ESW IV National Conference On

Impact of Global warming on Environment, Biodiversity and Ecotourism

30 & 31 January, 2017

Organized By

Environment & Social Welfare Society Khajuraho

An ISO 9001:2015 certified organization
Dedicated to Environment, Education, Art and Science and Technology since Bi-Millennium.
Under Govt. of MP., Firms & Society Act 1973 Reg. No. SC2707/2K
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Toxicology, Stress Monitoring, and Biodiversity

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About Environment & Social Welfare Society (ESW Society), Khajuraho

Environment & Social Welfare Society (ESW Society) An ISO 9001:2015 certified organization is the National Society of India. Now it's worldwide known by its impact. It is devoted to Environment, Education, Art and Science and Technology aspect related directly or indirectly to Environment and Social welfare *since Bi-Millennium.* ESW Society has been to develop relationship between Environment and Society envisions the promotion of Education and Sciences among the University, College and School students as well as in the society for Environment and Social welfare as well as Human Welfare. It is registered under the society Act 1973, Government of Madhya Pradesh, India on 31 January 2000. It was affiliated by Nehru Yuva Kendra Sangathan, Ministry of Youth Affairs and Sports, Government of India. It accredited by Madhya Pradesh Jan Abhiyan Parishad, Government of Madhya Pradesh, since 2013. And having NGO-PS, Government of India. NGO Databases.

The main branches of Environment and Social Welfare Society are:

Godavari Academy of Science & Technology (GAST) Chhatarpur: The Academy was established as prompt Science Academy in India. Goal of Academy is understand the problem, undertaking and solve them by scientific approach of Scientist, Academician or Researcher. Organizing Scientific Session, Science Communication Activity, Seminar, Symposium, Conferences, Workshop, Popular Science Lecture, Interaction with leading scientist, Quiz Contest, Interactive Session on Health and Pollution Control and Career in Biological Sciences are main program. Aim to develop scientific temper among students and social workers. Co-operating with other institute in State and in India as well as Abroad, having similar object and to appoint coordinator of the Academy to act National and International Bodies.
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Publication of the Environment and Social Welfare Bulletin (ESW Bulletin), Khajuraho is itself an evidence of its conservation and creative event of the Environment & Social Welfare Society.

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MESSAGE
The 17th January 2017

Greetings,

I am glad to learn that 'Environment & Social Welfare Society' is organizing the IV Annual National Conference on "**Impact of Global Warming on Environment, Biodiversity and Ecotourism**" on 30 & 31 January 2017 at Khajuraho, Madhya Pradesh. The conference provides the opportunity to the researchers, academicians and students to deliberate upon the vital and key issues pertaining to environment and biodiversity of the country and to share their ideas on the subject.

India, as one of the world's biodiversity rich countries is playing an important leadership role in a range of environmental concerns. I hope this conference will provide an excellent platform to the researchers, academicians, students and stakeholders and that it may lead to the formulation of strategies and policies for the sustainable use of natural resources and for a clean environment.

The abrupt changes in climate has been recently been recorded to influence the bio diversity world over. Therefore, this has been a very relevant theme to discuss on a National forum. I greatly appreciate the efforts put in by the Society to take initiative at a very appropriate moment that will act as a motivation for the youth to take up such modern issues for advanced researches. I am told that several awards have also been instituted by the Society to recognise the research efforts of younger scientists from different corners of the country. I am sure this will go a long way to imbibe spirit to face challenges in the youth, and the platform provided by the Society shall give an opportunity to the youngsters for in depth interactions with experts from various prestigious Institutions and Universities of the country.

I convey my sincere best wishes to Dr Ashwani Kumar Dubey, the Organising Secretary of the conference and the entire team of the organising committee of National Seminar on "Impact of Global Warming on Environment Biodiversity and Ecotourism" for great success of the National Seminar.

Dr. Kailash Chandra

Om Prakash Kohli

GOVERNOR MADHYA PRADESH

RAJ BHAVAN
BHOPAL—462 052

JANUARY 29, 2017

MESSAGE

I have great pleasure to know that Environment and Social Welfare Society, Khajuraho is organizing the IV ESW annual National Conference 2017 on " Impact of Global warming on Environment, Biodiversity and Ecotourism" on 30-31 January 2017 at UNESCO Heritage site Khajuraho and also publishing a souvenir to commemorate the occasion.

The objective of the conference is to create environmental awareness and importance of protecting our nature.

I hope the outcome of the conference will provide valuable guidance to the Reserchers and Scientist.

My best wishes.

O.P Kohli

(Om Prakash Kohli)

डॉ० रमेश चन्द्र श्रीवास्तव
कुलपति
Dr. R. C. Srivastava
M.Tech., Ph.D. (IIT, Kgp)
FNAAS, FIASWC, FISAE, FIE, FCHAI
Vice-Chancellor

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No. ..... / Dr.RPCAU (VC)

Date : 17-12-2016

Message

I am pleased to know that the Environment & Social welfare Society, Khajuraho is organizing **IV^th^ Annual National Conference on "Impact of Global Warming on Environment, Biodiversity and Ecotourism"** on 30 & 31 January, 2017 at Khajuraho.

Global warming is already underway with consequences that must be faced today as well as tomorrow. It is important to understand the ways it affects society and the natural environment. Sea levels are rising and glaciers are shrinking; record high temperatures and severe rainstorms and droughts are becoming increasingly common. Changes in temperatures and rainfall patterns alter plant and animal behavior and have significant implications for humans. A diversity of species increases the ability of ecosystems to do things like hold soils together, maintain soil fertility, deliver clean water to streams and rivers, cycle nutrients, pollinate plants (including crops) and buffer against pests and diseases. A loss of species could reduce this ability, particularly if environmental conditions are changing rapidly at the same time. It is possible that as the climate changes and as species are eliminated from an area we will see a change in some ecosystem functions; this could mean more land degradation, changes in agricultural productivity and a reduction in the quality of water delivered to human populations. Many species now stressed by climate change will continue to be affected. According to the IPCC, some 20–30% of plant and animal species assessed thus far are likely to be at increased risk of extinction if the global average temperature warms more than about 1.5–2.5°C.

Responsible ecotourism programs include those that minimize the negative aspects of conventional tourism on the environment and enhance the cultural integrity of local people. In addition to evaluating environmental and cultural factors, an integral part of ecotourism is the promotion of recycling, energy efficiency, water conservation, and creation of economic opportunities for local communities.

I wish the **IV^th^ Annual National Conference**, a grand success.

Srivastava

(R. C. Srivastava)

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Ref. 188/2016

Date : 15/12/16

MESSAGE

It's a matter of happiness that **Environment and Social Welfare Society, Khajuraho** an ISO 9001:2015 certified organization is organizing **The ESW IV Annual National Conference** at Khajuraho, a UNESCO Heritage site, on **"Impact of Global Warming on Environment, Biodiversity and Ecotourism"** during **30th** to **31st January 2017**. Definitely, it's a glorious venture of ESW Society which is uniquely dedicated to Environment, Education, Art and Science & Technology. The society is accredited by Jan Abhiyan Parishad, Govt. of Madhya Pradesh & NGO-PS, Government of India. The present conference is being held in association with BER Chapter, Chitrakoot, NASI, Allahabad and **Maharaja Chhatrasal Bundelkhand University**, Chhatarpur. It is also supported By MP Council of Science & Technology, Bhopal.

With the amazing advancement of technology, the society, nations, nay, the globe itself is facing enormous and multidimensional negative impacts. Global warming is one and the most devastating one. The climatic changes are being negatively affected by the excessive usage of various equipments, resultant upon technoscientific innovations. The present era of science and development has provided humans all the comfort and luxury upto the extreme. Nevertheless, the Nature has equipped human mind with a comprehensive understanding and a spirit of compassion, benevolence and harmony. Hence, one can very well expect from the scholarly minds involved in the services of different NGO's and various educational institutes a galaxy of restoring measures in this regard.

Unexpected climate change is the latest scientific assessment of the impact of global warming on human, animal and plant life. The culprit is greenhouse gases, notably carbon dioxide, methane and nitrous oxide. These are accumulating to unprecedented levels in the atmosphere as a result of profligate burning of fossil fuels, industrial processes, farming activities and changing land use. The greenhouse gases act like a blanket around the earth, trapping too much of the heat that would otherwise have escaped into space.

Its my pleasure and privilege to express my best wishes for the successful meeting and outcome across the academic event of the conference.

I would like personally to congratulate **Dr. Ashwani Kumar Dubey** for holding such a phenomenal event.

Priyavrat Shukla

Prof. Priyavrat Shukla
Vice-chancellor

Vice-Chancellor Residence, House No. 3, Sector-1, Peptech Town, Nowgong Road, Chhatarpur-471001 (M.P.)

Chandrakant Patil
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No. 2954/DG/CST/2017
Bhopal, dated 16.01.2017
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MESSAGE

It is a matter of immense pleasures that **Environment and Social Welfare Society, Khajuraho (M.P.)** is going to organize M P Council of Science and Technology (MPCST) sponsored ESW IV Annual National Conference at UNESCO Heritage site Khajuraho on **"Impact of Global warming on Environment, Biodiversity and Ecotourism"** during 30th to 31st January, 2017.

Global warming is projected to have a number of effects on the environment. Although throughout Earth's history the climate has always changed with ecosystems and species coming and going, rapid climate change affects ecosystems and species ability to adapt and so biodiversity loss increases. There is now a wide recognition of the urgent need to develop and implement strategies to face the changing climate conditions and to take preventive actions for future effects, as well as to mitigate tourism's environmental impacts contributing to climate change.

I hope the conference will provide an opportunity and forum to the young students, research scholars for exchanging ideas and interact among them to address most recent progress in these areas.

Chandrakant Patil

Dr. Ashwani Kumar Dubey
President
Environment and Social Welfare Society
Vidhyadhar Colony, Khajuraho
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MP Government, Firms & Society Act 1973/44 **07686-274225**
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EDITORIAL

The ESW IV National Conference on **"Impact of Global warming on Environment, Biodiversity and Ecotourism"** on **30** and **31 January, 2017 organized by Environment and Social Welfare Society (ESW Society), Khajuraho** has its inception when The Official Agenda for Sustainable Development adopted on 25 September 2015 for Sustainable Development Goals and its associated 169 targets. as the thrusty area for work in Climate action provide a field for research and discussion.

Global warming is projected to have a number of effects on the oceans. Ongoing effects include rising sea levels due to thermal expansion and melting of glaciers and ice sheets, and warming of the ocean surface, leading to increased temperature stratification.

Although throughout Earth's history the climate has always changed with ecosystems and species coming and going, rapid climate change affects ecosystems and species ability to adapt and so biodiversity *l*oss increases. Loss of Arctic sea ice threatens biodiversity across an entire biome and beyond. The growing international awareness about the fast pace of climate change taking place on our planet, together with the impacts that such changes are having on the natural environment, on humans and their economic activities have become evident.

Climate is an essential resource for tourism, and especially for the beach, nature and winter sport tourism segments. Changing climate and weather patterns at tourist destinations and tourist generating countries can significantly affect the tourists' comfort and their travel decisions. Changing demand patterns and tourist flows will have impacts on tourism businesses and on host communities, as well as knock off effects on related sectors, such as agriculture, handicrafts or construction. In small island states and developing countries, where tourism is a major economic activity, any significant reduction in tourist arrivals will have serious employment impacts and generate further poverty. For tourism, climate change is not a remote event, but a phenomenon that already affects the sector and certain destinations in particular, mountain regions and coastal destinations among others. At the same time, the tourism sector is contributing to greenhouse gas emissions, especially through the transport of tourists.

Since the 1st ESW National conference on sustainable development of natural resources and wildlife conservation, convened by ESW Society in Khajuraho, Madhya Pradesh India in 2014, a growing body of knowledge has been generated addressing the complex relationships between the Nature

conservation and wildlife with important research activities on this subject. There is now a wide recognition of the urgent need for the environment, biodiversity, and tourism industry, national governments and international organizations to develop and implement strategies to face the global warming and to take preventive actions for future effects, as well as to mitigate tourism's environmental impacts contributing to global warming. Furthermore, such strategies should take also into account the needs of developing countries in terms of Millennium Development Goals.

The **Millennium Development Goals** (**MDGs**) were the eight international development goals for the year 2015 that had been established following the Millennium Summit of the United Nations in 2000, following the adoption of the United Nations Millennium Declaration. All 189 United Nations member states at that time, and at least 22 international organizations, committed to help achieve the Millennium Development Goals by 2015. Each goal had specific targets, and dates for achieving those targets. Although there has been major advancements and improvements achieving some of the MDGs even before the deadline of 2015, the progress has been uneven between the countries. In 2012 the UN Secretary-General established the "UN System Task Team on the Post-2015 UN Development Agenda", bringing together more than 60 UN agencies and international organizations to focus and work on sustainable development. At the MDG Summit, UN Member States discussed the Post-2015 Development Agenda and initiated a process of consultations. Civil society organizations also engaged in the post-2015 process, along with academia and other research institutions, including think tanks.

The **Sustainable Development Goals** (**SDGs**), officially known as **Transforming our world: the 2030 Agenda for Sustainable Development** is a set of seventeen aspirational "Global Goals" with 169 targets between them. Spearheaded by the United Nations, through a deliberative process involving its 193 Member States, as well as global civil society, the goals are contained in paragraph 54 United Nations Resolution A/RES/70/1 of 25 September 2015. The Official Agenda for Sustainable Development adopted on 25 September 2015 has 92 paragraphs, with the main paragraph (51) outlining the 17 Sustainable Development Goals and its associated 169 targets.

Keeping above serious issue in mind ESW Society, India President Dr. Ashwani Kumar Dubey has called for action on Quality Education; Clean Water and Sanitation; Climate Action; Life on Land; Peace, Justice and Strong Institutions; Partnerships for the Goals, and Nature conservation to be taken in close coordination with global action on The ***Transforming our world: the 2030 Agenda for Sustainable Development.*** To provide a platform to Educational Administrators, College Principals, Deans, Readers, Head of Departments, Professors, Assistant Professors, Scientists, Environmentalist, Stakeholders, Researchers, Young scientists and Students to disseminate knowledge related to Nature Conservation, Resource Management and possible solution by Technological Approach.

Dr. Ashwani Kumar Dubey

Acknowledgement

This is an honor for Environment and Social Welfare Society, Khajuraho, to organize ESW Conference on "**Impact of Global warming on Environment, Biodiversity and Ecotourism**" on 30 and 31 January, 2017 after successful of III ESW Conference on "Strategy for Human Welfare on Nature conservation and Resource management" in 2016; II ESW Conference on "Environmental Degradation and Global Health" in 2015. And I ESW Conference on "Sustainable development of Natural resources and Wildlife Conservation" in 2014 in the UNESCO world heritage site Khajuraho of India, Assisted by Godavari Academy of Science and Technology, Chhatarpur, MP.

I am Thankful to Secretary, Bundelkhand Extended Region Chapter, Chitrakoot, The National Academy of Sciences India, Allahabad, UP, and to Vice Chancellor, Maharaja Chhatrasal Bundelkhand University, Chhatarpur MP for its in association with ESW Society for organizing this Conference. I am highly thankful to Director General, Madhya Pradesh Council of Science and Technology, Bhopal for grant to ESW Society for this Conference. I am thankful to Technology Basha Research Corporation, Singapur and Save environment and Welfare of animals help, Ajmer, India for its Technical Association to ESW Conference.

It is my privilege and pleasure to express my profound gratitude to our **VIP Guest** Honourable Pushpraj Singh, Former Education Minister, Govt. of MP, Honourable Tapan Bhowmik, Chairman, MP Tourism Development Corporation, Bhopal, Dr. A. K. Bhattacharya, MD, National Green Highways Mission, Govt. of India, Prof. Priyavrat Shukla, Vice Chancellor, Maharaja Chhatrasal Bundelkhand University, Chhatarpur MP**,** Prof. K. K. Sharma, Former Vice Chancellor, MDS University Ajmer, Rajasthan, Honourable Kun. Vikram Singh, MLA, Rajnagar Vidhan Sabha, Dr. Rajesh Saxena, Scientist, MP Council of Science & Technology, Bhopal**,** Dr. Niraj Kumar, Executive Secretary, National Academy of Sciences India, Allahabad, Dr. S. Sambath, Officer-in-Charge, Central Zone Regional Centre, Zoological Survey of India, Jabalpur, Mr. Ravindra Padhi Ex. Deupti Director, Geological Survey of India, Bhuvneswar, Odissa, Dr. U. C. Pandey, Regional Director, Indira Gandhi National Open University, Jabalpur, Prof. Satyendra Sharma, Principal, Govt. College, Satna MP**,** who have given very kindly, consented for Inaugural Programme of ESW Conference.

I am heartily thankful to honorable Invitee Guest Who have very kindly consented and given us an opportunity to share valuable thought which will provide milestone on the way of leading Scientists in the Conference.

I am especially thankful to all delegates who actively participated in this Conference. I am thankful to Electronic and Print Media. I am profoundly thankful to my Board of Director and All members of ESW Society for their invaluable cooperation, and those entire person who are directly or indirectly concerned with this conference.

Dr. Ashwani Kumar Dubey

ESW IV Annual National Conference on

"Impact of Global warming on Environment, Biodiversity and Ecotourism"

30 & 31 January 2017

Object: To provide a platform to Vice Chancellors, Educational Administrators, College Principals, Deans, Head of Departments, Professors, Readers, Associate Professors, Assistant Professors, Scientists, Environmentalist, Researchers, Young scientists and Post Graduate Students to disseminate knowledge related to **Global warming, Environment, Biodiversity and Eco-tourism.**

Theme: Take some positive steps towards improving our Earth for future generation

Goal

The moral obligation to act sustainably as an obligation to protect the natural processes that form the context of human life and culture, emphasizing those large biotic and abiotic systems essential to human life, health, and flourishing culture. Ecosystems, which are understood as dynamic, self-organizing systems humans have evolved within, must remain 'healthy' if humans are to thrive. The ecological approach to sustainability therefore sets the protection of dynamic, creative systems in nature as its primary goal. The principal goal of this conference will be to present some of the latest outstanding breakthroughs in Environment and global health, to bring together both young and experienced scientists from all regions of the world, and to open up avenues for research collaborations at regional and global level.

THE GENERAL TOPICS COVERED IN CONFERENCE WILL BE AS UNDER:

Global warming: Temperature increase, Impact of Temperature on Aquatic, Terrestrial and Areal animals, Carbon sinks, Forest and Global warming, Ecology, Ecosystem and its conservation measure, Critical, Natural Disaster, Volcano, Natural calamities, Achieving Global warming Security, Ecosystem services and human welfare. Oxidative Stress and Biomarker, Global warming impact assessment.

Climate change: Climate change, Impact of Food chain and Food web on Human life, Climate change and agriculture, Preventive measure for climate change, Rural Development, Tribal Welfare, Water Conservation, Chemical & Mineral Conservation, Conservation of critical and fragile habitats & corridors, Land degradation and Forest Conservation.

Biodiversity: Diversity, Geo-diversity Biological diversity, Genetic diversity, Species diversity, Ecosystem diversity, Levels of biodiversity, Importance of Biodiversity, Value of biodiversity, Types of biodiversity, Global warming affect Biodiversity, Threats to Biodiversity, Problem on biodiversity, Geo-Biodiversity Conservation and sustainable use of its, Sustainable development, Animal Behavior and Wildlife Conservation, Endangered, Threatened and Endemic Species Conservation, Strategy for biodiversity conservation, Biodiversity Conservation and Sustainable Management, Conservation issue, endangered species in India, Conservation and promotion of Medicinal plants, Status of Biodiversity, Regional biodiversity.

Eco-Tourism: Tourism, Importance of tourist, Tourist need, Eco-Tourism in India,

Technological Approach Lab to Land: Method and Technique for Global warming, Climate change and Biodiversity conservation, Bio-indicator as a tool of Global warming, Application of bio-technology, Rural bio-technology, Tools and technique: for protection and conservation of biodiversity, Bio-markers with special reference to Global warming, Climate change and Ecosystem management. Role of N.G.O. in Global warming, Climate change and Biodiversity conservation. Pollution, Recycling process of pollutant, Pollution and its monitoring, E-waste and Solid waste management, Eco-Toxicology, Environmental Ethics, Occupational health hazards, Possible solution of Agrochemical and environmental hazards, Environment Conservation and Validation of traditional knowledge

INVITEE LECTURE

Acousto-informatics: generation, management and application of acoustic database using advanced computing techniques

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The word "acoustic" is derived from the Greek word ἀκουστικός (*akoustikos*), meaning "of or for hearing. The Latin synonym is "sonic", after which the term sonics used to be a synonym for acoustics. Acoustics may be defined as Science of sound, including its production, transmission, and its effects.The application of acoustics is present in almost all aspects of modern society.Sounds are pressure vibrations having a higher or lower number of cycles per second according to the pitch. In a common technique of acoustic measurement, acoustic signals are sampled in time, and then presented in more meaningful forms such as octave bands or time frequency plots, spectrograms. Both of these popular methods are used to analyze sound and better understand the acoustic phenomenon.Hearing is one of the most crucial means of survival in the animal world, and speech is one of the most distinctive characteristics of human development and culture. Accordingly, the science of acoustics spreads across many facets of human society—music, medicine, architecture, industrial production, warfare and more. Likewise, animal species such as songbirds and frogs use sound and hearing as a key element of mating rituals or marking territories.Therefore, acoustics is the interdisciplinary science that deals with the study of all mechanical waves and their transmission through a medium.One important property of mechanical waves is that their amplitudes are measured in an unusual way, displacement divided by (reduced) wavelength. When this gets comparable to unity, significant nonlinear effects such as harmonic generation may occur, and, if large enough, may result in chaotic effects.

Acoustics has attracted attention of scientists and philosophers since the time of Pythagoras and Aristotle (384-322). The eighteenth century saw major advances in acoustics as mathematicians applied the new techniques of calculus to elaborate theories of sound wave propagation. In the nineteenth century the major figures of mathematical acoustics were Helmholtz in Germany, who consolidated the field of physiological acoustics, and Lord Rayleigh in England, for his monumental work *The Theory of Sound* (1877). Also in the 19th century, Wheatstone, Ohm, and Henry developed the analogy between electricity and acoustics. The twentieth century observed sound recording underwater acoustics etc. With the development in technologies, mathematical modelling and sophisticated tools of physics to study sound waves, application of acoustics has touched in many sectors of science, technology and industry. In the last about five decades advancement in computing techniques have made generation and management of varieties of databases very convenient. In order to facilitate handling of acoustic database there is need to develop informatics. I proposeda terminology (20th January, 2016) Acousto informatics in South Africa in an International Conference ACRS amphibian Conservation Research Symposium at North West University Potchefstroom. Acousto informatics may be defined as generation, management and application of acoustic database using advanced computing techniques. I have been developing such database for the anuran species of the world under the broad umbrella of Acousto Informatics Anura (AIA). Such taxa specific database may be developed for other fauna like reptiles, birds, mammals, etc. The Acousto informatics may be usedfor the identification, monitoring and management of animal biodiversity. Bioacoustic signal sampling, and their processing in species identification shall be discussed.

INVITEE LECTURE

Climate changes of Earth through ages and its effect on Biosphere

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During its entire existence since 4.6 billion years the earth had experienced several periods of warming and cooling and most of these without any human interference. Climate on earth is controlled by many internal and external forming related to sun and earth. The external forming include Melankovitch cycle, volcano and man's activity and the internal forming include atmosphere, biosphere, cryosphere, the oceans and lithosphere. The dynamics and the dynamical and chemico-physical interactions of air, land and sea on earth and its tectonics often controlled climatic changes.

A study of the past climates by palaeoclimatologists since early nineteenth century through geological proxies like tree rings, layers of ice in glaciers, ocean sediments, coral reefs, micofossils,layers of sedimentary and volcanic rocks on land, mass explosions and extinctions of life have indicated as many as 5 periods of world glaciation and intervening periods of warm earth. Thesestudies also point to the many changes in earth's atmospheric system. Likewise the land and sea configuration too has seen changes from time to time. There were also changes in the composition of land and sea. All these had their effect on climate.

The most notable climatic events in the earth's history are as follows:

1. Faint Sun Paradox- sun's radiation was 30% less (4600 mya), mya-million years ago.
2. Huronian Glaciation- earth was completely covered in ice probably due to Great Oxygenation Event (2400 mya), the poles were different from today.
3. Late Neoproterozoic Snowball Earth- precursor of Cambrian Explosion (600 mya).
4. Andean-Saharan Glaciation (450 mya)
5. Carboniferous Rainforest Collapse (300 mya)
6. Permian-Triassic Extinction (251.4 mya)
7. Oceanic Anoxic Event (120, 93, & others)
8. Cretaceous-Paleogene Extinction (66 mya)
9. Paleocene-Eocene Thermal Maximum (55 mya)
10. Younger Dryas- the big freeze (11000 BC)
11. Climatic Options of Holocene (7000-3000 BC)
12. Climate Changes (535-526AD)
13. Medieval Warm Period (900-1300AD)
14. Little Ice Age (1300-1800AD)
15. Year without a summer (1816)

Atmospheric samples obtained from bubbles of air trapped in the ancient layers of ice give us a history of greenhouse gases and chemistry of ice that stretches back to 800,000 years and provides clue to global temperatures which fluctuated between -8 to +4 degrees Celsius. These fluctuations are rather slow and a rise in temperature of4-7 degrees may have taken more than 5000 years while the increase in last century was 0.7 degree C which is 10 times the normal. While the natural process may have changes of 5 degree C. Atmosphere scientists predict a 20

fold increase in temperature in next century and they attribute this to a steep rise in greenhouse gases due to burning of natural fuels in super thermal power houses and transport industry.

The primordial atmosphere of earth was mainly hydrogen with some hydrides, water vapour and ammonia which probably resembled the gaseous content of the solar nebula. With dissipation of sun gasesfrom the earth escaped driven by solar wind. The second atmosphere of earth was mainly nitrogen, carbon dioxide and inert gases obtained from volcanic eruptions andsome gases received through bombardment of asteroids. As the air had no oxygen, it reactedwith other elements to form oxides, e.g. iron and manganese ores. Water bearing minerals arerecorded from rocks as old as 3800 m years.

Nitrogen was the main component of early life forms.(3.5 billion years). This is indeed a paradox as the sun was faint and emitted 30% less light. Earth was warm except the time around 2.4 billion years ago.By late Archean there was oxygen in air due to photosynthesis by blue green algae, the cyanobacteria. This was the great oxygenation time. Stromatolites appeared around 2.7 billion years ago. Carbon cycle(fundamental features) were established as early as 4 billion years.

The third atmosphere appeared after earth experienced plate tectonics. Carbon dioxide was fixed into carbonates, mainly in sea and less so on land. There was no free oxygen till 2.4 billion years. But by pre-Cambrian the air had 15% oxygen which fluctuated for nearly 600 million years and reached a peak level of 30% 280 million years ago. Today's air has about 21 % oxygen.

A study of past climates and past history of earth indicate times when life exploded and times when disaster struck and there was mass extinction. A global warming may mean melting of glaciers and polar ice-caps with consequent rise in sea level and drowning of many coastal and low lying areas. There can be other disasters like storms, cyclones, floods,draughts, water scarcity, food scarcity, epidemics etc. But we will have some permafrost land available to us for living. Past air analysis have indicated that CO2 content of earth's air was at times 3000-11000 parts per million and during those periods life had flourished. THE EARTH TODAY IS MUCH COOLER THAN WHAT IT WAS EARLER AND WE AREIN AN INTERGLACIAL PERIOD WHICH MAY LAST FOR ANOTHERb5000 YEARS. After that we again will have a cool earth.

INVITEE LECTURE

Addressing the challenges of CO_2 kidnapping coupling with biofuel production through microalgae

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Increasing trends in global warming already evident, the likelihood of further rise continuing, and their impacts give urgency to addressing more coherently carbon sequestration technologies. Sustainability is a key principle in natural resource management and it involves effective utilization of natural resources. Across the world, industrialization and the consequent emergence of economies reliant on fossil fuels have inevitably resulted in the adverse condition of atmospheric warming. Anthropogenic carbon dioxide (CO_2) has been identified as one of the major causes. Out of several CO_2 sequestration methods, biological methods of sequestration using microalgae are energy

efficient due to less energy requirement. Microalgae have gained enormous consideration from scientific community worldwide emerging as a viable feedstock for a renewable energy source virtually being carbon neutral, high lipid content, and comparatively more advantageous to other sources of biofuels. Microalgae are sunlight-driven cell factories that can convert carbon dioxide (CO_2) into raw materials for producing animal food, chemical feedstock's, and high-value bioactive compounds. Currently, algae biodiesel production is 2.5 times as energy intensive as conventional diesel and nearly equivalent to the high fuel-cycle energy use of oil shale diesel. Biodiesel from advanced biomass can realise its inherent environmental advantages of GHG emissions reduction. Researches area include CO_2 kidnapping through aquatic microalgaeand their use forlarge-scale biofuel production is still in pipeline. Here, we will primarily discuss the possibilities and current scenario regarding coupling of microalgal cultivation with biofuel production and emphasizing on recent progress in this area of carbon sequestration.

Key Word Index: *Microalgae, CO_2 Sequestration, Climate change, Biofuel production*

INVITEE LECTURE

Exposure to sub-lethal concentrations of copper sulphate induces alterations in Oxygen consumption and ammonia nitrogen excretion pattern in juveniles *Macrobrachium rosenbergii*

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Copper is an essential metal with a recognized biological role but like other heavy metals, it is potentially toxic at high concentrations. Long-term bioassay experiments for 30 days were setup to study the changes occurring in oxygen consumption and ammonia-nitrogen (ammonia-N) excretion pattern in the juveniles *of Macrobrachium rosenbergii* (de Man) when they were exposed to three sub-lethal concentrations of copper, 0.092 mg//L^{-1}, 0.184 mg L^{-1} and 0.306 mg L^{-1} ($1/3^{rd}$, $1/5^{th}$ and $1/10^{th}$ toxicity of 96h LC_{50}). 240 juvenile prawns of inter-molt stage (54±0.23 mm length and 1.380±0.213g weight), fasted for one day, were distributed to the above three chronic copper concentrations. In addition to this, 25 numbers of juveniles were maintained separately for each test concentration along with control to replace juveniles in the experimental setup in case of any mortality. The experiment was conducted in triplicate in glass aquaria (60x30x30 cm containing 20 L of test solution) along with control. In each aquarium, randomly selected 15 prawn juveniles were placed individually in a perforated plastic container to avoid cannibalism. A mild aeration in each aquarium was maintained to keep the oxygen level near its saturation level. The test solutions were changed after every 24h. The juveniles were fed @ 10% of their body weight with formulated pellet prawn feed containing 35% protein. Five prawn juveniles from each control and exposed concentrations experiment setups were randomly selected at interval of 24h, 48h, 15 days and30 days for estimation of oxygen consumption and ammonia-N excretion.

Behavioral pattern of juveniles were also recorded during the experiment period. During the initial exposure, the juveniles showed higher activity and movement in comparison to the controls. After a gap of 72 h, prawn showed normal behavior. Mortalities were observed in the control as well as in exposed groups. Total 36 juveniles died which were replaced by the previously exposed juveniles in the same copper concentrations. Maximum mortalities were observed in 0.306 mg L^{-1} after a gap of 15 days. In the present investigation, oxygen consumption rate in *M.rosenbergii* juveniles were

significantly ($P<0.05$) increased when they were exposed to all the three sub-lethal copper concentrations after exposure period of 24 h. The increased oxygen consumption was 6.32%, 12.36% and 16.045% in copper concentration of 0.092, 0.184 and 0.306 mg L^{-1}, respectively. After 48 hours of exposure, oxygen consumption rate was significantly ($P<0.05$) increased in the juveniles exposed to 0.092 mg L^{-1} copper concentration whereas those exposed to 0.184 and 0.306 mg L^{-1} copper concentration, oxygen consumption rate were decreased significantly to 16% and 23%, respectively.

The rate of ammonia-N excretion percent increased significantly in the juveniles exposed to 0.092 mgL^{-1} copper concentration after time interval of 48h. On contrary, the juveniles exposed to 0.184 mg L^{-1} and 0.306 mg L^{-1} copper concentration showed significant decreased in ammonia-N excretion over their respective control group. Decrease in ammonia-N excretion were recorded in the juveniles exposed to 0.184 mgL^{-1} copper concentration to the tune of 12.2%, 14.8%, 21.6% and 24.3% after a time interval of 24, 48, 96h 15 days and 30 days, respectively. Similarly decrease in ammonia-N excretion percent were recorded in the prawn juvenile exposed to 0.0.306 mgL^{-1} copper concentration too. In the present investigation, it was observed that when juveniles were exposed to lower copper concentration (0.092 mgL^{-1}), oxygen consumption rate did not decrease significantly over their respective control after a gap of 15 days. This suggests that the lower concentration of copper is not physiologically stressful to *M. rosenbergii* juveniles as they possess the ability to adapt to the low levels of this toxicant. The rate of oxygen consumption and ammonia-N excretion of the exposed prawn juveniles over the control increased initially after 24 h exposure period at all the three sub-lethal copper concentrations which indicates that the metabolic rate of the juveniles were increased due to copper toxicity as they require more and more energy for mobilization of energy reserves to compensate the stress.

INVITEE LECTURE

Dietary and Hormonal manipulations in early gonadal maturation for quality seed production of Indian Major Carp and Catfishes

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The steadily growing importance of culture fisheries has made it imperative that the fish culturists should improve the technique necessary for securing the basic requirement of fish culture, namely the production of young ones (fry and fingerlings) for stocking. The artificial propagation technique, presently used, needs constant refinement for obtaining quality fish seed at the desired times of the year. Recent advances in fish endocrinology have led to a better understanding of the hormonal factors involved in the control of gamete production, mode of their action and regulation of their secretion during different stages of reproductive cycle. Environmental stimuli like photoperiod and temperature are perceived by the brain which releases gonadotropin-releasing hormone (GnRH) that binds specifically to receptors in the pituitary gonadotrops and stimulates secretion of gonadotropic hormone (GtH- I , II). The circulating GtH enhances gonadal development and final maturation. GtH regulates ovarian and testicular function by producing maturation inducing steroids, 17α,20 β-dihydroxyprogesterone (17,20-P). The GtH functions at the target site in two ways - it induces synthesis and secretion of estradiol-17 β during pre-vitellogenic phase which, in turn, induces vitellogenesis or yolk production during post-vitellogenic phase, GtH triggers the synthesis of

17α,20β -dihydroxyprogesterone (17,20-P) which is responsible for the final maturation leading to ovulation and spermiatioin. Role of nutrition in broodstock management for quality seed production in fishes has been appreciated only during the recent years. Success of induced breeding depends on proper gonadal maturation because fishes reared without adequate food supply do not show full maturity. Also, the breeding of females and males do not synchronize under improper rearing conditions. Dietary as well as hormonal manipulations have resulted in the advancement of maturity in the Indian carps (*Catla catla*, *Labeo rohita* and *Cirrhinus mrigala*) and catfish (*Heteropneustes fossilis)* by 2 months under pond conditions giving scope for re-maturation and multiple breeding of the same fish even in subtropical region of the country for better gamete output. Modern fish industry is highly specialized exploring more and more possibilities to manipulate reproduction. With all the recent advances in the reproductive physiology, we are still far behind to understand the basic mechanism (s) involved in the process of fish propagation in nature because of different reproductive strategies of the diverse group of fishes. The knowledge on nutrition and reproductive endocrinology periodically refines the technology of production of quality gametes for the expansion of aquaculture. Altering sexual cycles, induction of advanced and delayed maturation, ovulation as well as spermiation and artificial fertilization are to be practiced where dietary and hormonal physiology might help for faster progress in aquaculture.

INVITEE LECTURE

Simulation Modeling of the Impact of Global Warming on Fish Biodiversity in Central Part of River Narmada River for Sustainable River Management

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The Global warming the root cause of climate change has been identified as most important environmental problem of the world. Under the banner of United Nations different countries of world joined hands together to address this problem using Kyoto protocol as a tool.

It is universally accepted fact that water is key regulatory factor for climate change Inland open waters in India are in a state of critical phase of ecological transition in face of abrupt change in climate conditions. Increased man centric activities have adversely affected the production functions and biodiversity to a large extent, which in turn threat the ecological services from such ecosystems leading to loss of livelihood support base in the rural sector. The riverine systems are in a spree of severe habitat degradation, impacting the biodiversity and fisheries adversely.

During the last decade increase in temperature, the central India faced severe failure of rainfall unlike other parts where huge rain occurred within short spell of time. Both such scenarios are detrimental to fisheries management. Due to stock loss, biodiversity loss and eutrophication due to dastric fall in water level thereby adverse impact on livelihood of the stake holders.

To cope with such environmental negation, contigent plan should have to be kept ready to effectively mitigate such vagaries of climate.

Narmada is known as life line of Madhya Pradesh is the largest west flowing river of India. The river is gifted with rich fish Biodiversity. Presently, the fish fauna of river experiencing serious threats to both biodiversity and ecosystem sustainability. Climate change will have strong impact on fisheries. In the present study attempts have been made to survey the impact of global warming on

fish biodiversity on a stretch of the central part of Narmada, assessment of fish diversity, their growth & breeding behavior, destruction of spawning ground & habitat due to climate change.

Planned and effective adaptation strategies need to be incorporated in River system's planning and decision making process for sustainability. The paper addresses the utility of simulation modeling as a powerful tool for charting out better options. The specific methods investigated are : System Dynamics & Cross Impact Simulation. These models are helpful in integrating polices to mitigate adverse effects of climate change for sustainable river management.

Key Word Index: *Climate Change, Global Warming, Simulation Modeling, System Dynamics, Cross Impact Simulation*

INVITEE LECTURE

Global warming, Climate change and Mitigative measures

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Warming of plant earth and climate change issues has become the foremost challenges endangering the sustainability of life on the earth. Natural i.e., geological activities and anthropogenic emissions mainly the green house gases like laughing gas (N_2O), plants food (CO_2), marsh gas (CH_4), Freon (CFC) and Ozone (O_3) with its paradoxical behavior etc. have been interrogated as the chief contributors to the phenomenon and to curtail their emission is a great challenge before modern society. Global warming and climate change severely affecting the behavior and pattern of Indian monsoon causing threats of flood and drought with many other adverse impacts to the environment. It is amendable to curtail and control air pollutants chiefly the green house gases from the cities worldwide. With global support and vision a global/ local/ regional action plan and a better understanding of the interrelationship among the green house gases, warming and climate change is needed to combat the problem effectively. The present study aims at the review of the warming and climate change issues in both local and global prospective. This review paper will may help to make awareness development and more focused research and development planning which primarily needed this time.

Key Word Index: *Warming of Planet earth, Global/ local warming, Climate change, Green house, Gases, Monsoon*

INVITEE LECTURE

Studies on Heavy metal cycling pattern in Gandhi Sagar reservoir ecosystem, Mandsour District, Madhya Pradesh with reference to Hg, Pb and Cd

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The paper deals with the heavy metal contents in water, sediment, macrophytes, plankton (phytoplankton and zooplankton), macroinvertibrates (benthos) and fish (herbivorous and

carnivorous) of Gandhisagar Reservoir, Mandsour district, Madhya Pradesh. The samples were acid digested and subjected to Atomic Absorption Spectrophotometer (Perkin Elmer, 3100 Model) for analysis for Hg, Pb and Cd. The results showed that the metal in water, sediment, macrophytes, plankton, macroinvertibrates and fish are distinguishable with sediment and biota samples are more susceptible to metal accumulation. It is assumed that the Pb and Cd concentration values in water, sediments, macrophytes, plankton, macroinvertibrates and fish were very low or below the safe concentration ranges for natural waters suggested by FAO. Whereas Hg levels detected reveals that out of the three metals considered in the present study, Hg accumulation is slightly higher in all the food fishes studied followed by Pb and Cd. The authors came to the conclusion that metal pollution in severe form in biota is inevitable in near future unless we take immediate preventive measures and constant monitoring. This would help to assess the nature of pollutant with time and space and to plan necessary preventive measures.

***Key Word Index**: Gandhisagar Reservoir, Heavy metal, Hg, Pb, Cd, Biota, Pollutant.*

Recent appearance and consequences of air pollution

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Air pollution has been identified as a serious problem throughout the world it causes tremendous loss to human health and the crops by affecting plant growth and yield. The rate at urban air pollution has grown across India and consequences are alarming. A vast majority of cities are caught inextricably in the toxic web, as air quality fails to meet health-based standards. India's capacity to monitor and assess the problem of air pollution remains abysmally weak, which impedes nationwide planning and action. The data generated allows only a fragmented, though scary picture of the status of the air quality in our cities. On a nationwide scale, very few pollutants are monitored on a regular basis, making risk assessment difficult. In India, despite advances in the scale and urban air quality monitoring in recent years, major hurdles persist in getting comprehensive and reliable data. Poor data quality, weak institutional capacity to assess pollution sources and the absence of an effective legal framework for air quality management are the reasons for ad hoc and fragmented planning. Exposure to ambient air pollution has been associated with a series of alarming adverse health effects.

ABSTRACT
GLOBAL WARMING

Need to review the role of carbon alone in present day rising of Global temperature Carbon cycles and past and present day Climates of Earth

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It is a well-known fact that besides water vapour carbon dioxide and methane are the two main greenhouse gases which control global temperature. Since the earth's atmosphere is generally out of balance with conditions expected from simple chemical equilibrium. It may be difficult precisely to evaluate the carbon dioxide content in the entire geologic time and even if the exact value may be in doubt from various geological parameters like strontium isotope in marine sediments,fossils,tree growth rings in fossil wood stem, ancient ice etc. It is known that carbon dioxide content 500 million years ago was 20 times the present level. It declined to 4-5 times present level in next 300 million years, when the earth experienced a rise of giant forests of fern trees resultinglater to coal deposits. There was a continuous decline in carbon dioxide content till the beginning of 20^{th} century.

Fresh rocks created by tectonics of the earth absorbed the carbon dioxide generated by volcanic activity into the calcium rich sediments in the sea. Carbon dioxide in atmosphere decreases as it goes from its volcanic source into sediments, containing fresh rock with calcium produced by plate collision and mountain building. This resulted in uplift of land with more erosion and drop in sea levelresulting in more deposition. Development and rose of more mountains in the last 100 million yearsand more so inthe last 40 million years on the surface of the earth. The rising mountains cool the earth. The organic matter buried in swamps and muds in sea reduces the methane content resulting in a cooler earth.

Computer simulated models have shown the changes in levels of greenhouse gases through geologic times. From this it is clear that the level of greenhouse gases was always higher than what it is today.The average temperature of earth is affected by certain other parameters of atmosphere, the sun, earth's tilt, its wobble and revolution, ozone layer, greenhouse gases such as carbon dioxide, methane, Sulphur dioxide, ammonia, water vapour, nitrous oxide etc. and dust particles. It will, therefore, be fallacious to attribute present day rise in global temperature to carbon cycle alone.

Prospects of Carbon Capture and Storage (CCS) Technology in the Indian framework

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The global warming and climate change is evident worldwide, which can be attributed to manmade CO_2 emissions. According to current research Capture and Storage (CCS) technology is emerging as a promising tool to reduce CO_2 emission by capturing CO_2 from flue gas and storing it under the possible surface. Therefore, the topic of carbon capture and storage (CCS) and it's currently one of the hottest topics in the field of energy technology. In this technique the CO_2 can be collected from industrial plants prior to or after combustion of fuel and can be compressed and transported to an

injection site for underground storage, or it can be utilized for productive purposes.
The present research article intends to carry out an integrated assessment in order to explore whether CCS could be a viable technological option for significantly reducing future CO_2emissions in India. Applying the technology to existing plants would be more expensive especially if they are far from a sequestration site. I have carried out extensive literature review at regular interval, performed prearranged interviews to assess on various aspects of carbon capture and storage technology. The collected data was analyzed individually based on the scope of the project. The lists of possible options were selected and were discussed in detail keeping limitations and opportunities in mind. The strengths, weakness, opportunities and threats were also described in detail. It was assumed that India will take up the scheme only after it is successfully demonstrated and implemented elsewhere in the world but will continue the R&D work in order to develop clean technologies and explore business opportunities in CCS in future.
Recent industry reports suggest that with successful research, development and deployment (RD&D), sequestered coal-based electricity generation in 2025 may cost less than unsequestered coal-based electricity generation today. A general problem is that long term predictions about submarine or underground storage security are very difficult and uncertain, and there is still the risk that CO_2 might leak into the atmosphere.
Consecutively, to overcome these barriers, the developed world would need to make a stronger commitment in terms of CCS technology demonstration, cooperation and transfer to emerging economies like India. Our study might also be extended by a comparison with other biological low-carbon technology options to draw fully valid conclusions on the most suitable solution for a sustainable future energy supply in India.
Key Word Index: *Climate change, Carbon foot print, CCS.*

Impact of Environment on Ethno medicine plants in tribal areas of Sagar M.P.

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According to a research by Dr Haris Saslis-Lagoudakis, from The Australian National University's (ANU) Research School of Biology 2014 says that Traditional medicine provides health care for more than half the world's population, but no one has really looked at how the environment affects traditional medicine. To understand biodiversity and its conservation through the present study of ethno medicinal plants, 152 plants species belonging to 56 families and 130 genera were recorded and being used as medicines by the tribes in tribal areas of dist. Sagar (M.P.)
Ethnobiologist found that plant availability in the local environment has a stronger influence on the make-up of a culture's medicinal floras. This means that the environment plays a huge role in shaping traditional knowledge. This is very important, especially when you think of the risks that these cultures are already facing.
Due to ongoing environmental changes we are observing across the globe, we might lose certain plant species which will lead to changed ecosystems, and an overall poorer natural environment. This will then affect what plants people can use around them.
"Traditional medicine utilizes plants and animals to make natural remedies. Despite a lot of these species being under threat due to ongoing climatic changes and other human effects on the environment, the effect that these changes can have on traditional medicine is not thoroughly understood."

We found that the more versatile a plant is, the more widespread its usefulness is and the more usefulness a plant has, the more over exploited and endangered it is likely to be. Mother Nature does permit use of her bountiful resources because of her remarkable rejuvenating capacity. In order to maintain functional ecological equilibrium, consciousness is to be created to stop any effect that harms our natural resources.

Key Word Index: *Ethnic, Climate and Traditional*

Circular Economy: The only Solution for keeping check on Global Warming

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The circular economy is a generic term for an industrial economy that promotes greater resource productivity aiming to reduce waste and avoid pollution by design**,** in which material flows are of two types: biological nutrients, designed to reenter the biosphere safely, and technical nutrients. Take, make, and dispose' are the three basic models which rely on large quantities of cheap, easily accessible materials and energy. It is a practical and scalable landscape of opportunities by moving towards an economy that is by design regenerative waste free .It includes -measures to reduce the input of virgin materials, improve the use of existing assets and reduce the output of waste. It emphasizes on recovery and reuse, lifetime extension, sharing and service models, to reduce greenhouse gas emissions. International consultancy had called for rapid transition to a global circular economy in it**s** ambitious plan at *Paris Climate Agreement* 2016, which aims to**;** strengthen the global response to the threat of climate change by keeping the global temperature rise this century well below 2 degrees. The three principles of circular economy are –a) Preserv**e** and enhance natural capital-by controlling finite stocks and balancing renewable resource flows. b) Optimize resource yields-by circulating products, components, and materials at all times in both technical and biological cycles. c) Foster system effectiveness-by revealing and designing out negative externalities. The present paper aims to look into strategies which can create human awareness to think above their selfish motives and work for the protection of environment.

Green Marketing: potential implement to combat global warming

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Yes, green marketing is a golden goose. As per Mr. J. Polonsky, green marketing can be defined as, "All activities designed to generate and facilitate any exchange intended to satisfy human needs or wants such that satisfying of these needs and wants occur with minimal detrimental input on the national environment." Green marketing refers to the process of selling products and/or services based on their environmental benefits. Such a product or service may be environmentally friendly in itself or produced and/or packaged in an environmentally friendly way.

The term Green Marketing came into prominence in the late 1980s and early 1990s.According to the American marketing association green marketing is the marketing of products that are presumed to be environmentally safe. Thus green marketing incorporates a broad range of activities, including product modification, changes to the production process, packaging changes, as well as modifying advertising. Yet defining green marketing is not a simple task where several meanings intersect and contradict each other; an example of this will be the existence of varying social, environmental and retail definitions attached to this term. Other similar terms used are Environmental Marketing and Ecological Marketing.

This paper describes about green marketing overview and some aspects whose improving green marketing with conclusion.

Key Word Index: *Green marketing, environment, Competitive Pressure, Opportunity, Reassure*

Climate change and its impact on India

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Climate change will make monsoons unpredictable; as a result, rain-fed wheat cultivation in South Asia will suffer in a big way and the total cereal production will go down. Industrial development is important for economic growth, employment generation and improvement in the quality of life. However, industrial activities without proper precautionary measures for environmental protection are known to cause pollution and associated problems. If ecological and environmental criteria are forsaken, "industrialise and perish" will be the nature's retort.

Now, there is a global consensus about the threat posed by the climate change. The disagreement is only, on how to go about altering human activities that unleash greenhouse gases, fuelling global warming. The energy efficiency of end user equipment can be ensured through appropriate tax brakes and certification systems. The improved cooking stoves and high efficiency lighting, heating and cooling devices are available even today.

Impact of Global warming on Biodiversity

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The climate of our planet has ever been fluctuating, however the frequency of such fluctuations have remained non-exceptional. A study of the variations in the climate during various glacial periods clearly exhibits something alarming today. for example, recent glacial periods, have been 4°–5°C cooler than now, and some interglacials have been 1°–2°C warmer. These prehistoric changes in climate were clearly natural in origin and occurred on the planet was less populated and witnessing the primitive phase of human civilization.

We are facing a challenge of unprecedented changes in the Earth's climate that may aggravate in the coming years. These changes in the climate are going to bring a powerful influence on our

ecological, economic and cultural setup and will introduce new challenges for the way we live with and influence climate. Some of these challenges may be predictable; however, many of them may not. Some of the risks associated with a rapidly changing climate may be quantifiable, many of them may not.

We need to adopt mitigation measures to reduce global warming with the intention of stabilising atmospheric concentrations at some acceptable level. An equilibrium could be sustained between climate, ecosystems and human society.

Key Word Index: *climate change, global warming, biodiversity*

Forest and Global warming

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Global Warming is the increase of Earth's average surface temperature due to effect of greenhouse gases, such as carbon dioxide emissions from burning fossil fuels or from deforestation, which trap heat that would otherwise escape from Earth. This is a type of greenhouse effect.

Earth's climate is mostly influenced by the first 6 miles or so of the atmosphere which contains most of the matter making up the atmosphere. This is really a very thin layer if you think about it. In fact, if you were to view Earth from space, the principle part of the atmosphere would only be about as thick as the skin on an onion! Realizing this makes it more plausible to suppose that human beings can change the climate. A look at the amount of greenhouse gases we are spewing into the atmosphere, makes it even more plausible.

An increase in the average temperature of the Earth's atmosphere, especially a sustained increase great enough to cause changes in the global climate. Many scientists believe that the Earth has been in a period of global warming for the past century or more, due in part to the increased production of greenhouse gases related to human activity.

Global warming

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Global warming is the term used to describe a gradual increase in the average temperature of the Earth's atmosphere and its oceans ,a change that is belived to be permanently changing the Earth's climate .There is great debate among many people and sometimes in the news on whether global warming is real (some call it a hoax).The increased volumes of carbon dioxide and other green house gases released by the burning of fossil fuels ,land clearing ,agriculture and other human activities are belived to the primary sources of global warming.

Relationships between Ozone and Meteorological parameters in the Trophosphere in Jabalpur

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This paper presents the observations of ozone (O_3) concentrations and meteorological parameters. Their analysis was performed to determine the relationship between meteorological changes and ambient O_3 concentrations in Jabalpur. Ground level or "bad" ozone is not emitted directly into the air, but is created by chemical reactions between oxides of nitrogen (NOx) and volatile organic compounds (VOC) in the presence of sunlight. Emissions from industrial facilities and electric utilities, motor vehicle exhaust, gasoline vapors, and chemical solvents are some of the major sources of NOx and VOC. Breathing ozone can trigger a variety of health problems, particularly for children, the elderly, and people of all ages who have lung diseases such as asthma. Ground level ozone can also have harmful effects on sensitive vegetation and ecosystems. The correlation between average daily maximum O_3 concentration and various meteorological variables were analyzed on a monthly basis from May 2016. The correlations were strongest during the month of May and the level decreased during January.

Key Word Index: *Meteorological Parameters, Surface ozone, Ambient NOx, Air quality.*

Global Warming: A Brief Review with Chhatarpur as Hypothetical Case Study

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Deforestation, massive industrial emission, bush burning amongst other are the primary causes of global warming and global warming which is the rise in the earth's surface or atmospheric temperature due to greenhouse effect is becoming a global concern even in small urban areas as Chhatarpur which has seen the summer seasons become hotter and the winter season not as cold as it use to be. This article tries to draw a picture by hypothetically observing the past few years as compared to what it used to be keeping in mind the overall climate of Chhatarpur. This study tries to see the impact that Global warming has on a place hidden away from the world yet brutally suffers at the global phenomenon even more than those areas which has the focus on NGOs and Government. Here we see what it was like before now and what the current situation is and we also tried to forecast what will be the subsequently as the world get warmer. Though the article relies heavily on the changes in the climatic situation in the district and also relies on what some of the people living in the past decades experienced, it went in dept to show how we have compared and contrast the various findings.

Key Word Index**:** *Climatic Change, Global Warming, Greenhouse Effect.*

Earthquake risk reduction

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Earthquakes are one of nature's greatest hazards to life and property.This paper intended to help Designers,Architects and others in their attempts to reduce the social and economic risks of earthquakes.Earthquake risk reduction involve so many issues in Planning,Designing,QA/QC(Quality Control) and finally Finance,that is difficult for any indivisual to gain full perspective on this issue.
The Principal objectives of this article to cover the follwing points:

- Chief aspect of Earthquake risks
- Methods /Methodology of reducing or managing a range of earthquake risks.
- Procedures to be adopted in Earthquake zones

It is an attempt has been made to provide guidance on most of the more important issues.
***Key Word Index*:** *Earthquake, Seismology*

CLIMATE CHANGE

Effect of Triazophos and Pendimethalin on Avoidance Behavior of *Eisenia fetida* in Natural Soil of Kota (Rajasthan)

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Global warming and biodiversity are always the matter of concern for the environmentalists and biologists. These issues have been raised on various platforms to aware masses. Vermicomposting is one of the important approaches towards its solution by using natural resources. Kota is situated in the south eastern part of Rajasthan state alongside Chambal River with very productive deep black/brown clayey soil. Maize, Wheat, Mustard and Soybean are the major crops of this region. In our research, it has been found that the main species of Earthworm in agricultural area around Kota city is *Eisenia fetida*. The main objective of this paper is to observe the effect of pesticides used for one Kharif season crop (Soybean). Triazophos and Pendimethalin are two popularly used insecticide and herbicide respectively for Soybean. For this, study has been conducted to observe the effect of Triazophos and Pendimethalin on avoidance behavior of *Eisenia fetida* in natural soil of Kota. Study of avoidance behavior of earthworm to pesticides is quick and easy to perform, and it is known to observe the sensitivity of earthworms towards a wide range of chemicals. Avoidance test has been performed by two compartment method in a container. This way optimal concentration of a specific pesticide may be determined so that farmers are encouraged to use these dosages and thus help to protect environment.

A serious Threat of Aqua-Pollutant on Flora and Fauna: Can Changing the Life of Tomorrow?

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Water is the cradle of life. Life was originated, arose and evolves with water and cover out all over the whole living blue planet system through evolution. Every cell can actively perform in watery environment by exchanging the energy through it cellular pool. Water has a unique Physico-chemical and biological properties in the form of its desirable and acceptable range of parameters. These parameters are very essential for survival of any living organism. Entire life supports within the optimum range of water but today's many anthropogenic activities accelerates the aquatic pollution and that undesirable threats makes the serious disturbance in aquatic biota, which ultimately disturb the flow of energy in our aqua-ecosystem. Due to which there is a changing pattern of flora and fauna in the form of their morphology, physiology, seasonality, species composition, and biological clock rhythm. Thus we can say that these aqua-pollutants acts as a major drivers and important signs responsible for the changing pattern of life during upcoming next future generation.

Key Word Index: *Aqua-pollutant, Flora and Fauna, Biological rhythm*

A Comparative Study of Environmental Awareness in Urban and Rural Women

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In this study, the investigator attempted to investigate the knowledge of environmental awareness in urban and rural women pupil teachers in relation to their academic streams (arts and science).women have key role to play in preserving the environment and natural resources, and in promoting sustainable development. For this study the sample consisted of 100 pupil-teachers of urban and rural background from training colleges of Rewa city. The investigator used the self-constructed tools:-1) questioners tool and 2) interview of experts to estimate environmental awareness of pupil-teachers. The data collected was processed for statistical analyses through percentage. The study revealed that the urban women pupil-teachers are more aware about environment than rural women pupil-teachers. Moreover, urban arts and science women pupil-teachers are more aware about environment than rural arts and science women pupil-teachers. In conclusion the present study shows that there is an influence of urban and rural background and academic streams on the level of pupil-teachers environmental awareness.
Key Word Index: *Environmental Awareness.*

Evaluation of Internet Resources Useful in Research: Nature and Types

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Internet resources have given us the power to get information timely and manage information move effectively. But information is everywhere on the internet, existing in large quantities and continuously being created and revised. This Information exists in large variety (facts, opinions, stories, interpretations, statistics) and is created for different purposes (to inform, to persuade, to sell, to present a viewpoint, and create or change an attitude or belief). This paper discusses and evaluates the usefulness of cost-free, reliable, quality online content to academics in studies and research purposes. The paper also highlights the nature and types of internet resources and concludes that more awareness about internet resources and training in use is to be provided to the library professional
Key Word Index: *Internet Resources, Electronic Resources, Evaluation Criteria, Research*

Environment Degradation: A Threat to Human Rights

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In recent years the relationship between human rights and environmental issues has become an issue of vigorous debate. Environment degradation is a state of crises arising out of the environmental pollution caused to the environment to a great extent by the human activities and to some extent by

the acts of God. While the environmental degradation caused by the acts of God is within the natural system, such degradation caused by human activity is more hazardous and dangerous not only to the mankind but also to the very existence of the planet earth. Environmental deterioration could eventually endanger life of present and future generations. Environment degradation and human rights were first placed on the International agenda in 1972, at an UN Conference on Human Environment. As environment deterioration eventually endanger life of present and future generations. Therefore right to life has been expressly recognized as a constitutional right and includes right to live with human dignity and all that goes with it. The court refused to restrict the right to life to mere animal existence. In plenty of cases Indian Judiciary has observed and held various people, organization to stop such entrepreneur and their activities which causes harm to environment at the cost and name of development. Despite the evident relationship between environmental degradation and human suffering, human rights violations and environmental degradation have been treated by most organizations and governments as unrelated issues.

This paper appears in the background of a worldwide realization that the protection of the environment has rapidly risen in importance to become one of the foremost concerns of the human race and tried to provide some suggestions at the grass root level, how a layman can contribute to lessen environment degradation and protect his right of pollution free and enriched environment for him and his children.

Key Word Index: *Environment Degradation, Constitution of India, Human Rights, Environment Education.*

Environmental Degradation and Its Effects on Human Health

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Environmental degradation is an extensive problem which arises through depletion of natural resources, destruction of ecosystems and the extinction of wildlife. Its influence on the health of human populations is great.

This paper presents a minute observation about the causes and effects of environment degradation, in the perspective of natural and human factors leading to air, water and soil pollution, on human by diseases and problems. The present Study explores that these kinds of destructions and depletion of natural resources critically affect both human health and the wildlife. The author is of the view that still there is time left in the hands of global organizations, governments and local bodies to use the advance resources to check it and balance the environment for living.

The effective reply to such issues is largely based on human appraisal of the problem from every age group and control program evolved as a nationwide fixed cost-sharing efforts relying upon voluntary participation.

Key Word Index: *Environment Degradation; Natural Factors; Human Factors; Human Health*

Estimation of water footprint patterns in domestic households concerned to Ranaghat municipality

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In the era of global warming and climate change we are going to experience technological advancement, demographic transitions, enriched globalization, and geographical shift of population as well as degradation of the environment and emergence of water scarcities. Water, food and shelter are the basic 3 survival tool of human. Among them on the basis of importance, water is called as life of human. Besides domestic purpose, water is abundantly required for industrial, agricultural purposes in modern day. Water scarcity has become a serious global threat due to hap hazardous population growth, frequent droughts and changing climate pattern. So, the scarcity of water is magnifying tremendously in urban and rural areas of India; a developing country which has poor water management of water resources. Water use means the amount of water used by a household or a country, or the amount used for a given task or for the production of a given quantity of some product or crop, or the amount allocated for a particular purpose whereas water footprint of an individual, community or business is defined as the total volume of freshwater used to produce the goods and services consumed by the individual or community or produced by the business. This study mainly focuses to estimate domestic household water footprint in Ranaghat Municipality. Besides analyzing activity-wise and socio-economic group-wise water footprint, the paper examines the sources of water supply, perception of households and awareness about water conservation. Studies showed that lower income group is almost water footprint efficient whereas high income group is water footprint inefficient broadly. Grey footprint system and rainwater harvesting should be implemented as immediate action as a measure to reduce water footprint as well as to conserve fresh water.

Key Word Index: *Water scarcity, Water foot print, domestic household.*

Impact of Coal Mine Air Pollution on Mine Workers & Tribal's Lungs: A Socio Economic Survey

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Coal mining air pollution is a causative of many lung disorders in mine workers and tribal's. Many tribal's communities are living simple life with their old customs and traditions but the rapidly growing city culture, urbanization gifts pollution which badly affects theses innocent communities .Lot of tribal's and workers of these mines are unknown to the dangers of coal mining air pollution in their surrounding which is causing a lot of incurable diseases in their life. A socioeconomic survey revels this crucial fact of tribal's living in the nearby area of Annuppur and Koriya district coal mines. coal mining operations and other activities in the Palkimara (Underground) Coal Mine of Koria distt., Chattisgarh, and Raj Nagar (Open Cast) Coal Mine Annupur (M.P.) .These coal mines give rise to the significant levels of pollutants in the atmosphere like dust, methane, nitrous oxide, sulpher di-oxide, carbon di-oxide, carbon mono oxide and least amount of heavy metals and fugitive fumes which causes huge air pollution in coal mine and nearby residential area. Coal mining

air pollution causes many respiratory problems like chronic bronchitis, asthma, pulmonary emphysema, allergic respiratory diseases etc. It makes the workers and tribal's lung sensitive for much infectious disease like tuberculosis etc. long term coal dust exposure may cause pneumoconiosis (Black lung) disease. The aim this study is to create awareness in the tribal's about these dangerous diseases and monitor the air pollution level like suspended particulate matter (SPM), Respiratory particulate matter (RSPM) and concentration of noxious gases like sulpher di oxide, carbon di-oxide, methane, carbon mono oxide, nitrous oxide in ambient air of coal mining area and effect of this air pollutants on coal mine workers and tribal's lung by measuring the lung vital capacity and their sensitivity towards respiratory diseases.

Key Word Index: *Respiratory Problems, Bronchitis, Asthma, Emphysema, Pneumoconiosis*

A study on the Airborne Particulates Matter in selected region Jabalpur, MP

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Particulate pollutant gives harmful effects to human health and became one of the main causes of the cultural heritage deterioration. The research is focuses on the airborne particulates at the Jabalpur city. The Beta Attenuation Monitoring instrument is used for analyzing sample coarse and fine particulate matter (PM_{10} & $PM_{2.5}$). Jabalpur it is a fast growing city and in one of five biggest city of Madhya Pradesh air quality parameter as PM_{10} and $PM_{2.5}$ was analyzed at sampling station at Jabalpur results shows increased values of parameters at severed sampling station. The mass concentrations at selected location were exceeding the limit of safety Air Quality and Pollution Control Board standard limit for PM_{10} and $PM_{2.5}$ in 24hours sampling. Thus, it is important to control the level of contaminants within the buildings for safety purposes.

Key Word Index: *Particulate Pollution (PM_{10} and $PM_{2.5}$), Air Quality Monitoring and BAM.*

Evidences of change in lichen composition due to anthropogenic pressure and Climate change in Amarkantak forest

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All lichen is a fungal algal association which forms a thallus that does not resemble either symbiont in the free living (non-lichenized state). In a lichen fungus provide shelter, and protection water to the photosynthetic partner algae and on reward of this algae provide nutrition to the fungus. Lichen is highly sensitive to air pollution, air quality, global warming, climate change and anthropogenic disturbances. Epiphytic lichens are generally considered to be good indicator of environmental quality. Changes in environmental condition may be reflected in changes to composition of lichen vegetation. Lichens, depends on the presence of all successional stages of forest and very specific microcohabitat condition. The present study conducted at Amarkantak which is now known for tourist place. The entire collected specimen were identified and studied for its response to climate change and current status of forest with comparative study of anthropogenic disturbances. The study reveals the forest fire each year leads to destruction of only fruticose lichen in central India.

Terricolous (on soil) lichen which was found only at Amarkantak of single species *Cladonia Paratermissa* of single genera entire the central India. Change in weather pattern, microclimatic condition disturbed the lichen pyrenuloid and Graphidaceous explains the evergreen forest is found inadequate. some exotic species exhibit poor growth of lichens. Pollution indicator species like physcia, Dirinaria indicates sensitivity to microclimate change in this area.
Key Word Index: *Lichen, Climate change, Amarkantak forest, anthropogenic disturbance*

Observations on impacts of Climate change on biodiversity

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There is growing consensus in the scientific community that climate change is occurring and its impacts are now visible enough to take it utmost seriously. Global average surface temperatures are increasing, and that snow cover and ice extent are decreasing in the higher latitudes of the Northern Hemisphere (IPCC 2001a). Atmospheric warming affects other aspects of the climate system: the pressure and composition of the atmosphere; the temperature of surface air, land, water, and ice; the water content of air, clouds, snow and ice; wind and ocean currents; ocean temperature, density, and salinity; and physical processes such as precipitation and evaporation. For the purposes of this study, we looked for biodiversity impacts at each level of hierarchical organization, and separately within functional terrestrial and freshwater systems. At the same time we understand that there are many interactions across the levels, and between the terrestrial and freshwater systems.
There are three levels of impacts seen as changes: Low - Intermediate levels of local economic development; slower, diverse technological change. Medium–Regionally-oriented economic development, slower; more fragmented technological change. High-Very rapid economic growth, rapid introduction of new and more efficient technologies. The *Indicators of Climate Change for present paper* include discussion of several biodiversity issues, focused primarily at the species and ecosystem level. Each identified impact includes: Primary Climate Change Driver – e.g., increased temperature; Impact Mechanism (or Hypothesis) –e.g., habitat loss; Environmental System – terrestrial, freshwater (linked); Biodiversity Level – ecosystem, species and Impact Range – local or widespread. Concluding, we can say that Climate change – including changes in long-term average conditions, variability or the frequency or severity of extreme events–will affect biodiversity from genes to species to ecosystems. In present paper, past changes in climate have been discussed, and future projections are pointed that can provide a starting point for assessing the types of climate stressors that will impact various biodiversity management endpoints in our terrestrial and freshwater systems.
Key Word Index: *climate change, biodiversity, climate stressors, species diversity, management.*

The Climate change its impact

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The change has come way in understanding. The fundamental of global warming there is not doubt anymore men stream of scientific community that the earth is warming and increasing evidence show that human activities are responsible and have a significant part in it. Country to it scientist

argue that the increase in green house gases has not made a measurable difference in the climate. These scientists say that warming trend is a normal change in a climate system. They argue that natural processes such as increases in the energy given off by sum could have caused global warming. Continued global warming have both a beneficial impact in some areas and a harmful changes.

The life style on environmental

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The sustainable development is a life style attempt to reduce an individual or society's use of earth natural resources. It is a pattern of resource use that aim to meet human to come the life of human beings may save their environmental and health risks to a great extent fertilizer for better crop production may generate a environmental as well as health problem. Solid water disposable, use of automobile excessive use of chemicals. The life style not only adversely affect of the environment but the health and many problem such as, obesity, different type of cancer, lung and heart disease', diabetes etc.

Environmental pollution and the global issue

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Pollution remain a major source of health risk throughout the world, though risks are generally higher in developing countries, where poverty, and weak environmental legislation combine to cause high pollution levels. Associations between environmental pollution and health outcome are, however, complex and often poorly characterized. Individual pollutants may be implicated in a wide range of health effects, whereas few diseases are directly attributable to single pollutants. Long latency times, the effects of cumulative exposures, and multiple exposures to different pollutants which might act synergistically all create difficulties in unravelling associations between environmental pollution. Nevertheless, in recent years, several attempts have been made to assess the global burden of disease as a result of environmental pollution, either in terms of mortality or disability-adjusted life years. Unsafe water, poor sanitation and poor hygiene are seen to be the major sources of exposure, along with indoor pollution.

Bio-Medical waste management and its risks associated with environment and Human health

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The waste generated by medical practices is a threat to human life besides environmental degradation as a result of transmission of bacteria, virus and other pathogens makes their home in man and its immediate environment. According to Word Health Organisation (WHO) report, 85% of

hospital wastes are actually non-hazardous, around 10% are infectious and around 5% are non-infections but harmful wastes. Therefore, appropriate management of biomedical wastes can be seem to be a must and implemented after stepwise segregation, collection, storage, transportation, treatment and disposal in and around Satna city.

Effect of cement dust pollution on crops of Satna District of Madhya Pradesh

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The study was confined to the selected area of Satna district in Madhya Pradesh to find out of dust pollution on various characteristics of selected grain crops *i.e* biomass, chlorophyll, number of grains pr spikes, weight and volume of thousand grains moisture, protein, starch, fat, total carbohydrate, nitrogen and phosphorus. The comparative study has also been recorded between control plant and polluted area plants.

An Impact of Global warming on Climate change

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Global warming is a very serious problem of all over world because it has a great threat to our whole living kingdom, climate change, ecosystem and biodiversity of nature. Global warming is affecting our planet by warming up sea water, ocean expands, glacier melt and floods as well as drought become more frequent and intense. An increment in average global temperature has been recorded by 0.6℃ over the last century, though by an assumption this temperature will be increased in the range of 1.8-4.0℃.

Global warming mainly occurs by green house gases, which are the result of several natural and anthropogenic phenomenons like floods, drought, earthquake, burning of solid wastes, wood, fossil fuels, natural gas, oil and coal respectively. There are three principal green house gases carbon di oxide (9-28%), methane (3-9%) and nitrous oxide (3-7%) which contribute more in rising of temperature of atmosphere, where as some other gases like chloral fluoro carbons, hydro fluoro carbons, per fluoro carbons and sulphur hexa fluoride have small green house effect on atmosphere surface. Water vapour also acts as green house gas notably.

The climate adversely affected by some human activities such as rapid industrialization, modernization, urbanization, population hazard etc. To fulfill the power demand, the establishment of coal based thermal power plants continually increased and hence burning of coal also increased drastically, by which a huge amount of CO_2 has been added to the atmosphere. This climate change creates various human health hazards like malaria, brain fever, break bone fever etc. Deforestation is also another important sector which is responsible for climate change and global warming. Wild life and aquatic life have been also affected by this global warming because many species extinct from our nature.

To protect our climate and environment, people should think to bring some changes in their life style to conserve of natural resources, wild life, our forest etc. We should invent some new technologies such as green technology, nano technology to minimize the amount of green house gases to control

the average temperature of our atmosphere. Government, communities and small society must launch some decisions, laws and rules and instruct to everyone to follow them.

Key Word Index : *Green house gases, CO_2, CH_4, N_2O Thermal power plants, Deforestation,*

BIODIVERSITY

Biodiversity and Anthropogenic impact in Dobrogea-case study: Conacu-Negresti Valley

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Dobrogea is located on the northern Balkan Peninsula in southeastern Central Europe ($44^0$17`03,77``N, $28^0$21`53,27``E). It occupies an area of approximately 23.142 km^2, of which 15.570 km^2 are located in Romania (making up 6.52% of the total area of Romania) and 7.572 km^2 in Bulgaria. The Dobrogea Region is bordered by the lower Danube River to the southwest, west, northwest and north, the Danube Delta to the northeast, the Black Sea to the east and the Ludogorie Plateau to the southeast and south. Dobrogea is distinguished by its special features from the rest of the country. Geographical position, near the Black Sea, soil structure, climate, land history of Dobrogea, made this region to show a characteristic fauna and flora, one mixture of southern, Ponto-Caspian, Black Sea, European, Eurasian elements, etc. Field and laboratory researches from 2003 to present led to the conclusion that the Conacu-Negreşti Valley, part of South Dobrogea, is distinguished by a special landscape beauty and is characterized by an extremely rich and diverse biodiversity, with many rare or endemic species specific to the Dobrogea Province. The landscape of Conacu-Negreşti Valley consists predominantly of Cretaceous and Sarmatian limestone, placed on a Precambrian background and covered by a thick blanket of 40 m of Quaternary loess. So far, have been identified, collected and determined a total of 239 plant species belonging to 32 orders and 62 families, 101 terrestrial and aquatic species of invertebrate animals belonging to 17 orders and 57 families, 13 species of fish live in the Conacu-Negreşti Lake belonging to 3 orders and 4 families, 7 species of amphibians and 12 species of reptiles belonging to 4 and 5 families, 94 species belonging to 14 orders and 32 families, 24 species of mammals, both terrestrial and aquatic, belonging to 4 orders and 11 families, But, it is seriously threatened by the human factors. The paper is intended to be an overview of valley biodiversity, highlighting the serious problems due to the anthropogenic factor, too.

Diversity of Hemiptera fauna of Pench Tiger Reserve, Madhya Pradesh India

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Pench Tiger Reserve is located in the Seoni and Chhindwara districts of the state, Madhya Pradesh between 21º 37' to 21º 50.30' N latitudes and 79º07.45' to 79º22.30' E longitudes with a total area of 757.907 sq. km. The vegetation of the park consist southern tropical dry teak forest and dry deciduous forests. It includes Pench National Park (PNP) and Pench Wildlife Sanctuary (PWLS) along with a buffer zone area of Seoni and Chhindwara districts. As part of the scientific documentation of the faunal diversity of the PTR faunastic surveys were undertaken by the scientific team of Zoological Survey of India. During the survey-cum-collections of sample of fauna from the

park, entomofauanl sample of the order Hemiptera were collected from 40 localities of the park area, 26 of these family in Seoni District and 11 in Chhindiwara District. The Hemiptera insect's sample comprising of 236 specimens were taxonomically identified and catalogued. Among insects the order Hemiptera is divided into 2 suborders, viz. Homotera and Hetroptera. 38 species were identified belonging to 11 families three of Homoptera and 8 of Heteroptera. Family Pentatomidae and Reuviidae of Heteroptera dominates. Two species one of each belonging to family Lygaeidae *Usilanus denotatus* Distant, 1909 and Miridae *Guisardus pulchellus* (Carvalho, 1959) are the new record to India. So far no survey on Hemiptera fauna has been carried out in PTR, as such all the species collected, identified and recorded from the park area are the first records. Hemiptera insects, generally known as bugs as considered to be the sincere pests in agriculture. The present study on the diversity of the Hemiptera fauna of PTR

Key Word Index: *Pench tiger reserve, 11 families, New to India.*

Status and Diversity of Ophidians (Reptilia: Squamata: Serpents) in Bhopal, Madhya Pradesh, central India

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A survey was conducted on the status and diversity of ophidians of Bhopal between November 2015 and September 2016. Eighteen species of snakes belonging to 17 genera and 6 families (Boidae, Colubridae, Elapidae, Pythonidae, Typhlopidae and Viperidae) were recorded during thisstudy period. Family colubridae contributed maximum (8 species) number of species in comparison to family Typhlopidae (1 species). *Ptyas mucosus* and *Xenochrophis piscator*the non-venomous snakes were mostly sighted in comparison to rarely sighted *Dendrelaphis tristis* and*Lycodon aulicus*of family Colubridae. Among venomous snakes *Najanaja* was frequently observed in comparison to *Echis carinatus.* Mortality due to vehicular killings and by the public has been found to bethe main threat for these species. As per wild life protection act of 1972 most of these species are not be killed as they have been put under the category of species to be protected, yet these species are eliminated due to ignorance by the local public.

Present investigation emphasizes conduction of mass awareness programs regarding the conservation of these species.

Key Word Index: *Ophidians, Diversity, Bhopal Madhya Pradesh.*

Genetic diversity analysis of common carp (*Cyprinus carpio* L.) and *Labeo rohita* (Hamilton, 1822) collected from hatchery by using microsatellite markers.

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The present study deals with genetic diversity analysis of *Cyprinus carpio* L. and *Labeo rohita* (Hamilton, 1822) collected from hatchery stock through microsatellite marker. Total 20 microsatellite primers were designed by using software Primer-BLAST and Primer-3. A total of 12

microsatellite loci were successfully amplified. After performing native PAGE using amplified 50 DNA samples each, POP GENE Version 1.32 was used to calculate microsatellite variation. The average expected Nei's genetic diversity ranged from 0.328 to 0.529 with mean value of 0.458 for *Labeo rohita* across all loci from hatchery whereas the average expected gene diversity ranged from 0.392 to 0.537 with mean value of 0.483 for *Cyprinus carpio* across all loci from hatchery. The observed and expected heterozygosity ranged from 0.2237 to 0.3326 and 0.2786 to 0.3763 respectively for *Labeo rohita* from hatchery. The mean value of observed heterozygosity was 0.2864 and that of expected heterozygosity was 0.3238. Fis values were found to be positive at all loci in hatchery with mean value of 0.256 whereas for common carp the observed and expected heterozygosity ranged from 0.2659 to 0.3910 and 0.3145 to 0.4129. The mean value of observed heterozygosity was 0.3350 and that of expected heterozygosity was 0.3731. Fis values were found to be positive at all loci in hatchery with mean value of 0.221. Mean values for Shannon's information index for all microsatellite loci were 1.1091 for rohu and 1.1320 for *Cyprinus carpio* from hatchery stock.Slightly more level of observed heterozygosity in *Cyprinus carpio* than *Labeo rohita* from hatchery might be due to presence of more differentiated stocks. Lesser value of observed heterozygosity in *Labeo rohita* from hatchery than *Cyprinus carpio* might be possibly due increase in incidents of inbreeding in successive generations owing to lack of regular germplasm exchange of appropriate genetic diversity. The microsatellite analysis showed that *Cyprinus carpio* of hatchery is more genetically diversed and genetically differentiated as compared to *Labeo rohita.*

Key Word Index: *Genetic Diversity, Microsatellites, Primers, Labeo rohita, Cyprinus carpio*

Fish faunal diversity in and around river Yamuna at Mathura, U.P.; in reference to the status of Exotic fish species

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Covering an area of 3340 square kms, Mathura is among one of the most religious places of the country, lies on the western side of Uttar Pradesh. The district is bounded by district-Aligarh on the north, Agra on south-east and Hathras on east. The district also shares its borders with district Bharatpur (Rajasthan State) on South-West and Faridabad district (Haryana State) on west north. It is divided in to 03 Tehsils, 10 blocks and 735 inhabited villages. The district suffers from chronic saline water problem along with problem of erratic rainfall. Tourism sector of the district along with trade and services are other important sectors of economy beside daily activity.

Fisheries play a vital role in the economy and community life of rural areas. Development of pisciculture can also be an important source of supplementary income to the farmers who may either own perennial or seasonal tanks. Inland Culture fishery is the prominent activity in Mathura district carried out mostly in gram panchayat ponds and in private ponds developed for the purpose.

Mathura, the north-west district of Agra division of Uttar Pradesh, lies in the basin of river Yamuna in the Ganga-Yamuna Doab. The district extends between $27^{\cdot}$ 14' to $27^{\cdot}$ 58' north latitude and $77^{\cdot}$ 17' to $78^{\cdot}$ 12'east longitude. Besides the river Yamuna which flows through the middle of the district from north to south there are a large number of small tanks and pokhras distributed throughout the district. River Yamuna originates from a glacier in the Himalayas. It is one of the major tributaries of

the river Ganges. Total length of Yamuna up to its point of confluence with Ganges is around 1370 km. Its catchment area is spread over 366,220 sq.km. and it falls in six different states of Himachal Pradesh, UP, Haryana, Delhi, Rajasthan and Madhya Pradesh. However, the riparian states are Himachal Pradesh, Haryana, Delhi and UP. Vastness of the catchment can be gauged from the fact that it is almost 10% of the total landmass of the country. In any water bodies (lentic or lotic) limnological characteristic can affect both fauna and flora. Biodiversity contribute both directly and indirectly to human in many ways. In last decade people interfere with ecosystem and over exploitation of natural resources its result that biodiversity decreases. But the losses in biodiversity and change in ecosystem have adversely affected the well-being.

Yamuna River supports a rich diversity of fishes of commercial value. But over the years the rivers has become highly polluted. The river water is extensively used for irrigation and receives heavy load of domestic and industrial wastes. All these factors have imparted the fisheries in the river as reflected by decline in fish catch a discernible shift in fish species composition and an increase presence of invasive fish species. Domestic pollutions, Industrial pollutions, Agricultural pollutions and Sand mining are the main responsible source in declining the native fauna and making the favorable ground for invaders. 52-fish species belonging to 15-families were recorded in Mathura waters so far. Species of the family Cyprinidae were most dominant followed by Bagaridae, Schilbeidae, Clupeidae, Ophiocephalidae. As far as concern with the trophic utilization of fishes; carnivorous fishes were dominant followed by herbivorous and omnivorous.

In terms of the status of Exotic fish species significance presence of *Oreochromis nilocticus, Cyprinus carpio and Clarias geripineus* is evident in majority of the river stretches. Abundannce of these species are recorded due to less stressed condition which reflects the dominance in terms of biomass than any other species. It also recorded the degraded environment condition; resulting the gradual depletion of native fish species. It has been recorded that presence of exotic fishes gradually establishing themselves as a breeding population replacing the Indian Native Fish Fauna. Study reveals that the use of Yamuna river water for the purpose of hydal projects, irrigation and drinking purpose and water pollution are the main threats affecting the habitat of native species and has provide a favorable environment for the exotic fishes.

So, need of the hour is to check the entry of exotic fishes in river Yamuna and monitoring the river water in terms if water pollution can be a mile stone in conservation of life and environment as well.

Key Word Index: *Yamuna River, Native fish fauna, Exotic fishes, Conservation.*

Aquatic Avifaunal Diversity of Gavier Lake, District - Surat (Gujarat), India

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The Gavier Lake is located in of Surat city. It is a perennial lake, rich in aquatic vegetation, therefore harbours several kinds of avifauna throughout the year. The present work has been carried out from January 2015 to December 2015, for determining the species diversity of aquatic avifauna which is inhabited by a variety of smaller birds, resident birds, migratory birds and wading birds.The study

revealed occurrence of 51 avifunal species belonging to 09 orders; 13 families, out of which 30 species were resident and 21 species were found to be migratory. Among these, Charadriiformes and Anseriformes are the dominating orders of the aquatic birds. During winter season, avifaunal diversity was maximum, so it was found that the avifauna of this Gavier Lake utilizes maximum water body in winter while minimum in monsoon season.

Biodiversity act as Bio-indicator of Ecosystem

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One of the reasons biodiversity is important is because it helps to keep the environment in a natural balance. An ecosystem which is species-rich is more resilient and adaptable to external stress than one in which the range of species is limited. In a system where species are limited, the loss or temporary reduction of any one could disrupt a complex food chain with serious effects on other species in that same system. Once biodiversity is sufficient, if one nutrient cycling path is affected another pathway can function and the ecosystem-and the biological species it supports-can survive.
Biodiversity offers many natural services such as Ecosystem services, Water conservation**,** Soils formation and protection**,** Nutrient storage and recycling**,** Pollution breakdown and absorption, Contribution to climate stability, Maintenance of ecosystems, Recovery from unpredictable events, Biological resources, such as Food, Medicinal resources and pharmaceutical drugs, Wood products, Ornamental plants, Breeding stocks, population reservoirs, Future resources, Diversity in genes, species and ecosystems, Social benefits, such as Research, education and monitoring, Recreation and tourism, Cultural values, Building materials, Fuel, Paper product, Fiber (clothing, textile), Industrial product (waxes, rubber, oils), Regulating global process such as atmosphere, climate and soil conservation, Pollination and seed dispersal, Control of agricultural pests, Genetic library.
Biodiversity may also define as "Biodiversity are an integral part of the ecosystem and have an importance in eco-balance for animal welfare" a new definition suggested in the present situation. In the last 50 years life has change rapidly world over. The loss of biodiversity as a result of anthropogenic activities has become a central preoccupation among natural scientists, and many social scientists as well. One of the most important roles of the biodiversity may be as bio-indicator of clean and healthy ecosystem need to discuss by researchers.
Key Word Index: *biodiversity, environment, food chain, ecosystem, atmosphere, bio-indicator*

Diversity, distribution and relative abundance of avian fauna of Dumna Nature Reserve, Jabalpur (Madhya Pradesh)

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Knowledge on species diversity, distribution and abundance are among prerequisite ecological information to design sound conservation strategy. The present study was carried out to assess diversity; distribution and relative abundance of avian fauna of Dumna Nature Park, Jabalpur, Madhya Pradesh. The state of Madhya Pradesh is located in the center of India and lies between 21^0

to 25^0 N and longitudes 74^0 to 84^0 E. One among the unexplored areas of MP till date is Dumna Nature Park (DNP). The DNP covers an area of 1058 ha and is located (23^0 10′, 80^0 1′) on the way to Dumna Airport Road about 6 km away from the campus of the Rani Durgawati University. It is an Eco-tourism center and mainly embraces two major ecosystems viz. a forest ecosystem (Bamboo forest) and a fresh water ecosystem (Khandhari water reservoir).Birds have been studied in the past in different regions of Central India including various districts of Madhya Pradesh. A deep study had been done in the Dumna Nature Park and in the communication of this 112 species of birds have been recorded from DNP Jabalpur on the basis of past records, collections and actual sightings during the surveys undertaken from 2014 to 2016. Birds were observed with the help of 7 x 50 pair of binoculars. It indicates that there is somewhat substantial bird diversity as compared to the avian diversity of Indian subcontinent. Further, the table indicates that at generic and species level, orders like Ciconiiformes, Charadriiformes and Passeriformes are well represented in the district.These birds are included in various schedules of Indian Wildlife (Protection) Act, 1972. Further, it can be pointed out that the bird species, viz., Cercomelafusca (Blyth) Indian Chat (Muscicapidae :Turdinae) is endemic to Central India and also occurs in the district

Key Word Index: *Dumna Nature Park, Diversity, Conservation.*

Failure of quarantine measures on account of proliferation of exotic species with special reference to *Populus deltoides* in Kashmir Himalayan region – A Review

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The plantation of *Populusdeltoides* conducted carried out on mass scale is on account of the fact that it takes less time (7-8 years) to reach a height were it can be harvested. The plant is normally propagated through vegetative propagation and has well acclimatized itself in Kashmir region. Its fast growing capability and its maximum usage in fruit industry has given a boost to the economy of rural poor not to speak of urban population only. On an average basis the plant attains a height of 60-70 feet fetches around Rs 13,000 per tree (210/feet). This way the economic status of general public has enhanced many folds. Because of its commercial importance the people have even converted their rice fields into *Populus deltoids* nurseries.

Though people have gained economically by rasing*Populus deltoides* on a mass scale but under the given environmental conditions of valley it has proved to be health hazardous at the time of its seed formation were in the general public and even the animals have been found to suffer from coughing, sneezing, phlegm, wheezing, breathlessness, irritation in eyes and running nose.

The plants once grown and harvested still persists in the form of its horizontally proliferating roots where from multiple plants shootout resulting in less efforts for its further proliferation/growth. Looking to the health hazardous quality of *Populus deltoides* the government of J&K was compelled to impose ban as per order of May 12, 2015 and again on June 5, 2015 for growing the new plants and harvest all the standing crop however there is a fear of its further proliferation from its horizontally proliferated roots which still lie beneath the soil.

In the present investigation we are of the opinion that the plants that grow from their roots should be harvested after three to four years only in order to stop its seeding stage which is more harmful to human health.

The Use of Birds for the Monitoring of Environment: A Survey on Narmada Valley Jabalpur Region (M.P.)

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Birds serve as important component to study any ecosystem as they have the ability to fly away and avoid any obnoxious condition. The diversity and richness of avian fauna community also mirrors the diversity and richness of habitat. Humans have invented a variety of instruments to monitor the health of ecosystems. Birds are useful biological indicators of ecosystem, for example, broad-scale habitat changes and environmental contaminants. Birds are especially suitable for detecting unexpected changes which cannot be observed by measuring pre-selected physical and chemical parameters, and for monitoring biological, often cumulative and non-linear consequences of many environmental changes acting simultaneously. Bird's population is frequently used as an indicator of environment quality and is thought to be a useful proxy for assessing the impact of human influence of on biodiversity. In the present study richness, abundance, and flight period of birds have been revealed in the tropical ecosystem of Narmada Valley in Jabalpur, Madhya Pradesh. The avian diversity of Narmada Valley and its surrounding areas at Jabalpur district was studied for a period of two years during June 2014 to May 2016. In the present survey 86 bird species were reported, belonging to 70 genuses, 35 families and 13 orders in which 65 species were prominent resident species of the study area. Most of the birds fauna are resident and out of these, 65 species were Resident (R), 14 species Resident Migrant (RM), 3 Migratory (M) and 4 were Winter Visitor (WV) species. The recorded data of study has shown that Passeriformes was very rich with 39 species followed by *Ciconiiformes* with 12 species, *Coraciiformes* with 8 species, *Charradriiformes* with 7 species, *Falconiformes* with 5 species, *Gruiformes* with 4 species, *Columbiformes* with 3 species, *Cuculiformes* and *Psittariformes* with 2 species each and *Anseriformes, Apodiformes, Pelecaniformes* and *Strigiformes* with 1 species. According to many literatures *Passeriformes* was the largest reported group among bird diversity of Jabalpur region which was not critically damaged. The survey suggested that Jabalpur Narmada basin have great variety of plants, availability of food in different seasons, agricultural land, water availability in surrounding areas which were favorable conditions for birds to nesting and survival in this area. The study determines various species of birds which will help in preparing a list for the evaluation and comparison of possible changes regarding the bird fauna in the future and provide measures for their conservation.
Key Word Index: *Birds diversity, Jabalpur region, bioindicator, pollution, conservation.*

Mollusks are Megadiverse: A Report

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The Mollusca, as second largest animal phylum, contribute with countless fossil and roughly 100,000 recent species, and many more remain to be discovered and investigated. In whichever tropical, temperate or polar ocean we have collected mollusks during the last 10 years, we always made new discoveries. Depending on the region, 10-50% of species collected referred to species new to science. Regarding gastropod species, 80% or even more may be new when exploring abyssal

depths of the oceans. Usually, species with individuals growing large, having massive shells and looking conspicuous are better represented in faunal lists than small and colorless, sluggish specimens living hidden between sand grains or parasitic in deep sea host animals. During centuries, molluscan taxonomy largely depended on shell morphology, and more recently also gross anatomy and radula features were compared and considered. Yet, the renaissance of (micro) morphology and especially the advent of molecular genetics greatly supplemented and enriched molluscan taxonomy and diversity research. There is increasing evidence that cryptic species, i.e. those not detectable by traditional methods, will boost the species richness in several sea slug groups. An exciting range of traditional and novel methods and tools is available to explore the hidden species diversity in molluscs, and also their morphological, functional and genetic diversity, i.e. any kinds of biological diversity. Ultimately, we are interested in how and why such an overwhelming organismic diversity evolved. Modern phylogenetic and evolutionary research provides exciting new insights into the secrets of molluscan life history.

Key Word Index: *Mollusca, Diversity, Evolution, Taxonomy*.

Studies on the Diversity and Assessment of Water Pollution Using Aquatic Insects: Survey of Narmada Valley Jabalpur (M.P.)

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Aquatic insects may considered model organisms in analyzing the structure and function of the freshwater ecosystem because of their high abundance, high birth rate with short generation time, large biomass and rapid colonization of freshwater habitats. Aquatic insects are major groups of arthropods found associated with water for most part of their life cycle, any change in their number and composition in the population at a given time and space may indicate a change in the water quality trophic structure, and eutrophication of the aquatic ecosystems. Coleoptera, Lepidoptera, Odonata belong to Class Insecta which has many potential representatives that can be used as environmental indicators. The use of bioindicators is essential for environmental monitoring. Present study was carried out from January 2015 to June 2016. Four study sites were selected for the investigation these were Bargi dam, Gwarighat, Tilwaraghat and Bhedaghat. In the study total 83 species of recorded viz., Odonata 37 species (7 Families), Lepidoptera, 25 Species (5 Families), Coleoptera 21 Species (5 families).

Key Word Index: *Bioindicator, Environment, Aquatic Insect, Pollution.*

Economic values of Ecosystem Services

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In the present study through a case study, an attempt has been made to highlight that National Parks offer intangible benefit such as - Water and Soil conservation, Carbon sequestration, recreation nutrient cycle, air purification, biodiversity conservation and pollination etc. among other benefits. For the lack of data, yet, the net benefit provided by the parks i.e. value of services minues (-) disservices (for e.g. wild life damages, forest fires, illegal cutting of trees & hunting etc.) are

considerable and worth millions of dollars. The benefits obtained from maintaining an area of National Parks are higher than that obtained from converting it to an alternate land uses. Such studies are warranted for all National Parks in India for more relevant data on this front.
Key Word Index: *National Parks, Ecosystem services, Economic values.*

Odonates Diversity in relation to physico-chemical characteristics of Gour river at Jabalpur, Madhya Pradesh

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The present study deals with the diversity of Odonates fauna in relation to Physico-chemical characteristics of Gour river at Jabalpur from July 2015 to June 2016. Gaur river is one of the important river at Jabalpur which flows from Niwas villege of Mandla district and joins Narmada river at Jabalpur. This river receives dairy effluents, agriculture runoff, sewage disposal as well as washing of clothes and animals and other daily activities. Odonates are good indicators of environmental change as they are sensitive to change in the habitats, atmospheric temperature and the weather condition. 38 species of Odonates, including 22 species of Dragonflies (Suborder- *Anisoptera*) belonging to 3 families and 16 species of Damselflies (Suborder- *Zygoptera*) belonging to 4 famlies were revealed from selected zones of the Gour river. These belong to 7 families of Odonates which the *Libellulidae* most dominated. The Odonates diversity is correlated with biological and various physico-chemical parameters that regulate the productivity and distribution of different species of the odonates.
Key Word Index: *Odonata, Dragonfly and damselfly, Gour River, diversity.*

Status and Diversity of Anurans (Anuran: Frogs and Toads) in Barkatullah University Campus, Bhopal, Madhya Pradesh, Central India

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A survey was conducted to know the status and diversity of anurans at Barkatullah University Campus between September 2014 and August 2015. Seven species of anurans belonging to 3 families (Bufonidae, Dicroglossidae, and Microhylidae) were recorded during the study period. Family Dicroglossidae contributed maximum number of species (5 species) in comparison to family Microhylidae and Bufonidae (1 species each). *Bufo melanostictus* and *Fejervarya limnocharis* were mostly sighted on the whole campus in comparison to rarely sighted *Sphaerotheca breviceps* of family Dicroglossidae. Among toads *Bufo melanostictus* was frequently observed. Mortality due to anthropogenic pressure (primarily vehicular killings) and has been found to be the main threat for these species. Present investigation emphasizes conduction of mass awareness programs regarding the conservation of these species.
Key Word Index: *Anurans, Diversity, Barkatullah University Campus, Bhopal Madhya Pradesh.*

Biodiversity conservation of National Chambal Sanctuary Panchnada area Etawah UP

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Panchnada which is also called a famous and natural untouched northern indian site where five big and important rivers meet together viz.Yamuna, Chambal, Sindh, Quari and Pahuj.It is the tail point of national Chambal sanctuary declared by the government of India (1987).The management and conservation of natural resources has been recognized as one of the most important human activities and a big goals so as it may yield sustainable benefits to the present generation while maintaining its potential to meet the needs of future generations.
Key Word Index: *Biodiversity, Conservation, National Chambal Sanctuary.*

Fish diversity of Lamhetaghat region of Narmada River at Jabalpur, Madhya Pradesh.

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The river Narmada is one of the important river of India and also called the life line of Madhya Pradesh. Fish diversity of Narmada River at Lamhetaghat region at Jabalpur studied during June 2015- May 2016. Lamhetaghat is about 16 km from Jabalpur city and about 3 km from Bhedaghat. Its name is derived from adjoining village called Lamheta. It is less crowded and beautiful ghat. Fish diversity is correlated with biological and various Physico-chemical parameters that regulate the productivity and different species of the fishes. 37 fish species identified during the study period belongs to Cyprinidae 16 species of fishes followed by Bagridae 5 species, Siluridae and Ophiocephalidae with 3 species, Claridae, Mastacembellidae and Notopteridae with 2 species and Belonidae, Centropomidae, Gobioidae and Anabantidae with 1 species of fish in each family.

Distribution and present status on Corals at coast of Okha, Gulf of Kutch, Gujarat

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Corals are marine invertebrates in the class Anthozoa of phylum Cnidaraia. They are usually live in dense colonies of many identical distinct polyps. The groups comprise the significant reef builders that inhabit tropical oceans and secrete calcium carbonate to form a solid skeleton.
The present study has been covered the distribution of corals in Okha and Mithapur to study the present day remnant of the major global geological climatological changes especially continental movements and major extinction events.
There were total 33 species of corals recorded in which 5 were hard corals from subclass Hexacorallia and 6 soft corals from Octacorallia. The present study aimed for conservation prospect of corals so their present status at IUCN red list has also been recoeded.

Biodiversity and its conservation: Asiatic lion

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Biodiversity is often used to describe all the species living in a particular area. Biodiversity represent the sum total of various life forms such as unicellular and multicellular organisms such as plants and animals at various biological levels including genes, habitats and ecosystem. In the convention of Biological diversity (1992), biodiversity has been defined as the variability among living organisms from all sources including inter alia terrestrial, marine and other aquatic ecosystem and ecological complexes of which they are a part. IUCN or WCU (World Conservation Union) red list with its headquarter in Switzerland, IUCN is playing important role for the conservation of endangered species. Some Indian endangered animal species are: Bengal tiger, Asiatic lion, Ganges river dolphin, Himalayan wolf, leopard, wild ass etc.

Asiatic lion is one of the seven sub-species of lions on this planet. Its scientific name is 'Panthera leo persica'. Gir (Gir forest), popular name for part of Gujarat in India is the only place where this magnificant animal is found today. Asiatic lion are listed as endangered species by the IUCN due to the size of its population. There are currently less than 500 Asiatic lions living in the wild. Asiatic lion is a big cat and other big cats that inhabit India include the clouded leopard, snow leopard, Indian leopard and Bengal tiger. The lion inhabits Gujarat's Gir forest and wildlife sanctuary. It is one of five big cats that can be found in India. Today, the last remaining lions live in a handful of protected areas in India's Gir forest.

Occurrence of AM Fungi in different Grasses growing on Dhubela Nutural forest

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Geologically Dhubela natural forest cames under the vidhyan and decan trap of rock system chief soil types are brown loam locally called "Bhuri Mitti" which is the most common soil, black soil locally known as "Kali Mitti" which from the soil of the area. Soil derived from vidhyan rocks is shallow and rather barren being loam in which sand is often excess the soil and toher climatic condition are responsible for the tropical dry deciduos type of the forest since Dhubela Nutural forest. Present study deals with the occurrence of Arbuscular Mycorrhizal Fungi in some grasses growing in the forest it was observed that there was significant variation in the AMF associated with different grasses. However maximum number of AMF species was recorded with *Cynodon dactyton* and minimum with *Hetropogon contortus. Glomus* 7 species, *Acaulospora* 5, *Scuttespora* 2 and *Entrospora single spicies* of *Gigaspora* wer also recorded.

Key Word Index: *AM Fungi colonization spore population.*

ECO-TOURISM

Khajuraho's Temples are not full of sexually explicit sculptures it has Spiritual and Religious value: View for research as Eco-tourism

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Khajuraho in Chhatarpur district of Madhya Pradesh is one of the most extraordinary archaeological sites in India. It is located on the banks of Khudar Nala, a tributary of Ken River. Khajuraho's ornate temples are among the most beautiful medieval monuments in India. Khajuraho was recognized as a World Heritage Site by the UNESCO in 1986 for its 'outstanding universal value' and 'human creative genius'. Despite the tourist traffic, Khajuraho preserves the ambience of a village and at the same time offers the most modern facilities to the visitor.

For many, the name Khajuraho is synonymous with erotic sculptures, however these erotic sculpture are less than one-tenth of total sculptures in the temples. Sometimes, Khajuraho is also associated with a religion where free love was in practice. Some people also associated it with the extreme Tantric sect, Kapalikas. D. N. Lorenz, a leading authority on the history of the Kapalika sect, dissociates this sect from the Khajuraho temples. None of these popular beliefs really define the character of Khajuraho. There are hundreds of images of divinities, many holding manuscripts and several in yogic posture in the temples. Khajuraho was not a royal playground, but a place of worship and religious discourse, where many sects received patronage. These temples were constructed for purpose of worship. We see evidences of existence of Brahmin, Jain and Buddhism religion in Khajuraho.

The Chandellas were local feudatories, under the imperial Pratihara monarch of Kanauj. A local legend romantically traces the descent of the Chandellas directly from Chandra, the Moon god. According to the legend, a young Brahmin maiden, Hemavati, was taking bath in one of the pond. Chandra saw her and fell for her beauty. Out of this relationship was born a boy. Hemavati was worried about the son because of illegal affair; however Chandra comforted her by prophesying that their son would become the first king of Khajuraho. The god added, he should perform Bhandya Yajna, a sacrificial ritual that included among the rites the depiction of erotic figures. He should also build 85 temples with erotic figures. This would free his mother from the blemish of extramarital affair. More than sixty-five inscriptions of the Chandellas have been found, however all of those are silent about this love story. Instead they trace the descent of the Chandellas from the mythic sage Chandratreya. Nannuka (AD 831-845) was the first chief of the Chandellas who was a directly descendent of sage Chadratreya. Vakpati (AD 845-865) succeeded Nannuka. Jayashakti (AD 865-885) was the third chief in the line. Soon the Chandella region got the name 'Jejakabhukti', after the chief Jayashakti, or Jeja. Rahila (AD 885-905) succeeded Jayashakti.

As a biologist sex is prime need to create next generation in any religion. As we seen nude sculpture put on the outer side of the temple not inside (Garbh Grah), their established God. It is a combination of body and soul. What we are seeing outside of temple may not be agree but if you go in inside the temple you will get peace where sole of body live. Ultimately finally human being search peace of mind. Therefore, It is important to highlight Khajuaho temple as Spritual and Religious temple not a wide sex view.

A study on the Airborne Particulates Matter in selected region Jabalpur, MP

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Particulate pollutant gives harmful effects to human health and became one of the main causes of the cultural heritage deterioration. The research is focuses on the airborne particulates at the Jabalpur city. The BAM (Beta Attenuation Monitoring) instrument is used for analyzing sample coarse and fine particulate matter (PM_{10} & $PM_{2.5}$). Jabalpur it is a fast growing city and in one of five biggest city of Madhya Pradesh air quality parameter as PM_{10} and $PM_{2.5}$ was analyzed at sampling station at Jabalpur results shows increased values of parameters at severed sampling station. The mass concentrations at selected location were exceeding the limit of safety Air Quality (AQ) and Pollution Control Board standard limit for PM_{10} and $PM_{2.5}$ in 24hours sampling. Thus, it is important to control the level of contaminants within the buildings for safety purposes.
Key Word Index: Particulate Pollution (PM_{10} and $PM_{2.5}$), Air Quality Monitoring and BAM.

A GIS based applications for an Ecotourism Region

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A GIS-based approach was designed to spatially estimate direct use value of ecosystem services. The approach highlights the use of GIS to collect data, perform spatial analysis, and map economic values; the unique spatial database technology in GIS can combine the figure information which reflects the geographical position together with various kinds of information. Along with the rapid development of computer multimedia technology and communication network technique, Geographical Information System (GIS) has been applied widely. At the same time, the functions of GIS in the development and management of tourism and the development and perfection in geography have been analyzed.
This paper proposes the solution of information service and supervision based on GIS for ecotourism for various countries at this stage.
Key Word Index: *Information services, Monitoring, Ecology, GIS, Remote Sensing.*

Conservation of Biodiversity wild Life Ecotourism Perspective of Chitrakoot

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Chitrakoot is well known historical Religious place with beautiful, dense Animals, etc. forest, Kamadgiri hills & hillocks; with rich Biodiversity & Medicinal herbs beside this Chitrakoot has Multidimentional importance for different fields. It is very popular in tourists as a Religious place – because Lord Rama spent 11 year of there exile. Good Climate & natural – beauty is the attraction of this place It attracts pilgrims from all over India On fair & festivals 5 – l0 lacks people gathered

there. Pressure of pilgrims creates great pressure and load of pollution in surrounding area of River & near around the kamadgiri parwat. Pollution level is very high – Creates problems to the environment of chitrakoot.
Anthropogenic activities creating large disturbance in wild life as well as in quatic – life of the river situation is Alarming we - Must need a scientific plan to protect the wild life of the chitrakoot, medicinal hubs of the chitrakoot & natural beauty & healthy climatic Conditions of the chitrakoot which attacts the tourists to save the beauty of this holy place Ecotourism – Perspective should be needed, to save the Biodiversity & Specialty of this place.

Ecotourism – An analytical study

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Ecotourism is referred to as sustainable based tourism. It associates tourism in synchronization with nature & offers opportunities for tourists to experience and explore the nature. It also highlights the absolute need of protection of biodiversity and local culture. Ecotourism focuses visiting natural areas featuring fragile, pristine and relatively undisturbed environment. It involves travel to the destination where flora, fauna and cultural heritage are prime attractions. It is designed to offer insight into the impact of human beings on the environment and also to nurture a greater appreciation of natural habitat along with educating travelers to provide funds for ecological conservation. Tourism is a booming sector in Madhya Pradesh and ecotourism is one way that's uplifting the society and is considered as one of the main source generating income. People nova days are talking ecotourism destination rather than picking mainstream holiday destinations. This paper is an attempt to convey how ecotourism cane has an impact on resource conservation and as well as local development.

Environmental Impacts of Ecotourism at the Global Level

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Ecotourism today is the most vibrant tertiary activity and a multi billion industry in India. Ecotourism is a form of tourism involving visiting fragile, pristine, and relatively undisturbed natural areas, intended as a low impact and often small scale alternative to standard commercial tourism. Its purpose may be to educate the traveler, to provide funds for ecological conservation, to directly benefit the economic development and political empowerment of local communities, or to foster respect for different cultures and for human rights. Since the 1980s ecotourism has been considered a critical endeavor by environmentalists, so that future generations may experience destinations that are untouched by human intervention. Ecotourism is intended to offer tourists insight into the impact of human beings on the environment, and to foster a greater appreciation of our habitats. The industrialization, urbanization and unsustainable agriculture practices of human society are considered to be having a serious effect on the environment. Ecotourism is now also considered to be playing a role in this depletion. These invasions often include deforestation, disruption of ecological life systems and various forms of pollution, all of which contribute to environmental degradation. Ecotourism not only contribute to climate change, but is affected by it as well. This

paper provides a review of some of the literature which focuses on environmental impacts of ecotourism.

Key Word Index: *ecotourism, urbanization.*

Importance of Eco-tourism in India

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India, the land of varied geography offers several tourist destinations which are treasures of natural beauty, archaeological and architectural monuments, hill resorts, beach resorts, mountains and rivers etc. The visits to these places destress as well as rejuvenate the tourists. Tourism in India is probably as old as its 5000 plus years old culture. Ecotourism, entirely a new approach in tourism has received much attention in recent years, especially within the developing countries. In simple words, ecotourism means management of tourism and conservation of nature in a way so as to maintain a fine balance between the requirements of tourism and ecology on the one hand and needs of the local communities for jobs, new skills, income generating employment and a better status for women on the other. Globally, ecotourism is identified as a means of achieving twin goals of biodiversity conservation and sustainable development. In the present paper, an attempt has been made to discuss the importance of ecotourism in India, as tourism industry development can play a pivotal role in building India the most favoured nation for tourists from all countries of the world.

Ecotourism and Biodiversity

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In present scenario, ecotourism can contribute to safeguard biodiversity and ecosystem functions in developing countries, even though meeting the requirements for ecotourism is extremely difficult. A cost-benefit analysis of those ecosystems richest in species diversity, i.e. tropical rainforests, leads to the conclusion that non-use values often outweigh the values of conventional uses, but are hardly considered in development decisions. Therefore, tourism and its high direct use value can play an important role as an incentive for protection. As tourism causes significant emissions, e.g. by flying, the concept of Environmental Damage Costs is introduced and integrated into the calculations. Further, international tourism development is analyzed and related to protection goals. Visitation rates of sensitive areas need to be limited; education, management, and control measures have to be integrated; and the proportion of money captured from tourists has to be increased. In the long run, tourism needs to undergo substantial changes.

TECHNOLOGICAL APPROACH LAB TO LAND

Embryonic development of two carp species with response to varied water temperature and breeding season under tarai condition of Uttarakhand

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The present study was designed to assess effect of water temperature on the embryonic development of Rohu (*Labeo rohita*) and Grass carp (*Ctenopharyngodon idella*) during late breeding season under tarai conditions of Uttarakhand. The present study dealt with the morphological aspects of the embryonic stages along with the effect of temperature on the embryonic development. Fishes were induced and eggs were fertilized at natural atmospheric conditions and fertilization was carried out at ambient temperature (28°C) and was considered as '0 hour' of embryonic development. Fertilized eggs incubated at two different water temperatures (i.e. 20°C and 35°C) until hatching. Developmental stages were monitored by sampling embryos in different temperatures at particular intervals. The present finding clearly demonstrated that the incubation temperature significantly influences hatching duration, hatching rate and survival of eggs of both *L. rohita* and *C. idella*. The present study also revealed that the embryonic development of eggs during high temperature, i.e. ambient temperature was faster than low temperature. It also revealed that during late breeding season, the development rate of eggs of *L. rohita* is more when compared to the development rate of eggs of *C. idella*.
Key Word Index: *Embryonic development, Hatching, Breeding season* and *Carps*

Change in Physico-chimical characteristic of River Kshipra during the Simhasth festival

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The Physico-chemical study on Kshipra River in the Ujjain district of Madhya Pradesh state revealed minor changes in alkalinity and conductivity values alone while all other parameters remained mostly unaffected during the month long Simhasth festival (celebrated after a lapse of 12 years) a mammoth public gathering flanked both the banks of Kshipra River (also known as Avanthinadi).

A study of scavenging enzymes activity in response to abiotic stresses in malformation disorder of mango (*Mangifera indica* L.)

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Mango malformation is a devastating disease of mango and a serious threat to mango cultivation, mango industries and its national and international trade. Malformation is a result of stress ethylene accumulated in plants due to various biotic and abiotic stresses. In response to stress factors reactive

oxygen species (ROS) are formed in the plant. The present study is therefore aimed to study the activity of some scavenging enzymes synthesized in the mango plant during the month of February and March when flower initiation and flowering has taken place in northern states of India where temperature remains low along with high relative humidity and feeble wind. In malformed tissue samples of five commercial mango varieties collected from different states recorded an increase in SOD activity and a reduced POX and CAT activity.
Key Word Index: *SOD, POX, CAT, mango malformation, stress ethylene, weather variables*

Traditional uses of Medicinal plants in some tribal villages of district Katni of MP, India

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District Katni is a part of Satpura Plateau region of Madhya Pradesh. The present work is focussed on the traditional uses of medicinal plants by Gond and Baiga communities from some tribal blocks of District Katni. In recent years ethnobotany have gained a lot of importance in the state of Madhya Pradesh. However, this important source of knowledge have not adequately documented from District Katni. Here in the present work seventy three species of medicinal plants, extensively used by tribals and local people have been analysed qualitatively and documented for their traditional uses. These plants are commonly used in cough, pneumonia, swelling, jaundice, stomach ache, toothache, skin diseases, weakness, headache, fever, piles, anaemia, eye diseases, cancer, acidity, spermatorrhoea, rheumatism, paralysis, sciatica, diarrhoea, pregnancy problems, elephant foot, leucorrhoea, menstrual problem, lactation.
Key Word Index: *Satpura Plateau, tribal, Katni, ethnobotany*

Phyto-diversity of Traditional Therapeutic Ethnobotanical plants used by tribal group of Jhabua district: A Instructive Prevision

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The history of Ethnobotany is as old as that of humanity but the search involving its observation, recognition and application in human life is traced to have been pioneered during the Phthagoreanism era around 500 BC while the orderly recorded ethnobotany is traced to have stated with Dioscorides a Greek Philosopher who published De *Materia Medica* that cataloged about 600 plants in the Mediterranean around 77 AD. Today ethnobotany has become progressively more valuable in the improvement of health care and protection programs in different parts of the world. Ethnobotanical studies that explore and help to preserve knowledge are therefore urgently needed before traditional folklores are lost forever.
Conclusively say Autochthon of Jhabua district Bheel, Bhilala and Pataya are using early anciently of various plants Traditional Therapeutic Ethnobotanical plants in various diseases. They determination use lots plant and this Traditional, Oldest, ancestral acquaintance, innate knowledge, Aboriginal knowledge, Traditional, Ancestral, invaluable knowledge, about uses and preparations of these plants is transfer verbally from one age group to another it is proved by Instructive

Prevision, history of Articles, stone, Primitive ethic evidence indication. This study is a little Effort of documentation of the Traditional Therapeutic Ethnobotanical plant used by Autochthon of Jhabua district.

Herbal medicine and health

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Bhopal is the capital of Madhya Pradesh. Present study is carried out of different sites of Bhopal during winter, summer and rainy season. The medicinal plants are very useful for us and having no side effect. Plant play a very vital role in human life as every basic need like food ,fiber, fuel, cloth, medicine etc are provide to them. Wild and cultivated plants have known to be used by man over generation by practice and experience. All plants produce chemical compounds as part of their normal metabolic activities. The World Health Organization (WHO) estimates that 80% of the population of some Asian and African countries presently uses herbal medicine for some aspect of primary health care.

Impact of neem leaf extract on Beetle (*Coccinellaseptempunctata*) of Wheat crop in a particular area of Jabalpur

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Investigation were carried out during (2015-2016) at particular area (Kungwa) Jabalpur. The extract of neem (*Azadirachtaindica*) leaf extract were tested against Beetle (*Coccinellaseptempunctata*) on wheat crop which is sown in 1.220 hectare area.The data was recorded at interval of 1, 2, 6, 12, 24, 48, 72, 96 hours. It was observed that neem has potential of toxicity against lady bird beetle.
Key Word Index: *Neem leaf extract, wheat , Kungwa.*

Ethnomedicinal study of plants used by Tribal person for dysentery diseases in Tikamgarh District Madhya Pradesh

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The indigenous people of Tikamgarh district are reputed to have been treating many diseases effectively with plants. However documentation of these plants use is not available. The present study documented the medicinal plants used traditionally for the treatment of dysentery in the Tikamgarh district of Madhya Pradesh. Twenty two traditional healers were interviewed with the help of a prepared questionnaire. Plants that were cited were coded in the field for identification later. 38 plant species were cited for the treatment of dysentery respectively. Out of twenty two

respondents had knowledge of plants used in treating dysentery were documented. The survey uncovered very important sources of cheap remedies for dysentery.

Ethnomedicinal plants used to cure diabetes and jaundice diseases among the rural and tribal peoples of Hathras district (U.P.)

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Hathras district is situated in Aligarh region of Uttar Pradesh. It is bounded in East by Etah, in West by Mathura, in North by Aligarh and in South by Agra district. It covered an geographical area is about 175.6 sq. km and surrounding area about 76.5 sq. km. Medicinal plants have an important role for the survival of rural and tribal peoples who live in remote villages and forest area. Present investigation were carried out to cure the diabetes and jaundice diseases by medicinal plants were reported 14 plants species belonging to 12 families from Hathras district. Important information were provided for each species like botanical name, family, local name, plant part used, methods of preparation of medicine. Study was found that rural and tribal peoples are still using herbal medicine to cure different types of diabetes and jaundice diseases. Some important medicinal plants are used to cure diabetes and jaundice diseases are as : *Aegle marmelos* Linn., *Ficus racemosa* Linn., *Momordica charanra* Linn., *Abitilon indicum* Linn., *Andragraphis paniculata* Nees, *Eclipta alba* Hassk., *Gymnema sylvestra* R.Br., *Luffa echinata* Roxb., *Madhuca indica* Linn., *Phyllathus niruri* Linn., *Picrorhiza kurroa* Benth., *Sphoeranthus indica* Linn., *Syzygium cumini* Linn., *Vinea rosea* Linn., etc. This study is important to preserve the knowledge of medicinal plants used by rural and tribal peoples of Hathras (U.P.). The survey of phytopharmacological and literature of these medicinal plants have great pharmacology and ethnomedicinal significance.
Key Word Index: *Ethnomedicinal plants to cure diabetes and jaundice diseases*

Monitoring and effects of air pollutants on foliar surface of some medicinal plants at Taj City, Agra

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Present investigation was carried out in the Taj City of Agra for which some medicinal plants species as: *Withania somnifera* Dunal, *Rauwalfia serpentina* Lam., *Nyctanthes arbor-tristis* Linn., *Vinca rosea* Linn., *Moringa oleifera* Lam., *Termanalia arjuna* Roxb., *Emblica offcinalis* Gaertn., *Madhuca indica* Linn., *Syzygium cumini* Linn., *Azadirachta indica* Linn., etc. were cultivated and exposed to different air pollution load of vehicular flow for active bio-monitoring at four heavy traffic junctions of Agra city. The level of major air pollutants viz. SPM, RSPM, SO_X and NO_X were monitored continuously at an interval of 15 days at all four sites. The depending upon the density of vehicles at different sites, concentration of measured pollutants were also varied. However, the maximum concentration of was recorded at a site with highest traffic flow. The maximum reduction

in the concentration of chlorophyll-a, chlorophyll-b, total chlorophyll and carotenoid content was observed at surrounding of Taj Mahal and Fatehabad Road, Taj Ganj, Agra, i.e. 1.12± 0.03mg/gm; 0.58± 0.05mg/gm; 1.73± 0.09mg/gm; 1.43± 0.03mg/gm respectively. When compared to control site, where the values of all above parameters are as: 2.42± 0.09mg/gm; 1.43± 0.08 mg/gm; 3.57± 0.14mg/gm; 1.74± 0.04mg/gm respectively. There seem to be a positive relationship between concentration of different pollutants and biochemical parameters. Foliar damage and pollutant exposure was studied on medicinal plants with the help of Scanning Electron Microscopy (SEM) and some micro-morphological changes were also observed in the leaves of selected plants at more polluted site as composed to the control site.

Key Word Index: *Air pollutants, foliar damage, Agra*

Assesing ground improvement of soil at site Budhagar, Jabalpur, Madhya Pradesh

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In order to assist likely impact on environment due to mining activities, this research paper describes the system of classifying the soil for the areas of mineral ores. Mineral soil based on laboratory determination of particle size characteristics, liquid limit, and plasticity index and shall be used for particle size classification required for the laterite soil. The crystalline rocks are present in layer within the alluvial plain. These are belongs to Mahakoshal group of rock lower to middle Proterozoic. The mining area at Budhagar (district Jabalpur) belongs to laterite soil. These soils are essentially a mixture of aluminium and iron. These soils are deficient in potash, phosphoric acid and lime. The pH value of soil is low which is responsible for changing the bearing capacity of soil from the actual value; which is a matter of design consideration for knowing the soil-structure interaction.

Key Word Index: *Mining, Mineral soil, Laterite Soil*

Risk assessment of occupational exposure to Profenofos among Farmers: A Case report of Seoni District

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Profenofos (O-4-bromo-2chlorophenyl O-ethyl S-Propyl Phosphorothioate) is a natural toxic organophosphorous insecticide which kills insects in field and helps to achieve better quality and quantity of crops. Present study aims at effects of Profenofos (insecticide) on hematological parameters of occupationally exposed workers in Seoni district (M.P). Various studies have found that many farmers used excessive amounts of profenofos without proper protective gear, but no toxicological study has been made. This cross-sectional study aimed to evaluate the hematological and liver enzymatic status of these farmers from duration of July 2015 to September 2016. 40 blood samples of sprayers were compared with 10 non-occupationally exposed controls group from same area. According to report Profenofos significantly affect the RBC, HCT, MCV, MCHC, MCH and Eosinophil level. They should be used as useful parameters and warning signals for identification of

profenofos poisoning. Blood might be used to detect early haematological effects of exposure of profenofos insecticide. Exposure of profenofos creates contact dermatitis and allergic symptoms.
Key Word Index: *Profenofos, Human Health, Parameters, Workers*

Studies on Liver Glycogen in *Heteropneustes fossilis* (Bloch.) after feeding an Alga, Spirulina

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Spirulina is one of the most concentrated natural sources of nutrition for all animals. The micro algae, spirulina consists of polysaccharides, proteins and lipids having lots of negative group which are the dominant bending sets of toxic metal cation. In tissue glycogen showed increasing trend in 24 hr, 48 hr, 72 hr and 96 hr feeding of spirulina as compared to control in liver of *Heteropneustes fossilis* (Bloch.). The slight enhancement in liver glycogen content in the liver tissue indicates it's rapid formation by feeding of spirulina. Fish are considered as a main source of dietary protein for human consumption and essentially helps in improving the malnutrition in Indian. Sprirulina is cultured commercially in China and other parts of the world. This cyanobacterium has been proved to be a valuable source of food supplement not only for human but also for other farm animals too. It has been observed that Sprirulina is an effective bio absorbent, as it possesses a large surface area and high binding affinity. Spirulina improves the intestinal flora in fish by breaking down indigesatible feed components to extract more nutrients. Spirulina has gained a high economic value particularly because it contains some fine compounds such as essential fatty acids amino acids, antioxidants, vitamins and minerals etc.
Key Word Index: *Spirulina, liver glycogen, Bioabsorbents, Microalgae.*

Studies on Efficacy of Pesticides on Leaf Minor *Phytomyza atricormis* (Meign) infesting *Dolichos lablab* Linn.

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The bean leaf minor, *Phytomyza atricornis* (Meign) is an important pest of India. It causes serious economic loss to farmers otherhand low quality production is available due to infestation of this pest. The infestation is occurs in early winter season thus the leave falls immaturely and the growth of plants retarded due to feeding of maggot larva of the pest. Kinadon and heptochlor used to control the pest separately in two beds of *Dolichos lablab.* In a bed Kinadon (in 0.08%) solvent gave 96% larval mortality while the heptachlor pesticide (in 1.50%) solvent gave 98% mortality of larvae in separate beds. Thus it is proved that both pesticides were very effective of control the pest.

Rapid assessment approaches of Benthos and Venomous Snakes in Narmada Valley Jabalpur for Environment and Human Welfare

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Water is most essential element and prime necessity of life required for growth and activity of all living beings on globe. Narmada River, a mighty west flowing river is the fifth largest river in India. Day by day pollution load of river increases rapidly. Benthic Macro invertebrates are used as pollution indicators that live on or inside the deposite at the bottom of a water body. Jabalpur is one of the important destinations of the country. It has some of the best places of the country. Jabalpur is located between 23°10'N latitude and 79°56'E longitude. In the way of development of Jabalpur as smart city firstly we have to make Narmada as Smart River and pollution free because it is life line of Jabalpur and 9 Lacs 32 thousand people depends on it. The present study was carried out from January 2014 to December 2016. The whole Narmada valley of Jabalpur region including river, forest, grassland and urban area were selected as study site for the collection of sample. Four study sites had been selected for the investigation these were Bargi dam, Gwarighat, Tilwaraghat and Bhedaghat. The sites had been visited from 5 to 9 in the morning and 5 to 7 in the evening. In the study total 100 species of Bioindicators of various fauna have been recorded viz., Odonata 41 species (7 Families), Lepidoptera 27 Species (5 Families), Mollusca 15 Species (2 Class), Reptiles 17 species (2 families) although the whole world made of chemical so we can't stop the use of it, but their utilization is always hazardous. For developing smart city, organic way of pollution assessment is necessary, hence we should use biological indicator in place of chemical to save the life. In the same way Central India is rich in widespread snake diversity by having maximum number of common snakes of India. Venomous snakes of Central India are also widespread across the country or Indian subcontinent. This study will help people to know snakes especially venomous ones when encountered. We follow the term Big Four for four most widespread and common venomous snakes *viz.* Common Krait, Spectacled Cobra, Russell's viper and Saw-scaled Viper. These snakes are responsible for more than 80% fatalities due to snake bites in Indian Subcontinent. In many parts of their range they are actually the only occurring set of venomous snakes. The whole study on benthos as well as reptile encircle around environment and human welfare.
Key Word Index: *Central India, Smart City, Narmada River, Benthos, Reptiles, Venomous, Pollution.*

A technology for eutrophication abatement in Indian rural ponds

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Aquatic bodies are very important, highly dynamic ecological pockets and have great potential for biomass production and capable of harvesting diverse flora and fauna. Fresh water bodies directly help in the growth of human civilization; particularly the pond forms the lifeline of Indian villages. Freshwater ecosystems are one of the most common and stable habitats of biosphere and have their own physical, chemical and biological characteristics, which are molded by local conditions and physiographic features. Water quality is getting vastly deteriorated due to unscientific waste disposal and carelessness towards the environment; this has led to scarcity of potable water affecting the

human health. The growth of population and industry has resulted in an increase, both in the total volume of the sewage and the degree of toxicity of industrial effluents in which the share of obnoxious matter has markedly increased resulting in eutrophication of water bodies and in turn leading to the invasion of harmful vegetative species. Over time, unless they have continued input from a fresh water source, closed aquatic ecosystems like ponds often become eutrophic. This is a process in which the ecosystem is enriched by nutrients, encouraging excess plant and algal growth. This plant growth often strips the water of necessary oxygen, since microbes use up the oxygen as they decompose the excess plant material. Although, eutrophication is a natural form of succession which usually takes hundreds or thousands of years, it can be enhanced through human inputs of nutrients.

As the pond becomes covered with surface vegetation, the organic matter settles at the bottom, slowly filling up the pond and causing low dissolved oxygen levels as decomposition takes place. Eutrophication from these excess nutrients (primarily nitrates and phosphates) leads to algal blooms, which leads to a degradation of water quality due to reduced dissolved oxygen levels and a subsequent decrease in biodiversity. Eutrophication is a natural ageing process of aquatic ecosystems. Although it is a very slow process, under which the aquatic environment is ultimately transformed into terrestrial habitats. The accumulated excess nutrients in the water body stimulate the growth of phytoplankton. Eutrophication is also induced by anthropogenic activities such as fertilizer application in agriculture and land-use changes that accelerate the phytoplankton growth in aquatic ecosystems.

At present, many water bodies i.e. ponds or lake are dying due to eutrophication. Domestic waste water and uncontrolled waste material is imparting to enhance the rate of eutrophication of rural ponds at very fast pace. There is no provision in India to combat or prevent the eutrophication of these rural ponds except some mechanical restoration activities like, digging, embankment, widening etc.

These measures are not enough to combat against eutrophication of these rural ponds. So, we are proposing the following provision for the abatement of eutrophication problem in freshwater ponds in the vicinity of rural areas. This four chamber technology will not only help to check eutrophication but also aggregate some scattered nutrients for the agriculture use.

Key Word Index: *Eutrophication, Domestic wastewater, eco-friendly technology, BK plant, Rural ponds*

Applications in Biological Research and Future Prospects based on Cloud Computing

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Cloud computing has emerged rapidly as an exciting new paradigm that offers a challenging model of computing and services. The use of large bio datasets, its highly demanding algorithms, and the hardware for sudden computational resources makes large-scale bio data analysis an attractive test-case for cloud computing. This paper is targeted at researchers in the field of genetics and biotechnology who wish to understand how cloud computing can contribute to their area of research. Bio-informatics tools are extensively used in biological research today. These tools can be utilized more efficiently and in a possibly more cost and time effective manner using cloud technology. High-throughput genomics leads to reams of data that cannot be processed by local research facility

computers at the speed it is generated. Large datasets and applications for image analysis, data mining, protein folding, and gene sequencing can also be shared for collaborative research between facilities using clouds. This is a simpler approach than transferring such data.
Cloud technology can contribute significantly in areas such as biodiversity informatics and the study of human genetic variation and disease. We discuss these possibilities, the challenges in realizing the potential for application of cloud technology in biological sciences, and the work being done to overcome these challenges.
Key Word Index: *Biotechnology, Bioinformatics, Genetics, Protein folding.*

Assessment of Physico-chemical studies on Ground water in and Around Banda city, UP

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Banda district lies between latitude 25º00"00" North and longitude $80^0$00"00" and 81º00"00" East. Total geographical area of the district is 4460 sq. Km. The present study was investigated various physic-chemical parameters like Temperature, pH, DO, COD, TDS, TSS, Alkalinity, Total Hardness, Nitrate, Chloride and Sulphate etc. The results of the above work show that most of the physico-chemical Parameters are well within the permissible limit. DO was reported at all the sampling station are more than the permissible limit. Fifteen percent samples of BOD are higher than the permissible limit prescribed by WHO. COD was found at sampling station BG1, BG2, BG4, BG5, BG6, BG7, BG8, BG10, BG14 and BG15 are above the permissible limit set by WHO. Cadmium concentration was found at sampling station BG6, BG12 and BG14 are exceeding the limit. Mn and Cr were detected at all the samples were below the permissible limit of WHO.
Key Word Index: *Physico- chemicals Parameters, Ground water, Banda City, Uttar Pradesh.*

An advance Design of Toilet used in Indian Trains

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Indian railway is the back bone of the transportation industry of our country. It plays an important role for common man as well as for industry people. Indian Railways is an Indian state-owned enterprise, owned and operated by the Government of India through the Ministry of Railways. It is one of the world's largest railway networks comprising 115,000 km (71,000 mi) of track over a route of 65,808 km and 7,112 stations. In 2012-13 on an average, on any given day, 12617 trains were running on Indian Railway tracks. The total number of passengers in 2014-15, Indian Railway carried 8.397 billion passengers annually or more than 23 million passengers a day (roughly half of whom were suburban passengers) and 1058.81 million tons of freight in the year .In a single train generally there are 24 coaches and its counting depends upon the axle designing and the route of the train. It is a well known fact that large number of people of all age groups travel by train. Irrespective of the type of train or class, one facet of the train that needs improvement is the cleanliness of toilets. A toilet is a sanitation fixture used primarily for the disposal of human excrement and urine, often found in a small room referred to as a toilet/bathroom/lavatory. Maximum time four toilets are needed in a single coach, two for female

passengers and two for male. Sometimes two toilets for Indian style and rest of two for English pattern are constructed in the coach. An unclean toilet causes bad smell, which makes people uncomfortable. Further it affects people by spreading various diseases. One main reason for the lack of cleanliness is that people forget to flush the toilet often. To maintain toilets clean, separate routines are adopted but only periodically at major stations. Hence for cleanness of toilets, a large amount of water is needed. In the recent design of toilets almost 5 to 7 litres of water is consumed by a single passenger while using toilet and almost 2 to 3 litres of water is used in the wash basin for cleaning the hand. In this project, design and fabrication of advance toilet is suggested to minimise the use of water in the toilets of Indian Trains. Only 2 to 3 litre of water will be used if this design is implemented in Indian Trains. A huge amount of fresh water approximately 5 to 7 litres will be saved on a single passenger. The expected cost of this design would be around Rs. 8000 to 10000 only, which can be recovered only in 1 month.

Key Word Index: *Indian Railways, Cleanliness, Toilets, Fabrication and Design.*

Factor Analysis: A Tool for Research

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Factor analysis is the name given to a group of statistical techniques that can be used to analyze interrelationships among a large number of variables and to explain these variables in terms of their common underlying dimensions (factors). 'Factor analysis' is a useful tool for investigating variable relationships for complex concepts such as socioeconomic status, dietary patterns, or psychological scales. It allows researchers to investigate concepts that are not easily measured directly by collapsing a large number of variables into a few interpretable underlying factors.

Key Word Index: *Research, Variables, Factor Analysis.*

The Application of Remote Sensing in the Field of Natural Resources Recognition

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One the key applications within this project is the operational high resolution optical and radar data to confirm conditions claimed by a farmer when he requests aid or compensation. The use of remote sensing identifies potential areas of non-compliance or suspicious circumstances, which can then be investigated by other, more direct methods. As part of the Integrated Administration and Control System (IACS), remote sensing data supports the development and management of databases, which include cadastral information, declared land use, and parcel measurement. This information is considered when applications are received for area subsidies. A proper consideration of analytical factors will help in our effort. As there are various types of rock a photographic representation or guide line is not of much importance. In fact the number and relative effectiveness of geological events and various processes (causes) that have acted upon them is of much importance to evaluate such features. This paper concentrates on the recognition of natural resources with the help of the Aerial photographic study

Key Word Index: *Remote Sensing, Natural resources.*

The impact of Chlor alkali Industry effluents on reproductive system of fresh water teleost *Barilius bend*

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Mercury is among the most extensively studies of all the environmental pollutions, because of its high toxicity, its environmental ubiquity and persistence, bioaccumulation in food chain and the developmental effects observed at relatively low level of exposure. Mercury released from the chlor alkali industry has been cause of environmental concern since 1950s. At present it is estimated that around 12,000 tones of mercury are contained in mercury cells used from chlorine production.
The chlor alkali industry is the third major mercury user worldwide. Chlor alkali industry produced topten chemicals and manufacturing of a wide variety of products used in day today life. These include pharmaceuticals, detergents, deodorants, disinfectants, herbicide, pesticides, and plastics. Emission of chlor alkali effluents from various industries into water bodies is having detrimental effects on aquatic species like fish. Since fish is very important part of ecosystem. So their study is done to observe the damage on the reproductive system of fish. Locally caught fresh water river fish from local market has concentrations of total hg from 0.049-248 mg hg/g fw, of which 37-100 ./. were in form of methylmercury. The wide usuage of heavy metal salt ultimately pollutes the aquatic environment, thereby affecting the aquatic fauna, mainly fishes, which constitute the major economy of the country.
So an attempt has been made to find out toxic effect over reproductive system of teleost fish *Barilius bendelesis*. Parameter are recorded from district Shahdol, MP, place-Kshir Sagar, the junction point of river Sone and river Munda, 32 km away from effluent discharge point of chlor alkali industry.
Key Word Index: *chloralkali, industry, mercury, Teleost fish, Barilius bendelesis, Kshir sagar*

A Study on – Impact of religious activities on water quality of Holy River Narmada at Hoshangabad

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Water is the most vital element among the natural resources, and is critical for the survival of all living organisms including human, food production, and economic development. Today there are many cities worldwide facing an acute shortage of water and nearly 40 percent of the World's food supply is grown under irrigation and a wide variety of industrial processes depends on water. The problem of water quality deterioration is mainly due to human activities such as disposal of dead bodies, pilgrim activities, chat puja, major rituals, Idol immersion, and mass bathing, which are major cause of ecological damage and pose serious health hazards. The main objective of present study was to analyze water quality changes occur due to religious activities. To address water-related environmental problems. To provide appropriate picture of current water quality conditions and trends in water-quality and water uses. To facilitate the identification of emerging issues and future priorities. This study was carried out at different stations of Narmada river at Hoshangabad on Bandarabhan and sangam ghat. The water samples collected were analyzed, as per standard method parameters such as Physico-chemical and biological parameters like temperature, pH, turbidity,

conductivity, TDS, Total hardness, Ca-hardness, Mg-hardness, Alkalinity, carbonate, Bicarbonate, free CO_2, DO, BOD, chloride, COD, phytoplankton, zooplankton, significant changes were observed on the water quality of the Hoshangabad region of Narmada River. Increased pollution load deteriorating the water quality of river Narmada day by day. Further, the study suggested that some eco friendly water quality management strategy and incorporation of some newer technology is required to develop the Ghats to achieve the needs of community as well as conservation of river.
Key Word Index: *Impact, religious activity, Narmada River, BOD, COD.*

Toxic effects of Lead Nitrate and Cadmium Chloride on the Indian Major Carps (*Labeo rohita, Cirrhenea mrigla and Catla catla*)

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Environment plays very important role in every biological phenomena of organism and every single variation in it create a stress situation for the organism. When any water body is polluted, the fish population is exposed to such a stress situation. The fish tries to overcome this stress situation but if fails then tries to adopt. Pollutants when cross the limit of tolerance then prove to be lethal.
In the present paper, the results of effects of Pb and Cd pollution are being reported. The fishes were exposed to different concentrations of lead nitrate and cadmium chloride separately. LC_{50} was also studied for each metal. The fishes were exposed to sublethal concentration of metal pollutants for 7^{th} , 14^{th} , 21^{th} and 28^{th} days and it was found that significant decrease in various parameters lipids, protein, carbohydrates. Histology of vital organs also supports it.
Key Word Index: *LC_{50}, Lead, Cadmium, Indian Major Carps, histology.*

Isolation techniques of microbs with special to bacteria

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Isolation of microbes is a primary objective of any research in the field of microbiology and biotechnology. Serial dilution technique is often used for the isolation of bacteria. In this technique sample suspension is prepared by adding soil mixed with waste (1g) was added to 10ml of sterile water (the stock) and shaken vigorously for at least 1minute. In the present paper, various techniques used for different types of microbes for isolation have been discussed. Bacteria are very commonly used in day to day affairs and in industry. Therefore, detailed account of various techniques is necessary to be discussed.
Key Word Index: *Microbes, Isolation techniques, Serial dilution, Bacteria.*

Study of certain aspects of harmful Coleopterans (Class: Insecta, Phylum: Arthropoda) issues and challenges for mankind

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The vast number of variety of beetles has inevitably had an important impact on the human population that share environment with these insects. Beetles, like some other insects, pose a threat to agriculture, feeding on crops and wood, both harvested and stored. The beetles of the family Dermestidae are widely distributed and feed on cereal products, grains, stored food, rugs and carpets, upholstery and fur coats. Although the adults of some species may be destructive, usually it is beetle larvae that do the most damage.In this paper, the results of a yearlong field investigation carried out in ten villages of Tehsil Ladpura, District Kota Rajasthan, are being presented. In the survey ten families were found more destructive to the crops, stored grains, fruits, wood, vegetables, cloths and other household articles.
Key Word Index: *Harmful coleopterans, Insecta, Environment, Beetles, Dermestidae.*

Importance of exploration of Zooplankton Diversity as Water Quality Assessment

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Freshwater habitats occupy a relatively small portion of the earth surface as compared to marine and terrestrial habitats, but their importance to man is far greater than their areas. The worldwide distribution of water body type leads to a large variety of temporary pond type due to climate and geological differences. The man is using water resources at a large scale. The effort to conserve these resources is present need. Factors that influence the sustainability of such lentic systems are temperature, transparency, salinity, biogenic salts, dissolved gases etc. Since, ponds are favorable habitants for a variety of flora-fauna and anthropogenic society, so its regular monitoring is necessary for control. Recently, lot of work has been done on changing ecological behavior of ponds. Fresh water resource are becoming deteriorate day-by-day at the very faster rate. Now water quality is a global problem. The healthy aquatic ecosystem is depended on the biological diversity and Physico-chemical characteristics. Zooplanktons are widely distributed in nature and its Diversity may be used as an indicator for Pollution.
Key Word Index: *Water, Pollution, Pond, Ecosystem, Zooplankton.*

Morpho-taxonomical Description ofa new species Capingentidae from *Heteropneustes fossilis* (Bloch) in Hamirpur (U.P.) India

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The tapeworm are generally endoparasites found in the different part of the body of various vertebrate hosts including fish viz. intestine, liver, gall bladder, gills etc. Fish are natural source of protein for human but the heavy infection of tapeworm parasites cause damage to fish health and

deterioration in the production and quality of food value. Present morphological investigation under taken to evaluates a new species of the family Capingentidae Hunter, 1930 from a local fresh water fish, *Heteropneustesfossilis* (Bloch) in district Hamirpur (U.P.) India.

Key Word Index: *Human Health, fresh water fish, Tapeworm, Capingentidae.*

Seasonal and diel variations in plankton production in relation to phyco-chemical parameters and its impact on Fisheries in River Narmada from Lamhetaghat to Bhedaghat, near Jabalpur, MP, India

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Water is universal solvent as it dissolves more substances than any of other liquid without undergoing any chemical change. It is indeed an elixir aspect of life and health for production of food, industrial activity, energy generation and maintenance of environment as well as sustenance of life and development. Approximate water volume of the earth (total water supply of the world) is 1,360,000,000 km^3 (326,000,000 mi^3). This natural source is becoming scarcer in certain places and its availability is a major social and economic concern. Currently, about a billion people around the world routinely drink unhealthy water.

The assessment of water quality of any aquatic resource is based on physico-chemical and biological methods. The former gives information about the type of substances/pollutants and its concentration while the latter indicate the general effects. When biological data are correlated with physico-chemical profiles, a better understanding of the effects of pollution is obtained and integrated picture of water body furnished. The physico-chemical approach for monitoring of water pollution is most common and plethora of information is available of these aspect but such data provide a mosaic picture of the whole scenario, chemical analysis, although valuable and necessary, does not provide all the information required in pollution assessment. Indeed, it is not the concentration of contaminants that are concerned rather the effect of these concentrations on organisms or human being. However, water quality depends upon its source of history and signifies the terrain through which it is flowing, origin and most important the extent to which it is contaminated on its way by anthropogenic means.

In the developing world, 90% of all wastewater still goes untreated into local rivers and streams. More than 50 countries with roughly a third of the world population also suffers from medium or high water stress and 17 of these extract more water annually than is recharged through the natural water cycle. This not only affects surface freshwater bodies like rivers and lakes but also degrades groundwater resources. Jabalpur, the central point of India, is located at $23^0$10'N$79^0$57'E23. 17^0N 79.95'E on an average elevation of 411 meters (1348 fts). Often called as Sanskaardhaani in Mahakaushal region of Madhya Pradesh, this city is largest in the state and 19^{th} largest urban agglomeration in India and the third most populous city of Madhya Pradesh after Indore and Bhopal. Narmada (also called Rewa) is a river in Central India and the 5^{th} largest river in the Indian subcontinent. It is the third largest river that completely flows within India after the Ganges and Godavari, forms a traditional boundary between North and South India and flows westwards over a length of 1,312 km (815.2miles) before draining through the Gulf of Cambey (Khambat) into the Arabian Sea, 30 km (18.6miles) West of Bharuch city, Gujarat. The source of Narmada is a small

tank called Narmada Kund located on Amarkantak Hill (1,057 m , 3,467.8 fts) in the Annupur district of eastern Madhya Pradesh.

The five different sampling sites selected for physico-chemical and biological (plankton) profile studies were - (1) Lamhetaghat (S-1): This spot is situated around 16 km from city headquarter. Narmada River at this point is 150-200 m wide and depth 5-10 feet inner the bank and 40-50 feet in the centre, the depth of Kharighat is unknown. Shape is slightly curved. (2) Laxminarayanghat (S-2): This station is also called Gopalpurghat and situated about 17.5 km from city headquarter. Narmada at this station is 200 m wide and 10-15 feet deep near the bank and 50-60 feet in the middle. (3) Gograghat (S-3): It is a third sampling station and also called Little Bloom water fall, situated at a distance of 19 km from the city headquarter. Narmada at this station is 150 m wide and10-15 feet deep near the bank and 70-75 feet in the middle. (4) Saraswatighat (S-4): It is located 20 km from Jabalpur city. The depth of Narmada at this bank is 25 feet and in the middle around 70-75 feet. This is U-shaped. This is often visited by pilgrims and nature lovers. (5) Bhedaghat (S-5): It is situated 21 km from the city headquarter and a well-known tourist place in Jabalpur. The sampling site is situated 50 m before Dhuadhaar which is very famous in India. It is one of the best places chosen by film industry for shooting and frequented by thousands of tourists.

In the present study conducted during October 2010-September 2012, the colour (visual observation) of the Narmada water at different sampling sites was colourless during winter and summer while light brown to dark brown in the months of rainy season at all the selected sites. Odour of the river water at sampling sites S-2 and S-4 was slightly unpleasant whereas at sampling sites S-1, S-3 and S-5 odourless. Water temperature ranged from 20.47to 35.50^0C, pH showed alkaline condition and varied between 6.6- 9.5. The turbidity ranged from 11.1 to 19.9 NTU with maximum values during monsoon months. Specific conductivity is an index of the amount of water soluble salts present in water which ranged between 163µ -384µ mhos/cm. In general, water of Narmada stretch covered in the study had fairly low contents of dissolved salts mostly contributed by the ingress of tributaries. Total solids ranged between 183-506 mg/l, total dissolved solids 101-305 mg/l and total suspended solids 52- 250 mg/l. In natural water, dissolved oxygen (DO) is the most important chemical factor as regulator of metabolic processes of plant and animal community and as indicator of water condition. DO of the Narmada water in the stretch fluctuated from 3.1 to 6.5 mg/l with low values observed in summer.

Biological oxygen demand (BOD) is the measure of oxygen required for biological oxidation of organic matter. Monthly changes in BOD at the five different sites varied from 5.0-13.0 mg/l. Chemical oxygen demand (COD) is the measure of oxygen required for chemical oxidation of organic matter. Monthly changes in COD at different sampling sites ranged from 45-140 mg/l. Alkalinity of natural freshwater is generally caused by carbonate and bicarbonate of calcium and magnesium. Natural water bodies in the tropics usually show a wide range of fluctuation in total alkalinity values depending upon the location, seasons, plankton population, rain fall, waterman's activity and nature of bottom deposits. Total alkalinity of Narmada water at the five selected sites varied between 157-286 mg/l suggesting the nutrient rich status of the river. Increase in concentration of chloride is an indication of eutrophy. Though chloride concentration less than 10 ppm has been reported in different stretches of Narmada in 2001, the present study conducted during October 2010-September 2012 showed chloride content between 526-687 mg/l suggesting the river stretch is getting eutrophied.

Total hardness refers to the concentration of divalent metal ions in water expressed as calcium carbonate which is usually related to total alkalinity and the cations of hardness are normally derived from the solution of carbonate minerals. Total hardness is not a specific constituent of water but

variable and complex mixture of cations and anions predominantly contributed by calcium and magnesium. Total hardness of Narmada water at the five selected sites ranged from 339 to 599 mg/l. The content of calcium is one of the variables in freshwater in which faunistic difference can be based since calcium serves as a micronutrient to most of the organisms. Calcium hardness ranged from 206 to 388 mg/l. Magnesium is a component of chlorophyll and required by flora in enzymatic transformation. It acts as a carrier of phosphates and stimulates bacterial reaction to organic matter. Magnesium content in the water remains less in comparison to calcium because of its uptake by saprophytes and algae in the form of chlorophyll enzymatic transformation. Magnesium content ranged between 123-206 mg/l, nitrate 11.0-26.5 mg/l, phosphate 1.04-3.58 mg/l and sulphate ranged from 266 to 366 mg/**l.**

Water quality index (WQI) recorded for both the years indicated minimum polluted water at S-1 (upstream) whereas maximum polluted water at S-3 (downstream). During October 2010-September 2012, 19 phytoplankton species were recorded from the surface and bottom water of river Narmada at the five different sampling stations, the species observed belong to five major groups, Chlorophyceae, Bacillariophyceae, Cyanophyceae and Euglenophyceae. Out of 19 species, 05 species belonged to Cyanophyceae, 08 to Chlorophyceae, 04 to Bacillariophyceae and 02 species to Euglenophyceae. High density of phytoplankton was observed during summer season. Maximum density (751 mg/l) was observed in April 2012 at S-1 on the surface while minimum density (483 org/**l)** in of September 2012 at S-1. Maximum density (498 org/l) is observed in February 2012 at the bottom whereas minimum density (317 org/l) in September 2011. Order of dominance being Chlorophyceae> Bacillariophyceae> Cyanophyceae> Euglenophyceae.

During the present study (October 2010 to September 2012), zooplanktons were represented by four major groups belonging to Protozoa, Rotifera, Cladocera, Copepoda and Ostracoda. Copepoda is observed to be the most dominating species. In all, 13 species of zooplanktons were observed at different sampling stations. As far as qualitative and quantitative abundance is concerned the Copepoda had 04 species followed by Cladocera with 03 species, Rotifera 03 species, Protozoa 03 species and Ostracoda with 01 species. The maximum density was (480 org/l) was observed in March-2011 on the surface while minimum density (310 org/l) in January 2011. Order of dominance of zooplanktons for both the years was Copepoda> Cladocera> Rotifera> Ostracoda> Protozoa.

Generally, the phytoplankton was observed most commonly near the surface at 5.00 am. Among zooplanktons, copepodans were followed by cladocerans. The maximum density was observed during summer months. The zooplanktons are well known for their diurnal vertical migration as they can swim actively towards the most suitable environmental niche in the river. The maximum diel variation in total zooplankton population at surface was found during winter and summer season and the minimum fluctuation occurred during the monsoon season. Further studies in this regard may be needed to ascertain the other factors that could affect this relationship causing seasonal modalities. During monsoon, the maximum number of zooplankton was encountered on surface around 5.00 pm and dominated by copepoda that generally remains near surface. Cladocerans exhibited an upward diurnal trend of migration from 5.00 pm till 9.00 pm. The zooplankton that was predominantly composed of copepods followed by cladocerans was low on surface in winter during morning hours (5.00 am). Their number was sufficiently high at 9.00 am and 5.00 pm. Rotifers were the third in the order of dominance and found in sufficient high numbers at 5.00 am and declined gradually until 1.00 am. Ostracoda represents the fourth dominant group whose maximum count was observed at 5.00 pm and minimum at 1.00 am. Protozoans were the last among zooplankton and showed a maximum count around 5.00 pm and reduced to minimum at 1.00 am.

Application of water quality index (WQI) gives comparative evaluation of water quality of different study sites during different season. The WQI of all the 5 sites of river Narmada (S-1 to S-5) during October 2010-September 2012 ranged between 80.14-95.47, the maximum value (95.47) was recorded during winter season (October 2011-January 2012) at S-3. The minimum range of 80.14 was recorded during rainy season (June 2012-September 2012) at S-1. From the present observation, it can be concluded that overall water quality of river Narmada at the selected sites is poor. The plankton density was observed to be high in all the five stations of the river which may be due to the higher concentration of nitrate and phosphate.

In the present study, 18 species of commercially important fishes such as *Catla catla, Labeo rohita, Labeo calbasu, Labeo fimbriatus, Labeo bata, Cirrhinus mrigala, Cirrhinus reba, Cyprinus corpio, Mystus seenghala, Wallago attu, Ompok bimaculatus, Heteropneustes fossilis, Clarias batrachus, Channa punctatus, Anabas testidineus, Notopterus chitala, Notopterous notopterus* and *Mastacembelus armatus* were observed. The high diversity in fish fauna may be due to the presence of favourable physico-chemical parameters and abundance of planktons.

Effect of Probiotics on Fish growth

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The word probiotic is constructed from the Latin word *pro* (for) and the Greek word *bios* (life). Probiotics are live microbial feed supplement which beneficially affects the host animal by improving its microbial balance. The demand for animal protein for human consumption is currently on the rise and is largely supplied with terrestrial farm animals. Aquaculture, however is an increasingly important option in animal protein production. This activity requires high-quality feeds with high protein content which should contain not only necessary nutrients but also complementary additives to keep organisms healthy and favor growth. Some of the most utilized growth-promoting additives include hormones, antibiotics, ionophores and some salts. Though these do promote growth, their improper use can result in adverse effects in the animal and the final consumer as well as lead to resistance in pathogenic bacteria in the case of antibiotics. Probiotics have received special attention from researchers as the use of probiotics is being increasingly seen as an alternative to the antibiotics in animal production. The present experiment was done to observe the effect of probiotic (PRORICH) on fish growth by giving different feeds *i.*e, T_1, T_2 and T_3 with different concentrations of probiotic (0.50%, 0.75% and 1.00% of feed, respectively). It was observed that the fishes fed with T_3 feed showed highest growth followed by T_2 and T_1.

Key Word Index: *Probiotics, fish growth, fish feed.*

Physico-chemical status of Parichha Dam, Jhansi, UP

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The present study deals with the analysis of Physico-chemical parameter of the Parichha dam District Jhansi (U.P.) during the year 2014-2015 in the present study various physico-chemical characteristics of Parichha dam viz.temperature,total solids, turbidity, pH, DO, CO_2, BOD,

COD, Alkalinity, Chloride, Sulphateduring the course of study only minor difference in physical and chemical parameter of study area were observed.
Key Word Index: *Physico-chemical, Parichha dam, Jhansi*

Analysis of lipid profile of Fish Heteropneustes fossilis (Bloch) in serum after Famfos intoxication

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Pesticide pollution is on increase through its increasing application in almost every field either it is household or agriculture where it is used widely. These pesticides reach to aquatic life by means of run off water and other ways. The residual impact is increasing in aquatic fauna. Fishes are the best indicator of aquatic pollution and also used for human consumption. Oxidative stress and role of reactive oxygen species (ROS) in disease and toxicity have been studied on two major issues in biomedical science in recent times. These aspect have also been studies in the aquatic animals.Recently a great deals of attention has been paid to evaluate hazardous effect of organophosphorus compound on physiology of many non – target organisms particularly fish. The symptoms of organophosphorus compound toxicity generally involve respiratory distress, increase glycolytic rate, decreased oxidative metabolism protein and RNA synthesis, though a lot of work has been done on the pollutional characters and determinate effect of the organophosphorus compound, their indiscriminate use has increased the pollutional hazards, posing much danger to fish and other aquatic life.The residual effect adversely affects the serum lipid profile of fishes which is measured and discussed in the present study to assess extent of damage caused by non-target effect of famfos to *Heteropneustes fossilis* (Bloch.).
Key Word Index: *Heteropneustes fossilis, Oxidative stress, Pesticide*

Antioxidant vitamin E supplementation and Total Leucocyte Count in NO_2 exposed albino rat

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In the present study, albino rats of both the sexes were exposed to nitrogen dioxide gas (50ppm) for one hour per day for 15 and 30 days. Albino rats of both the sexes of equal size and weight (150-200g) were kept in standard laboratory conditions and grouped in three sets (A, B and C) containing twelve rats each. Control set (A) was unexposed, experimental set (B) was exposed to nitrogen dioxide gas (50ppm) and experimental set (C) was exposed to nitrogen dioxide gas (50ppm) alongwithsupplementation of vitamin E (2.5mg) for one hour per day for 15 and 30 days. Total leucocyte count increases significantly after nitrogendioxide gas inhalation in both the sexes of

albino rat, due to irritant effect of toxic gas and airway inflammation which induces leucocytosis. Supplementation of antioxidant vitamin E plays a protective role in attenuating the toxic effect of NO_2 gas in both the sexes of albino rat due to antioxidant defense mechanism to a greater extent.
Key Word Index: *Antioxidant, vitamin E, Total Leucocyte Count, NO_2 gas, Albino rat*

Municipal solid waste management plan of Gwalior city. Madhya Pradesh, India

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Municipal Solid Waste Management is a global environmental challenging problem in today's world. There is an increase in commercial, residential and infrastructure development due to the population growth and this has negative impact on the environment. Urban solid waste management considered as one of the most serious environmental problems confronting municipal authorities in developing countries. One of these impacts is due to location of dumping site in unsuitable areas. The present paper deals with the production or the consumption of plastic in the form of plastic sheet, plastic utensils and carry bags was found to be 566 kg /day. The raw plastics make most of the bulk initial consumption as 565 kg/day. Carry bags make 1 kg/day consumption from various shops. Consumption of 700-800 plastic sheets was also found to contribute to the whole plastic consumption. As per the data given by the rag pickers, it has been found that a total of 229 – 274 kg/day of plastic waste is generated in Gwalior city.
Key Word Index: *Solid Waste Management, Organic Carbon, Composting, Gwalior city.*

Noice pollution sources, effect and their control form Kanpur, Uttar Pradesh, India

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The study examines the problems of noise pollution in the wake of its all effectson the life of the people. A cross section study of the pollution in Kanpur (U.P.) points out that main source of noise pollution is loudspeakers, mobile phone, automobiles, factories alarms and railway. Majoreffect of noise pollution include interference with communication, sleeplessness, a large variety of influence on spirit, mood,mentality and body so on, which cause career tension and strain also slow agent of deathand reduce efficiency. However complains to the administration and police have alsobeenaccepted as a way of solving this means. Public education and their awareness appear to be the best method a suggested by the respondents. However government and NGOs can play a significant role in the process.

Taxonomic study of an interesting tapeworm from edible fish, *Heteropneustes fossilis (Bloch)* from Yamuna river district Hamirpur (U.P.) India

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Ninety six fresh water edible fish, *Heteropneustes fossilis (Bloch)* were sacrificed from Yamuna river distric Hamirpur (U.P.) for study of parasites. Fourteen of them were found infected by

tapeworms. These parasites were reported from their intestine. This work was carried in one successive years 2016-17. Infection shows variation in different seasons.

Physico-Chemical features and phytoplankton population in Banisagar Lake Panna

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Studies on some physio-chemical features and phytoplankton population of the stoking pond at banisagar lake panna district tha thermal cycle revealed stratified conditions from march-august and isothermal conditions during rest of the year.
The pond water registered on observed pH range of 7.25-8.25 .the dissolved oxygen ranged between 2 and 2.8 ppm at the surface with the values slightly low in tha bottom water.
The diatoms depicted luxuriant growth throughout the period of study five species of green algae and two species of cyanophyceae were identified of different seasons.

In vitro Establishment studies for adaptive responses to drought stress: Are habilitation approach for Adansonia digitata L.: From lab to land

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Introduction: *Adansonia digitata* L. (Bombacaceae) is a native deciduous tree of African savannas known for its unique medicinal properties and charismatic appearance.The plant isstem succulent and has high water holding capacity. Its hollow trunk serves as a reservoir during drought. It is also resistant to fire and survives well in dry climate.For arid zones, drought is one of the most important constraints to the survival and development of plants playing a key role in the livelihoods of human populations. The domestication of *A.digitata*through tissue culture approaches has been suggested as a strategy to improve rural population livelihoods. The present study was carried out to rehabilitate the plant in nature.
Methodology: Effect of basal media for induction of axillary and apical buds using shoot explantsand effect of Cytokinins on percent sproutingwas investigated.Plantlets (10-15 cm in height) were transferred to plastic pots using different substrates as potting mixtures.
to assess their survival rate.
Results: BAP (0.2 mg/l) + kinetin (3.0mg/l) gave the highest percentage of sprouted explants (74.4%) in Class I explants and 86.6% in Class II explants. Maximum bud break was obtained in MS medium (79.9%) for class II shoots and minimum axillary buds were induced on B5 medium (43.3%). The mixture of soil and sand (1:1) resulted in 60-70% survival.
Conclusion: Conventional breeding techniques for woody trees are often difficult and slow because of high levels of heterozygosis and the long generation time between successive crosses. The results obtained are very encouraging and will give impetus to overcome drought stress and thus conserve this multipurpose tree.
Key Word Index: *Adansonia digitata, medicinal, drought, Bud break, Reservoir, BAP, Apical buds, conservation.*

Microbiological water quality and human health

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Globally, wateris one the most essential compounds needed for the sustenance of life on earth. The study of bacteriological aspects of water is an important parameter from public health point of view since they play a key role in water borne diseases. Water samples (05 samples for each season & year) collected from Madhav Lake of district Shivpuri in Madhya Pradesh for pre monsoon & post monsoon during 2009-11 were analyzed for Microbiological parameters. The MPN value of water in Madhav Lake was observed beyond the permissible limit of drinking water quality. Maximum value of Total coliform, fecal coliform and fecal streptococcal coliform was observed 28×10^5, 18×10^5, and 15×10^5 cfu/100ml in post monsoon session. In pre monsoon, the TPC of Madhav Lake water ranged between 4.5×10^4 - 10.5×10^4 cfu/ml during 2009-2011 and in post monsoon it ranged between 4.1×10^4 - 19×10^4 cfu/ml. Total plate count is considered to represent the contamination from the natural environment and also indicate that the presence of bushes and shrubs makes likely possible that, smaller mammals may have been coming around these water bodies to drink water, thereby passing out feces into the water. The profile of the isolated organisms from water samples collected from Madhav Lake was analyzed biochemically and found that *E. coli*, *Streptococcus species*, *E. aerogenes,Pseudomonas species* and *Salmonella species*. The seasonal changes observed in various microbial groups could be related to the influence the physico-chemical properties in the combination with human activities. The bacteriological characteristics of Madhav Lake, Shivpuri (M.P.) indicates that its water is highly contaminated and is not suitable for drinking.
Key Word Index*: Coli forms, MPN, TPC &IMViC,*

Traditional methods for biodiversity conservation in present scenario

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The continuous decline in Earth's biodiversity remains one of the most critical challenges in the 21st century. Worldwide, populations of wild flora and fauna are being depleted due to anthropogenic disturbances and species extinctions rates exceed those of pre-human periods, which greatly impacts human health and sustainability of our planet. Biodiversity loss poses a real threat to the livelihoods, food security and health of the Human. Deforestation is the main contributor to these biodiversity losses. Continuous decline of biodiversity over the past decades suggests that efforts to decrease biodiversity loss have been insufficient. A range of forest policy tools was investigated to find the most appropriate one to enhance biodiversity. All such conservation efforts to save biodiversity essentially depend on biological monitoring for obtaining precise data on species distributions and

population sizes on a relevant ecological and political time scale. In this study different traditional methods has been reviewed which are applied for the conservation of biodiversity. The method concerned relate to small shrubs herbs, wild medicinal plants as traditional medicines are still under practice in Indian villages and were developed through experience of many generations. In contrast to the present global scenario, in remote sites of the few countries, aboriginal communities are silently conserve the natural resources and maintain the biodiversity and achieving sustainable agriculture by their traditional ecological knowledge. Different traditional practices for conservation of wild plants were also identified as domestication; beliefs in sacredness of trees; beliefs in sacred forests; respect of cultural forests; protection of plants at the burial sites; selective harvesting; secrecy; collection of deadwood for firewood, and use of energy-saving traditional stoves etc.

Ficus carica Linn.extraction of Bioactive Components from Leaves, by using different solvent systems

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The evaluation of all the drugs is based on phytochemical and pharmacological approaches which lead to drug discovery often is referred to as "natural product screening". Any part of the plant may contain active components like bark, leaves, flowers, roots, fruits, seeds, etc. The beneficial medicinal effects of plant materials typically result from the combinations of secondary products present in the plant. In this regard, one such plant is *Ficus Carica* Linn., one of the oldest medicinal plant recorded in the Indian system of medicine (Family- Moraceae).
The present study is based on the methods, with which the good amount of yield of the bioactive components can be extracted from the leaves of the *Ficus carica* Linn..Dried leaves were extracted using petroleum ether, ethyl acetate and methanol. The bioactive components were observed by using the techniques of TLC and HPLC. For flavonoids extraction with ethyl acetate 80% was more efficient than other two solvents.
***Key Word Index**: Ficus carica Linn, flavonoids, ethyl acetate, TLC, HPLC.*

Food label reading knowledge and understanding among consumers

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Background: Nutrition information on food labels is regarded as a major means for encouraging consumers to make healthier choices when shopping for food. The FDA announced the new Nutrition Facts label for packaged foods to reflect new scientific information, including the link between diet and chronic diseases such as obesity and heart disease.
Aim: The purpose of this study was to assess the frequency of food label use among the consumers and its relationship to nutrition knowledge, and beliefs regarding diet-disease relationships, and to determine factors predictive of infrequent label use.

Method: The study surveyed 850 consumers of the city, approached randomly. A verbal consent had been taken from the consumers before giving them questionnaire. A pre-tested questionnaire was used to collect data for analysis and interpretation. The questionnaire was formulated based on questionnaires validated and used reliably in previous studies.
Result: About 40% consumers buy the pre packed foods once weekly. Taste, brand name, convenience and habit are the main reason for buying pre packed foods. Although majority of consumers across the age groups read the food labels, but majority looked only for the sign of vegetarian or non-vegetarian (70%) and manufacturing and expiry date (85%). Of those who read labels, only a third checked nutrition information and ingredients.
Conclusion: Nutrient information on labels was not often read because most consumers either lacked nutrition knowledge or found the information too technical to understand. The intention of promoting healthy food choices through use of food labels will not be completely met till people found it difficult to comprehend nutrition information.

Determination of antidiabetic activity of leaves of *Strychnos nux-vomica* L.

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In the present work, ethanolic extract from the leaves of *Strychnos nux-vomica* were analyzed phytochemically for the antidiabetic activity. Different concentrations of the leaves of *Strychnos nux-vomica* were prepared and were subjected to α-amylase inhibitory and α-glucosidase inhibitory activity. The result of the present study concludes that leaves of *Strychnos nux-vomica* contain antidiabetic activity.
Key Word Index: *Strychnos nux-vomica,* α-amylase, α-glucosidase, antidiabetic activity.

Municipal Solid Waste Management in India: Options and Opportunities

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Municipal solid waste management (MSWM) is one of the major environmental problems of Indian cities. Improper management of municipal solid waste (MSW) causes hazards to inhabitants. Uncontrolled dumping of wastes on outskirts of towns and cities has created overflowing landfills, which are not only impossible to reclaim because of the haphazard manner of dumping, but also have serious environmental implications in terms of ground water pollution and contribution to global warming. In the present study, an attempt has been made to provide a comprehensive review of the characteristics, generation, collection and transportation, disposal and treatment technologies of MSW practiced in India. The study pertaining to MSWM for Indian cities has been carried out to evaluate the current status and identify the major problems. Various adopted treatment technologies for MSW are critically reviewed, along with their advantages and limitations. The study is concluded with a few fruitful suggestions, which may be beneficial to encourage the competent authorities/researchers to work towards further improvement of the present system.

Quercetin prevent against Oxidative Damage and Permeability Transition in Brain Mitochondria of Zebra fish

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Mitochondrial dysfunction is a major cause of neurodegeneration in animals.Mitochondrial disorders are a group of abnormalities caused by dysfunctional mitochondria, the organelles that generate energy for the cell.The clinical features of various neurodegenerative disorders, deals with the fact that neurons are highly dependent on oxidative energy metabolism and dysfunctional bioenergetics can be the cause of pathophysiologicalchangesin mitochondrial metabolism. Mitochondria are the seat of a number of important cellular functions, including essential pathways of intermediate metabolism, fatty acid oxidation and oxidative energy metabolism. Glutamic acid isneurotransmitterswhichalso involved in brain normal functioning including cognition and learning.In neurons, the ability of mitochondria to modulate Ca^{2+} flux is essential for controlling neurotransmitter release.In addition, mitochondria supply large amounts of ATP as well as the TCA intermediates that serve as the building blocks for synthesis of glutamate neurotransmitters.In the present study, we show that the effect of glutamic acid with quercetin an antioxidant in the brain mitochondria of zebra fish.To reveal the effect of glutamic acid,mitochondria swelling and behaviour test werecarried out in Zebra fish. Due to the effects of glutamic acid, mitochondria becomeenlarge, swelled and burstbecause of opening of permeability transition pores andCa^{2+} flux process in mitochondrial membrane. NMDAreceptor activated with the glutamate excitotoxicity can cause changes in the kinetics of ATPase complex that will lead to deleterious effects in brain mitochondria.When we added Quercetin with the glutamic acid, mitochondria of the brain retain its normal integrity. We can conclude that Quercetin treatment 10µl and 20µl is able to retain the normal structure as well as controlling the permeability transition across the gradient so as to prevent mitochondria dysfunction and regulate the oxidative level in brain of *Danio rerio* in vivo.

Key Word Index: mitochondria dysfunction, neurodegeneration, Quercetin, Glutamic acid.

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From the Executive Director of the ESW Society, Khajuraho India

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Brief Report

3rd National Conference On
"Strategy for Human Welfare on Nature conservation and Resource management"
Organized By: Environment & Social Welfare Society Khajuraho-471606 MP, India.
In association with: The National Academy of Sciences India, Allahabad,
Supported By: Madhya Pradesh Council of Science and Technology, Bhopal MP, and
Assisted by: Godavari Academy of Science and Technology, Chhatarpur, Madhya Pradesh.
From **31 January & 01 February, 2016**
Website: www.godavariacademy.com and www.ijgsr.com

A PRELUDE: After the success of 2nd National conference on "Environmental degradation and Global health 2015" The **3rd National conference on "Strategy for Human Welfare on Nature conservation and Resource management" 2016** Organized By Environment & Social Welfare Society Khajuraho-471606 Madhya Pradesh, India from 31 January to 01 February, 2016 at Khajuraho world heritage of India.

OBJECT: To provide a platform to Educational Administrators, Vice-Chancellor, College Principals, Deans, Readers, Head of Departments, Professors, Assistant Professors, Scientists, Environmentalist, Researchers, Young scientists and Students to disseminate knowledge related to **Nature Conservation, Resource Management and possible solution by Technological Approach.**

GOAL: The moral obligation to act sustainably as an obligation to protect the natural processes that form the context of human life and culture, emphasizing those large biotic and abiotic systems essential to human life, health, and flourishing culture. Ecosystems, which are understood as dynamic, self-organizing systems humans have evolved within, must remain 'healthy' if humans are to thrive. The ecological approach to sustainability therefore sets the protection of dynamic, creative systems in nature as its primary goal. The principal goal of this conference will be to present some of the latest outstanding breakthroughs in Environment and global health, to bring together both young and experienced scientists from all regions of the world, and to open up avenues for research collaborations at regional and global level.

THEME: Take some positive steps towards improving our Earth for future generation.

INAUGURAL FUNCTION: The **3rd National Conference** inaugurated on 31 January, 2016 by Chief Guest Prof. N. C. Gautam, Vice-chancellor, Mahatma Gandhi Chitrakoot Gramodaya Vishwavidyalaya, Chitrakoot, Madhya Pradesh, Key note speaker Prof. K. K. Sharma, Former Vice Chancellor, MDS University Ajmer, Rajasthan Guest of Honour Prof. Kubaer Ram Mourya, Former Vice Chancellor Rajendra Agricultural University, Pusa, Bihar, Special Guest Dr. Kunal Kumar Das, Scientist (Retd.), IIRS, Indian Space Research Organization Dehradun, Uttrakhand, Prof. Shivesh Pratap Singh, Secretary, Bundelkhand Extended Region Chapter, Chitrakoot, The National Academy of Sciences India, Allahabad. Fellow/Member of Environment & Social Welfare Society Khajuraho-471606 Madhya Pradesh, India, Mrs.Vandana Dubey, Managing Director, Godavari Academy of Science and Technology, Chhatarpur, Madhya Pradesh and other distinguished guests, participations from various part of India and Two hundred+ listener including media were participated in conference.

Souvenir released with Message of Honourable **Mahamahim** Ram Naresh Yadav, Governor Govt. of MP, Honourable **Mahamahim** Ram Naik, Governor Govt. of UP; Prof. Priyvrat Shukla, Vice Chancellor Bundelkhand University, Chhatarpur, Prof. Surendra Dubey, Vice Chancellor Bundelkhand University, Jhansi, Dr. Kailash Chandra, Director, ZSI, Govt. of India, Ministry of Environment and Forest, Kolkata, and Dr. Masood Akhtar, Collector ad District Magistrate, Chhatarpur. Abstract which included from various part of India including Madhya Pradesh, Uttar Pradesh, Bihar, Karnataka, Maharashtra, Rajasthan, Gujarat, Uttarakhand, Haryana, Jammu & Kashmir, West Bangal, Panjab, New Delhi, Pakistan, Romania. And also released a Book by the guest in this occasion Edited by Dr. Ashwani Kumar Dubey.

Prof. K. K. Sharma, Former Vice Chancellor, MDS University Ajmer, Rajasthan delivered Key note address on Bioacoustic based sensors can effectively reduce man wild life conflict.
Prof. N. C. Gautam, Vice-chancellor, Mahatma Gandhi Chitrakoot Gramodaya Vishwavidyalaya, Chitrakoot, Madhya Pradesh emphasized that Need to study of Environment conservation and Biodiversity on practical level and must be introduced with the latest technology.
Prof. Kubaer Ram Mourya, Former Vice Chancellor Rajendra Agricultural University, Pusa, Bihar says enhancement of food processing is necessary for proper food supply and need to develop basic infrastructure and technique for grain and food storage for future.
Dr. Kunal Kumar Das, Scientist (Retd.), IIRS, Indian Space Research Organization Dehradun, Uttrakhand, focused on regular monitoring of environment is required by remote sensing and GPS technique for nature and resource management.
Dr. Ashwani Kumar Dubey, Executive Director and Convenor & President of The National conference delivered his presidential address emphasized the role of ESW Society in Human and Social welfare and also focus on annual report of the ESW Society, Khajuraho. And focus attention on wildlife conservation to maintain food chain and ecosystem for maintain our safe Environment. Plantation may be safe guard instead of wire boundary in National park and sanctuary.

TECHNICAL SESSION: After the inauguration, the scientific session held.

The general topics covered in the conference will be as under:

Nature Conservation

Ecology, Ecosystem and its conservation Measure, Impact of Food chain and Food web on Human life, Animal Behavior and Wildlife Conservation, Biodiversity Conservation and Sustainable Management, Conservation and promotion of Medicinal plants, Eco-Tourism in India, Conservation of critical and fragile habitats & corridors, Land degradation and Forest Conservation, Climate change and endangered species in India, Role of N.G.O. in Nature conservation, Critical, Endangered and Endemic Species Conservation, Natural Disaster, Volcano, Natural calamities, Achieving Environmental Security: Ecosystem services and human Welfare.

Resource Management

Status of Natural resources, Alternation in Natural resources, Preventive measure for natural resources and conservation, Rural Development, Tribal Welfare , Water Conservation, Chemical & Mineral Conservation, Oxidative Stress and Biomarker, Occupational health hazards, Environmental Impact Assessment, Agrochemical and environmental hazards. Environment

Conservation and Validation of traditional knowledge, Pollution and its monitoring, E-waste and Solid waste management, Eco-Toxicology, Environmental Ethics.

Technological Approach

Method and Technique for Nature Conservation, Bio-indicator as a tool of Nature, Recycling process of pollutant, Application of bio-technology, Rural bio-technology, Tools and technique for protection and conservation of bio-resources, Bio-markers with special reference to climate change, Ecosystem management technique.

SCIENTIFIC EXIBITION: An exhibition was arranged along with conference. Researchers got opportunity with delegates and scientist to discuss their needs and publication in the reputed journals.

CULTURAL PROGRAMME: To conserve, promote and develop the Indian's culture, Environment and Social Welfare Society, Khajuraho arranged cultural event with the national conference.

VALIDICTORY & AWARD CEREMONY: Prof. K. K. Sharma, Former Vice Chancellor, Maharishi Dayanand Saraswati University, Ajmer, Rajasthan was the Chief Guest, Dr. A. K. Pandey, Scientist, National Bureau of Fish Genetic Resources, Lucknow was Special Guest and Dr. Kunal Kumar Das, Scientist (Retd.), IIRS, Indian Space Research Organization Dehradun,Uttrakhand was the President of the Validictory and award ceremony of the Conference. And other eminent scientists were present on this occasion.

AWARD CEREMONY:

National Amazing Godavari Memorial Award (NAGMA) in the field of Education & Science awarded to Prof. K. K. Sharma**,** Former Vice Chancellor, MDS University Ajmer, Rajasthan.

Best Paper Oral Presentation Award in each Session awarded to Dr. Jitendra Kumar, Fisheries College, Manglore; Dr. Sanofer Khokhar, Fisheries Research Station, Junagarh, Okha port, Gujarat; Dr. Mohammad Danis, Dr. Dipali Jat, Dr. Harisingh Gour University, Sagar MP.

Best Poster Presentation Award in each session awarded to Dr. Aditya Narayan, Bundelkhand University, Jhansi Uttar Pradesh; Dr. Meenakshi Sharma, CP University, Kota Rajasthan

Young Environmentalist Award to Dr. Jitendra Kumar, Fisheries College, Manglore

Young Scientist Award (Below 35 Years) to Dr. Mohammad Danis, Manglore.

Best Scientist Award 2016 to Dr. Karruna S. Perdeshi, Abasaheb Garware College, Pune

Fellowship of ESWSociety Awarded to Dr. Karruna S. Perdeshi, Pune

ESW Recognition Award: For "Valuable support to ESWSociety for Nature conservation" to Dr. Prahlad Dubey, Kota Rajasthan**;** Dr. A. K. Pandey Lucknow Uttar Pradesh.

Honourable Member of ESW Society to **Prof. N.C. Gautam,** Vice-chancellor, Mahatma Gandhi Chitrakoot Gramodaya Vishwavidyalaya, Chitrakoot-485334

Honourable Fellow of ESW Society: to Prof. K. K. Sharma**,** Former Vice Chancellor, MDS University Ajmer, Rajasthan. Prof. Kuber Ram Maurya, Former Vice Chancellor Rajendra Agricultural University, Pusa, Bihar. Dr. Kunal Kumar Das, Scientist (Retd.), IIRS, Indian Space Research Organisation Dehradun, UK

ESW Society Life Member Certificate Award: Dr. Karruna S. Pardeshi Assistant Professor of Zoology, Abasaheb Garware College, Pune; Mrs. Renu Jain**,** Infront of Collector Bonglaw, Chhatarpur; Mr. Rachakonda Satyanarayan**,** Assistant Manager Operations, Jindal Steel &

Power, CG**;** Dr. Atul Kumar Mishra**,** Associate Professor of Zoology, DAV College Kanpur; Dr. Praveen Kumar**,** Research Scholar Blundelkhand University, Jhansi; Dr. Deepali Jat**,** Asst. Professor of Zoology, Dr. Hari Singh Gour Central University, Sagar.
Certificate of Paper presenter and Participants given by the Chief Guest. And vote of thanks by Dr. Prahlad Dubey.

RECOMMENDATIONS:
· Bioacoustics based sensors can effectively reduce man wildlife conflict.
· Need to study of Environment conservation and Biodiversity on practical level and must be introduced with the latest technology.
· Scientist said that there is more need to work for food processing sector in India.
· Enhancement of food processing is necessary for proper food supply and need to develop basic infrastructure and technique for grain and food storage for future.
· Regular monitoring of environment is required by remote sensing and GPS technique for nature and resource management.
· Attention on wildlife conservation to maintain food chain and ecosystem for maintain our safe Environment. Plantation may be safe guard instead of wire boundary in National park and sanctuary.
· Needs to revise its current approach by adopting the ecological methods and innovative techniques of waste management.
· Evidences indicate that research is needed to improve the quality and quantity of compost as well as its efficient management.
· Biological process controlled nutrient cycling and influence many other aspects of soil fertility.
· Knowledge of these processes helps farmers make informed management decision about their crops, how these decision affect soil biology especially root growth and organic matters are key factors in efficient nutrient management.
· It requires training to the farmers in proper crop selection and farming practices and also the strict monitoring by the agriculture ministry.
· Species conservation must be prime target for eco-balance and global health.
· Much stress must be given on challenges at national level viz. Malnutrion, Poverty, and environmental degradation**.**

180+ participants were present out of these General 60 % Schedule Caste 10 % Schedule Tribes 30 % and Women more than 30 % overall.

News Gallery:
National news paper, Local news paper and electronic channel covered this event promptly.

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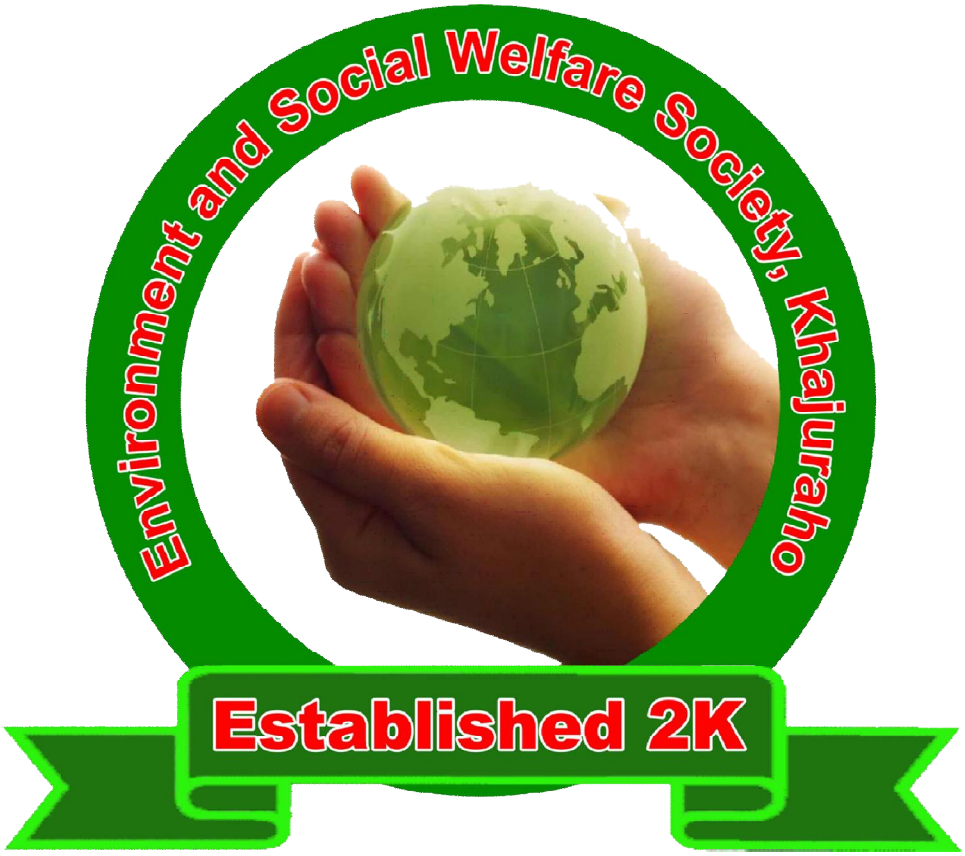
ESW IV Annual National Conference on
"Impact of Global warming on Environment, Biodiversity and Ecotourism"
on 30 & 31 January, 2017.


Environment and Social Welfare Society, Khajuraho
Established 2K