

**Report on National Seminar on Impact of Environment on
Biodiversity**

**Organized by Dept. of Zoology,
Govt. N.P.G. College of Science, Raipur-C.G**

**Sponsored by
Chhattisgarh State Biodiversity Board, Raipur-CG**

PLACES OF TOURIST IN ATTRACTIONS IN CHHATTISGARH

Chhattisgarh is situated in the Vindhyan hills and on the Deccan plateau in Central India. 44% of its land is covered by forests, hence it is rich in biodiversity, besides various other natural resources that include precious mineral ores.

Chhattisgarh is situated in heart of India it is gifted with the rich cultural and unique natural diversity. In the State one can find ancient monuments, wildlife sanctuaries, temples, waterfalls, hills and plateaus. The major destinations for tourist are Bastar (Kangar Valley National Park, Kotumsar caves, Chitrakote, Tirathgarh Waterfalls, Danteswari temple in Dantewada), Sripur, Bhorandeve, Bamleshwari temple at Dongargarh, Rajim (a well known place for Kumbh). The wild life sanctuaries like Barnawapara, Achanakmar Tiger reserve, Udanti Wild life sanctuaries and many more are worth visiting. All places are easily approachable from Raipur. The main attractions of the city are Jungle Safari, ponds and temples.

ORGANIZING COMMITTEE

Patron : Dr. P.C. Choubey (Principal)
 Convenor : Dr. Seema Gupta
 Co-convenor : Dr. Renu Maheshwari
 Mrs. Preeti Mishra
 Mrs. Indu Maandrik
 Organizing Secretary : Dr. Pallavi Sinha
 Joint Secretary : Dr. Kavita Das
 Mrs. Gunjan Ojha
 Treasurer : Dr. Shashi Gupta
 Mr. Satish Ramteke

SEMINAR REGISTRATION FEES

Category	Registration Fees. (Rs) upto 10.06.23	After 10.06.23
Faculty/Scientists	1000/-	1200/-
Research Scholars & Students	500/-	600/-
The accompanying person	800/-	800/-

Mode of Payment :

Registration fees can be paid by on line as well as off line mode
 1. Name of Bank: State Bank of India NIT Branch, Raipur
 2. Name of Account Holder: Principal, Govt. Nagarjuna Post Graduate College of Science, Raipur
 3. Account No. 10071038197
 4. IFSC Code: SBIN002852

ADVISORY COMMITTEE :

1. Shri Rakesh Chaturvedi (Chairman, C.G. State Biodiversity Board, Raipur, Chhattisgarh).
2. Shri Arun Kumar Pandey (Member Secretary, C.G. State Biodiversity Board, Raipur, Chhattisgarh).
3. Dr. M. L. Naik (Retd. Professor & Head, SOS Life Science, Pt. Ravishankar Shukla University, Raipur).
4. Dr. A. K. Pati (Ex. V.C., Gangadhar Mehar University, Sambalpur, Odisha)
5. Dr. S.K. Malhotra (Retd. Professor, Dept. of Zoology, University of Allahabad, Prayag Raj).
6. Dr. Samrat Mondal (Scientist E, Wildlife Institute of India, Dehradun, U.K).
7. Dr. A. K. Gupta (Professor, SOS Life Science, Pt. Ravishankar Shukla University, Raipur).
8. Dr. R.K. Agarwal (Retd. Principal Govt. College Arjunda, C.G).
9. Dr. S.K. Prasad (Professor, SOS Life Science, Pt. Ravishankar Shukla University, Raipur).
10. Dr. S.K. Jadhav (Professor, SOS Life Science, Pt. Ravishankar Shukla University, Raipur).
11. Dr. Aditi Poddar (Professor & Head, SOS Life Science, Pt. Ravishankar Shukla University, Raipur).
12. Dr. Arti Parganilha (Professor, SOS Life Science, Pt. Ravishankar Shukla University, Raipur).
13. Dr. H.K.S. Gajendri (Asst. Prof. Dept. of Zoology Govt. P.G. College, Kasdol).
14. Dr. Ajit Hundet (Professor & Head, Dept. of Zoology, Govt. D.B Girls PG College, Raipur).
15. Dr. Maya Sheshpuri (Professor Dept. of Zoology, Govt. D.B Girls PG College, Raipur).
16. Dr. Anil Shrivastava (Professor & Head, Dept. of Biotechnology, Govt. VVTPG College, Durg, C.G).
17. Dr. Rashmi Sao (Professor & Head Dept. of Zoology, Govt. E. Rajgopendra Rao PG Science College, Bilaspur).
18. Dr. Shubhda Rahalkar (Professor & Head Dept. of Zoology, Govt. Bilasa Girls PG College, Bilaspur).
19. Dr. Parmita Dubey (Assistant Professor, Head Dept. of Zoology, Govt. J.Y. P.G. Chhattisgarh College, Raipur).
20. Dr. Rohit Seth (Associate Professor, Dept. of Zoology, GGU, Bilaspur).

CONTACT FOR CORRESPONDENCE

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NATIONAL SEMINAR ON

“Impact of Environment on Biodiversity”
 27 & 28th June, 2023



ORGANIZED BY
 DEPARTMENT OF ZOOLOGY
 GOVERNMENT NAGARJUNA
 POST GRADUATE COLLEGE OF SCIENCE
 RAIPUR (C.G.) 492010

SPONSORED BY
 CHHATTISGARH STATE BIODIVERSITY BOARD
 RAIPUR, (C.G.)

REGISTRATION LINK
<https://forms.gle/WHyHtN6ag5CMW8J8>
<https://chat.whatsapp.com/JsQZSPysONHpiDcYRcXT>

ABOUT RAIPUR CITY :

Raipur is the capital of Chhattisgarh State. Chhattisgarh State is rich in floral and faunal diversity, besides various other natural resources that include precious mineral resources. It is an important industrial and educational hub. The higher education includes, Pt. Ravishankar Shukla University, NIT, Pt. J.N.M. Medical College, AIIMS, IIM, Indra Gandhi Agriculture University, Kushabhau Thakre Journalism and Mass Communication University, Amity University, Kalinga University and MATS University.

ACCESS TO RAIPUR :

Raipur is located on Mumbai Howrah railway route and is well connected by road National Highway 6 and National Highway 43. The airport of the city is Swami Vivekanand Airport in Atal Nagar, Nava Raipur, Chhattisgarh and is well connected with all main cities of the country.

ABOUT THE COLLEGE :

The Government Nagarjuna P.G. College of Science is single faculty Autonomous and lead college of Raipur District. It was founded in 1948 and is affiliated to Pt. R. S. University. It has a well-developed infrastructure with 14 UG and 11 PG departments. The college offers the Undergraduate Degree with 15 combinations. The 10 departments of the college are recognized as Research Center. The vision of the college is to produce proud Indian Citizens, who adhere to the Constitution of India, and have a deep sense of responsibility towards enhancing India's unique identity and legacy through Indian Knowledge System and indigenous skills; to produce financially independent youth; to produce global citizens with 21st century skills; to inculcate human values in the youth.

ABOUT ZOOLOGY DEPARTMENT :

The Department of Zoology was established in 1948 and offers both Undergraduate and Post graduate programs. The department is also recognized as a Research Centre for Ph.D. under the affiliation of Pt. Ravishankar Shukla University, Raipur. Presently the main thrust area of research is Biodiversity, Fish physiology, Sericulture, Entomology, Animal Behaviour, Immunology and Environmental Biology. The department has organized several National and International Conferences in online and offline mode.

INVITATION :

The Department of Zoology, Government Nagarjuna Postgraduate College of Science, Raipur Chhattisgarh cordially invites you to participate in the National Seminar on **“Impact of Environment on Biodiversity”**.

ABOUT THE NATIONAL SEMINAR :

The proposed seminar will provide a platform to discuss the pros and cons of environment on biodiversity. It will also address the management and remedy of environmental pollution so that the biodiversity can be conserved. The proposed seminar will allow the budding researchers to share their work and will motivate towards the novel ideas in the field of environment and biodiversity.

The proposed seminar will cover the following topics:

1. Environment, biodiversity, and its conservation Strategies.
2. Environmental pollution and organismal health.
3. Waste management and Bioremediation.
4. Sustainable and Renewable Energy Resources.
5. Recent trends in animal science research.
6. Millet : Food for Humans and Animals.

CALL FOR ABSTRACTS :

Abstract should be submitted before 15/06/2023.

INSTRUCTION FOR SUBMITTING ABSTRACTS :

The abstract should include object, methodology, results, conclusion and key words.

1. Title in the CAPITAL LETTER and Bold
2. Name of Author(s), with Institutional Affiliation and e-mail id
3. An Abstract should be written in Times New Roman, Font size-12, and line space-1.5.
4. The abstract should be submitted on e-mail : biodiversitynpg2023@gmail.com

POSTER PRESENTATION

Poster size will be of 1x1.5m with headings: Title, Introduction, Materials and Methods, Results and Discussion, Conclusion, References and Photographs.

EMINENT SPEAKERS

- Prof. M.L. Naik, Raipur (C.G)
- Prof. A. K. Pati, Sambalpur (Odissa)
- Prof. Sandeep K. Malhotra, Prayagraj (U.P.)
- Dr. Thulasingham Kalachelvan, Bhalai (C.G)
- Dr. Shantonu Roy, Kolkatta (WB)
- Dr. Samrat Mondal, Dehradun (UK)
- Dr. Ashok Sengupta, Bengaluru (Karnatak)

Resource Person in the National Seminar entitled “Impact of Environment on Biodiversity”

S.No.	Name of the Resource Person	Affiliation	Title of the Lecture
1.	Dr. A.K. Pati	Executive member Odisha State Higher Education Council, Bhubaneswar	Sixth (mass) extinction: is there a biodiversity crisis?
2.	Dr. M.L. Naik	Expert member, Chhattisgarh Biodiversity Board & Chhattisgarh Biotechnology Promotion Society	Biodiversity and Chhattisgarh.
3.	Dr. S.K. Malhotra	Retd. Prof. Dept. of Zoology University of Allahabad, Prayag Raj, UP	Parasitic curbs on biodiversity loss as the environmental sink.
4.	Dr. Gowri Shankar. P	Wild life Biologist & TED speaker, Bangalore	Phylogenetic study of the king cobras (<i>Ophiophagus hannah</i>) with new insights on classification, naming, distribution range, and conservation.
5.	Dr. S. Roy.	Asst. Professor I.E.S.T Shibpur, Kolkatta	Sustainable environment-friendly cultivation of algae for carbon dioxide sequestration and value-added product formation.
6.	Dr. B. A. Kumar Prusty	Professor (Associate) & Head Berhampur University, Berhampur Odisha (India)	Implications of environmental perturbations on biodiversity: An overview of anthropogenic disruptions in the 21 st Century.
7.	A. Sengupta	Kendriya Vidyalaya Sanghathan Bangalore	Butterflies as Sentinels of Environmental Change: Unveiling the Vibrant Wings of Nature's Messengers.
8.	Dr. Sankararaman. H	Asst. Professor, Vanavarayar Institute of Agriculture, Pollachi Tamilnadu	Diversity and conservation of entomophagous insects.
9.	Dr. S.K. Jadhav	School of Studies in Biotechnology, Pt. Ravishankar Shukla University, Raipur	Biofuel: A sustainable alternative for energy generation.
10.	Dr. Seema Rai	Professor & Dean SoSLS Guru Ghasidas Central University, Bilaspur CG	Stress-induced reproductive alterations under constant light.

11.	Dr. Shubhada Rahalkar	Professor & Head, Govt Bilasa Girls' Autonomous College Bilaspur	Study on the effect of urban habitat on Maina species around Bilaspur City.
12.	Dr. Abhaya R. Joglekar	Professor, Govt. D.B. Girls' Govt. Autonomous College, Raipur	Shrianna -a miracle nutri-cereal for our sustainability.
13.	Dr. Anil Kumar	Professor, Head, Dept of Zoology/ Biotechnology Govt. V.Y. T. P.G Autonomous College Durg	Human genetic biodiversity and health implications.
14.	Dr. J. Biswas	Cave Biologist, Raipur	The Stygobiotic fishes identified from Various Parts of India: A special discussion on their specific habitats
15.	Dr. A. Pradhan	Associate Professor I.G.K.V. Raipur	Biodiversity of millets and potential to feed the population under climate change scenario of farming.
16.	Dr. S.K. Dutta	Assistant Professor, Govt. College, Jagdal Pur	An assessment of avifaunal biodiversity of Bastar District of Chhattisgarh.
17.	Dr. T. Kalaichelvan	Retd. Manager SAIL, Bhilai, Durg	Zoo Education: An Effective Method for Biodiversity Conservation.

Impact of Environment on Biodiversity

Context

Biodiversity refers to the variations of life forms, i.e., variations among animals, plants, and microorganisms. Biodiversity is the very basis of human existence and economic development. It plays an important role in the functioning of ecosystems. Biodiversity also maintains nutrients and water cycling, soil formation and retention, resistance against invasive species, pollination of plants, regulation of climate, as well as pests, and pollution control by ecosystems. Several aspects of human well-being including human health, and social relations, are influenced by biodiversity. In recent times changing environmental conditions and increased pollution damaged biodiversity globally. The loss of biodiversity resulted in a serious threat to the survival of humankind.

One of the main causes of biodiversity loss is environmental alteration. Environmental conditions along with other factors play a significant role in defining the function and distribution of organisms. Environmental changes have had enormous impacts on biodiversity patterns in the past and will remain one of the major drivers of biodiversity patterns in the future. The main culprit behind the changes in environmental conditions is ever-increasing pollution. Increased pollution resulted in conditions like global warming, acid rain, change in water quality, etc. These conditions are responsible for changes in biodiversity. Various types of research are going on to overcome pollution and conserve biodiversity.

Aim of Seminar

The objectives of the seminar were to provide a platform to discuss the problem of environmental damage and its adverse effect on biodiversity. It will also address the management and remedy of environmental pollution so that biodiversity can be conserved and the future generation can also enjoy beautiful nature.

To fulfill the objectives of the seminar a two-day National seminar entitled “Impact of Environment on Biodiversity” was organized by the Department of Zoology, Govt. N.P.G. College of Science, Raipur on 27th and 28th June 2023. A detailed report of the seminar can be discussed as follow.

Subthemes of Seminar:

The seminar covered the following topics:

1. Environment, biodiversity, and its conservation strategies
2. Environmental pollution and organism health
3. Waste management and Bioremediation
4. Sustainable and Renewable Energy Resources
5. Millet: Food for Humans and Animals
6. Recent trends in animal science research

Seminar in brief

The seminar was started by **Inaugural function** on June, 27th 2023 in which the chief guest was **Shri. Rakesh Chaturvedi, Chairman Chhattisgarh State Biodiversity Board, Raipur**. Shri Chaturvedi elaborated on the importance of Biodiversity and its conservation. In his lecture, he also summarized various ongoing schemes for biodiversity conservation conducted by Chhattisgarh State Biodiversity Board, Raipur.

The inaugural function was followed by the **Keynote lecture delivered by Dr. A.K. Pati**, Executive member at Odisha State Higher Education Council (OSHEC), Department of Higher Education, Government of Odisha, Bhubaneswar, India. Dr. Pati delivered his lecture entitled “Sixth (mass) extinction: is there a biodiversity crisis? In his lecture, he compared between last five mass extinction and the ongoing 6th mass extinction. He emphasized that the ongoing sixth mass extinction is due to anthropogenic activities while anthropogenic activities were not induced by anthropogenic activities.

The keynote lecture was followed by technical sessions. The first lecture was delivered **by Dr. M.L. Naik on the topic “Biodiversity and Chhattisgarh”**. In his lecture, Dr. Naik talked about the role of the United Nations Convention on Biological Diversity (UNCBD) and the Convention on Biological Diversity (CBD), the goals of Biodiversity conservation. Dr. Naik also told that the loss and gain of biodiversity is a natural process phenomenon as the species become extinct and new species originate and this process is going on since life originated on Earth. He advocated

those anthropogenic activities have accelerated the loss of biodiversity almost 100 to 1000 times the natural rate of loss of biodiversity. Dr. Naik pointed out that due to a lack of knowledge of our biodiversity richness both at local as well as global level people are unable to know exactly the loss and gain of species. He further highlighted the loss of a single species playing the role of a keystone species can cause the destruction of the whole ecosystem of which it is a part. To boost bringing back the lost biodiversity the theme for biodiversity day for 2023 was chosen as “From Agreement to Action: Build Back Biodiversity”, which signifies the pressing requirement to go beyond mere commitments and transform them into concrete actions aimed at revitalizing and safeguarding biodiversity. Dr. Naik in his lecture gave an insight into the biodiversity prevailing in Chhattisgarh. Dr Naik. Pointed out the causes of depletion of Biodiversity in Chhattisgarh which can be enumerated as Shifting Cultivation, poaching, invasive alien species, and forest right act. Dr. Naik also mentioned that a non-alien invasive species *Bos indicus* and the domestic cow a disease resistant and well-adapted to harsh conditions cattle are becoming feral in many parts of Chhattisgarh state. This particular species is found to increase its population in the forest of the state and if immediate measures are not taken the animal will pose a serious threat. Dr. Naik also emphasized on Parad festival of Bastar region in which male members of the village move into the forest and kill any wild animals they can kill. Dr. Naik advocated for the prohibition of such types of activities so that biodiversity can be preserved.

The next lecture of the session was delivered by **Dr. S.K. Malhotra** retired professor from the University of Allahabad, Prayagraj on “Parasitic curbs on biodiversity loss as environmental sink”.

In his lecture, Dr. Malhotra discussed how parasitic sensitivity to pollutants has facilitated intense interaction between helminths and their host. Dr. Malhotra concluded that parasitic nematodes act as saviors to biometallic influence in the fish body from the loss of biodiversity in the aquatic ecosystem.

The session proceeded with the talk of **Dr. Shantonu Roy** from IEST, Shibpur, Kolkatta. Dr. Roy delivered his talk on “Sustainable Environment-Friendly Cultivation of Algae for Carbon Dioxide Sequestration and Value-Added Product Formation. He elaborated that algae have been identified as a potential solution to the problem of carbon dioxide. Dr. Roy further explained the use of algae for carbon dioxide sequestration involves the cultivation of algae in large-scale facilities, where they can absorb CO₂ from industrial processes and convert it into biomass through photosynthesis.

Algae are further exploited for the production of value-added products. The process of using algae for carbon dioxide sequestration has several advantages over other methods. Firstly, it is a natural process that does not require any additional energy input. Secondly, algae can be grown in a variety of environments, including wastewater treatment plants and power plant flue gas streams. Finally, the biomass produced by algae can be used as a feedstock for biofuels or other products. Biofuel derived from algal biomass is known as third-generation biofuel and they offer several advantages over terrestrial and crop-based biomass.

The next resource person in the session was **Dr. B. A. K. Prusty** from Berhampur University, Berhampur Orissa. He collided environmental perturbation on biodiversity and anthropogenic disruption in the 21st century.

Shri. Ashok Sengupta from Bangalore talked about the importance and role of butterflies and ecosystem function. He also talked about the role of butterflies as bioindicators and the need for their conservation. Shri. Sengupta advocated that there is an urgent need to recognize butterflies as sentinels of environmental changes and prioritize their conservation. Shri. Sengupta added that harnessing the unique ecological role of butterflies as bioindicators will empower them to understand as well as mitigate the environmental challenges that the world is facing.

On behalf of **Dr. T Kalaichelvan**, Dr Sanju Sinha from V.Y.T.P.G College, Durg talked about the importance of Zoo Education for biodiversity conservation.

The second day of the seminar started with an invited lecture by **Dr. Sankararaman. H.** from Pollachi. Dr. Sankararaman talked about the diversity and conservation of entomophagous insects. In his lecture, Dr. Sankararaman talked about how entomophagous insects can be used as biocontrol agents in agrosystems.

The session proceeded with the next invited lecture by **Dr. P. Gowri Shankar** from Bangalore. Dr. Gowri Shankar talked about the phylogenetic study and distribution of King Cobra. In his lecture, Dr. Gowri Shankar also elaborated on his findings of four new species of King Cobra.

The UN declared the year 2023 as the “International Year of the Millets” therefore in the seminar one subtheme was devoted to millets. In this context, the next lecture entitled “Shrianna -a miracle nutri-cereal for our sustainability” was delivered by **Dr. Abhya R. Joglekar**. Dr. Joglekar talked about the diversity of millets and their nutritive importance. Dr. Joglekar addressed the millets as Nutri-cereals or Shri Anna.

The next lecture was given by **Dr. Shubhada Rahalkar** from Bilaspur on “Study on Effect of Urban Habitat on Maina Species Around Bilaspur City”. In her lecture, Dr. Rahalkar discussed how urbanization is leading to the disturbance of natural habitats followed by habitat destruction of birds as well as other animals. Dr. Rahalakar summarized the results of her studies on the distribution of Myna concerning different habitats in Bilaspur City.

Dr. Anil Kumar from Durg delivered the lecture on “Human Genetic Biodiversity and Health Implications”. Dr. Kumar discussed the coastally-oriented dispersal of modern humans from Eastern Africa to Southern Asia. Dr. Kumar elaborated that Indians are an assembly of 4365 well-defined populations with 532 tribes and 72 primitive tribes. Dr. Kumar elaborated on genetic diversity prevailing in the globin gene of Sickle cell patients in Chhattisgarh and its correlation with the pathogenicity of the disease.

The next lecture was delivered by **Dr. Jayant Biswas** from Raipur on “The Stygobiotic Fishes Identified from Various Parts of India: A Special Discussion on Their Specific Habitats”. Dr. Biswas talked about the adaptation of terrestrial animals into the subterranean mode of life. Dr. Biswas explained the evolution and distribution of Stygobiotic fishes in various parts of India.

The last invited lecture of the seminar was delivered by **Dr. Adikant Pradhan** from Indira Gandhi Krishi Vishwavidyalaya, Raipur. Dr. Pradhan talked about the biodiversity of millet and told millets are the traditional food for 59 crore people in Asia and Africa and India is the largest producer of millets. Dr. Pradhan concluded that Chhattisgarh state has a huge range of Biodiversity in millets and the biodiversity of millets is being used in developing crop varieties and designing newer approaches for crop improvement against stress tolerance have become a priority for the future.

In the two-day national seminar in addition to keynote lecture and invited lectures participants also presented their work in the form of short invited lectures, Oral presentations, and poster presentations.

Summary of Abstract received and presentations held in Seminar:

S.No.	Type of Abstract	No. of Abstract Received	No. of Paper Presented in Seminar
1.	Key-Note Lecture	01	01
2.	Invited Lectures	17	13
3.	Short Invited Lectures	12	07
4.	Oral Presentations	30	23
5.	Poster Presentations	28	11

Results of Paper Presentation:

Type of Presentation	Oral Presentation
First Award	<p>1.Miss Anita Yadav: Infra Population Regulation of Camallanid Worms During their Transformation to Anaskid Worms Under Environmental Influence.</p> <p>2.Mr. Kshitij Upadhayay: Distribution and Sources of Microplastics in Urban Ponds of Raipur City.</p>
Second Award	Mr. Sarvesh Kaushik Patel: Phytodiversity Conservation Practices of the Tribals in Gomarda Wildlife Sanctuary, Chhattisgarh, India.
Third Award	Mr. Gaurav Nag: Diversity of Wild Plants Used by Tribals for Their Livelihood Security in Nagri Block of District Dhamtari, Chhattisgarh, India.

Type of Presentation	Poster Presentation
First Award	Miss. Chitramani Shrimali: Avifaunal Diversity in the Biodiversity Lab of Sant Guru Ghasidas Government P.G. College Kurud, Chhattisgarh, India
Second Award	Miss Devshree Verma: Antisickling Properties of Extracts From Two Plants, <i>Helianthus annus</i> linn and <i>Azadirachta indica</i> A. JUSS
Third Award	Miss. Anuradha Sharma: A Global Perspective on Heavy Metal Analysis in Milk: Analytical Methods and Assessing Health Risks
Consolation	Mrs. Gunjan Ojha: Millets: The Super Food

Some of the important highlights obtained from the abstracts are as follows:

- Zoo education can be an effective method for biodiversity conservation (**Dr. T. Kalaichelvan and Dr. Sanju Sinha**).
- Biodiversity survey at the local level. Any sizable area will help to plan for the conservation of biodiversity which ultimately help to assess the Impact on the environment. Biodiversity surveys in any sizable area, at an interval of about a decade, will give information about changes in the population size of different species, declining or increasing (**Dr. T. Kalaichelvan and Dr. M.L. Naik**).
- Environmental pollution can be curbed by exploiting hydrogen as a green fuel. The hydrogen can be produced by using biowastes a substrate in Dark Fermentation. The spent media of dark fermentation can be further used for extraction of other valuable products or can be further used as raw material for the generation of electricity, algal biomass, hydrogen, etc. The approach will reduce environmental pollution as well as help in the prevention of loss of biodiversity (**Dr. Pallavi Sinha**).
- Pesticides used to increase crop production ultimately affect the health of fishes and their diversity in aquatic fauna when reach water by runoff, spray, or by leaching. Sub-lethal value of different pesticides causes histopathological and histochemical alterations in the gills, liver, kidney, intestine, stomach, and brain. While acute exposure to pesticides may lead to the death of fish. Pesticides can accumulate in fish tissue and can enter the body at higher trophic levels when eaten by them. So it is very crucial to save nontarget groups of aquatic ecosystems including fish (**Tameshwar Kumar Markanday and Ajit Hundet**)
- . The freshwater ecosystem is declining rapidly because of the indiscriminate use of agrochemicals. *Labeorohita* is a highly edible fish in Central India but excessive use of pesticides is causing much damage to them (**Swapna Mishra and Dr. Rashmi Sao**)
- All the tribal communities have found to utilize the plant resource of the forest sustainably as tribal know the importance of plants in their daily life. In the present investigation, conservation measures adopted by the tribal were documented. It was noted that the Tribal community never cut the plants. Many of the plant species were found to be used in their socio-religious practices. Tribals were found to conserve the plants that were found in their niche. One of the most common methods of conservation practice adopted by tribal was

protecting the plant species through celebrating festivals and socio-religious practices, and by this means tribal encourage plant conservation. tribal avoid the repeated collection of plant parts from the same location and while collecting some of the underground parts, such as tubers, rhizomes, and bulbs were found to be left in the soil for regeneration (**Sarvesh Kaushik Patel and Dr. V.K. Kanungo**)

- At Lemru elephant reserve a survey took place during a two-day Nature Camp organized by the Korba unit of Chhattisgarh Vigyan Sabha, an NGO dedicated to promoting scientific awareness and biodiversity conservation in Chhattisgarh. A total of 48 butterfly species were observed during this survey. Notably, a rock painting featuring a butterfly was discovered in the Futka Hills, marking the first documented instance of a butterfly depicted in rock art in Central India. This finding holds significant importance in the region's cultural and natural history (**H. N. Tandan et al.**)

The two days national seminar was also graced by the presence of M.L.A **Shri. Vikas Upadhayay** and President **Dr. Vikas Pathak**. Shri Vikas Upadhayay in his lecture appreciated the theme of the seminar and advised to organize such type more seminars in the future at National as well as international level.

The seminar ended with a Valedictory function in which the Chief Guest was **Shri. Arun Kumar Pandey**, Member Secretary, Chhattisgarh State Biodiversity Board. The Guest of Honour was Prof. Sandeep Kumar Malhotra, Retd Professor, University of Allahabad, Prayag Raj. Special Guest was Dr. A.K Pati and Dr. M.L. Nayak. The various events of the seminar were summarised by organizing secretary Dr. Pallavi Sinha. Chief Guest of the Valedictory function Shri Arun Kumar Pandey addressed the participant and complimented the forest as the source of happiness. In his lecture, Shri Pandey also explained the importance of Biodiversity and the need for its conservation. Shri Pandey also assured that Chhattisgarh State Biodiversity Board will support the initiative taken for biodiversity conservation and promote the workshops and seminars based on biodiversity.

Dr. Malhotra also advised organizing workshops for biodiversity conservation. The Patron of the seminar Dr. P.C. Choubey assured that in the future workshops for Biodiversity conservation would be organized. At last Convenor of the seminar, Dr. Seema Gupta thanked all for the successful conduction of the Seminar.

Feedback obtained in the seminar on Biodiversity conservation:

1. People use to share the coordinates of wild animals on social media which can increase the incidence of animal poaching therefore this sharing of coordinates of animals should be strictly prohibited.
2. To know more about biodiversity and its conservation workshops should be conducted in wildlife sanctuaries, National parks, etc.
3. As Chhattisgarh is rich in forest and biodiversity institutes devoted to wildlife should be opened in the state so that more people gain knowledge about wildlife and its protection.
4. Plantation of more trees and their protection for successful growth will help to reduce environmental pollution.
5. The drive for Biodiversity conservation should be started by the young children of society.
6. Everyone should take responsibility to save the environment as it will preserve Biodiversity as a drop of water from the ocean.
7. Frequent organization of such types of workshops and projects for the improvement of biodiversity.
8. Make MoU with the Biodiversity board and involve students in short projects.
9. Seminal, based on biodiversity conservation. Should be organized at the international level.
10. The Apterygota group of insects should be considered for further study in Chhattisgarh.
11. Indigenous knowledge of conservation methods should be included in the syllabus.
12. Recycling waste can deduced environmental pollution.
13. Awareness and publicity of biodiversity and its conservation.
14. The best way of biodiversity conservation is to preserve the natural habitat of species and inhibit invasive species.
15. Due to increasing tourism, the biodiversity of caves is on the verge of loss. Therefore, caves need the most attention from a conservation point of view.
16. The use of plastic should be reduced and recycling of waste material should be promoted.
17. The construction of a small botanical garden of a specific significance and an animal shelter in each locality will help in the conservation of biodiversity
18. Students first be encouraged for the study of biodiversity in and around their residents.



Inaugural Function of the Seminar



Dr. A.K. Pati delivering Key-note lecture



Dr. M.L. Naik delivering Invited lecture



Dr. S.K. Malhotra delivering invited lecture



Dr. S.Roy delivering invited lecture



Dr. B.A.K Prusty delivering invited lecture



Shri. Ashok Sengupta delivering invited lecture



Dr. T. Kalai Chevan answering the queries of Audience



Dr. Shankaraman. H delivering invited lecture



Dr. P. Gowri Shanker delivering invited lecture



Dr. Abhya. R. Joglekar delivering invited lecture



Dr. Shubhda Rahalkar delivering invited lecture



Dr. Anil Kumar delivering invited lecture



Dr. J. Biswas delivering invited lecture



Dr. A. Pradhan delivering invited lecture



Distribution of Awards in poster and oral presentation





Valedictory Function of the Seminar