits, condiments, vegetables, pulses, fiber crops and oilseeds, and 114 breeds of domesticated animals. About 4,900 species of flowering plants are endemic to the

country. These are distributed among 141 genera belonging to 47 families. These are concentrated in the floristically rich areas of North-East India, the Western Ghats, North-West Himalayas and the Andaman and Nicobar Islands. These areas constitute two of the 18 hot spots identified in the world. It is estimated that 62 per cent of the known amphibian species are endemic to India of which a majority is found in Western Ghats. (Source- Ministry of Environment and Forests, Government of India)

Major problems with biodiversity conservation

- Low priority for conservation of living natural resources.
- Exploitation of living natural resources for monetary gain.

- Values and knowledge about the species and ecosystem in adequately known.
- Unplanned urbanization and uncontrolled industrialization.

Biodiversity conservation in India is also impeded by a lack of knowledge of the magnitude, patterns, causes, and rates of deforestation and biodiversity loss at the ecosystem and landscape level. Poaching and trade in wildlife species are among the most important concerns in the management of protected areas today but information on poaching, trade, and trade routes is sketchy and current wildlife protection and law enforcement measures are inadequate and inefficient.

LEGISLATIVE AND POLICY MEASURES FOR BIODIVERSITY CONSERVATION

India has been a signatory to the Convention since 18th February 1994, and is one of the first countries to have enacted an appropriate comprehensive legislation to achieve the objectives of the convention.

As of now, 193 countries are party to the CBD. Amongst the signatory nations, India has some unique qualities. As signatory to the CBD, the Biological Diversity Act, 2002, passed on December 11, 2002 came into force on February 5, 2003, followed by the formation of its Rules in 2004. The Biological Diversity Act of 2002 provides necessary statutory and administrative mechanism at the National, State and Local body levels to realize the objectives of the Act and CBD.

A three-tiered system of regulation is envisaged under the Biological Diversity Act, which consists of the National Biodiversity Authority (NBA) at the apex level, Biodiversity Boards (SBBs) at State level and Biodiversity Management Committees (BMCs) at local level. The headquarter of NBA is at Chennai and the main functions include regulating activities, advising the Government of India on biodiversity matters, grant for access to biodiversity and associated knowledge and to take necessary measures to protect the biological diversity of the country. The main functions of the State Biodiversity Boards are to regulate requests for utilization of biological resources by Indian nationals and to assist the State Government in

notification of areas of biodiversity importance as Biodiversity Heritage Sites and framing rules for their management and conservation. At the local level, Biodiversity Management Committees perform the function of documenting People's Biodiversity Registers and implement biodiversity conservation programmes.

The major achievements in the implementation of Biological Diversity Act include notification of guidelines on People's Biodiversity Register, Biodiversity Heritage Sites, designated repositories, enforcement mechanisms etc. 87 benefit sharing agreements have been signed by NBA with the applicants. 25 State Biodiversity Boards have been established and over 30,000 BMCs have been formed. Over 400 People's Biodiversity Registers have been documented and national biodiversity fund has been created. Various awareness generation and capacity building activities of different organizations have been supported. During 2010, several activities have been organized/ supported to mark the celebration of International Year of Biodiversity. National consultations have been organized on various issues relating to biodiversity. To ensure the fair and equitable sharing of benefits arising out of the use of genetic resources, India has taken significant legislative measures and also integrated these principles in various policies and programmes.

BIODIVERSITY HOTSPOTS

A **biodiversity hotspot** is a bio-geographic region with a significant reservoir of biodiversity that is under threat from humans. The concept of biodiversity hotspots was originated by Norman Myers in two articles in "the environmentalist" (1988 &

1990), revised after thorough analysis by Myers and others in "hotspots: earth's biologically richest and most endangered terrestrial eco-regions" To qualify as a biodiversity hotspot on Myers 2000 edition of the hotspot-map, a region must meet two

strict criteria: it must contain at least 0.5% or 1,500 species of vascular plants as endemics, and it has to have lost at least 70% of its primary vegetation.

A biodiversity hotspot is a bio-geographic region with a significant reservoir of biodiversity that is threatened with destruction. An area is designated as a hot spot when it contains at least 0.5% of plant species as endemic.

There are 25 such hot spots of biodiversity on a global level, out of which two are present in India.

These are:

- ♣ **Indo-Burma (earlier The Eastern Himalayas) and**
- ♣ **The western Ghats & Sri Lanka**

These hot spots covering less than 2% of the world's land area are found to have about 50% of the terrestrial biodiversity.

Criteria for determining hot-spots:

- ♣ No. of Endemic Species i.e. the species which are found nowhere else
- ♣ Degree of threat, which is measured in terms of Habitat loss

1. Indo-Burma (Eastern Himalayas) Hotspot

- ♣ The hotspot includes all of Cambodia, Vietnam & Laos, and nearly the entire areas of Thailand, Myanmar & Bhutan as well as part of Nepal, far eastern India and extreme southern China.
- ♣ In addition, it covers several offshore Islands including Mainan Islands in the South China Sea and Andaman & Nicobar Islands in Indian Ocean.
- ♣ Indo-Burma is one of the most threatened biodiversity hotspots, due to the rate of resource exploitation and habitat loss.

2. Western Ghats and Sri Lanka:

- ♣ Western Ghats and Sri Lanka, also known as the "Sahyadri Hills" encompasses the mountain forests in the southwestern parts of India and on the neighboring Islands of



- ♣ Sri Lanka.
- ♣ The entire extent of hotspot was originally about 1,82,500 square kms, but due to tremendous population pressure, now only 12,445 square Km or 6.8% is in pristine condition.
- ♣ The important populations include Asian elephant, Indian tigers and the endangered lion tailed macaque.

RESPONSIBILITY OF LOCAL BODIES AT PANCHAYAT LEVEL

Biodiversity Management Committee/BMCs should be constituted at Gram Panchayat, block Panchayat and district Panchayat level. The purpose of this is promote conservation, sustainable use, documentation of biological diversity including preservation of habitats, conservation of land races (primitive cultivars which were grown by ancient farmers and their successors), folk varieties and cultivars, domesticated stocks and breeds of animals and microorganisms and documentation of knowledge relating to biodiversity. Preparation of biodiversity register also forms a major activity of biodiversity management committees. The authority of these registers should be kept and modified periodically. Information/knowledge gathered on

biodiversity, traditional knowledge, sharing of benefits arising out of the uses of biodiversity, etc should be registered in this register. The biodiversity management committees may levy charges by way of collection of fees from any person for assessing or collecting any biological resource for commercial purposes.

Taking cognizance of the provisions of the biological diversity act, 2002 and the biological diversity act, 2002 and the biological diversity rules, 2004, national biodiversity authority and state biodiversity boards were constituted in India. (Source -Kerala ENVIS)

PEOPLE'S BIODIVERSITY REGISTER (PBR)

Preparation of a register for documenting biodiversity represents the biodiversity register. Biodiversity registers prepared with the help of local communities or local people are often referred to as people's biodiversity register. Just like preparing a list of things in a house, preparation of biodiversity register is an attempt to realize the rich biodiversity in the gram Panchayat, block Panchayat and district Panchayat states and the whole country. correct identification and documentation is one prerequisite for further research and research institutions, leading to new discoveries and development of new commercial products, patenting such products, equitable distribution of benefits, if any, and through this, paving the way for a new economic order in the country. PBR is not simply a register with names of species and their distribution patterns in an area. It is a comprehensive data base recording people's knowledge and insight of the status, uses, history, ongoing changes and forces driving these changes in the biological diversity resources of their own localities. This will also provide information on the current utilization patterns of biodiversity, its economic benefits to the local communities and future management strategies required for the sustainable

utilization of biodiversity in a decentralized manner. Further, it also helps equitable sharing of benefits arising out of commercial utilization of biodiversity resources and knowledge of their uses.

Source- (West Bengal Biodiversity Board)

As per the provisions of biological diversity act, 2002 and the biological diversity rules, 2004 several programmes have been initiated in the state. The biological diversity rules provide legal support for biodiversity conservation, protection and for the formation of state biodiversity boards. Establishment of biodiversity management committee at gram panchayats, block panchayats, and district panchayats is one of the prime responsibilities of the state biodiversity board. Biodiversity management committee at the three local bodies has the responsibility of preparing PBRs. At the local bodies has the responsibility of preparing the biological diversity rules, 2004 with several programmes have been initiated in the state. The biological diversity rules provide legal support for biodiversity conservation, protection and for the formation of state biodiversity boards; establishment of biodiversity management committee at the gram Panchayat, Block Panchayat and District Panchayat.

CONCLUSION

There is a clear need for rural development and economic growth in many countries and regions throughout the world. Equally there is a need to conserve the integrity of the environmental systems upon which rural populations ultimately depend. There are two methods of biodiversity conservation, in situ and ex situ. The former envisages conservation within the natural ecosystem such as protected areas (wildlife sanctuaries, national parks, biosphere reserves, heritage sites, etc.), and the latter is a method of conservation outside natural habitats (botanical and zoological gardens, gene banks, seed banks etc). In case of domesticated or cultivated species, conservation means conservation in the surroundings where they have developed their distinctive properties. In addition to this there are special projects envisaged by Government of India to protect threatened species such as Project Tiger, Project Elephant, Project Rhino, Project Hangul, etc.

In situ conservation– Faced with the conflict between development and conservation, many nations find it unrealistic and economically not feasible to conserve all their biological wealth. Invariably, the number of species waiting to be saved from extinction far exceeds the conservation resources available. On a global basis, this problem has been addressed by eminent conservationists. They identified for maximum protection certain 'biodiversity hotspots' regions with very high levels of species richness and high degree of endemism (that is, species confined to that region and not found anywhere else). Initially 25

biodiversity hotspots were identified but subsequently nine more have been added to the list, bringing the total number of biodiversity hotspots in the world to 34. These hotspots are also regions of accelerated habitat loss. Three of these hotspots – Western Ghats and Sri Lanka, Indo-Burma and Himalaya – cover our country's exceptionally high biodiversity regions. Although all the biodiversity hotspots put together cover less than 2 percent of the earth's land area, the number of species they collectively harbour is extremely high and strict protection of these hotspots could reduce the ongoing mass extinctions by almost 30 per cent. In India, ecologically unique and biodiversity-rich regions are legally protected as biosphere reserves, national parks and sanctuaries. India now has 14 biosphere reserves, 90 national parks and 448 wildlife sanctuaries. India has also a history of religious and cultural traditions that emphasised protection of nature. In many cultures, tracts of forest were set aside, and all the trees and wildlife within were venerated and given total protection. Such sacred groves are found in Khasi and Jaintia Hills in Meghalaya, Aravalli Hills of Rajasthan, Western Ghat regions of Karnataka and Maharashtra and the Sarguja, Chanda and Bastar areas of Madhya Pradesh. In Meghalaya, the sacred groves are the last refuges for a large number of rare and threatened plants.

Ex situ Conservation– In this approach, threatened animals and plants are taken out from their natural habitat and placed in special setting where they can be protected and given special

care. Zoological parks, botanical gardens and wildlife safari parks serve this purpose. There are many animals that have become extinct in the wild but continue to be maintained in zoological parks. In recent years ex situ conservation has advanced beyond keeping threatened species in enclosures. Now gametes of threatened species can be preserved in viable and fertile condition for long periods using cryopreservation techniques, eggs can be fertilised in vitro, and plants can be propagated using tissue culture methods. Seeds of different genetic strains of commercially important plants can be kept for long periods in seed banks.

Several activities related to biodiversity conservation are going on in India. Many such activities, including formation of biosphere reserves, are centered in biodiversity-rich forests ecosystems. In addition to this, many ecosystems such as wetlands, mangroves and sacred groves have also been brought under conservation schemes. As mentioned, Project Elephant, Project Tiger, etc are some of the national efforts in India towards conservation of selected individual species. National Botanic Gardens have been established at Lucknow and Kolkata for the conservation of plants. Further, there are Orchidaria at Yercard and Meghalaya for the conservation of orchids. The Government of India has also enacted several laws aimed at conserving our rich biodiversity.

The continued growth of human populations and of per capita consumption has resulted in unsustainable exploitation of Earth's biological diversity, exacerbated by climate change, ocean acidification, and other anthropogenic environmental impacts. We argue that effective conservation of biodiversity is essential for human survival and the maintenance of ecosystem processes. Despite some conservation successes (especially at local scales) and increasing public and government interest in living sustainably, biodiversity continues to decline. Moving beyond 2010, successful conservation approaches need to be reinforced and adequately financed. In addition, however, more radical changes are required that recognize biodiversity as a global public good, that integrate biodiversity conservation into policies and decision frameworks for resource production and consumption, and that focus on wider institutional and societal changes to enable more effective implementation of policy.

From Print Media

Panel on biodiversity of Western Ghats set up

The Environment Ministry on Thursday initiated a move to protect the rich biodiversity of the Western Ghats. In a bid to regulate and restrict the commercial, industrial and infrastructural developmental activities in the 1600-km expanse of Western Ghats, it set up an expert panel to demarcate areas

Thus, there are several important ways in which humans can slow biodiversity loss, although there is no way to bring back the species that have already gone extinct.

Protecting Areas

Creating protected areas where human activity is limited is the best way to prevent deforestation and exploitation of organisms and the resources they need to survive. In order to truly make a difference, much planning needs to go into the creation of a protected area. It needs to consider all elements of the ecosystem it is trying to protect, so that it isn't too small. It needs to include all resources that are utilized by its inhabitants; for example, leaving out a stream where half of the mammals go to drink would not make a protected area very effective.

Preventing Species

Introductions It is often much easier and less expensive to prevent a problem from developing in the first place than to try to fix it once it occurs. This is the case with invasive species, which can wreak havoc when introduced to ecosystems that aren't prepared to deal with them. Many governments prohibit bringing foreign plants and animals into their countries without authorization; some even go so far as to disinfect landing planes and the shoe-bottoms of people on them.

Informing/ Educating

Education is a powerful tool, and the more people know about biodiversity loss, the more they will be prepared to help slow it. Spreading the word about detrimental human effects on plants and animals can encourage people to change their ways and effect changes to preserve biodiversity.

Slowing Climate Change

Climate change is the documented cause of several extinctions that we know about, and has likely caused hundreds of species to go extinct about which we may never know. Any efforts as individuals, organizations, or governments, to slow current human-caused global warming is a step towards slowing biodiversity loss.

Promoting Sustainability

Sustainable agriculture is much better for the environment than grazing and cropping that rely on clearing swathes of forest or field.

within the region which could be notified as ecologically sensitive zones (ESZ) and also to assess the biodiversity hotspot's current ecological status.

And even as the decision was taken, Environment Minister Jairam Ramesh went into a huddle with around 20 MPs' of the

total 43 MPs representing the 51 districts spanning six States through which the Western Ghats run to discuss the threat to the ecologically sensitive region. These Western Ghats MP's would meet regularly to take stock of issues concerning the region's ecology and sustainable development.

The Notification of the ESZs would enable a planned development and land-use for the region with industrial and developmental activities being regulated on the basis of local priorities.

Western Ghats, which covers an area of 1.60 lakh sq km across Karnataka, Goa, Maharashtra, Tamil Nadu, Gujarat and Kerala, is estimated to neutralize 4 million tones of carbon (14 million tones of carbon dioxide equivalent) and which is 10 per cent of the country's total green house gas emissions.

However, the region is facing ecological and environmental problems due to increasing pressure of population, industrial (including tourism), mining, and infrastructural development activities (roads, railways), monoculture plantations besides felling of trees and encroachments.

The 14-member Western Ghats Ecology Expert Panel, headed by ecologist Madhav Gadgil, has been set up also in view of the complex inter State nature of its geography as also in view of the possible climate change impact.

The panel's brief includes recommending measures for conservation, protection and rejuvenation of the Western Ghats after consultations with all stakeholders and the six State Governments; taking into account different Supreme Court orders and other expert committee reports, and suggesting modalities to set up a Western Ghats Ecology Authority.

Yasuni National Park is one of the most biodiverse places on earth

Scientists have confirmed that an average upland hectare (247 acres) in Yasuni National Park, Ecuador, contains more tree species, 655, than are native to the continental United States and Canada combined. The number of tree species rises to more than 1100 for an area of 25 hectares.

A team of scientists has documented that Yasuni National Park, in the core of the Ecuadorian Amazon, shatters world records for a wide array of plant and animal groups from amphibians to trees to insects.

The authors also conclude that proposed oil developments projects represent the greatest threat to Yasuni and its biodiversity.

The study

"This study demonstrates that Yasuni is the most diverse area in South America and possibly the world", said Dr. Peter English of The University of Texas at Austin. "Amphibians, birds, mammals and vascular plants all reach maximum diversity in Yasuni."

The study is published in the open access scientific journal PLoS ONE.

"We have so far documented 596 bird species occurring in Yasuni," said English, a bird specialist. "That's incredible diversity to find in just one corner of the Amazon rainforest and rivals any other spot on the planet."

Other specialists joined in to give the first complete picture of the extraordinary diversity found in Yasuni National Park.

"The 150 amphibian species documented to date throughout

Yasuni is a world record for an area of this size" said Shawn McCracken of Texas State University. "There are more species of frogs and toads within Yasuni than are native to the United States and Canada combined."

Perhaps the most impressive statistic of all is that a single hectare of forest in Yasuni is projected to contain 100,000 insect species. According to eminent entomologist Dr. Terry Erwin, that is the highest estimated diversity per unit area in the world for any plant or animal group.

The extraordinary diversity of Yasuni is best exemplified at the 1,600 acre Tiputini Biodiversity Station on the northern edge of the park, according to a University of Texas at Austin press release.

"The Tiputini Biodiversity Station is home to 247 amphibian and reptile species, 550 bird species and around 200 mammal species." Said Dr. Kelly Swing of the University of San Francisco in Quito, Ecuador.

"What makes Yasuni especially important is its potential to sustain this extraordinary biodiversity in the long term" said Dr. Matt Finer of Save America's Forests.

"For example the Yasuni region is predicted to maintain wet, rainforest conditions as climate change-induced drought intensifies in the eastern Amazon."

The paper concludes with a number of science based policy recommendations. One of the key recommendations is a moratorium on new oil exploration or development projects within the park, particularly in the remote and relatively intact-but oil rich northeast corner that contains oil blocks 31 and ITT.

The Ecuadorian government is promoting a revolutionary plan, known as the Yasuni –ITT. Initiative, which would leave the parks largest oil reserves in the ITT block permanently under the ground. A lack of funding commitments, however, now threatens the proposal.

“The Yasuni-ITT Initiative urgently needs International funders

to step up and make it a success, or else more drilling in the core of Yasuni may become a tragic reality.” Concluded Finer. – Our Bureau

AMPHIBIAN ABUNDANCE : There are more species of frogs and toads within Yasuni than are native to the United States and Canada combined.

Ramesh hints at Panna-like danger in 18 Tiger Reserves

IIPTI & SNS.

BHOPAL, 2 APRIL, A situation akin to Panna and Sariska reserves, where big cats disappeared, can arise at 18 tiger parks across the country if they are not protected in a proper manner environment minister Mr. Jairam Ramesh today warned.

“There are 39 Project Tiger Reserves in the country and among them, the condition of only nine is good, 12 need improvement and in 18 Panna or Sariska can happen anytime,” Mr. Ramesh told reporters after the seventh convocation ceremony at the Indian Institute of Forest Management (IFM). “There is certainly a conspiracy by mining and poaching mafia to kill big cats so that the land gets denotified and then they can turn it into a real estate or use it for mining.” He said When asked to identify some of these reserves he said that besides Panna in Madhya Pradesh such a threat also exists in Orissa, Bihar, Jharkhand, Chhattisgarh, Andhra Pradesh and Maharashtra among others.

To a question on handing over the case of disappearance of tigers from Panna reserve to the CBI Mr. Ramesh said he is awaiting the report of the committee formed by the state government and

only after going through it, findings a decision can be taken. The minister said it is not necessary to hand over everything to CBI “Once we get the report, we will take a decision on the issue”.

On the issue of shifting of lions from Gujarat's Gir Forest to Madhya Pradesh, he said the Centre wanted to make another habitat for lions.

As part of that plan the Centre had asked the Gujarat Government to give lions to Madhya Pradesh, he said.

Forest protection

“In the next five years, Rs. 5000 crore will be given to state governments for forest protection.” said Mr. Jairam Ramesh in Bhopal today. In the city to address the graduating class of the Indian Institute of Forest Management (IFM) Mr. Ramesh announced the provision of grant funds to stage for forest protection, as recommended by the 13th Finance Commission. Mr. Ramesh termed the grant funds as a “green bonus” for states that “for the first time in history are not short of funds for forest conservation.”

वनो के अस्तित्व पर बढ़ता संकट

नई दिल्ली (एजेसी)।

विश्व की करीब सात अरब जनसंख्या अगर एक-एक पेड़ लगाए तो पृथ्वी बन सकती है फिर से हरी-भरी

वायुमंडल से कार्बन डाई ऑक्साइड, कार्बन मोनो आक्साइड, सीएफसी जैसी जहरीली गैसों को सोखकर धरती पर रह रहे असंख्य जीवधारियों को प्राणवायु 'आक्सीजन' देने वाले जंगल आज खुद अपने अस्तित्व के लिये संघर्ष कर रहे हैं। भारत से जंगलों के संरक्षण के लिए सक्रिय संस्था 'तरुमित्र' से वर्षों से जुड़े फादर राबर्ट ने 'भाषा को बताया कि वर्तमान समय में किसी व्यस्क व्यक्ति को जिंदा रहने के लिये जितनी ऑक्सीजन की जरूरत है वह उसे 16 बड़ों-बड़ों पेड़ों से मिल सकती है। लेकिन पेड़ों की अंधाधुंध कटाई से उनकी संख्या दिनों दिन कम होती जा रही है। राबर्ट ने बताया कि भारत में पेड़ों की उपलब्धता की स्थिति काफी

चिंताजनक हैं। उनके अनुसार 'भारत में प्रति 36 लोगों के लिए एक पेड़ है। कोलकाता जैसे महानगर में 15 हजार लोगों के लिए एक पेड़ है। वर्ष 1988 में पटना शहर में जहां प्रति ढाई हजार लोगों के लिए एक पेड़ था वही अब चार हजार व्यक्तियों पर एक पेड़ है। हालात दिन पर दिन गंभीर हो रहे हैं। उनकी शिकायत है कि जंगलों पर मानवीय हमले विश्वभर में जारी हैं भारत में पिछले दस वर्षों में हरित क्षेत्र में मामूली हुआ है। पर्यावरण मंत्रालय के नवीनतम आंकड़ों के मुताबिक भारत का 21.02 फीसदी हिस्सा हरित क्षेत्र में आता है। जंगलों का आकार बढ़ाने के मामले में भारत, चीन के बाद दूसरे नंबर पर आता है।

पृथ्वी को इस घोर संकट से बचाने के लिये प्रयासरत प्रख्यात पर्यावरणविद और ग्रीन ऑस्कर पुरस्कार से सम्मानित माइक पांडे का सुझाव है कि विश्व की करीब सात अरब जनसंख्या

अगर एक एक पेड़ लगाये तो पृथ्वी को फिर से हराभरा बनाया जा सकता है। उन्होंने कहा, हमने अपने लाभ के लिये पेड़

काट लिये लेकिन जंगल कुदरत द्वारा दिये गये वे उपहार है जो हमें जीवन के लिए जरूरी आक्सीजन देते हैं। जलवायु परिवर्तन जैसी तमाम समस्याओं से बचने के लिये हमें पेड़ लगाना होगा। पृथ्वी के फेफड़ें कहे जाने वाले ब्राजील के जंगल वहां पर होने वाले फुटबाल विश्वकप और

अगले ओलंपिक खेलों की भेट चढ़ रहे हैं। ब्राजील में वर्ष 2014में फुटबॉल विश्वकप तथा 2016 में ओलंपिक खेल आयोजित किए जाने हैं। ब्राजील में करीब एक अरब एकड़ क्षेत्र में फैले ये वर्षावन विश्व की 20 प्रतिशत ऑक्सीजन पैदा करते हैं। दुनिया की आधे से ज्यादा वनस्पति, जंतु तथा कीट प्रजातियां इन्हीं उष्णकटिबंधीय वर्षावनों में पायी जाती हैं। लेकिन ये वन बड़ी तेजी से काटे जा रहे हैं। विकास के नाम पर प्रत्येक सेंकेंड में डेढ़ एकड़ वर्षावन को नष्ट किया जा रहा है।

जैविक वैविध्य संरक्षण में पंचायत की भूमिका

भारत विविधताओं का देश है फिर भले ही वो जैव विविधता हो या फिर विभिन्न जाति अथवा धर्म। सदियों से पशु पक्षियों का भारत की संस्कृति एवं हिन्दू धर्म से गहरा नाता रहा है। जैव विविधता हमारे पर्यावरण का महत्वपूर्ण अंग है और आजकल इस विषय पर दिन प्रतिदिन कोई न कोई चर्चा सुनने को मिल ही जाती है। हिन्दू पौराणिक कथाओं के अनुसार मनुष्य एवं पशु पक्षियों का नाता बहुत ही गहरा एवं पुराना है। जैव विविधता में न केवल पशु पक्षियों का स्थान है अपितु पेड़ पौधों भी जैव विविधता में सम्मिलित है।

हिन्दू देवी देवता भी पशु पक्षी प्रेम से अछुते नहीं हैं। जहाँ दुर्गा माता का वाहन सिंह है वही शिवजी का वाहन नंदि नामक बैल है। मनुष्य की अति प्रिय लक्ष्मी माता भी कई चित्रों में अपने वाहन उल्लू पर विजामान नजर आती है। उसी प्रकार भगवान कृष्ण भी कई चित्रों में गायों के बीच में मुरली बजाते देखे जा सकते हैं। यही नहीं हिन्दू मान्यताओं के अनुसार तुलसी को माता कहा गया है। गाय को भी माता कहा गया है एवं इनकी पूजा भी की जाती है। शनिवार को पीपल के पेड़ की पूजा होती है। पीपल शनि देव का अति प्रिय वृक्ष है उसी प्रकार शिवलिंग पर बेल के पत्तों चढ़ाए जाते हैं।

वैदिक ज्योतिष शास्त्र के अनुसार हर एक नक्षत्र का चिन्ह कोई न कोई पशु पक्षी है। उदाहरण के लिए अश्विनि नक्षत्र का चिन्ह घोड़ा है उसी तरह रोहिणी नक्षत्र का प्रतीक सर्प है। और तो और भारत का राष्ट्रीय चिन्ह भी एशियाई शेरों पर आधारित है जो हमारी राष्ट्रीय शक्ति का प्रतीक है। हमारे देश का राष्ट्रीय पशु बाघ है और राष्ट्रीय पक्षी मोर है। हमारा राष्ट्रीय पुष्प कमल है। अलग-अलग राज्यों ने भी विभिन्न प्रकार के पशु पक्षी और पेड़ पौधों को अपना प्रमुख पशु या पेड़ बनाया हुआ है। जैसे कि बिहार राज्य का प्रमुख पक्षी नीलकंठ है। यहाँ पर पीपल का पेड़ प्रमुख है। सिक्किम राज्य का प्रमुख जानवर लाल पांडा है। ऐसे ही विभिन्न राज्यों के अपने अपने प्रमुख पशु पक्षी एवं पेड़ पौधे हैं।

मानव जीवन की प्रकृति पर निर्भरता कोई नई नहीं है। मानव जीवन का अस्तित्व प्रकृति से है पर दुर्भाग्यवश अब वो प्रकृति पर अत्यधिक दबाव डाल कर उसका संतुलन बिगाड़ रहा है। प्रदूषण, दूषित वातावरण, प्राकृतिक आपदाएं अब बहुत ही आम समस्याएं होती जा रही हैं।

भारत एक कृषि प्रधान देश है और आज भी 72.2 प्रतिशत आबादी गाँव में ही रहती है। जैव विविधता का सबसे गहरा सम्बन्ध कृषि से है।

पंचायत गाँव में संचालक संस्था होती है। पंचायत जैव विविधता के प्रति आम जन को जागरूक कर सकती है। इसके लिए पंचायतों को कुछ कदम उठाने पड़ेंगे जो इस प्रकार हैं:-

- स्थानीय निवासियों का एक दल बनाएँ जो पर्यावरण सम्बन्धी जानकारी प्रदान करें।
- हर महीने जागरूकता शिविर का आयोजन करें और किसी अभ्यस्त व्यक्ति से पर्यावरण सम्बन्धी चर्चा कराएँ।
- राज्य सरकारों से मदद ले और एक टास्कफोर्स का गठन करें जो पर्यावरण हानि की समय समय पर जाँच करें।
- घरों में किचन गार्डन को बनाने की पहल पर आम जन को प्रोत्साहित करें।
- नीम, तुलसी, जामुन, बेल, आदि जैसे औषधी सम्बन्धी पेड़ों के बारे में जानकारी प्रदान करें और उन्हें लगाएँ।
- किसानों से एवं पशु पालकों से अनुरोध करे कि वह अपने पशुओं को जंगल में चराने न ले जाएँ।
- अभ्यारण्य एवं राष्ट्रीय उद्यान से सीमित दूरी बनाकर रखें ताकि किसी भी जानवर को हानि न हो।
- जिला एवं ग्राम पंचायतें समय-समय पर बैठक आयोजित करें जिनका आधार पर्यावरण एवं जैव विविधता संरक्षण हो।
- अपने स्थानीय वन विभाग के सम्पर्क में रहें और उनसे जानवरों एवं पेड़ पौधों के विषय में विशिष्ट जानकारियाँ प्राप्त करते रहें।
- स्थानीय लोगों से अनुरोध करें कि वह गन्दगी न फैलाएँ एवं पेड़ पौधों की आवश्यकता को समझें।
- मानव जीवन की वास्तविकता यही है कि हम पशु पक्षी और पेड़ पौधों के बिना अधूरे हैं। हमारा जीवन उन पर पूर्णतय निर्भर है। इसलिए हम मनुष्यों को बिना देर किए जैव विविधता के संरक्षण में एक जुट होकर काम प्रारम्भ कर देना चाहिए।
- अपने गाँव का एक जैव विविधता रजिस्टर बनाएँ और जो भी पशु पक्षी एवं पेड़ पौधे आपके गाँव में उपलब्ध हों उसमें उनकी जानकारी समय-समय पर वर्णन करते रहें।

Messages

Social workers and grass root level team leaders find this newsletter very useful and practical about the progress surroundings.

Dr. K.R. Dhar, *President, DHRUVH Social Awareness Forum, New Delhi.*

This Panchayat issue is very good for NGO sector related to Environmental education.

Mr. P.K. Chak, *Director, Institute of Entrepreneurship Development and Management Studies, Kanpur*

This magazine is very informative and reassures the need for such information when ecological balances are man-made these days.

Mr. Narayana Vishwanath, *Chairman, Sri.V.Narayana Iyer Memorial Trust "GITALAYA", Anna Nagar*

The matter Panchayat encompasses is undoubtedly of use for all the segments of the society.

Mr. B.S. Kusum, *Secretary, Gram Bharati Samiti, Jaipur*

The articles published are very knowledgeable.

Santwana Kumari, *Project Co-ordinator, Mahila Vikas Sansthan, Aligarh.*

We have never come across such a valuable and surprisingly free booklet full of environmental information.

Smt.Mohini Devi Vajpai, *Panchayat Sadasya, Vill/P.O Nihastha, U.P.*

The magazine is very good for general public of villages as they get lot of relevant information from it.

Saraswati Shiksha Vikas Samiti, *Kanput, U.P.*

Role of Panchayats in Environmental Management

ENVIS Newsletter

Glimpse of the Website

www.iesenvis.nic.in

ENVIS CENTRE ON ROLE OF PANCHAYATS IN ENVIRONMENTAL MANAGEMENT

The website has compiled all the relevant data and comprehensive information on different components of Panchayati Raj and Environment. The website contains information on databases developed; geographical distribution of Panchayats; success stories, areas of Panchayati Raj co-operation; elections, finance, query services; bibliography; resource repository etc.

We hope that the information contained in the website will suffice your requirements.

We would appreciate your comments & suggestion about the website so that we can update it as per the requirements of our browsers.

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The Centre invites for Publications :

- Reports on Panchayati Raj (specially related to environment) and rural development
- Short report on seminars/workshops on the related topics are also invited. Those found suitable will be published in the newsletter.
- Articles for the newseletter "Panchayat" are invited.

Forthcoming Events

- **GLOBE Teacher's Training Program**, at Conference Room, Delhi Secretariat, Delhi during April 18-20, 2011.
- **GLOBE Teacher's Training Program**, at Shimla, Himachal Pradesh during May 2011.
- **Celebration of World Environment Day**, on June 5, 2011
- **Second Ecology Learning Expedition to Kathmandu**, Nepal, Kathmandu, Nepal during June 9-12, 2011.
- **GLOBE Teacher's Training Program**, August 8-10, 2011.
- **GLOBE Teacher's Training Program**, September, 2011.
- **Conference on Earth Science and Climate Change Research**, at the International Centre, Goa, India during September 25-28, 2011.

Book Post

Please return, if undelivered :

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To
