

**ESW X Annual Research Conference International Level. 29 to 31 January, 2023**  
**“Strategies for promotion and conservation of environment and native species to protect and restore the Nature”**



**Organized by**  
**Environment and Social Welfare Society, Khajuraho, MP**

**In association with**



International Union for Conservation of  
Nature-CEC, Switzerland



Zoological Survey of India, Ministry of  
Environment, Forest and Climate Change,  
Government of India, Kolkata, West Bengal.



Mahakoshal Vigyan Parishad, Vigyan  
Bharti, Jabalpur, Madhya Pradesh



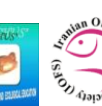
The National Academy of Sciences India,  
Bhopal Chapter, Madhya Pradesh

**Editor**

**Dr. Ashwani Kumar Dubey**

(Zoology, Ichthyology, Biochemistry, Free Radical Biology,  
Toxicology, Stress Monitoring, Biodiversity & Natural Resources Management)

**In collaboration with MoU Institutes**



**Assisted by**  
**Godavari Academy of Science & Technology, Chhatarpur, Madhya Pradesh**

**ESW X Annual Research Conference International Level. 29 to 31 January, 2023**  
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X- Annual research conference International Level: 2023

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**"Strategies for promotion and conservation of environment and native species to protect and restore the Nature"**

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Environment and Social Welfare Society, Khajuraho, Madhya Pradesh, India.

**ESW X Annual Research Conference International Level. 29 to 31 January, 2023**  
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मंगुभाई पटेल  
MANGUBHAI PATEL



सत्यमेव जयते

राज्यपाल, मध्यप्रदेश  
GOVERNOR OF MADHYA PRADESH

राज भवन  
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BHOPAL-462052

क्रमांक 885/राजभवन/2022  
भोपाल, दिनांक 20 दिसम्बर, 2022

### संदेश

हर्ष का विषय है कि पर्यावरण एवं समाज कल्याण सोसाइटी, खजुराहो द्वारा  
**Strategies for promotion and conservation of Environment and Native species to protect and restore the Nature** विषय पर 10वां अनुसंधान सम्मेलन आयोजित कर रहा है।

प्रदूषण के कारण पृथ्वी का दूषित होता पर्यावरण संपूर्ण विश्व के समक्ष एक ज्वलंत और चिंतनीय समस्या है। पर्यावरण परिवर्तन के कारण आज पृथ्वी से करोड़ों जीव-जन्तु एवं वनस्पतियाँ विलुप्त होने की कगार पर हैं। कोई भी राष्ट्र या व्यक्ति इसके दुष्प्रभावों से मुक्त नहीं है। इन विकराल समस्याओं के समाधान के लिए देश, समाज और व्यक्ति सभी स्तरों पर प्रयासों की आवश्यकता है, ताकि हम विरासत में अपनी आने वाली पीढ़ियों को एक स्वच्छ एवं स्वस्थ पर्यावरण दे सकें।

आशा है, सम्मेलन शोधकर्ताओं और वैज्ञानिकों को बहुमूल्य मार्गदर्शन प्रदान करेगा।

शुभकामनाएं,

मंगुभाई पटेल  
( मंगुभाई पटेल )

दूरभाष : 0755-2858828, 2858830, फैक्स : 0755-2858832, ई-मेल : mpajibhavan@mp.gov.in

**ESW X Annual Research Conference International Level. 29 to 31 January, 2023**  
**“Strategies for promotion and conservation of environment and native species to protect and restore the Nature”**

**Dr. Mohan Yadav**  
Minister  
Higher Education  
Government of Madhya Pradesh



Mantralay : Room No. E-216, VB-III, Bhopal  
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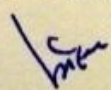
Letter No. A-10388/M/22  
Date 31/12/2022

**MESSAGE**

I am delighted to know that Environment and Social Welfare Society, Khajuraho, India is organizing ESW 10th Annual Research Conference International Level on “Strategies for promotion and conservation of environment and native species to protect and restore the Nature” to be held during **29 to 31 January, 2023** at World Heritage site Khajuraho, Madhya Pradesh, India.

The conference provides the opportunity to the environmentalists, researchers and academicians to deliberate upon the vital and key issues pertaining to Strategies for promotion and conservation of environment and native species to protect and restore the Nature and to share their ideas on the subject.

I convey my sincere best wishes to Dr. Ashwani Kumar Dubey, the organising Secretary and entire team of the organising committee of research conference for the grand success of the conference.

  
(Dr. Mohan Yadav)

Uttain Office : 1/1, Muni Road, Frengani, Uttain (M.P.) Tel. No. 0734 - 4070000

**ESW X Annual Research Conference International Level. 29 to 31 January, 2023**  
**“Strategies for promotion and conservation of environment and native species to protect and restore the Nature”**

**डॉ. धृति बैनर्जी**  
निदेशक  
**Dr. Dhriti Banerjee**  
Director



भारत सरकार  
**भारतीय प्राणि सर्वेक्षण**  
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय  
Government of India  
**Zoological Survey of India**  
Ministry of Environment, Forest and Climate Change

**MESSAGE**

I am delighted to know that **Environment and Social Welfare Society, Khajuraho, India** is organizing ESW 10<sup>th</sup> Annual Research Conference International Level on "Strategies for promotion and conservation of environment and native species to protect and restore the Nature" to be held during 29 to 31 January, 2023 at World Heritage site Khajuraho, Madhya Pradesh, India.

I convey my best wishes for the successful conclusion of the International conference and would like to congratulate **Dr. Ashwani Kumar Dubey** for conducting this regular event for some positive steps towards improving our Earth for future generation.

With best wishes

  
Dr. Dhriti Banerjee



प्राणि विज्ञान भवन, 535, एम. ब्लॉक, न्यू अलीपुर, कोलकाता - 700 053. दूरभाष : +91 33 2400 6893, टेलीफैक्स : +91 33 2400 8595  
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**ESW X Annual Research Conference International Level. 29 to 31 January, 2023**  
**“Strategies for promotion and conservation of environment and native species to protect and restore the Nature”**



केन्द्रीय कृषिवानिकी अनुसंधान संस्थान  
पहुज बाँव के सामने, जौली-ग्वालियर मार्ग, जौली 284003 (उ० प्र०)  
**Central Agroforestry Research Institute**  
**Ministry of Agriculture & Farmers' Welfare**  
Opposite Pahuj Dam, Gwalior Road, Jhansi 284003, Uttar Pradesh



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**डा. अ. अरुणाचलम / Dr. A. Arunachalam, D.Sc.**

*निदेशक / Director*

**MESSAGE**

I am delighted to know that the Environment and Social Welfare Society, Khajuraho, India is organizing its 10<sup>th</sup> Annual Research Conference International Level on “Strategies for promotion and conservation of environment and native species to protect and restore the Nature” to be held during 29-31 January 2023 at the World Heritage Site - Khajuraho, Madhya Pradesh, India.

I sincerely hope that the conference will be of immense value and benefit to the researchers as well as the participants in motivating the young minds to take new strides for scientific temper and come out with fruitful policy planning for development of road map for research and development in the field of nature conservation.

My best wishes and compliments for the grand success of the Conference.

With best wishes,

Jhansi  
25-12-2022

A. Arunachalam

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Ph: +91-510-2730214; Fax: +91-510-2730364; Email: [director.cafri@icar.gov.in](mailto:director.cafri@icar.gov.in); website: [www.cafri.res.in](http://www.cafri.res.in)  
Facebook: @icarcafri.jhansi; Twitter: @icarCafri; Instagram: @icar.cafri; LinkedIn: @ICAR-CAFRI JHANSI



**ESW X Annual Research Conference International Level. 29 to 31 January, 2023**  
**“Strategies for promotion and conservation of environment and native species to protect and restore the Nature”**

**डॉ. बी. आर. अम्बेडकर सामाजिक विज्ञान विश्वविद्यालय**

**Dr. B. R. Ambedkar University of Social Sciences**

(State University, Government of M.P.)

**प्रो. दिनेश शर्मा**

कुलपति

**Prof. Dinesh Sharma**

Vice Chancellor



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E-mail : brauss2020@gmail.com


Website : www.brauss.in

**MESSAGE**

I am delighted to know that **Environment and Social Welfare Society, Khajuraho, India** is organising ESW 10th Annual Research Conference International Level on **Strategies for Promotion and Conservation of Environment and Native Species to protect and restore the Nature** to be held during 29th to 31st January 2023 at World Heritage Site Khajuraho, Madhya Pradesh, India.

The vision of this International Conference is to bring together the efforts of leading scientists, technologists and researchers on a platform that would expand the horizon of human understanding of the environment and its protection for the well-being of Mother Earth. The publication of the souvenir of the Conference shall add additional feather in the cap of the concerned Institute.

My best wishes to Dr. Ashwani Kumar Dubey, Organising Secretary and compliments for grand success of the Conference.

  
(Prof. D.K. Sharma)

डॉ. अम्बेडकर नगर (महू) - 453441, इन्दौर (म. प्र.), भारत Dr. Ambedkar Nagar (Mhow) - 453 441, Indore (M.P.), India

**ESW X Annual Research Conference International Level. 29 to 31 January, 2023**  
**“Strategies for promotion and conservation of environment and native species to protect and restore the Nature”**



**Prof. Ram Shankar**  
*Vice-Chancellor*  
**Pandit S.N. Shukla University**  
*Shahdol, M.P., INDIA-484001*

I am happy to know that **Environment and Social Welfare Society, Khajuraho, India** is organizing the **10<sup>th</sup> ESW Annual Research Conference (International Level)** on **“Strategies for Promotion and Conservation of Environment and Native Species to Protect and Restore the Nature”** to be held from 29 to 31 January, 2023 at World Heritage site Khajuraho, Madhya Pradesh, India.

Publication of the souvenir of the Conference shall add an additional feather in the cap of the Institute.

I convey my best wishes for success of the Conference and would like to congratulate Dr. Ashwani Kumar Dubey, organizing secretary and all team members for organizing this Conference. I am sure the deliberations in the Conference will go a long way in improving our environment and ensure a better future for generations to come

With best wishes.

**Prof. Ram Shankar**  
Vice Chancellor



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Navalpur, Shahdol, M.P., INDIA-484001

**ESW X Annual Research Conference International Level. 29 to 31 January, 2023**  
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रानी दुर्गावती विश्वविद्यालय  
RANI DURGAWATI VISHWAVIDYALAYA  
Rajwade Sanshodhan Mandal,  
Chhatrapati Sambhaji Maharaj Vastu Sangrahalaya,  
Mumbai-400 005



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वेबसाइट: www.esw.org

श्री. कपिल देव मिश्रा  
सूचनाएं

Prof. Kapil Deo Mishra  
Vice-Chancellor

Dec. 06, 2022

**MESSAGE**

I am glad to learn that Environment and Social Welfare Society, Khajuraho, India is organizing ESW 10th Annual Research Conference International Level on “Strategies for promotion and conservation of environment and native species to protect and restore the Nature” to be held during 29<sup>th</sup> to 31<sup>st</sup> January, 2023 at World Heritage site Khajuraho, Madhya Pradesh, India.

The theme of the conference is important from view point of environment conservation and protection. The deliberations related to burning issues in this field will go a long way in suggesting the effective solutions.

I convey my sincere best wishes and would like to congratulate Dr. Ashwani Kumar Dubey for conducting this regular event for positive contribution towards nature conservation.

  
(Kapil Deo Mishra)

**ESW X Annual Research Conference International Level. 29 to 31 January, 2023**  
**“Strategies for promotion and conservation of environment and native species to protect and restore the Nature”**

प्रो. अखिलेश कुमार पाण्डेय  
कुलपति

**Prof. Akhilesh Kumar Pandey**  
Vice Chancellor



विक्रम विश्वविद्यालय  
नेक द्वारा 'ए' ग्रेड प्रदान  
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E-mail : vc@vikramuniv.ac.in  
Website : www.vikramuniv.ac.in

**MESSAGE**

The best return gift that mankind can give to 'Mother Nature' is to sincerely resolve for a continuous safeguarding of environment for our future generations.

Human beings have exploited nature in their quest for development and enjoyment but now they must realize that riches of nature have their limitations and are reducing fast. Therefore, in order to reap the benefits of nature the capacities of nature need to be conserved to sustain development and to support all life existing in it. So, we need a combined interrelatedness of actions and associated efforts backed by strong will and determination. A concentrated national and global strategic solidarity and coordination can yield better results in conserving environment and protecting ecosystem.

I extend my sincere wishes for the success of ESW 10th Annual Research Conference International Level on "Strategies for Promotion and Conservation of Environment and Native Species to Protect and Restore the Nature" to be held during 29-31 January 2023 at World Heritage site Khajuraho.

(Prof. Akhilesh Kumar Pandey)

ESW X Annual Research Conference International Level. 29 to 31 January, 2023  
“Strategies for promotion and conservation of environment and native  
species to protect and restore the Nature”

प्रो. मुकेश पाण्डेय  
कुलपति

Prof. Mukesh Pandey  
Vice-Chancellor



बुन्देलखण्ड विश्वविद्यालय  
झाँसी - 284 128 (उ. प्र.) भारत

BUNDELKHAND UNIVERSITY  
JHANSI - 284 128 U.P. (INDIA)  
(STATE UNIVERSITY OF U.P.)

MESSAGE FROM THE DESK OF VICE-CHANCELLOR

I am delighted to know that **Environment and Social Welfare Society (ESW)**, Khajuraho, India is organizing ESW -10<sup>th</sup> Annual Research Conference International Level on “**Strategies for promotion and conservation of environment and native species to protect and restore the Nature**” to be held during 29 to 31 January, 2023 at World Heritage site Khajuraho, Madhya Pradesh, India.

The publication of the souvenir of the conference shall add additional feather in cap of the concerned institutes/organizations.

I extend my best wishes and congratulate to Dr. Ashwani Kumar Dubey, Organizing Secretary and his team members for conducts this regular event for some positive steps towards improving our Mother Earth for budding generation.

With best wishes.

(Prof. Mukesh Pandey)

NAAC B++ Accredited, NIRF Ranked, ISO:9001-2015 Certified, State University of U.P.

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**ESW X Annual Research Conference International Level. 29 to 31 January, 2023**  
**“Strategies for promotion and conservation of environment and native species to protect and restore the Nature”**

**Dr. Rajkumar Acharya**  
**Vice-Chancellor**

**डॉ. राजकुमार आचार्य**  
**कुलपति**



**Awadhesh Pratap Singh University**  
**Rewa - 486 003 (M.P.)**

**अवधेश प्रताप सिंह विश्वविद्यालय**  
**रीवा - 486003 (म.प्र.)**  
vcapsu@gmail.com

Dated 13th November 2022

**Message**

I am delighted to know that Environment and Social Welfare Society, Khajuraho, India is organizing ESW 10th Annual Research Conference International Level on "Strategies for promotion and conservation of environment and native species to protect and restore the Nature" to be held during 29th & 31st January, 2023 at World Heritage site Khajuraho, Madhya Pradesh, India.

I convey my sincere best wishes and would like to congratulate Dr. Ashwani Kumar Dubey for conducts this regular event for some positive steps towards nature conservation.

I am sure that the participants in the events will get benefited with scientific temper.

With best wishes,

(Dr. Rajkumar Acharya)  
Vice-Chancellor  
A.P.S. University, Rewa

Dr. Ashwani Kumar Dubey  
President & Organizing Secretary  
Environment and Social Welfare Society  
MIG 24, Vidhyadhar Colony  
Khajuraho (MP)  
471606

**ESW X Annual Research Conference International Level. 29 to 31 January, 2023**  
**“Strategies for promotion and conservation of environment and native species to protect and restore the Nature”**

# NEHRU GRAM BHARATI

(Deemed to be University)

J. N. Misra  
Chancellor

Mob. 91 9415236900  
91 9810288892  
Email: chancellor@ngbu.edu.in



## MESSAGE

I am delighted to know that Environment and Social Welfare Society, Khajuraho, India is organizing ESW 10th Annual Research Conference International Level on “Strategies for promotion and conservation of environment and native species to protect and restore the Nature” to be held during 29 to 31 January, 2023 at World Heritage site Khajuraho, Madhya Pradesh, India.

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I extend my best wishes and congratulate to Dr. Ashwani Kumar Dubey, organizing secretary for conducts this regular event for some positive steps towards improving our Earth for future generation.

With best wishes.

Dr. J. N. Misra

Kotwa- Jammipur-Dubawal, Prayagraj (U.P) INDIA

Office address: 104 F/3, Malviya Road, George Town, Prayagraj (U.P.) India

Delhi office: Nav Sansad Vihar, Plotmuber-4, CGHS, Plot number 204, Sector-22, Dwarka, New Delhi-110077

**ESW X Annual Research Conference International Level. 29 to 31 January, 2023**  
**“Strategies for promotion and conservation of environment and native species to protect and restore the Nature”**



Principal

**OFFICE OF THE PRINCIPAL**

GOVT. GIRDARI LAL DOGRA MEMORIAL DEGREE COLLEGE HIRANAGAR

(NAAC ACCREDITED WITH GRADE B+)

Website: <https://www.gldmdchiranagar.in> E-Mail: [hiranagardc@gmail.com](mailto:hiranagardc@gmail.com)

M.No: 94192-20975 Telephone No. 19222-95455

**MESSAGE**

I am delighted to know that Environment and Social Welfare Society, Khajuraho, India is organizing ESW 10th Annual Research Conference (International Level) on “Strategies for promotion and conservation of environment and native species to protect and restore the Nature” to be held during 29<sup>th</sup> to 31<sup>st</sup> January, 2023 at World Heritage site Khajuraho, Madhya Pradesh, India.

The publication of the souvenir of the conference shall add additional feather in cap of the concerned Institute.

I extend my best wishes and congratulate Dr. Ashwani Kumar Dubey, organizing secretary for conducting this regular event for some positive steps towards improving our Earth for future Generations.

With best wishes.

*8.01.2023*  
Dr. Pragya Khanna  
Principal  
Govt. G.L. Dogra  
Memorial Degree College  
Hiranagar

**ESW X Annual Research Conference International Level. 29 to 31 January, 2023**  
**“Strategies for promotion and conservation of environment and native species to protect and restore the Nature”**



Principal  
Dr Anil Khajuria

**Office of the Principal**  
GOVT.DEGREE COLLEGE,CHENANI,UDHAMPUR

Ph. No.: 9469406244, 9419264268  
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[principaldccchenani@gmail.com](mailto:principaldccchenani@gmail.com)  
Website: [www.gdchenani.in](http://www.gdchenani.in)

Dated-14-01-2023.

**MESSAGE**

I am delighted to know that **Environment and Social Welfare Society, Khajuraho, India** is organizing ESW 10<sup>th</sup> Annual Research Conference International Level on “**Strategies for promotion and conservation of environment and native species to protect and restore the Nature**” to be held during 29 to 31 January, 2023 at World Heritage site Khajuraho, Madhya Pradesh, India.

I convey my best wishes for the successful conclusion of the International conference and would like to congratulate **Dr. Ashwani Kumar Dubey** for conducting this regular event as a contribution towards improving our Earth for future generations. The efforts put in by the organizers are worth appreciation.

I wish the organizers the best in this endeavour.

  
**PRINCIPAL**

**ESW X Annual Research Conference International Level. 29 to 31 January, 2023**  
**“Strategies for promotion and conservation of environment and native species to protect and restore the Nature”**

**ABOUT ENVIRONMENT & SOCIAL WELFARE SOCIETY, KHAJURAHO**

Environment & Social Welfare Society (ESW Society) *Dedicated to Environment, Education and Sciences & Technology throughout India since Bi-Millennium* is registered organization under the society Act 1973, Government of Madhya Pradesh, India on 31 January 2000 with No SC2707. It was affiliated by Nehru Yuva Kendra Sangathan, Ministry of Youth Affairs and Sports, Government of India. It is accredited by Jan Abhiyan Parishad, Government of Madhya Pradesh, since 2013, also enrolled in Navankur Yojana with enrollment number NV2016CHH0062 Dated 29/09/2016. It is also accredited by NITI Aayog, (National Institution for Transforming India), Govt. of India. ID MP/2014/0076324 and Registered under 12a(1)(ac)(iii) 2022-23 to 2026-27 Income Tax Dept. Govt. of India

Now it's worldwide known for its impact. ESW Society has been to develop the 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 Social Welfare.



**Object of The ESW Society:**

1. To establish, arrangement and management all around development in the field of Education and expansions of educational institutions.
2. To develop Ideal morality, Character building in the Children according to Indian tradition and Culture.
3. All around development of the Children. Arrange training programme to establish Self Employment Centre.
4. To organize Seminar for Environmental management, Pollution control, and establish Awareness centre for the same.
5. To make awareness for Social welfare. Check against Animal cruelty and to protect against cruelty and Tyranny.
6. Open animal house for improvement of animal health and provide necessary facility for them.
7. To highlight modern Technology, Computer, Games & Sports, Music, Art, Literature, and various languages Hindi, English, Urdu, and other foreign languages in the field of Education.
8. Establish Research Centre

**ESW X Annual Research Conference International Level. 29 to 31 January, 2023**  
**“Strategies for promotion and conservation of environment and native species to protect and restore the Nature”**

**ACKNOWLEDGEMENT**

This is an honor for Environment and Social Welfare Society, Khajuraho organize its ESW 10<sup>th</sup> Annual Research Conference International Level on “Strategies for promotion and conservation of environment and native species to protect and restore the Nature” to be held during 29 to 31 January, 2023 (Sunday to Tuesday) at World Heritage site Khajuraho, Madhya Pradesh, India.

I am Thankful to Dr. P N Vasanti, Regional Vice Chair for S & SE Asia, IUCN CEC, Switzerland, Dr. B. N. Johari, President, The National Academy of Sciences India, Bhopal Chapter, MP, Dr. Dhriti Banerjee, Director, Zoological Survey of India, Ministry of Environment, Forest and Climate Change, Government of India, Kolkata, West Bengal and Dr. Sunita Sharma, President, Mahakoushal Vigyan Parishad, Unit of Vigyan Bharti, Jabalpur for its association.

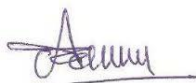
I am Thankful to Prof. D. K. Sharma, Honourable Vice Chancellor, Dr. Bheem Rao Ambedkar University, MHOW, Indore, Prof Ram Shankar Honourable Vice Chancellor, Pt. S. N. Shukla University, Shahdol, Madhya Pradesh. Prof Akhilesh Kumar Pandey, Honourable Vice Chancellor, Vikram University, Ujjain, Madhya Pradesh, Prof. Kapil Deo Mishra, Honourable Vice Chancellor, Rani Durgavati Vishwavidyalaya, Jabalpur, Madhya Pradesh, Prof. Mukesh Pandey, Honourable Vice Chancellor Bundelkhand University Jhansi, Uttar Pradesh, Mr. J. N. Misra, Honourable Chancellor, Nehru Gram Bharti Deemed to be University, Prayagraj, Uttar Pradesh, Principal, Mr. Anil Khajuria, Principal, Govt. Degree College Chenani, Jammu & Kashmir, Dr. Pragy Khanna, Principal, Govt. Girdari Lal Dogra Memorial College, Hiranagar, Jammu & Kashmir, India for its collaboration in this conference.

I am thanking to International institute Dr. Hafeez Basha, Technology Basha Research Corporation, Singapore. Dr. Monika Axini, MONACHUS, Group of Scientific Research and Ecological Education, Hortensiei Alley, Constanta, Romania, Dr. Fawaz Azki Geological Museum, Kismin, Syria and Dr. Shahram Dadgar, Iranian Ornamental Fish Society, Tehran for its international collaboration in ESW 10<sup>th</sup> Annual Research Conference International Level.

It is my privilege and pleasure to express my profound gratitude to our VIP Guest of inaugural session Dr. Mohan Yadav, Honourable Minister, Higher Education, Govt. of MP, Prof Rajkumar Acharya, Vice Chancellor, Awadhes Pratap Singh, Rewa, Madhya Pradesh, Dr. S. N. Pandey, Pro-Chancellor, The Global Open University Nagaland, Dr. M. S. Parihar, President, BIOEXONS LLC Washington, USA and Dr. Ulrich Berk, German Association of Homa Therapy, Germany, Dr. Sudha Malaiya, Chancellor, Eklavya University, Damoh. And VIP Guest of Valedictory session Prof. Kapil Deo Mishra, Vice Chancellor, Rani Durgavati University, Jabalpur, Madhya Pradesh, and Dr. Arunachalam, Ayyanadar, Director, ICAR – Central Agro Forestry Research Institute, Jhansi, Uttar Pradesh and Mr. Sandeep, G. R. (IAS) Collector, District Chhatarpur.

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 X Annual Research Conference International Level. 29 to 31 January, 2023**  
**“Strategies for promotion and conservation of environment and native species to protect and restore the Nature”**

# **Environment and Social Welfare Society**

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## **EDITORIAL**

In September 2015 world leaders adopted the 2030 Agenda for Sustainable Development and its 17 goals that cut across disciplines, sectors and institutional mandates, acknowledging the integrated nature of the many challenges that humanity faces – from gender inequality to inadequate infrastructure, from youth unemployment to environmental degradation. In the preamble to the 2030 Agenda, world leaders affirmed that they are: “Determined to protect the planet from degradation, including through sustainable consumption and production, sustainably managing its natural resources and taking urgent action on climate change, so that it can support the needs of the present and future generations.”

The ESW 10<sup>th</sup> Annual Research Conference International Level on “Strategies for promotion and conservation of environment and native species to protect and restore the Nature” to be held during 29 & 31 January, 2023 (Sunday to Tuesday) at World Heritage site Khajuraho, Madhya Pradesh, India. The theme is “To take some positive steps towards improving our Earth for future generation” which will underpin the need for collaboration and cooperation of individuals from a wide range of professional backgrounds.

The ESW Conference will strive to offer plenty of networking opportunities, providing you with the opportunity to meet and interact with the leading professionals as well as sponsors and exhibitors. And also to provide a platform to Educational Administrators, College Principals, Deans, Readers, Professors, Assistant Professors, Scientists, Environmentalist, Stakeholders, Researchers, Young scientists and Students to disseminate knowledge related to Strategies for promotion and conservation of environment and native species to protect and restore the nature and possible solution by technological approach.

ESW Society, India and its MoU institutes have joined hands in fulfil the object of ESW Society, raise awareness and valuable solution of Sustainable Development Goal 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities, Goal 7: Affordable and Clean Energy, Goal 13: Take urgent action to combat climate change and its impacts, and will continue to coordinate their endeavours in support of its implementation.

**Dr. Ashwani Kumar Dubey**

**ESW X Annual Research Conference International Level. 29 to 31 January, 2023**  
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Under auspicious of: Environment & Social Welfare Society, India

**ESW X Annual Research Conference International Level. 29 to 31 January, 2023**  
**“Strategies for promotion and conservation of environment and native species to protect and restore the Nature”**

**ABOUT ESW 10<sup>TH</sup> ANNUAL RESEARCH CONFERENCE AT  
INTERNATIONAL LEVEL**

It gives us immense pleasure to invite and welcome you in the Environment and Social Welfare Society (ESW Society), Khajuraho, Madhya Pradesh, India to participate in ESW 10<sup>th</sup> Annual Research Conference International Level on “Strategies for promotion and conservation of environment and native species to protect and restore the Nature” to be held during 29 to 31 January, 2023 (Sunday to Tuesday) at World Heritage site Khajuraho, Madhya Pradesh, India.

**Object:** To provide a platform to Vice Chancellors, Educational Administrators, Academicians, Professors, Readers, Associate Professors, Assistant Professors, Scientists, Environmentalist, Researchers, Young scientists and Post Graduate Students to disseminate knowledge related to Strategies for promotion and conservation of environment and native species to protect and restore the Nature.

**Goal:** The principal goal of this conference will be to present some of the latest outstanding breakthroughs in Strategies for promotion and conservation of environment and native species to protect and restore the Nature 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:** To take some positive steps towards improving our Strategies for promotion and conservation of environment and native species to protect and restore the Nature for our future generation

**THE GENERAL TOPICS COVERED IN THE CONFERENCE WILL BE AS UNDER**

1. **Biological Sciences:** Biological Sciences, Agricultural Science, Anthropology and Behavioral Sciences, Animal Husbandry, Aquaculture, Biodiversity, Biotechnology, Biochemistry, Bioinformatics, Cell and Molecular Biology, Fish and Fisheries, Home Sciences, Immunology, Life Sciences, Limnology, Medical Sciences, Microbiology, Nutrition, Plant Sciences, Taxonomy, Tissue Culture, Toxicology, Veterinary Sciences, Wildlife Conservation, Zoology.

2. **Environmental Sciences:** Environmental Ethic, Environmental Legislation, Environmental Impact Assessment, Environmental Management, Environmental Policies, Environmental Pollution, Natural Resources Conservation.

3. **Earth and Atmospheric Sciences:** Mineralogy.

4. **Sustainable Development:** Nutritional and Food Security, Biodiversity conservation, Promotion and conservation of indigenous species, Strategic and advocacy for nature conservation, Scientific approach of native species conservation, Scientific temper to protect and restore the nature, Livelihood.

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Prof. R. K. Day, Vice Chancellor, Central University of Jharkhand, Ranchi, Jharkhand

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Prof. Premendu Prakash Mathur, Vice-Chancellor, KIIT University, Bhubaneswar, Odisha

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Dr. Kailash Chandra, Scientist ‘G’, Former Director, Zoological Survey of India, Ministry of  
Environment, Forest and Climate Change. Govt. of India, New Alipore, Kolkata, WB  
Dr. Shobha Shouche (Aug. 2021), Associate Professor of Zoology, Govt. Madhav Science  
College, Ujjain, Madhya Pradesh.  
Dr. Shuchita Majoomdar Chandorkar (Aug. 2021), Assistant Professor of Zoology, Govt.  
College Kaytha, District Ujjain, Madhya Pradesh.  
Dr. Sudha Shrivastav (Aug. 2021), Prof. of Zoology, Govt. Kalidas Girls College, Ujjain, MP

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Dr. Leena Lakhani (Aug. 2021), Professor of Zoology, Govt. Girls College, Ujjain, MP  
Dr. Amita Shrivastav (Aug. 2021), Asst. Professor of Zoology, Dayanand PG College, Kanpur, Uttar Pradesh

***Life Members***

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Miss. Abha Shrivastava (Oct. 2013), Principal, Govt. Girls High School, Alipura, MP  
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Dr. Pramod Pathak (Dec. 2013), Professor of Hindi, Govt. Girls College, Chhatarpur, MP  
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Dr. Mohd. Abdullah (Dec. 2013), 146, Sastannagar, Faizabad Road, Gonda, Uttar Pradesh  
Dr. Arvind Prasad Dwivedi (Dec. 2013), (FESW), Guest Lecturer, Government Sanjay Gandhi Smriti College, Sidhi, Madhya Pradesh  
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Mrs. Sadhana Gupta (Nov. 2014), Near Panjab National Bank, Chhatarpur, MP  
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Dr. Aditya Narayan (Jan. 2015), Dept. of Zoology, Bundelkhand University, Jhansi, UP  
Mrs. Shivani Chaurasia (Jan. 2015), Ward No. 28, Chhatarpur, Madhya Pradesh  
Dr. Peyush Punia (Jan. 2015), Principal Scientist, National Bureau of Fish Genetic Resources (ICAR) Lucknow, Uttar Pradesh  
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Mrs. Renu Jain (Aug. 2015), Infront of Collector Bonglaw, Chhatarpur, Madhya Pradesh  
Mr. Rachakonda Satyanarayan (Sep. 2015), Assistant Manager Operations, Jindal Steel & Power Limited, Kharsia Road, Raigarh, Chhattisgarh  
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Dr. Praveen Kumar (FESW) (Jan. 2016), Assistant Professor of Zoology, Agrawal College, Gangapur City, District Sawai Madhopur, Rajasthan  
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Dr. Arjun Shukla (May 2016) (FESW) Dept. of Zoology, Govt. Model Science College, Jabalpur, MP  
Dr.. Shivani Rai (May. 2016), Department of Zoology, Government M. H. College of Home Science and Science for Women, Jabalpur, Madhya Pradesh  
Dr. Mukta Dubey (May. 2016), Guest Lecturer of Political Science, Government College, Rampura, Madhya Pradesh  
Mr. Shachindra Kumar Dubey (Jun. 2016), RS, Department of Computer Science & Engineering, Government Engineering College, Gokalpur, Jabalpur, Madhya Pradesh  
Dr. Narendra V. Harney (Sep. 2016), (FESW) Assistant Professor of Zoology, Nilkanthrao Shinde Science and Arts College, Bhadravati-442902  
Dr. Ashwani (Jan. 2017), (FESW) Bhagini Nivadita College, University of Delhi, Delhi.  
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Dr. Sandeep Kushwaha (Feb. 2017), Assistant Zoologist, Zoological Survey of India, ‘M’ Block, New Alipore, Kolkata, West Bengal  
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Dr. Parvinder Kumar (Feb. 2017), Sr. Assistant Professor of Zoology, University of Jammu, Jammu & Kashmir  
Dr. Esha Yadav (March. 2017), Assistant Professor of Zoology, Janta College, Bakewar  
Dr. Hemlata Pant (Jul. 2017), Nematologist, Society of Biological Sciences & Rural Development, Allahabad, Uttar Pradesh  
Er. Priyansha Kushwaha (Jul. 2017) United College of Engineering and Research, Allahabad,  
Dr. Shivam Dubey (Aug. 2017), RS, Central Ordnance Depot, Jabalpur, Madhya Pradesh  
Dr. Achuta Nand Shukla (Aug. 2017), Scientist B, Botanical survey of India, Allahabad, UP  
Er. Saurabh Kushwaha (Sep. 2017), Mechanical Engineer, In front of Transformer Raiganj, Gorakhpur, Uttar Pradesh  
Dr. S. K. Bhatnagar (Sep. 2017), Director, Biomedical Research Centre, Delhi NCR  
Dr. Sanjay Tiwari (Nov. 2017), Former Registrar, Maharaja Chhatrasal Bundelkhand University, Chhatarpur, Madhya Pradesh  
Mr. Bhoopendra Kumar Ahirwar (Nov. 2017), RS, Department of Zoology, Government Science College, Jabalpur, Madhya Pradesh  
Dr. Krishna Pateria (Nov. 2017), Professor of Zoology, Government M. H. College of Home Science, Jabalpur, Madhya Pradesh

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Dr. Ashwani Kumar Awasthi (Dec. 2017), Mahatma Gandhi Chitrakoot Gramodaya Vishwavidyalaya, Chitrakoot, Madhya Pradesh

Dr. Sangeeta Mashi (Jan. 2018), Prof. of Zoology, Pt. S. N. Shukla, University, Shahdol, MP

Dr. Sajjad ul Akbar Wani (Jan. 2018), (FESW) Assist., Prof. of Zoology, I. K. College, Indore, MP

Dr. Devendra Swaroop (Jan. 2018), (FESW), Assistant Professor, Krishi Vigyan Kendra, Thariaon, Fatehabad, UP

Dr. Amita Pandey (Jan. 2018), (FESW), Assistant Professor of Botany, C. M. P. Degree College, Allahabad, Uttar Pradesh

Dr. Manoj Kumar Singh (Jan. 2018), Department of Horticulture Kulbhaskar Ashram P G College, Allahabad, Uttar Pradesh

Dr. Ayyandar Arunachalam (Mar. 2018), Director, ICAR-Central Agroforestry Research Institute, Jhansi, Uttar Pradesh

Dr. Mohammad Mubashir Kachroo (Jul. 2018), Sher-e-Kashmir University of Agricultural Sciences and technology, Kashmir

Dr. Shamim Ahmad Banday (Jul. 2018), Assistant Professor of Zoology, Government Degree College, Poomch, Jammu & Kashmir

Dr. Khursheed Ahmad Dar (Jul. 2018), College of Temperate Sericulture, SKUAST-Kashmir, Jammu & Kashmir

Dr. Arti Maheshbhai Joshi (Jul. 2018), ICAR, Central Institute of Fisheries Technology, Matshya Bhavan, Bhidiya, Veraval, Gujrat

Dr. Sujata Magdum (Dec. 18) Asst Prof of Zoology, KTHM College, Nashik, Maharashtra

Dr. Shri Prakash (Dec. 18) Assistant Professor of Zoology, K.A.P.G. College, Prayagraj, UP

Dr. A. K. Verma, (Dec. 18), Prof. of Zoology, Govt. P.G. College, Saidabad, Prayagraj, UP

Dr. S. B. Shashi, (Jan. 19), Dept. of Zoology, R.B. Jalan College, Bela, Darbhanga, Bihar

Dr. Md. Mansoor Alam, (Jan. 19), Department of Zoology, L. N. Mithila University, Darbhanga, Bihar

Dr. Smita Singh (Jan. 19) Scientist in Agronomy, K.V.K., Rewa, Madhya Pradesh

Dr. Chandra Shekhar Dwivedi (Dec. 19) Department of Geoinformatics, Central University of Jharkhand, Ranchi, Jharkhand

Mr. Umesh Kumar Mishra (Dec. 19) Research Scholar, Department of Zoology, Bipin Bihari (PG) College, Jhansi, Uttar Pradesh

Dr. Vandana Ram (Dec. 19) PDF, UGC, Department of Zoology, Pandit SN Shukla University, Shahdol, Madhya Pradesh

Dr. Neerja Khare (Jan. 2K20) (FESW), Prof. of Zoology, Govt. P.G. College, Satna, MP

Dr. Bhawna Srivastava (Jan. 2K20), Asst. Prof of Zoology, D.A.V. College, Kanpur, UP

Dr. Pranay Punj Pankaj (Jan. 2K20) Asst. Prof of Zoology, Fish Biology & Fisheries Lab, Department of Zoology, Nagaland University, Lumami, Nagaland

Ms. Annie Durrant, (Jan. 2K20) Psychologist, 5, Tan Lan, Llanfrothen, Penrhyndeudraeth, Gwynedd, LL48 6SG, Wales, UK.

Dr. Parveen Kumar (Jan. 2K20) Scientist, Krishi Vigyan Kendra, Leh, SKUAST-K

Dr. S. G. Syeddain Zaidi (Jan. 2K20) Former Senior Scientist Aquaculture, Indian Council of Agricultural Research, Central Education of Fisheries Education Bombay, Directorate of Cold water Fisheries Research, Bhimtal, India.

Dr. Rashmi Tripathi (Jan. 2K20), Assistant Professor Zoology, Bramhanand P.G. College, Kanpur, Uttar Pradesh.

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Dr. Roshni Pandey (May, 2K20) Assistant Professor Zoology, Government College, Badwara, Katni, Madhya Pradesh

Dr. Amit Pal (May, 2K20) (FESW), Professor, Institute of Environment & Development Studies, Bundelkhand University, Jhansi, Uttar Pradesh.

Dr. Sarada Prasad Mohapatra, (FESW), (Aug. 2K20) Associate Professor of Botany, Narasingh Choudhary College, Jajpur, Odisha

Dr. Shobha Thakur (Oct. 2K20) Assistant Professor, Department of Chemistry, Sam Higginbottom University of Agriculture, Technology and Sciences, Prayagraj, Uttar Pradesh.

Dr. Niraj Kumar (Oct., 2K20) Department of Zoology, L.N.D. College, Motihari, Bihar

Dr. Shiv Ji Malviya, (Dec., 2K20) Deputy Secretary, Uttar Pradesh Higher Education Service Commission, Prayagraj, Uttar Pradesh

Dr. Alok Sagar Gautam (Jan., 2K21), (FESW), Asst. Professor of Physics, Hemvati Nandan Bahuguna Garhwal University, Srinagar, Uttarakhand

Dr. Neetu Mishra (Jan., 2K21) Associate Professor of Home Science, University of Allahabad, Uttar Pradesh

Dr. Pratibha Tripathi (Jan., 2K21) Asst. Prof. Zoology, D.A.V. College, Kanpur, UP

Dr. Ajay Kumar Singh (Jan., 2K21) Principal Scientist, A.G. Biosystems Pvt., Ltd., Telangana

Dr. Awanish Kumar Singh, (Jan. 2021) Asst. Prof of Botany, SGN Govt. PG College, Muhammadabad, Mau, Uttar Pradesh

Dr. Ranjana Verma (Feb., 2K21) Asst. Prof of Zoology, Bherulal Patidar Govt. P. G. College, Mhow, Madhya Pradesh

Dr. Varsha Aglawe (Feb., 2021) Professor of Zoology and Biotechnology, Govt. Science College, Jabalpur, Madhya Pradesh

Dr. Parminder Singh (Feb., 2021), Zoologist, Punjab, Haryana.

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Dr. Harendra Nath Sharma (Aug. 2021) Assistant Professor of Zoology, Dr Bheem Rao Ambedkar University, Agra, Uttar Pradesh

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Dr. Jyoti Sharma (Dec. 2021), Kota, Rajasthan

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Mr. Barun Kumar Prahbat (Jan. 2022), Assistant Professor of Zoology, J. N. College, Madhubani, Darbhanga

Prof. Mahendra Singh (Jan. 2022), Principal, KK PG College, Etawah, Uttar Pradesh

Mr. Vagh Sarman Naranbhai (April, 2022) College of Fisheries Science, Junagarh Agricultural University, Veraval, Gujrat.

Mr. Lal Singh (April, 2022) Assist Prof. of Law (April, 2022) Shri Varshney College, Aligarh, UP.

Mr. Sharang Ambadkar (April 2022) FeelGood EcoNature LLP Mumbai, Maharashtra.

Dr. Santeshwar Kumar Mishra (April 2022) Assistant Professor of Sociology, Nehru Gram Bharti Deemed to be University Prayagraj, Uttar Pradesh.

Dr. Keshava Chandra K. (April 2022), Assistant Professor of Botany, Alva's College, Sundari Anand Alva Campus, Vidyagiri, Moodubidre, Karnataka.

Dr. Gaurav Sharma (Oct. 2022) Associate Professor of Floriculture & Landscaping, Rani Laxmi Bai Central Agriculture University, Jhansi, Uttar Pradesh

Dr. Sangeeta Chaurasia (Nov. 2022) Guest Faculty of Zoology, Specialization in Ichthyology, Swami Vivekanand Government College, Berasia, Madhya Pradesh.

Dr. Baban Seyke (Nov. 2022) Assistant Professor of English, Specialization in Indian Novel, Swami Vivekanand Government College, Berasia, Madhya Pradesh.

Dr. Chandrakanta Ahirwar (Nov. 2022) Assistant Professor of Physics, Specialization in Digital Electronics, Swami Vivekanand Government College, Berasia, Madhya Pradesh.

Dr. Richa Sharma (Dec. 2022) Assistant Professor of Biological Science, SHUATS, Prayagraj, Uttar Pradesh. Specialization in Noise Pollution, Water pollution, Air Pollution, Climate Change, Global warming, Plant Science, sustainable Agriculture.

Dr. Saroj Gupta (Dec. 2022) Professor Department of Hindi, Pandit Deendayal Upadhyay Government Arts and Commerce College, Sagar, Madhya Pradesh,

Dr. Rakesh Rahul Jadhav (Dec. 2022) Assistant Professor of Fisheries Engineering, Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth (Agricultural University), Dapoli, India. Specialization in Fisheries Science, Food Engineering and Bioprocess Technology.

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Dr. Manju Jain (Oct.-13 to Sep. 14), Former Prof. of Botany, Govt. Girls College, Vidisha, MP

Dr. Vaheedun Nisha (June-13 to May-15) Guest Lecturer of Zoology, Govt. Maharaja College Chhatarpur, MP

Dr. Vidushi Sharma (Dec.-17 to Nov. 18) General Secretary, International Human Rights Organization, New Delhi

Dr. Malik Asif Aziz, (July-18 to June 19) Assistant Professor, Division of Basic Science & Humanities, Faculty of Agriculture, Wadia, SKUAST-Kashmir

Dr. J. Thilak (Jan.-19 to Dec. 20) Scientist E, Southern Regional Centre, Zoological Survey of India, 130 Santhome High Road, Chennai.

Mr. Vagh Sarman Naranbhai (Jan. 20 to Dec. 20) College of Fisheries Science, Junagarh Agricultural University, Veraval, Gujarat.

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## **Invited Lecture**

## **AGNIHOTRA AND HOMA FARMING - TOOLS FOR A SUSTAINABLE DEVELOPMENT ON PLANET EARTH**

Ulrich Berk

German Association of Homa Therapy, Germany

### **ABSTRACT**

Environmental Pollution and Climate Change are the big challenges of our time. All live on this planet – plant kingdom, animal kingdom, and humans – are affected. The Covid pandemic has shown how vulnerable we are. We have to change our lifestyles and find sustainable ways in order to basically save our planet. For example, conventional agrochemical agriculture is not been sustainable. It has led to a degradation of soil, pollution of not only soil but also water resources and our atmosphere. This makes it clear that we cannot continue like that – alternative ways of farming are the need of the hour.

Agriculture is just one source of environmental pollution. Industrial waste, household waste, pollution by combustion engines (especially cars and trucks) etc. have created a of compounded pollution which now causes problems in yield and health of plants, and leads to diseases of animals and humans.

What can be the solution for this universal problem? One such solution is Homa Therapy with Agnihotra, a daily pyramid fire at sunrise and sunset, as its basic tool. It comes from ancient Vedic Knowledge and has wide-reaching beneficial effects on our whole environment, means on our atmosphere, on the soil, and on our water resources, and also biodiversity is increased.

Agnihotra purifies our environment and thus offers a solution for a sustainable future where humans live in Harmony with Nature, with plants and animals and keep this planet, our Mother Earth, alive and thriving.

In this presentation first the method of Agnihotra and Homa Therapy will be explained. Then I will give an overview on the research done so far and the research currently being carried out about how Agnihotra and Agnihotra Ash help to mitigate problems of the pollution of our atmosphere, the soil, and water resources and thus lead to sustainable agriculture and horticulture.

Besides that, Homa Organic Farming can help a lot to sequester large quantities of CO<sub>2</sub> from the atmosphere which helps in controlling Climate Change.

As Homa Organic Farming has been shown to be more profitable than conventional farming, this also is an important example of how we can bring ecology and economy together.

**Keywords:** Agnihotra, Homa Farming, Sustainable Development, Earth

## **FISH DIVERSITY IN RELATION TO ENDEMICITY AND STATUS IN NEPAL**

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### **ABSTRACT**

Nepal is a landlocked country located in South Asia between India and China. Its south, east and west parts are bordered by India while China in the north. It possesses a series of rocky and inaccessible hilly terrains having more than 6000 rivers. The watersheds with different altitudinal variations from 60m-8848m represents a total of 252 fish species. Among them 236 species are indigenous while 16 species are exotic. The Nepalese fishes belong to 15 orders (Anguilliformes, Anabantiformes, Beloniformes, Cichliformes, Clupeiformes, Cypriniformes, Cyprinodontiformes, Gobiiformes, Mugiliformes, Osteoglossiformes, Perciformes, Siluriformes, Salmoniformes, Synbranchiformes and Tetraodontiformes), 40 families and 120 genera. Among the orders, Cypriniformes has the highest number of species (51%) followed by Siluriformes (30%), Anabantiformes (6%) Perciformes (2%), Synbranchiformes (2%), while rest of the orders represented each by about 1%. The conservation status of 236 native species indicated that 71 species are common (C), 59 uncommon or lower risk least concern species (UN), 42 data deficient pristine rare ornamental (PRO), 28 conservation dependent and rare (CDR), 23 rare or near threatened (R), 11 vulnerable (VU), 2 endangered (EN). None of the native fish species are reported as critically endangered (CE) and extinct (EX). There are 18 endemic fishes belonging to 3 orders, 8 families and 12 genera. Major rivers and their tributaries naturally support a varied range of ichthyofaunal diversity and service to the people. Catches of major food fishes are declining due to overexploitation of resources, therefore, appropriate measures are needed at once to maintain and conserve the indigenous stock.

**Keywords:** Fish diversity, Endemic species, Conservation status

## **POTENTIAL OF SYMBIOTIC MICROBES IN CONSERVATION OF DEGRADED SOIL**

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### **ABSTRACT**

Worldwide, approximately three billion people have poor-quality of diet and more than two billion people suffer from micronutrient deficiencies. Nearly 25 per cent of children under the age of five are chronically undernourished. Malnutrition causes health problems and losses in economic productivity, including GDP losses. Without access to adequate, affordable, nutritious food, generations remain trapped in poverty, unable to take advantage of educational and job opportunities to fulfill their potential. Investing in nutrition through Food Plants is a sound development. Its impact is multi-generational, allowing children to reach their full physical and intellectual potential, so that they can grow themselves out of poverty. FAO's work in land and water is relevant to several dimensions of sustainable development, such as the governance and management of food production systems; the provision of essential ecosystem services; food security; human health; biodiversity conservation; and the mitigation of, and adaptation to, climate change. Through 2050, in many countries, agriculture will remain an important determinant of economic growth, poverty reduction, and food security, even as, over time, the proportion of agricultural revenue in national gross income declines.

Natural ecosystems and biodiversity are fundamental to sustainability. For example, wetlands function as natural sponges that trap and slowly release surface water, rain, snowmelt, ground water and flood waters, thus helping to slow down the movement of water to surrounding areas. The benefits of nature-based solutions include increasing the resilience of countries to climate risks, including droughts, floods and erosions, playing a role in biodiversity challenges such as access to safe drinking water, food security and human health, land degradation neutrality, sustainable cities as well as tourism. Soil is the loose surface material that covers most land. It consists of inorganic particles and organic matter. Soil provides the structural support to plants used in agriculture and is also their source of water and nutrients.

Soils vary greatly in their physicochemical properties. Now efforts are made to reduce the chemical input in forms of fertilizers and pesticides and make use of alternative methods. Soil symbiotic microorganisms like *Rhizobium*, *Bradyrhizobium*, and mycorrhizae can improve the plant growth and increase the yield. A soil can be made more productive by incorporation of organic manure and use of such biological entities. Role of free living Plant growth promoting Rhizobacteria (PGPR) and Mycorrhizae in plant rhizosphere is well recognised. Drastic yield increase has been reported due to application of these. Paper

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protect and restore the Nature”

describes role of such associations in revegetating the degraded or polluted areas and restoring the soil ecosystem.

Most mycorrhizae have 'balanced' mutualistic associations in which the fungus and plant exchange commodities required for their growth and survival. Myco-heterotrophic plants have 'exploitative' mycorrhizas where transfer processes apparently benefit only plants. Exploitative associations are symbiotic, but are not mutualistic. The importance of nutrient transfer at an interface resulting from synchronised plant-fungus development. The diversity of interactions between mycorrhizal fungi and plants is considered. Mycorrhizal fungi also function as endophytes, necrotrophs and antagonists of host or non-host plants, with roles that vary during the lifespan of their associations. It is recommended that mycorrhizal associations are defined and classified primarily by anatomical criteria regulated by the host plant. Fungus-controlled features result in 'morphotypes' within categories of Arbuscular Mycorrhiza (AM) and Ectomycorrhiza (ECM). Arbutoid and monotropoid associations should be considered subcategories of epidermal ECM and ectendomycorrhizas should be relegated to an ECM morphotype. Both arbuscules and vesicles define mycorrhizas formed by glomeromycotan fungi. The relationship between AMF and plants is purely symbiotic in nature. The AMF acts as extension of the root system of plants, to assist in absorbing water and nutrients, whilst the plant provides the fungus with a source of carbohydrates. The degraded mining areas of Kadipani in Gujarat were revegetated using spores of *Glomus* and AM fungi. Use of ECM is proposed to restore the heavy metal polluted soil. The ECM helps to reduce the stress to plants by sequestering the harmful heavymetals in fungal hyphae or in vacuoles of plant cells.

**Keywords:** Microbs, Soil, Natural ecosystem, Biodiversity, Fungi, Plant cells

## **SUSTAINABLE DEVELOPMENT GOALS AND BIODIVERSITY**

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It is utmost important that we need to maintain Natural Recourses for future Generations for this we must answer some questions our self. What is biodiversity conservation? Who's involved? What do they do? How does biodiversity conservation fit into other big picture goals like sustainable development? What exactly is sustainable development? These questions take a closer look at biodiversity conservation and how it fits within the larger concept of sustainable development.

Humans use the planet's resources such as forests, oil and minerals. Many of these resources have accumulated or have grown over thousands or even millions of years!

The 2010 WWF living Planet Report estimates that we'll need the equivalent of two planets by 2030 to support human populations if we continue with our current consumption patterns!

Where will we find that second planet? What happens if we don't find it? What alternatives are there? These are the unanswerable questions therefore we have to follow Sustainable model for development.

Sustainable human development is about living on earth without taking more than can be naturally replaced. It is about good health, good living conditions and long-term wealth creation for everybody. All these things must occur within the carrying capacity of the planet. To understand sustainable development, think about its three pillars: “economic wealth”, “social equity” and “environmental health”; or in other words “profit”, “people” and “planet”. All three are linked to each other.

In other words, any development has to be not only economically sound but also beneficial to social equity and environmental health. Lastly, we must ask these hard questions ourselves and act accordingly for Sustainable human life:

What if I don't own this?

Do I need everything I own?

What are my real needs?

Am I aware of what I eat, how it Produced & how far it has travelled?

Is my computer Energy efficient? Is my computer free of Persistent organic Pollutants (PoPs)?

What is my favorite means of transportation? Do I know how to save electricity and gas?

What I can do to be more sustainable?

It required the deep sense of belonging to the planet and owns it as its integral part.

**DEVELOPMENT, ACADEMY AND CONSTRUCTION OF A BETTER WORLD**

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ICAES, Argentina

**ABSTRACT**

Governments and societies must work to recognize the main values and principles that underpin the 2030 Agenda for Sustainable Development, its international and national precedents, and subnational processes, promoting contributions to the guidelines and methodological suggestions that allow the incorporation of the Sustainable Development Goals (ODS) as a planning and management tool at the local level. Universities and science organizations in the Latin American context have an important role to play in the development of the Sustainable Development goals. Together with the extension of culture, we must not forget that talking about scientific and technological development requires in a special way understanding education as a strategic element of social, economic and research policies. Latin American countries perceive, with increasing intensity, that revaluing education is relevant based on the relationship model that is proposed for the integration of Latin America. Taking into account the ongoing globalization process, the climate crisis, the post-pandemic, the prevailing economic conditions and social variables, scientific-technological development constitutes an objective circumstance. The academy must play a decisive role tending to socialize knowledge, which is essential to address the different problems within the framework of the complexities of today's world. Socializing knowledge means producing it collectively in organizations, communicating it, disseminating it and making it reach those who can benefit from that knowledge, but we also require global citizenship and global ethics.

**Keywords:** Development, Academy, Local, Environment, Science

**SOME OBSERVATION ON SPECIFIC BEHAVIOUR OF HIGHLY PROVISIONED  
FOCAL TROOPS OF RHESUS MACAQUE AND HANUMAN LANGUR.**

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**ABSTRACT**

The rhesus macaque (*Macaca mulatta*) and Hanuman langur (*Semnopithicus entellus*) are one of the well known non-human primate species of old world monkeys. The artificial feeding of Rhesus macaque and Hanuman langur in pilgrimage areas usually leads to change in behavioural strategies, individual activity and physical growth rate etc. The variability in the frequency of provisioning directly affects the ranging of particular troop. Troops showed a well marked home range with certain degree of defense mechanism. During the present investigation data on specific behaviour were obtained and correlated with each other. The present paper suggests recommendations to improve the present situation of Rhesus macaque (*Macaca mulatta*) and Hanuman langur (*Semnopithicus entellus*), their eco-behavioral and conservation in different location of pilgrimage places.

**Keywords:** Rhesus monkey, Hanuman langur, eco-behavioral

**FIRST RECORD OF *PARACOPIMUM LEWISI* DISTANT, 1903 (HEMIPTERA:  
HETEROPTERA: TINGIDAE) FROM INDIA**

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**ABSTRACT**

Family Tingidae is distributed from tropical to temperate zones. Because of honeycomb-like surface on wings so-called lace bugs. The Genus *Paracopium* has some economic importance such as playing an important role in the gall formation and acting as a pest also. *Paracopium lewisi* Distant, 1903 (Hemiptera: Heteroptera: Tingidae) was reported only from Sri Lanka and Indonesia (Oriental region), in 1902. For the first time after 118 years, it has been reported from the North-Eastern region, of India. The new distribution record from Sri Lanka and Indonesia to Mizoram, India shows the long dispersal of the species. An updated checklist of genus *Paracopium* Distant, 1902 from the world has been provided along with their distributions.

**Keywords:** *Paracopium lewisi*, Dispersal, Distribution, Oriental region, India.

## **RESPECTING THE NATURE IS THE BEST WAY TO PROTECT THE NATIVE SPECIES**

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### **ABSTRACT**

Protection and Restore the nature is societal goal that broadly aims for all living being to safely co-exist on Earth over a longtime.

Maintenance of essential ecological processer and life support system, Preservation of genetic diversity, Sustainable utilization of natural resources species and ecosystem is necessary.

Our Ancient and resent Agricultural practices are a great example of sustainability. It combines plant and animals product to enhance productivity and reduce the negative impact.

Our religious believes play a significant role in promoting the conservation of flora and fauna of the region.

Our native plant and animal species are endangered primarily by the effects to human activities, such as land use changes, direct over exploitation of species and local nature resources, climate change and environmental pollution. We can save and restore it by following some holy practices.

In this presentation briefly reviews the studies on our culture, traditional, religious importance those are essential for assessing their ecological role and formulating strategies for their conservation.

**Keywords:** Nature, Ancient, Flora, Fauna, Environmental pollution, Native plant

## ROLE OF ACTINOMYCETES IN TURNING WASTE TO RESOURCE

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### ABSTRACT

Bioremediation techniques are constantly evolving, which use naturally occurring microorganisms to eliminate hazardous organic chemical residues and contaminated areas. Actinomycetes have gained importance as they play a significant role in the recycling of organic matter and the production of novel pharmaceuticals, cosmetics, enzymes, antitumor agents, enzyme inhibitors, immune modifiers, and vitamins. Diverse Actinomycetes genera have the potential to be utilized in the bioconversion of underutilized urban and agricultural waste into high-value chemical compounds. This study was conducted to isolate actinomycetes capable of producing waste-degrading enzymes from floral waste vermicompost. In this study, floral waste was decomposed using the technique of vermicomposting. The floral wastes and cow dung in a ratio of 1:1 (50% each) were fed to *Eisenia fetida* earthworms for two months. Twenty actinomycetes were isolated and characterized morphologically using the soil dilution technique on starch casein agar media. The amylase, protease, and peptonization-coagulation activities were determined through a screening procedure. Almost every isolating organism demonstrated maximum enzyme production. Actinomycetes growth patterns and mycelial coloration were documented. The cultural and morphological analysis identified actinomycetes genera as *Streptomyces*.

**Keywords:** Floral waste, Ecofriendly waste treatment, Actinomycetes, Enzyme production

**CONSERVATION OF LIFE SAVER PLANT *RUTA GRAVEOLENS* L.**

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**ABSTRACT**

*Ruta graveolens* L., commonly known as Rue and Locally as Sitab or Sadaab, is an annual herb belonging to family rutaceae. It is a herb with bluish green colour leaves, pungent smell and beautiful yellow flower. Plants are cultivated around the houses for decoration purpose as well as to keep poisonous insects away. *Ruta graveolens* is used as a medicine for treatment of various diseases in the traditional systems like Ayurveda, Homeopathy, Unani, etc. Due to the presence of more than 120 photochemicals like alkaloids, flavonoids, fluoroquinolones coumarins, it shows antibacterial, anticancer, antiepileptic, anthelmintic and antihysterical properties. As a traditional medicine this plant is also used in many other diseases like Pneumonia, eye problems, joint pain, bones problem, stomachache, muscle pain, bacterial infection, menstrual cramps and anxiety. After an ethnobotanical survey of in and around Bhopal it was found that plant was not physically present due to the distortion of habitat of plant and over exploitation. Conservation of this plant has been done by vegetative propagation and plant tissue culture. However, rootone treated stem was used for vegetative propagation and proper growth, which has been achieved within 50-60 days as compared to that of without treated one which takes approximately 70 to 80 days. By Plant tissue culture shoot induction best growing result was founded in the media MS+2.0BAP+1.5KN+0.5AA from apical bud.

**Keywords:** *Ruta graveolens* L., Antiepileptic, Anthelmintic, Antihysterical, Vegetative propagation, Plant tissue culture.

### **Biological Sciences**

Agricultural Science,  
Anthropology and Behavioral Sciences,  
Animal Husbandry, Aquaculture, Biodiversity,  
Biotechnology, Biochemistry, Bioinformatics,  
Cell and Molecular Biology, Fish and Fisheries,  
Home Sciences, Immunology, Life Sciences, Limnology,  
Medical Sciences, Microbiology, Nutrition, Plant Sciences,  
Taxonomy, Tissue Culture, Toxicology, Veterinary Sciences,  
Wildlife Conservation,  
Zoology.

## TRANSCRIPTOME ANALYSIS AN INTEGRAL TOOL TO CONSERVATION PLANNING FOR ENDANGERED SPECIES

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### ABSTRACT

Biodiversity is exhibited at different spatial levels in landform and marine form for plants and animals on the earth, and also it has a measure of variation in genetic diversity and species variability. It comprehends the evolutionary, ecologically, and culturally that process life. Rapid environmental changes cause the mass extinction of the species. Climate change, destruction of natural habitat, industrialization, degradation of habitat quality, afforestation, pesticide exposure, animal poaching, and animal trafficking are the reasons for threatening extinction with a lack of conservation planning and measures. With genomic information lacking for the species, an evaluation of population genetic structure, genetic diversity, and possible evolutionary responses to environmental perturbations and climate change are not feasible. Preserving the commercial and cultural importance of endangered species is accomplished by conservation biologists. Transcriptomics is an integral tool that takes advantage of high-throughput next-generation sequencing. It provides whole-genome transcriptome information and rich insights into adaptive features and functional processes involved in immunity and reproduction. It revolutionized in the study of Differential Gene Expression (DEG) analysis, whole genome sequencing, targeted re-sequencing, and DNA methylation. The Illumina NGS analysis using de novo programs generates the unigenes. The unigenes annotated against public databases using BLASTX, and subsequently, functionally classified using Gene Ontology (GO), Clusters of Orthologs Groups (COG), Kyoto Encyclopedia of Genes and Genomes (KEGG), and InterPro domain analysis. The Simple Sequence Repeats (SSR) located within coding regions could be utilized for gene polymorphism studies.

**Keywords:** Biodiversity, Conservation, Endangered species, Next Generation Sequence, Transcriptome.

**PARTIAL ACID HYDROLYSIS METHOD USED FOR THE STRUCTURAL  
ELUCIDATION OF OLIGOSACCHARIDES FROM SEEDS POLYSACCHARIDE  
OF CASSIA GLAUCALAM PLANT**

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**ABSTRACT**

*Cassia glauca* Lam. plant (Caesalpiniaceae) is a large evergreen shrub up to an 10m in height. It occurs in Himalayan region of Northern India, Malaysia Peninsula. North Australia, Pakistan, China, South America and tropical Asia. Bark and leaves are medically used for the treatment of diarrhoea, skin infection, diabetes, asthma and other human diseases. Seeds oils are also used in ligenous system of medicine for skin and leukoderma diseases. Seeds yielded a water soluble polysaccharide as D-galactose and D-mannose in 14 molar ratio by TLC. Column and Paper chromatographic analysis. Present investigation mainly deals with the isolation identification characterization and structural elucidation of oligosaccharides obtained after partial acid hydrolysis of seeds polysaccharide. Seeds polysaccharide upon partial acid hydrolysis followed by column chromatography over charcoal- celite column and paper chromatography of hydrolysate afforded two disaccharides, one trisaccharide and one tetrasaccharide were characterized as; [I] 4-O- $\beta$ -D-mannopyranosyl-(1 $\rightarrow$ 4)-O- $\beta$ -D-mannopyranose: [II] 6-O- $\alpha$ -D-galactopyranosyl-(1 $\rightarrow$ 6)-O- $\alpha$ -D-mannopyranose: [III] 6-O-  $\alpha$  -D-galactopyranosyl-(1  $\rightarrow$  6 )-O-  $\alpha$  – D-mannopyranosyl-(1  $\rightarrow$  4)-O  $\beta$  -D-mannopyranosy and [IV] 6-O-  $\alpha$  -D-galactopyranosyl-(1  $\rightarrow$  6)-O-  $\alpha$  -D-mannopyranosyl-(1  $\rightarrow$  4)-O-  $\beta$  -D-mannopyranosyl-(1  $\rightarrow$  4)-O-  $\beta$  -D-mannopyranose. The D-galactopyranose unit is glycosidically attached to (1 $\rightarrow$ 6)-D-mannopyranose units with  $\alpha$ -type linkages at the branch of single repeating unit of non-reducing end residues of D-galactopyranose. The D-mannopyranose units are attached by (1-4)- $\beta$ -type linkages of the main polymer chain with other D-mannopyranose units. Its significance can only be adjusted in the earlier proposed structure of seeds polysaccharide of *Cassia glauca* Lam. plant.

**Keywords:** Oligosaccharides. Partial acid hydrolysis. *Cassia glauca* Lam seeds polysaccharide

## MAJOR INSECT PEST OF CHICKPEA AND THEIR NATURAL ENEMIES

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### ABSTRACT

Chickpea (*Cicer arietinum* L.) is one of the most important pulse crops grown in 10.2 million hectares with an average production of 7.9 million tonnes and an average productivity of 995 kg ha<sup>-1</sup>, of which about 80 per cent is grown in India. It is one of the earliest cultivated legumes: 7500-year-old remains have been found in the Middle East. Madhya Pradesh is the largest producer in the country. Chickpea crop is damaged by a large number of insect species, both under field conditions and in storage. Field experiment carried out during Rabi 2018-19 revealed that incidence of the chickpea pod borer *Helicoverpa armigera*. Population range of pod borer during different weather weeks varied between 0.30 and 1.89 larvae/mrl (April 2<sup>nd</sup> week and March 2<sup>nd</sup> week respectively). Peak larval population of *Helicoverpa armigera* was recorded in 2<sup>nd</sup> week of March (11 standard weeks). A weak negative correlation was observed with the maximum relative humidity and minimum relative humidity ( $r = -0.172, -0.595$  respectively) and a weak positive correlation with maximum temperature, minimum temperature and rainfall. The respective  $r$  was found to be 0.306, 0.391 and 0.269. In district Rewa, MP, India the seasonal incidence of major and their natural enemies during Rabi the total seven species was recorded in Chickpea in which six pests minor in nature and one major pest Chickpea pod borer (*Helicoverpa armigera*). Termite (*Odontotermes obesus* Ram.), White grub (*Holotrichia consanguinea* Bl.), Black aphid (*Aphis craccivora* Koch), Grasshopper (*Chrotogonus trachypterus* Blan.), Semilooper (*Autographa nigrisigna* L.), Cut worm (*Agrotis ipsilon* Huf.) are minor in nature. Seven natural enemies found during field investigation i.e. lady bird beetle (*Chilomenes sexmaculata* Fab.), lady bird beetle (*Coccinella septempunctata* L.), Praying mantis (*Mantis religiosa*), Dragon fly (*Crocothemis servilia* Drury), *Campoletis* parasitoid (*Campoletis chloridae* Uch.), Indian mynah (*Acridotheris tristis* L.), King crow (*Dicrurus macrocerus* Vie.) in Chickpea observed in low to medium population on the crop and to help in reduction of pest population.

**Keywords:** *Cicer arietinum* L., *Helicoverpa armigera*, *Odontotermes obesus* Ram, *Holotrichia consanguinea* Bl., *Aphis craccivora* Koch, *Agrotis ipsilon* Huf., *Chilomenes sexmaculata* Fab.

## INSECT-PESTS OF LINSEED AND THEIR NATURAL ENEMIES

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### ABSTRACT

Linseed (*Linum usitatissimum* L.) is an important *Rabi* oilseed crop in India it's grown for its fiber (fiber flax), seed oil (oil flax, seed flax) and for both purposes. It is highly nutritious and a complete source of protein (having all 8 essential amino acids), complex carbohydrates, vitamins and minerals. Linseed cultivation is done on an area of 4.26 lakh hectares in India, 24.09 lakh hectares in Madhya Pradesh and 13.1 ha in Rewa district. Linseed bud fly (*Dasyneura lini* Barnes) and leaf miner (*Phytomyza horticola*) belong to order Diptera whereas, Jassid (*Amrasca kerri* pruthi), Aphid (*Aphis craccivora* Koch) and Green sting bug (*Nazara viridula* linn.) belong to order Hemiptera. Among Lepidoptera order, Foliage caterpillar (*Spodoptera litura* Hub.), Capsule borer (*Helicoverpa armigera* Hub.), semilooper (*Plusia orichacea* Fab.) and Bihar hairy caterpillar (*Spilosoma oblique* Walk.) and other Grasshopper (*Oxya velox* F.) and Termite (*Micrptermes* sp.) belong to order Orthoptera and Isoptera. As regards to the natural enemies in linseed crop under agro climatic condition of new district few predators of sucking pests and caterpillars lepidopterous pest like lacewing (*Chrysoperla carnea* Stephen), lady bird beetle (*Chilomenes sexamaculata* Fabricius), spiders (*Lynx* sp.) and rove beetle (*Aleochara bilineata*) belonging to orders Neuroptera, Coleoptera, Oxyopidae, and coleoptera respectively have been recorded. The first incidence of linseed bud fly population was noticed in 2<sup>nd</sup> SMW with the initial infestation noted as 3.85%, which increased gradually and attained the peak infestation of 35.66% in 8<sup>th</sup> SMW. After wards, population declined and an infestation of 27.93% was noted in 10<sup>th</sup> SMW, after which crop was harvested.

**Keywords:** Insect pests, natural enemies, infestation

**GREEN CHEMISTRY: THAT SUSTAIN AND IMPROVE THE QUALITY OF LIFE  
FOR FUTURE GENERATIONS**

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**ABSTRACT**

Green chemistry is an important area of science and technology to pursue for the benefit of the environment, industry and general public. Green chemistry introduced in early 1990's, is a way of using basic science to address environmental issues in an economically profitable manner and many names given to it i.e., 'Environmentally Benign Chemistry', 'Clean Chemistry', 'Atom Economy', 'Sustainable Chemistry', 'Benign by Design Chemistry'. No doubt, green chemistry is a special contribution of chemists to the conditions for sustainable development. Some examples of research and development in the area of green chemistry are microwave synthesis and extraction, natural dyes as eco-friendly substitute to synthetic dyes, eco-friendly waste water treatment technologies, reactions in supercritical carbon dioxide, bioremediation of toxic pollutants like heavy metals and pesticides etc. Many chemical processes are responsible for the environmental damage. In the present work study conducted on green chemistry because working towards the green chemistry is the only hope to make chemistry lose its toxic image and be more interesting and compelling to people.

**Keywords:** Sustainable chemistry, Clean chemistry, Toxic

## **IDENTIFICATION OF TOLERANT GENOTYPES FOR MUNGBEAN YELLOW MOSAIC DISEASE MANAGEMENT**

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### **ABSTRACT**

Yellow mosaic disease (YMD) is a significant bottleneck for mungbean productivity globally, and control of this deadly virus remains the most difficult challenge. Finding strategies to manage YMD, such as developing genotypes resistant to mungbean yellow mosaic virus (MYMV) is, therefore, a key research area for the mungbean crop. Characterization of YMD resistance using molecular and biochemical techniques revealed information regarding disease severity and mechanisms of YMD resistance in mungbean. Against this backdrop, during the summer of 2022, fifty genotypes of mungbean [*Vigna radiata* (L.) Wilczek] were sown and screened under natural field conditions using the infector rows method to screen for MYMV resistance. The percentage disease incidence (PDI) was determined. The observed differential response to MYMV and the results indicated that Virat, Shikha, MH 421, IPM 312-19, ML 512, TBM-36, CM-11-02, VGG 04-11, ML 2333, RMG 1004, IPM 312-86K-1, DGG-1, TKMC-2-2-1, KM 2342, KM2328, DGG-4, NDMK 14-24, COGG-11-02, RMG-1030, NVL 825, ML 1907 were among the 21 resistant genotypes. These genotypes can be used as parents in future breeding studies and to verify the molecular marker, which may be used in conjunction with marker-assisted selection (MAS) to develop YMV-resistant mungbean breeding lines. Finally, the prospects of employing emerging tools like CRISPR/Cas9 may also be highlighted to complete the YMD management perspective in the mungbean.

**Keywords:** Disease resistance, Mungbean, Tolerance, Yellow Mosaic Virus

**STUDY ON GONADO SOMATIC INDEX AND HEPATOSOMATIC INDEX OF  
*LABEO CATLA* (HAMILTON, 1822) AT CAPTIVE CONDITION AND NATURAL  
CONDITION IN FAIZABAD.**

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**ABSTRACT**

The gonadosomatic index (GSI) and hepatosomatic index (HSI) of *Labeo catla* (Hamilton, 1842) were assessed at fish farms in UP's Cof, NDUAT, Kumarganj, Ayodhya, and Gomti River (Haliapur, Bhurelalpurva) for a period of six months (from January to June of 2021). Male of *Labeo catla* GSI had lowest observed value of  $0.233 \pm 0.086$  and highest observed value of  $1.755 \pm 0.701$  during the investigation, that occurred in January and June, respectively. Female of *Labeo catla* GSI values ranged from  $1.13 \pm 0.403$  January to  $8.386 \pm 3.781$  in June, with the highest value being  $8.386 \pm 3.781$ . Male of *Labeo catla* had HSI values that were highest in June and lowest in January, whereas female of *Labeo catla* had HSI values that were highest in June and lowest in January, respectively, measuring  $2.322 \pm 0.725$  and  $1.142 \pm 0.824$ . In terms of GSI, June had the highest value of  $1.605 \pm 0.537$  and January saw the lowest value of  $0.318 \pm 0.312$ ; in terms of females, June saw the highest value of  $17.63 \pm 12.148$  and January saw the lowest value of  $1.195 \pm 2.179$ . While HSI for males was found to be highest at  $2.243 \pm 1.052$  in June and lowest at  $0.996 \pm 0.465$  in January, it was found to be highest at  $4.158 \pm 1.126$  in June and lowest at  $1.176 \pm 0.464$  in January for females. We found good Gonado Somatic Index and Hepato Somatic Index of *Labeo catla* (Hamilton, 1822) in Gomti River comprising instructional fish farm in this study.

**Keywords:** GSI, HSI, *Labeo catla*, Gomti river, Instructional fish farm

**INVASION IMPACT OF THAI MAGUR, *CLARIAS GERIPINEUS* (LINNAEUS)  
FISH ON THE NATIVE FISH FAUNA OF RIVER YAMUNA AT MATHURA  
DISTRICT, U.P.**

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**ABSTRACT**

A preliminary record shows that 48-fish species belonging to 13-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. Now present condition has changed in terms of native fish fauna are gradually decreasing. It has been recorded that presence of invasive 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 alien fishes. In the present study recorded 14 - Species belonging to 12 genera and 8 families, of which reported 4- species as Alien. In terms of the status of Invasive fish species significance presence of *Clarias geripineus* is evident in majority of the river stretches. Introduction of the African catfish *Clarias gariepinus* for aquaculture purposes has become a threat to indigenous fishes in our rivers. *Clarias gariepinus* is an alien species for the communities in Yamuna River and corresponding one of the major reason in decline of native fish fauna of River Yamuna.

**Keywords:** Yamuna River, Native fish fauna, Invasive fishes

**STUDY OF FISH DIVERSITY OF RIVER CHANDLOI (KOTA, RAJASTHAN) AND  
OCCURANCE OF FISH-PARASITES THEREIN**

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**ABSTRACT**

Chandloi River is a small, semi-perennial left bank tributary of Chambal River. Its location is 25.23 Latitudinal and 75.99 Longitudinal near Kota City, Rajasthan, India. Fish biodiversity includes all unique species, their habitats and interaction between them. The ichthyofaunal diversity was studied in a segment of Chandloi River (from its origin up to Kaithoon village, district Kota, Rajasthan) for a period of three years from July 2017 to June 2020. In the period of present study, a total of 16 species of fishes were recorded - 7 species of order Cypriniformes, 5 species of Siluriformes, 2 species of Anabantiformes, 1 species of Cichliformes and 1 species of Synbranchiformes. Among these Ichthyofauna Cypriniformes was found as the dominant group throughout the study period. Order Cypriniformes (44%) was dominated over Siluriformes (31%), Anabantiformes (12.5%), Cichliformes (6%) and Synbranchiformes (6%). Some of the parasites found during the study on few fishes. The parasites mainly belong to Protozoa, Ciliophora, Arthropoda and Platyhelminthes group. Heavy infection is observed in gills, fins and skin.

**Keywords:** Chadloi River, Cypriniformes, Siluriformes, Anabantiformes, Cichliformes, Synbranchiformes, Semi-perennial, Ichthyofaunal Diversity.

**COMPARATIVE STUDY OF THE TOXICITY OF SOME SYNTHETIC  
PESTICIDES TO THE LARVA OF *TRICHOPLUSIA NI* ON *BRASSICA OLERACEA*  
*VAR CAPITATA***

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**ABSTRACT**

Toxicity of spray deposits was undertaken to obtain more precise information than is normally available from field experiments regarding the performance of synthetic pesticides against full grown larvae of *Trichoplusia ni* attacking *Brassica oleracea var capitata* standing field, sprays were used to and the toxicities of both fresh and naturally weathered deposits were tested in the laboratory, using full grown larvae from laboratory culture. This work describes the techniques used for the application and assessment of toxicities of the spray deposits and the results of trials with three pesticides. The mean mortality of the larvae, expressed as a percentage and corrected by Abbott's formula (1925) for the mortality of the controls in each test. The age of the deposits was considered as the best criterion to assess the combined effects of weathering, dilution due to the growth of the leaves, penetration in to the cuticle and chemical change of the deposits.

The work shown that organophosphorus pesticide (Parathion) is more effective than chlorinated hydrocarbon pesticides (dieldrin and aldrin).

**Keywords-** *Trichoplusia ni*, Chemical pesticides, mortality count, Abbott's formula.

## **CONSERVATION OF NATIVE SPECIES: NEED OF FUTURE**

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and

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### **ABSTRACT**

Conservation of microorganisms, plants and animals is vital for survival of human race. Humans are cosmopolitan and have evolved and adapted their life style and food preferences on the basis of local or native biological species. Native species, by definition, are those that occur naturally in a region in which they evolved and which are the ecological basis upon which life depends. With the evolution, development and adoption of new tools and techniques, the humans invaded in new geographical areas and brought species of their region to other parts of the globe. In due course of time, this dispersal has created new challenges for native-biota. In the current paper, the issues related to types of native species (organisms), importance in environment, ecological significance, ecological impacts of invasive species on native species, survival and conservation strategies have been discussed.

**Keywords:** native species, ecological impacts, invasive species, survival, conservation strategies.

## **COMPARATIVE ASSESSMENT OF KOLAR RESERVOIR AFTER A PERIOD OF 10 YEARS**

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### **ABSTRACT**

The present study is aimed at assessing the changes in the water quality parameters of Kolar Reservoir of Bhopal, M.P. after a time period of 10 years. The first analysis was conducted in the year 2007-2008. The second analysis was done in the year 2017-2018. The parameters included for study are pH, Turbidity, B.O.D., D.O., Electrical Conductivity, Total Alkalinity, Total hardness, Nitrate and Phosphate.

This comparative study will help in the overall assessment of the present condition of the water body. In the present study the Total Alkalinity and Electrical Conductivity has increased when compared to that of 2007-08. Thus, indicative of the fact that there is a strong relationship between these two parameters and even though all the other water parameters showed improvement after a gap of 10 years but still at some points there is certain amount of solvency of salts mainly due to human activities.

**Key words:** Electrical Conductivity, Total Alkalinity, Analysis, Turbidity, Comparative.

**STUDIES ON THE AVIAN DIVERSITY OF MUNSHI SINGH COLLEGE CAMPUS,  
MOTIHARI, BIHAR, UTTAR PRADESH, INDIA**

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**ABSTRACT**

The avian diversity of Munshi Singh College campus, Motihari, East Champaran district (situated in the foothills of Himalaya) in Bihar was studied during August 2018 to December 2019. A total 36 avian (bird) species belonging to 22 families and 32 genera were recorded in the entire campus during the study period. The results showed that family *Ardeidae* and *Muscicapidae* were the dominant families collectively comprising of 8 species. The highest number of avian species were observed in families *Ardeidae* (4 species) and *Muscicapidae* (4 species) followed by *Cuculidae* (3 species), *Corvidae* (3 species), *Accipitridae* (2 species), *Columbidae* (2 species), *Hirundinidae* (2 species) and *Pycnonotidae* (2 species) while other 14 families viz. *Cisticolidae*, *Coraciidae*, *Dicruridae*, *Leiotrichidae*, *Megalaimidae*, *Nectariniidae*, *Paridae*, *Passeridae*, *Psittacidae*, *Rallidae*, *Rhipiduridae*, *Strigidae*, *Sturnidae* and *Zosteropidae* were comprising only one species. Shikra, Black-crowned Night Heron, Cattle Egret, Indian Pond Heron, Little Egret, House Crow, Asian Koel, Common Tailor Bird, Jungle Babbler, Red-vented Bulbul and Common Myna were very common and abundant in number. The result of the present study depicts changing contours of land use and its impact on urban avifaunal distribution and diversity within the district of East Champaran, Bihar.

**Keywords:** Avifauna, Diversity, M. S. College, Motihari, Champaran, Himalayan Foothill, *Ardeidae*, *Muscicapidae*, Changing contours, Land use.

**FIRST RECORD OF *PRAETEXTATUS TYPICUS* DISTANT, 1901 (HEMIPTERA:  
PENTATOMIDAE: CAYSTRINE) FROM INDIA**

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**ABSTRACT**

Genus *Praetextatus* was established by Distant (1901) for the species *typicus* from Burma. The second species *Praetextatus chinensis* reported from China. After that *P. typicus* Distant, 1901 redscribed and provided a key to species of the genus. Presently this genus includes two species distributed in China, Myanmar and Taiwan. On the basis of specimen, the present paper confirms the presence of *Praetextatus* Distant, 1901 in India. *P. typicus* Distant, 1901 is redscribed first time from India and illustrated with a key to species of this genus. The specimen was deposited in National Zoological Collection of Zoological Survey of India, Kolkata.

**Keywords:** Heteroptera, new to India, Western Himalaya, India.

**STUDY OF SOME PHYSICO-CHEMICAL PARAMETERS OF UMA RIVER BASIN  
DIST- WASHIM (M.S.), INDIA**

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**ABSTRACT**

Assessment of some physico-chemical parameters like water temperature, pH, turbidity, total dissolved solids, dissolved oxygen, and chlorides were taken. Finally it may be concluded that the water parameters are within permissible limit and support fish diversity in Uma River Basin Dist. Washim (M.S.). Water temperature ranges from 20.3 °C to 28.7 °C the minimum water temperature was recorded in the winter months and maximum in the summer months. It was observed that pH of water is minimum (7.2) during winter and higher (8.8) in summer season. Turbidity of river water result shows all the five stations had different values in all seasons. During study period the total dissolved salts (TDS) was maximum in rainy season (343.5 mg/l) and was minimum during summer (127.4 mg/l). It was observed that the value of D.O. fluctuates from 5.10 mg/l to 11.40 mg/l. The maximum values 11.40 mg/l was recorded in the month of December and minimum values 5.10 mg/l in the month of August. The maximum values of chlorides recorded during summer season while in winter less chloride content was detected.

**Keywords:** Uma River, pH, DO, Turbidity, Total dissolved solids.

**MOLLUSCAN DIVERSITY OF GILBILI LAKE OF CHANDRAPUR DISTRICT  
(M. S.), INDIA**

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**ABSTRACT**

Molluscs are the environment indicators and play a very important role in maintaining aquatic ecosystem by recycling nutrients and surviving as nutrition for certain aquatic organisms. Also they are important source of food for other animals i.e. fishes, birds and mammals even for human being. In the age of global decline of biodiversity, it is necessary to study the present status of different biota and hence this attempt was made. The present paper deals with check list of diversity of molluscan fauna from Gilbili lake of Chandrapur district in the period February 2019 to January 2020. A total of 14 molluscan species were reported and identified in this paper. These listed species belonging to 02 classes, 03 orders, 07 families and 14 genera. Out of 14 molluscan species 11 species belonging to class Gastropoda and 03 species belonging to class Bivalvia.

**Keywords:** Molluscs, Diversity, Gilbili Lake

**SEASONAL ANALYSIS OF PHYSICO-CHEMICAL FACTORS AND FISH  
CULTURE IN BADA TAAL POND OF SHAHDOL, M.P. INDIA**

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**ABSTRACT**

The present work deals with the seasonal variations in some significant Physico-chemical parameters and Biological analysis of the fish Pond of Shahdol Madhya Pradesh. Selected standard classical methods were used with an objective to find out the present condition for its better utilization. The data collected in different seasons i.e. summer, winter and rainy during the study revealed that the analyzed parameters were within permissible limit for fish culture and the stocking should be made as per the productivity of the water. By increasing the carrying capacity of the water bodies, there is good scope to increase the production of fishes.

**Keywords:** Physico-chemical analysis, Fish culture, Biological factors.

## **LOW COST POLYMER ELECTROLYTE BASED SUSTAINABLE DYE SENSITIZED SOLAR CELL**

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### **ABSTRACT**

Dye sensitized solar cell (DSSC) offers an efficient and easily implemented technology for future energy supply. It provides comparable power conversion efficiency at low material and manufacturing costs, as compared to silicon solar cells. DSSC has mainly four major components, which are photo-anode, sensitizer, electrolyte, and photo-cathode. Generally, the liquid electrolyte is used in DSSCs, which limits its practical application as long-term instability is caused by leakage and volatilization of organic solvents, and to solve this problem scientists are focusing on polymer electrolyte as it overcomes the problems like leakage and sealing, flammability issues, shape flexibility, and electrochemical stability. The disadvantage of polymer electrolyte is that it has lower ionic conductivity than liquid electrolyte to resolve this drawback multi-walled carbon nanotube (MWNT) is used as filler, which aided in increasing the electrical conductivity of the polymer electrolyte. This study evaluated to investigate the potential of chitosan based polymer electrolyte incorporating MWNT as filler. The addition of a small amount of MWNTs as filler increases the A.C. conductivity due to the formation of a conductive layer by MWNTs. The co-sensitized dye obtained from beetroot (betacyanin) and spinach (Chlorophyll) (1:1) is evaluated for the fabrication of dye sensitized solar cells. The use of this polymer electrolyte helped in the fabrication of a highly efficient natural DSSC.

**Keywords:** Low Cost Polymer, Electrolyte, Sustainable Dye, Sensitized Solar Cell

## **FOREST SOIL-ASSOCIATED PLANT GROWTH-PROMOTING BACTERIA CAN ADVANCE SOYBEAN YIELD, NUTRIENT UPTAKE, AND SOIL PARAMETERS**

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### **ABSTRACT**

Soybean (*Glycine max* L.) became an economic crop in India and worldwide due to its nutritional value and oil. The current study investigated forest-associated plant growth-promoting rhizobacteria (PGPR) effect on soybean yield and grain nutrient content. Five potential bacteria were used in this study based on their PGPR traits. The pot assay result with two crops (soybean and chickpea) confirmed the growth promotion activity of the two strains (*Bacillus subtilis* MpS15 and *Paraburkholderia sabiae* NvS21). The result showed significant ( $p<0.05$ ) enhancement in plant length and biomass with the seed treatment with strains (MpS15 and NvS21) compared to the control. Later both biocompatible potential strains were used in field experiments as individuals and consortia. Seed treatment of consortia significantly improves the nodulation and photosynthetic content more than individual treatments and control. Co-inoculation of MpS15 and NvS21 increased soybean grain, straw yield, and grain NPK contents compared to the control. Interestingly, soil parameters (organic carbon, available NPK) showed a strong correlation ( $p<0.05$ ) with plant parameters and nutrient uptake. Overall, our study provides strong relationships between soil parameters, microbial inoculum as consortia, and soybean performance, and these strains may be utilized as bioinoculant in the future.

**Keywords:** Plant growth promotion, Seed treatment, co-inoculation, Crop yield, Grain nutrients

## **BIOACCUMULATION OF CADMIUM IN *TUBIFEX* SP.**

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### **ABSTRACT**

Biomagnification is magnification in concentration of accumulated toxin or heavy metals or pesticides, in the tissues of tolerant organisms at successively higher trophic levels in a food chain. Bioaccumulation is the gradual retention of substances per unit of tissue of an organism. It occurs when an organism absorbs a substance at a rate faster than its elimination by various metabolic processes like catabolism and excretion. All the previous investigations were performed surrounding a natural ecosystem and mainly focused to show the accumulation of various metals in different organisms but all of those studies failed to establish how the substances are actually magnified through trophic structure. In this study, *Tubifex* sp. has been selected as the primary consumer to construct a short food chain. A dynamic bioassay upon *Tubifex* sp. has been done to determine 96 hour LC<sub>50</sub> of cadmium chloride with applications of has seven different concentrations renewed every 48 hours. To estimate accumulation of cadmium the tissue samples of the experimental *Tubifex* were prepared and subjected to atomic absorption spectroscopy (AAS). The result of the AAS studies revealed concentration dependant accumulation of cadmium in the body. Histological study was done to understand the impact of accumulation of the salt in tissue. The effects include muscle degeneration, separation of epidermis from dermis. Future study is directed towards construction of a short food chain to understand biomagnification of the salt.

**Keywords:** Bioaccumulation, biomagnification, cadmium, *Tubifex*, muscle degeneration.

**ECO-FRIENDLY DYE-SENSITIZED SOLAR CELLS INSPIRED BY  
PHOTOSYNTHESIS TO PRODUCE CLEAN ENERGY**

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**ABSTRACT**

Dye Sensitized Solar Cell (DSSC) has attracted attention of many researchers due to its low cost, flexibility, and relatively high photon-to-current energy conversion efficiency and owing to these reasons, it is considered as prominent alternative to the conventional silicon solar cells. The use of synthetic dyes as sensitizer in DSSC provide better efficiency and high durability, but they suffer from several limitations such as higher cost, tendency to undergo degradation, and usage of toxic materials. These limitations have opened up for alternate sensitizers that are bio compatible natural sensitizers. Natural sensitizers extracted from natural products like fruits, flowers, leaves, seeds, barks absorbs incoming photons from the sun, similar to the way plants absorb light for photosynthesis and inject the charges to the conduction band of  $\text{TiO}_2$ . We have used biopolymer like Chitosan and Agarose based solid polymer electrolytes for the fabrication of DSSCs. The biopolymer based solid polymer electrolytes have moderate conductivity, good thermal stability, film formation abilities and are biodegradable which make them suitable for being used in DSSCs. The use of natural dye and biopolymer electrolyte makes the DSSC eco-friendly and sustainable source of clean energy.

**Keywords:** Eco-Friendly, Dye-Sensitized Solar Cells, Photosynthesis, Clean Energy

**POTENTIAL APPLICATION OF MYCOHERBICIDE FOR THE CONTROL OF  
NOXIOUS WEEDS: ECO-FRIENDLY WEED CONTROL OPTIONS FOR  
SUSTAINABLE AGRICULTURE**

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**ABSTRACT**

Weed control by herbicide is issued for environmental problems and the emergence of resistance herbicide; thus, researchers are looking for alternative methods including mycoherbicide. In recent years, synthetic herbicides' intense and disordered use has triggered severe contamination of soils and water bodies, causing damage to live organisms, including vegetal herbicide-resistance. There is a need requirement for suitable alternative of chemical herbicides. Fungal pathogens are the most promising alternative of synthetic chemical herbicides for weed management systems. Fungi are well recognized for their ability to produce diverse biologically active metabolites including natural herbicides. The large number of secondary metabolites produced by fungi provides ecofriendly, diverse and challenging chemical structures. These metabolites inhibit the plant pathways and toxic to weed plant cells. *Alternaria* sp., *Ascochyta* sp., *Drechslera* sp., *Fusarium* sp., *Colletotrichum* sp., *Phoma* sp., *Phyllostictica* sp., *Pyrenophora* sp., *Septoria* sp., and *Stagonospora* sp., are the most common fungal pathogens for the biocontrol of weeds like *Cassia tora*, *Xanthium* sp., *Hyptis* sp., *Parthenium*, *Lantana*, *Chenopodium album* L., *Cirsium arvense* L., grass weeds etc. It inhibits of physiological activities like nutrient uptake, photosynthesis etc. and disrupt cellular functions like cell wall and cell membrane, hormone and toxic production etc. Different types of formulation have been developed to enhance the shelf life of different bioherbicides for successful commercialization.

Therefore, new weed control methods are being explored which are environment friendly as well as efficiently control the weed problems. The biological control of weeds by mycoherbicides (fungal weed pathogens and/their metabolites) have received considerable consideration. Mycoherbicides offer an innovative approach to the management of noxious weeds using formulated fungal phytopathogen or their natural metabolite extracts would serve as an important component in integrated management strategy. In this research presentation, we present the work for the management of noxious weeds of India with isolated indigenous fungal pathogens and by their metabolites.

**Keywords:** Noxious Weeds/ Mycoherbicide/Natural metabolites/ Sustainable/ Ecofriendly

**ASSESSMENT OF GROUND WATER CONTAMINATION BY INTERACTION OF  
LOMAY SOIL WITH SALTS OF HEAVY METALS OF AGRA DISTRICT (U.P.)**

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**ABSTRACT**

The potential risk of metal pollution of surface and ground water contamination by leaching from contaminated land disposes and wastes is a major environment concern. The aim of this study is to know what happens when heavy metals interact in batch tests with sandy loam and silt leamy soils and how they affect ground water quality. Heavy metals were analysed doubly with Helios Alpha scanning double beam UV/Vis Thermospectronic spectrophotometer and Perkin-Elmer Analyst 100 AAS spectrophotometer. The sorption decreased in the order Mn>Fe>Ni>Cr>Zn>Cu>Pb>Cd. The leaching order should be reverse of it Thus Cd<sup>2</sup> is the least strongly retained by the soils than the other toxic cations, and hence can pose a more serious problem of polluting ground water with its extreme toxicity, Zn, Cu, Pb and Cd were found far more mobile than other four metals. These should, therefore be properly monitored at all contaminated sites in Agra. An increase in metal concentration led to weaker retention. This indicates to possibility of ground water pollution due to landfilling. Metals are more sorbed on silty loam than on sandy loam because the former has higher organic matter montmorillonite contents, CEC and surface area. Most of Agra district of Uttar Pradesh (India) soil is sandy loam, and hence it is advised that all wastes containing heavy metals should be treated before disposal into loamy formations.

**Keywords:** Heavy metal, Ground water, Agra

**REMOVAL OF ARSENIC AQUEOUS SOLUTION, USING PYROAURITE,  
SORBENT ACTIVITATED CARBON, GEOTHITE AND RICE HUSK**

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**ABSTRACT**

The problem of arsenic contamination in ground water in the vast tract of alluvial aquifers in Bengal Delta Plains is a subject of global concern and known to have affected a population of about 38 million in West Bengal and another 40 million in different districts of Bangladesh. In an attempt to evaluate the suitability of synthesized pyroaurite like compound (PLC) modified PLC i.e. pyroaurite type sorbent (PTS) and adsorbents such as powdered activated carbon (PAC) rice husk (RH) and geothite [FeO(OH)] for the removal of pentavalent arsenic from aqueous solution a comparative study of these five sorbents was carried out by batch as well as column processes. Arsenic was analysed using Perkin Elmer Analyst 100 AAS. In batch tests, PLC, PTS, PAC, FeO(OH) and RH could remove 75.8, 83.9, 80.4, 65.1 and 49.5% As(V) respectively at initial metal concentration 0.1 mg/l, pH 6.0, temperature 25°C, agitation time 5 h, adsorbent dose 5 g/l and rpm 150. The order of arsenic removal capacities for these chemical adsorbents was found to be PTS>PAC>PLC>FeO(OH)>RH. The effect of various parameters affecting the adsorption such as initial metal concentration, adsorbent dose, contact time and pH was determined.

**Keywords :** Arsenic, Removal, Rice husk, Geothite

**THE PHYTOCHEMICAL AND NUTRITIONAL ANALYSIS AND  
ANTIMICROBIAL ACTIVITIES OF  
*ANNONA SQUAMOSA (L)***

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**ABSTRACT**

*Annona squamosa* is a traditional plant predominantly seen in Tamil Nadu India. The principle objective of the study is to assess the phytochemicals present in the ethanolic leaf extract of *annona squamosa*, prepared from organic solvents of ascending polarity index (petroleum ether<ethanol<aqueous,) and to analysis revealed the presence of carbohydrate, alkaloids, flavonoids, tannins, terpenoids, quinones and glycosides in the ethanolic leaf extract. TLC Profiling of ethanolic leaf extract reveals the presence of phytochemicals. Different RF (RETENTION FACTOR) Value of various phytochemicals provide valuable information regarding their polarity and selection of solvents for separation of phytochemicals. HPLC revealed the presence of Rutin, farmarixetin and isorhmnetin in the ethanolic leaf extract. A comparative antimicrobial activity of dried leaf extracts of *Annona Squamosa (L)* Were evaluated against one gram negative bacterial strains namely one *Escherichia coli* and two clinical fungal pathogens namely *candia albicans* and *aspergillus Niger* by agar method. The leaf extracts of *Annona squamosa* was found to have high antibacterial activity than antifungal activity. The result suggest that the leaves are a rich source of valuable primary and secondary metabolites exhibiting the antimicrobial activity.

**Keywords:** Phytochemical, Nutritional analysis, Antimicrobial activities, *Annona squamosa*, organic solvents (*L*)

**CLEANING SYMBIOSIS BETWEEN *MACROBRACHIUM LAMARREI* H. MILNE-  
EDWARDS AND *LABEO ROHITA* HAMILTON: AN APPROACH FOR  
BIOLOGICAL CONTROL OF *ARGULUS BENGALENSIS* RAMAKRISHNA**

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**ABSTRACT**

Aquaculture of fin fish is an important and promising industry around the globe. However, one of the crucial problems of this industry is the parasitic infestations and infections. Among the parasitic diseases, argulosis, caused by the branchiuran ectoparasite *Argulus* Müller, is posing a severe problem. An intense nature of haematophagy of the parasite causes acute stress, retarded growth, altered physiology, secondary infection and even death of the host fish. Therefore, this situation demands a suitable control strategy. Though various chemical, mechanical, biological and immunoprophylactic methods have been proposed to manage argulosis, each of those approaches suffers from some drawbacks. The present investigation is thus directed to work out an alternative remedy for argulosis in a microcosm experiment. A rarely explored method of biological control through development of ‘cleaning symbiosis’ could be an alternative way for disease management with restoration of ecosystem balance. In this experiment, a freshwater prawn species *Macrobrachium lamarrei* has been selected as a prospective cleaner and *Labeo rohita* as a prospective client for controlling *Argulus bengalensis*. The parasite cleaning efficiency of *M. lamarrei* was empirically validated in laboratory condition. The cleaner is found efficient to capture argulids in both their parasitic forms and dispersal forms with the first two pairs of pereopods. The parasite cleaning efficiency of the cleaner was increased with the magnitude of the parasitic load upon the client and as well as the density of the cleaner organism. The availability of alternative feed to the cleaner and proximity between the cleaner and the client/parasite serve as the determinant factors for the rate of parasite clearance. It has been established that *M. lamarrei* can serve as an efficient cleaner to clean *Argulus* from the client’s body. The outcome of the study can be extended to field condition for controlling argulosis in an eco-friendly manner and to grow the prawn as an additive species in composite fish culture system.

**Keywords:** *Labeo rohita*, *Macrobrachium lamarrei*, cleaning symbiosis, biological control, *Argulus bengalensis*.

## **EFFECT OF HYDROXYCHLOROQUINE UPON DEVELOPMENT OF CHICK EMBRYO**

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### **ABSTRACT**

Rheumatic disease is a very common nick nowadays to women at their child bearing age. It includes various illnesses such as systemic lupus erythematosus (SLE), rheumatoid arthritis (RA), discoid lupus (DL) that are more common in female at their early and midlife. All these conditions are fatal and treating with medication are of extreme necessity. Hydroxychloroquine (HCQ) sulphate, the promising drug is very often prescribed in the treatment of rheumatological diseases. Very few preliminary reports claim about the unfavourable effects of hydroxychloroquine on developing foetus. In this study the chick embryos as a model have been used to understand the effect of hydroxychloroquine during development and to determine the dose and time window of its teratogenicity. For experimentation a window is formed on chick egg through which the drug was administered to the blastodisc dissolving in 0.9% sterile normal saline solution (NSS) vehicle at different concentrations viz., 0.625, 1.25, 2.5, 5.0 mg/ml at different incubation hours of 18, 24, 33, 48 hours. A control set was maintained with administration of sterile NSS. After drug administration the window was sealed by coverslip using a glue gun. The developmental outcome was observed after 48, 72 and 96 hours of incubation. Heart rate of the embryo was measured viewing through the window and subsequently whole mount was prepared for further study. Malformations in embryo if any were recorded under light microscope. The effects of the drug include reduced heart rate, stunted growth, deformities in neural tube, delayed or absence of angiogenesis, ophthalmic abnormalities, irregular cranial and cervical flexure. This study on chick embryos revealed that hydroxychloroquine can cause a wide range of deformities to the developing embryo and further study will be required to uncover the mechanism of its action.

**Keywords:** Rheumatic disease, hydroxychloroquine, teratogenicity, chick embryo

**ASSESSMENT OF GROUND WATER QUALITY IN SATNA -DISTRICT OF  
MADHYA PRADESH, (INDIA)**

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**ABSTRACT**

The district of Satna is situated between latitude 23° 12' north and longitude 80° 21' and 81° 23' east in mid northern part of Rewa commissioners division in Madhya Pradesh state of India. Fifteen sampling locations were selected for the study from study area. The procedures followed to analyze the physico-chemical parameters were from standard method. Most of stations were found higher value of hardness. The results were compared with standard prescribed by WHO. Temperature, pH, Chloride and sulphate of all the samples were found below the permissible limit set by BIS, 10500 (2012). The quality of ground water is highly related with the local environmental and geological conditions. The quality of soil and rock and the water table determines the quality of ground water. The ground water source level changes by the regular withdrawal, and hence the quality of ground water may change seasonally as well as annually. There are many sources of ground water pollution and, unfortunately, humans are to blame for many of them. Poor management of waste, the rapid growth of industry and irresponsible use of chemicals all endanger the ground water people need to survive.

**Keywords:** Ground Water, Satna, physico-chemical parameters, WHO.

**SUSTAINABLE HORTICULTURE PRODUCTION FOR LIVELIHOOD SECURITY  
IN BUNDELKHAND REGION**

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**ABSTRACT**

Bundelkhand region comprising of seven districts each in the state of Uttar Pradesh and Madhya Pradesh in the central part of India is characterized by erratic and deficient rainfall, perennial droughts and harsh climate in summer, undulating topography and rocky terrain, traditional methods of crop husbandry and poor livelihood security. The major agricultural produce of this area are cereals (54.6%), pulses (32.4%), oilseeds (8.0%), sugarcane (0.2%), and other crops including horticulture (4.8%). The cropping intensity is about 111 %, which clearly indicates scope for horticultural crops. Horticulture is gaining popularity owing to the high value of horticultural produces and the important role it plays in livelihood security of poor farmers. Fruit crops viz., ber, karonda, aonla, bael, jamun and citrus; vegetables like brinjal and cucurbits and flowers like marigold and gaillardia are very common in this region. The region also has possibility of cultivating some high value vegetables like capsicum, cherry tomato, cucumber flower viz., gerbera and fruit like strawberry in protected cultivation. However, there is a need for technological interventions to enhance sustainable horticultural production in the prevailing poor soil, dry spells and droughts condition of Bundelkhand region.

**Keywords:** Bundelkhand, crop diversification, horticulture, income, yield

## **THE ORGANOCHLORINE PESTICIDES IN THE ENVIRONMENT AND THEIR TOXIC EFFECTS ON LIVING ORGANISMS**

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### **ABSTRACT**

Organochlorine pesticides are synthetic pesticides widely used all over the world. They belong to the group of chlorinated hydrocarbon derivatives, which have vast application in the chemical industry and in agriculture. These compounds are known for their high toxicity, slow degradation and bioaccumulation. Even though many of the compounds which belong to OC were banned in developed countries, the use of these agents has been rising. This concerns particularly abuse of these chemicals which is in practice across the continents. Though pesticides have been developed with the concept of target organism toxicity, often non-target species are affected badly by their application. The purpose of this review is to list the major classes of pesticides, to understand pesticides based on their activity and persistence, and also to understand their biochemical toxicity.

**Keywords:** Organochlorine pesticide, pesticide persistence, biochemical toxicity, pesticides.

## **IMPACT OF CORONAVIRUS ON MENTAL STRESS AND ITS SIDE EFFECTS**

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### **ABSTRACT**

Coronavirus is a well-known virus that has affected human health all over the world, causing a great impact in India. It has been observed that, throughout the world, the affected population is made aware of the physical effects of the SARS-COV-2 infection. Therefore, various steps have been taken to prevent exposure to coronavirus which has in turn helped to prevent the rise of COVID-19. The coronavirus pandemic has created a very critical situation all over the world and has caused great damage to the population of India. Nowadays, the outbreak of COVID-19 has disturbed the routine of people and has resulted in many unanticipated changes, leading to severe psychological responses, mental health issues, and various physiological disorders. In such a crisis, the response of the citizens may greatly affect the pandemic's dynamic by altering the severity, transmission, disease flow, and repercussions.

This research paper aims to understand the impact of coronavirus and its effect on the mental health of people. Moreover, it will investigate various physiological changes due to increased mental stress. Therefore, this research will also provide pragmatic implications for many psychological disorders at both macro and micro levels during such an epidemiological crisis, along with a detailed overview of the effects of coronavirus on the mental health of people around the world.

**Keywords:** Corona virus, Covid19, Disease Flow, SARS COV2, Pandemic Dynamics, Mental Health

**CHARACTERISTICS AND IMPACT OF DIFFERENT INDUSTRIAL EFFLUENTS  
FROM COAL MINES WITH A NANOTECHNOLOGICAL APPROACH OF USING  
NANO ADSORBENT.**

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**ABSTRACT**

Coal is an important source of energy for the world, particularly for power generation, demand for coal has grown rapidly over the last decade. water is required at various mining sites for dust suppression mineral processing coal washing and Hydrometallurgical extraction mine water is generated and disposed during various stage of mining. Water of poor quality needs remediation as it's uncontrolled discharge, flow drainage or seepage From the mine site may be Associated with the release of suspended solid, base, Acid and dissolved solid including metals, metalloids or salts such release has a negative impact on the environment in and around the mine site. It is very toxic in nature and contain non-biodegradable substance. This waste water is disposed Off in the nearby water bodies Without treatment. It create a lot of problem for the Aquatic life as well as for the nearby habits on the environment. Many successful method have been applied for the treatment of waste water. Waste water is needed to be treated through different techniques which enables it to make it potable and for multipurpose uses. Furthermore, some nano technological treatment are also required for this nanotechnology play a vital role in reducing hazard of toxic materials and other harmful substance release during various mining process. Nano adsorbent are used in the environment in controlling water pollution. This will be most effective methods of treatment of waste water generated from different coal based industries and it will also provide a problem for sustainable development and ecofriendly approach for the humankind. The present study highlights on the different waste generated by coal – based mine and on their treatment through different methods and Technologies used in coal mining. Implementation of different processes using Nano- materials for environment remediation is a challenging area Nowadays,

**Keywords:** Effluent, Coal based mines, Waste water treatment, Nanotechnological method, Adsorbent.

**POSSIBLE ROLE OF ASHWAGANDHA IN AMELIORATION OF  
HYPOTHYROIDISM-INDUCED ANXIETY BEHAVIOR**

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**ABSTRACT**

**Objective:** Thyroid hormones play an important role in the development and proper functioning of the brain in mammals. The aim of the present study is to find the ameliorative effect of ashwagandha in the amelioration of altered behavior and anxiety in cypermethrin-induced hypothyroid mice models.

**Material and Methods:** Adult male mice of average weighing 25-30 gm were used and divided into four groups. Group I served as control, Group II hypothyroid model (Cypermethrin 15 mg/kg body weight), Group III Ashwagandha co-treated (200 mg/kg body weight), and Group IV Ashwagandha only (200 mg/kg body weight). The behavior parameters (Open Field Maze, Elevated Plus Maze, and Dark-Light Behavior) were recorded at 28 days of the experiment and serum thyroid hormone concentrations were measured.

**Results:** The serum levels of T3, T4, fT3, and fT4 were decreased and TSH increased signifying that cypermethrin induces hypothyroidism whereas, ashwagandha co-treatment prevents it. The behavior results showed hypothyroid mice spent major time in the inner zone in the open field test, closed arm in the elevated plus maze, in dark in the dark-light test, more fecal boli, and fewer transitions between light-dark as compared to the control and vice-versa in the ashwagandha co-treated mice.

**Discussion and Conclusion:** Thigmotaxis is the condition to stay near walls for protection, which shows anxiety-like behavior and locomotor activities. The less fecal boli and locomotor activity by hypothyroid mice concluded that mice were under stress and anxiety. The results of the elevated plus maze and dark-light test also showed anxiotic behavior and hypothyroid mice remained away from open surroundings in search of protection. The present study concluded that cypermethrin-induced hypothyroidism alters behavior and induces anxiety, simultaneously with ashwagandha and quercetin co-treatment to hypothyroidism mice not only treat hypothyroidism but also the altered behavior and anxiety.

**Keywords:** Cypermethrin, Ashwagandha, Anxiety, Hypothyroidism, Behavior.

## **ENDOCRINE DISRUPTING CHEMICALS & HUMAN HEALTH**

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### **ABSTRACT**

Endocrine disrupting chemicals (EDCs) and potential EDCs are mostly man-made found in various materials. By interfering with the body's endocrine system, endocrine disruptors produce adverse developmental, reproductive, neurological, and immune effects in humans, abnormal growth patterns and neurodevelopmental delays in children. Thus, diethylstilbestrol (DES) a non-steroidal estrogen, which is regarded as a proof of concept, induces clear cell carcinoma among young women. EDCS may be found in plastic bottles and metal food cans (BPA), medical devices (phthalates), detergents, flame retardants (polybrominated diphenyl ethers), food (BPA), toys (phthalates), cosmetics and drugs (parabens), and pesticides (alkyl phenols such as nonylphenol). The deleterious effects of endocrine disruptors constitute a real public health issue. However concerning the mechanisms of action of EDCs, many questions remain unanswered and need further investigations.

**Keywords:** Endocrine, chemicals, Health, Disruptors

## **PRESENT CLIMATE CHANGE AND PATTERNS OF BIODIVERSITY**

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### **ABSTRACT**

Climate change refers to any change in climate over time, whether due to natural variability or as a result of human activity. Now it has been well recognized that Earth's energy flux is not in balance. Earth's surface was getting warmer affecting the elements of climate system. The climate itself was changing. By 1995 it became evident that the main culprit was Carbon Dioxide emissions produced by the burning of fossil fuels. If the emissions continue to grow at current rates it is almost certain that atmosphere levels of carbon dioxide will double from pre industrial levels during current century and it is quite possible that levels will triple by the year 2100. As a result of this Earth has been suffering from 'FEVER' and we have to act sincerely to cure it. Climate change has become the prime issue which is threatening the sustainability of world's environment. It has also affected the livability, health and economy of the globe. The forth assessment report of the Intergovernmental Panel on Climate Change (IPCC) stated that “continued GHG emissions at or above current rates would cause further warming and induce change in the global climate system during 21<sup>st</sup> century, that would very likely be larger than those observed during the 20<sup>th</sup> century. Predictions are there that that climate change will bring about increase in temperature s across the world which will ultimately lead to changes in average temperatures and rainfall patterns. It will have profound impacts on phenology, pollination patterns. Crop flowering, productivity and leaf fall. It will cause the risk of extinction of species. It is estimated that 15-37 % of wild plant diversity will be lost by 2050 due to climate change. We must remember that tropics and subtropics are more affected and may face problem of decreased food production. India and other developing countries would be among the most seriously affected by climate change.

Therefore there is an urgent need for creating bibliographic information in searchable databases. This will reduce the time spent in data gathering and support the provision of information on climate change to public and policy makers. Let us return to our natural ecosystem rather than a new arrangement may be termed as 'human –dominated techno -ecosystem'

**Keywords:** Climate change, Biodiversity, ecosystem

## **ORIGIN OF CHEMICAL SUBSTANCES IN TRADITIONAL AYURVEDA PLANTS**

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### **ABSTRACT**

Ayurveda is considered to be the oldest system in the world. Traditional Ayurvedic medicine has not been fully explored yet. New opportunities can be discovered in the field of herbal medicine through traditional Ayurvedic system of medicine. Every plant is a medicine, every plant conditioned its life cycle from chemical elements to biomass. If trees are plants, then there are chemicals, otherwise it is not possible. On the basis of the oldest Vaidya, Scientific Research Research Center, it has been proved that when any Rasya element or Rasa fluid was discovered, then some plant (vegetable) was used. In Ayurveda system of medicine, the entire V universe is made up of Panch Mahabhutas (Air, Water, Earth, Fire, Sky).

**Keywords:** Ayurveda Medicine, Vedas, Botanicals plant, Animal, Chemicals

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“Strategies for promotion and conservation of environment and native species to  
protect and restore the Nature”

**NEW RECORD OF COMMON SAILOR *NEPTIS HYLAS VARMONA* MOORE, 1872  
(INSECTA: LEPIDOPTERA: NYMPHALIDAE) FROM PANNA TIGER RESERVE,  
MADHYA PRADESH (INDIA) WITH ITS LARVAL HOST PLANTS**

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**ABSTRACT**

Present communication deals with the new record of *Neptis hylas varmona*, the Common Sailor, belonging to family Nymphalidae under insect order Lepidoptera, from Panna Tiger Reserve, Madhya Pradesh (India) with its larval host plants and other details.

**Keywords:** New record, *Neptis hylas varmona*, Panna Tiger Reserve, Madhya Pradesh.

**DIVERSITY OF CYNOBACTERIA (BGA) IN RICE FIELDS OF SATNA DISTRICT  
OF MADHYA PRADESH**

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**ABSTRACT**

The blue green algae or Cyanobacteria is one of the most primitive group of living organisms. The present study deals with the diversity of blue green algae in rice fields of Nagod and Amarpatan tahsil of Satna District. These blue green algae found here provide a boost to rice production. Twenty nine species of Blue green algae were identified in different localities of Nagod and Amarpatan tahsil of Satna District. Out of these *Anabaena*, *Aphanocapsa*, *Coloeocapsa*, *Lyngbya*, *Nostoc*, *Oscillatoria*, *Phormidium*, *Spirulina* etc. are the major species of blue green algae. Wide spread distribution of Cyanobacteria reflects a large variety of species covering a broad spectrum of morphological characteristics. Cyanobacteria (BGA) are also characterised by great morphological diversity; unicellular as well as filamentous species being included with a cell volume ranging over more than orders of magnitude. Morphological characteristics of these different forms of Cyanobacteria dealt with details of morphological configuration helpful in algal characterisation.

**Keywords:** Cyanobacteria, rice fields, Nagod, Amarpatan, *Anabaena*, *Aphanocapsa*, *Coloeocapsa*, *Lyngbya*, *Nostoc*, *Oscillatoria*, *Phormidium*, *Spirulina*

**MUNICIPAL SOLID WASTE MANAGEMENT IN SHAHDOL CITY (M.P.)**

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**ABSTRACT**

Solid waste generated from various sources needs to be disposed properly in scientific manners to ensure its minimum impacts on the quality of environment. Solid waste is a consequence of life and it varies from one society to other. In early time human consumed resources and he had not any problems but disposal of its waste. Traditional composting and producing the fertilizers were very typical solutions for most of the organic waste during that time; the disposal of the solid waste can be traced from that time when human started to make community, society and urban life. Municipal solid waste is one of major problem in urban centers. Shahdol city is one of the urban centers of Shahdol district Madhya Pradesh state in India is our study area. The main objective of the study sources of the solid waste generation and disposal. At present study gives the details of municipal solid waste generation, in the forms of residential, industrial, commercial, construction, demolish, and agriculture. The solid waste collection in the forms of door to door, community bins and storage points. Different types of vehicles are used to transport the municipal solid waste. To study the implementation of disposal methods of solid waste in Shahdol city (M.P.).

**Keywords :** Municipal solid Waste, Waste generation, collection methods, transportation

## **ROLE OF TEACHERS IN IMPARTING ENVIRONMENTAL EDUCATION FOR SUSTAINABLE DEVELOPMENT**

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### **ABSTRACT**

Teachers play a predominant role in imparting knowledge and sensitizing the students and society about the environment. They help to tackle the various environmental issues. Environmental problems have increased tremendously because environment is being abused beyond its capacity by human beings. Issues related to environmental problems have become a major concern for the international community particularly for educational policy makers and curriculum developers. Environmental Education is a powerful sensitization tool for the conservation of Environment, its biodiversity and the sustainable use of natural resources. Teachers are the potential change agents and are capable of generating a workforce of enlightened, skilled and motivated learners using formal and non-formal channels of education. It is now even more critical than ever before for mankind as a whole to have a clear understanding of environmental concerns and to follow sustainable development practices. Teachers should be actively involved in the implementation of environmental education programs. Several measures and strategies have been considered to intervene. Among these is the use of school curriculum by teachers to impart knowledge to protect and preserve environment for sustainable development.

**Keywords:** Teachers, Environmental Education, Sustainable Development, Sensitization

**ASSESSMENT OF THE WATER QUALITY OF ATARITAL TANK, MAUGANJ,  
REWA, USING SELECTED PHYSICO-CHEMICAL PARAMETERS**

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Department Zoology

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**ABSTRACT**

The variations in selected physico-chemical factors were investigated for two years to determine the water quality of Atarital Tank, Mauganj, Rewa (M.P.), for drinking and fish production. Three stations were chosen on the reservoir to reflect the effect of human activities, lacustrine and lotic habitats. Temperature, transparency, pH, conductivity, total dissolved solids, dissolved oxygen, nitrate, phosphate, chemical oxygen demand, total alkalinity, total hardness, calcium, magnesium, silica, sulphate, carbon dioxide were analyzed monthly between January 2021 and December 2021 using standard methods and procedures. The ranges of these factors were found to be comparable to those reported for other Madhya Pradesh reservoirs except for nitrogen and phosphate which were found in higher concentration above freshwater limits. Runoff of nitro-phosphate and sulphate fertilizers from nearby farm lands and washing of cows dungs from the watershed into the reservoir were found to have caused cultural eutrophication in the reservoir. The eutrophication was pronounced at Station 1 due to impact of human activities on the watershed, and with time, it will affect the water quality and fish production in the reservoir. The study concludes that Atari tank reservoir has excellent water quality, high ecological status and passes chemical status. Eutrophication which was noticed to be a threat to the water quality should be arrested at the nick of time through denitrification and nutrient control to halt the degradation of the water.

**Keywords:** Eutrophication, Fertilizers, Ecology, Total Dissolved Solids, Fish production.

**A STUDY OF PHYTOPLANKTONS IN BANSAGAR DAM, SHAHDOL (M.P.) INDIA  
WITH SPECIAL REFERENCE TO THEIR DIVERSITY AND ETHNOLOGICAL  
VALUES**

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**ABSTRACT**

Phytoplanktons are one of the best resources for mankind as well as for the environment. They not only play an important role in the food web and biogeochemical cycles but are rich in chemicals used in medicines. Phytoplanktons have medicinally valuable chemicals beta-carotene, antioxidant properties, vitamin A, fucoxanthin, diatoxanthin, diadinoxanthin, and many other medicinal properties. By the application of scientific tools and techniques with the help of biotechnology, we can explore them for ethnological uses. They are also great carbon and nitrogen fixers and improve the soil quality status of organic carbon and nitrogen. They can be used in treating i.e., aging, diabetes, obesity, liver cirrhosis, cancer, cataract, etc.

The present study was carried out in the Bansagar Dam, Shahdol, during the survey members of Chlorophyceae, Bacillariophyceae, Cyanophyceae, and Euglenophyceae were found. Apart from food and medicines there are still immense possibilities in finding the fields where phytoplanktons can be used.

**Keywords:** Biogeochemical cycles, beta-carotene, antioxidant properties, vitamin A, fucoxanthin, diatoxanthin, diadinoxanthin etc.

**A SURVEY OF DAMAGE BY PORCUPINE (RODENTIA) IN THE KASHMIR  
AGRO SAFFRON FIELDS AT CHANDHARA PAMPORE KASHMIR HIMALAYAS**

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**ABSTRACT**

Kashmir is a paradise on earth not only because of its scenery and climate but due to different agricultural productions like saffron, apple, cherry, pears, plum, peach, grapes, apricots, walnuts, almonds, chestnuts etc. As we know horticulture sector is the backbone of rural economy in Kashmir. But from last few years there is an increase in porcupine population. The most common is the Crested Porcupine, *Hystrix indica*, which is distributed from Kashmir to Cape Comorin and Sri Lanka. It is a widely rodent in the subcontinent inhabiting temperate grasslands, fields, plateau areas, sandy deserts (Gurunga & Singh, 1996) and caves (Alkon 199; Harries et al; 2008, Biswas & Shrotriya, 2011).

A plemenary survey was done last year for assessment on damage by agricultural pests especially Porcupine (*Hystrix indica*) in Chandhara-Pampore saffron fields as a massive financial losses was reported in saffron and other crops. Porcupine, called *Tronz* locally, are small animals with spikes which they use to defend themselves when attacked. They are having life span of 15 to 25 years, covered in multiple layers of modified hairs called spines or quills and are shy- natured, nocturnal with diverse in food habits. Farmers are now resorting to wire fencing around the trees to avoid damage by these thorny rodents and give protection to their prized saffron and also to their nearby almond trees

Local farmers conveyed it to the wildlife department for some advisory so that growers could have be saved from these losses. Experts recommended that it is important to monitor these rodents because they can physically damage the saffron corms or even girdle it if left unattended for too long, besides, also cautioned that the number of porcupines have exponentially grown in the last few yea in the Chandhara-Pampore fields.

Due to a growing trend of deforestation in Kashmir, these animals are losing their habitats. So they have no option but to come down to inhabited areas for food. Experts say porcupines prefer to eat the nutritious inner corm sac or brain. To get to inner part, they remove the bark all the way down to the inner layer of the corm, where they get the starch. It has been a generalist forager, exploiting a wide variety of cultivated wild plants and consuming both hypogeal and epigeal plant tissues.

**Keywords:** Porcupine, Kashmir, Agro Saffron Fields

**LOCAL COMMUNITIES: OPPORTUNITIES FOR SPECIFIC AREA -BASED  
CONSERVATION STRATEGIES IN REACHING BIODIVERSITY**

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**ABSTRACT**

Area specific conservation is very essential to safeguard nature's diversity. Climate change and unmet conservation targets, area specific conservation requires efficiency and effectiveness more than ever. Bio-cultural conservation, climate-smart management and biosecurity approaches help to overcome challenges induced by human needs, and invasive species, respectively. Traditional ecological restoration, species-targeted conservation, and conservation-oriented restoration these three conservation approaches broadly defined goals and attributes of their targets. In this review, I identify and relate pressing challenges to promising opportunities for capacity building in a specific area-based conservation under uncertain future developments. Human land use, invasive species, and social, political and economic limitations are challenging in present scenario. local communities, disrupting their traditional ways of living and limiting their control of and access to natural resources. In-situ monitoring techniques, remote sensing and open data infrastructures can fill data and information gaps for protected area planning and management. To address this issue analysis of 55 published case studies from developing countries to determine the new conservation approach. I consequently conclude with the need for a global information system that is to support area-based conservation by synthesizing challenges and opportunities for protected area management effectiveness and efficiency at the local to global level.

**Keywords:** Bio-cultural conservation; compliance; conservation; empowerment; remote-sensing; biodiversity; specific area management; biosecurity

## **NUTRITION AND FOOD SECURITY: A VAST CHALLENGE FOR INDIA**

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### **ABSTRACT**

Due to social and economic disparities, nutrition, especially in women and children, is still an huge challenge. The multiple decline in childhood stunting is not fast enough to meet global targets. India is progressively foremost with the double burden of malnutrition: According to UNO -India, there are nearly 20 crores undernourished people in India, which is a quarter of the world's hunger burden. Also, roughly 43% of children in India are chronically undernourished. India ranks 68 out of 113 major countries in terms of food security index 2022. It's a proven fact that the Food availability is not that dependable in India. The challenge to produce more and more for the growing population is becoming increasingly hard for a country of its size and economic growth. Since the land in India is a lessening resource for agriculture, the production rate for agriculture needs to be higher per unit of land and irrigation water. Over 60% of the Indian population depend on agriculture for their daily meals. Many families and particularly children in India don't have access to food because of financial difficulty. India needs to focus on methods to better the availability and affordability of protein rich food products using the latest environmental friendly technology without the need of additional land and water.

Although, India has been watching remarkable economic growth in recent years and remains one of the fastest growing economies in the world. However, poverty and food insecurity in India are still areas of concern in spite of many paces. Food is considered as a basic amenity essential for the nourishment, improvement and growth of an individual.

The Government of India has been actively addressing food security at households for a long time through the Public Distribution System and the National Food Security Act (NFSA) 2013, there are still concerns related to Food Security in India among increasing population. The concept of Food Security is multifaceted. Food is as essential for living as air is for breathing.

**Keywords:** Economic disparity, nutrition, Poverty and Food security, Agriculture

## **NEED FOR CONSERVATION OF INSECTS TO ENSURE SUSTENANCE OF HUMAN LIFE**

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### **ABSTRACT**

Insects represent many different trophic niches and a wide range of ecological functions in their natural ecosystems. Insects are the key components in diverse ecosystems as major role players in functioning of ecosystem processes. The main ecological functions of insects in ecosystems are ecosystem cycling, pollination, predation/ parasitism, and decomposition. Since insects are mostly perceived as pests or potential pests, this ecological importance of insects not only goes unnoticed, but insecticides are instead used to kill them. By their very nature, most insecticides create some risk to humans, animals, or the environment. Unfortunately, some of the highly hazardous insecticides are continually and indiscriminately used globally. It is for sure that insecticides, once enter the environment will have negative impacts on air, water, soil, human beings and animals. These include health hazards to human from direct or indirect exposure to pesticides, development of resistance, and pest resurgence due to destruction of natural enemies, pesticide residues in food, water, soil and fodder, poisoning of wild-life and livestock, environmental pollution and ecological imbalance. Wildlife includes not only the large animals in the forests, but also insects, birds, small mammals, fish, other aquatic organisms, and the biota within soil.

Wildlife can be impacted by pesticides through their direct or indirect application, such as pesticide drift, secondary poisoning, runoff into local water bodies, or groundwater contamination.

Two major reasons for the many threatened and endangered species of animals and insects internationally include:

- Shrinking habitats
- Increased use of pesticides and other chemicals

In the last fifty years, the abundance of wildlife on Earth has reduced dramatically. Many species that were once common are now scarce including insects. Insects are vitally important, as food, pollinators and recyclers amongst other things. There is utmost need to take measures to conserve insect diversity as is being done for the wild life. So, an alternate strategy is need of the time and botanical insecticides are broad spectrum in pest control and many are safe to apply, unique in action, and can be easily processed and used as an alternate so that not only the insect pest population is managed but also the non-target insect population, wildlife and environment is safe guarded from pesticidal hazards for a safer future.

**Keywords:** insect, natural ecosystem, wildlife, forest, bird, runoff, pesticide

## **SUSTAINABLE AND ECO-FRIENDLY HOUSING: PRESENT SCENARIO AND FUTURE NEED**

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### **ABSTRACT**

Our earth is only known planet where life is existing including human being. Development and evolution are two important factor, which are rapidly changing scenario of earth surface. As we know we have only 29% terrestrial zone, which includes hills, mountains, agricultural fields, forests and residential area. Our major problem is increasing population, which require land for houses. Our pattern of residential development area is horizontal type and it is affecting the forest and agricultural fields very fast. Now due to decreasing density of plants, pollution, disease outbreaks and many other associated problems are increasing. Many areas are slums, affecting the living standard of below poverty line population. Many questions are in our mind like, what are we doing and where are we going? We are just surrounded by electronic garbage like computers, tablets, mobiles etc., but reducing the green herbage cover. It is also affecting the availability of water and energy crisis is another importance issue. So naturally at resent time the housing pattern is creating the problems rather than providing solutions. Disharmony with nature is not our requirement because our primary need is synchronization with nature. We are the part of nature not enemy of nature. So can we create housing pattern which is nature friendly and helpful in reducing the pollution like global warming, uneven rainfall, desertification etc.?

In the present paper we will see what are the major issues related with environment and how can we solve these problems. What should be our role as at individual level, as social and academic persons and as an industrialist. I have developed a model house which may solve many problems, because it is our future need. This house is based on concept of sustainability. For developing this house our vision is:

“Our water, our electricity and our vegetables.”

**Keywords:** Sustainable house, pollution problems, global warming, uneven development, housing pattern.

**ANALYSIS OF MORPHOLOGICAL, CYTOLOGICAL AND BIOCHEMICAL  
VARIANTS OF GAMMA-TREATED SEEDS OF  
*SALVIA HISPANICA* L. (CHIA SEED)**

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**ABSTRACT**

*Salvia hispanica* L. commonly known as “chia” belongs to the Lamiaceae family. Chia seeds are high in oil contents, and rich in polysaccharides and fatty acids mainly omega-3 and omega-6 fatty acids. Chia is emerging as a new “superfood” that offers a great source of antioxidants, dietary fiber, and fatty acids. In the current scenario, the genetic base of the plant is narrowing due to continuous selfing so there is a need of generating genetic variability in order to enhance the vigour of the plant and better adaptability of it in present-day climate change. For this purpose, induced mutagenesis emerged as the most appropriate option and it is executed with the help of some physical (Gamma Rays, UV-Rays) and chemical mutagens (EMS, MMS). That’s why here we have taken healthy and dry inbred seeds of *Salvia* and treated them with five doses of gamma rays (150 Kr, 250Kr, 300Kr, 450Kr, 600Kr, 750Kr) through Co-60 sources sown in triplicate along with one set of control. Gamma rays induced various morphological and cytological variants which can be inherited. In the experiment, lower doses of gamma have shown a number of positive responses while higher doses were proved to be fatal for the plants.

**Keywords:** *Salvia hispanica* L., Gamma rays, chromosomal aberrations, Genetic Variations

## **BACTERIAL POPULATION OF RIVER KSHIPRA WITH SPECIAL REFERENCE TO WATER BORNE DISEASE**

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### **ABSTRACT**

River Kshipra is one of the most holy and sacred river of the country, is believed to have originated from lap of lord Brahma and has geographically originated from hill of Vindhya range near Indore district M.P. The river is responsible for draining Ujjain city, which is one of the main pilgrimage center of the country. The city is also known to host many mass baths on the banks of river Kshipra which is one of the main reasons for polluting the river. One of the authentic way to analyze the pollution load of the river is by analyzing the bacterial diversity and density of the river. The current investigation aims at analyzing the presence of bacteria in river Kshipra with relation to pollution load of the river. The study also records occurrence of many bacterial species along with fecal and total coliforms (FC and TC respectively) and other pathogenic bacteria. Results of the investigation sharply report that the river is continuously flooded with pathogenic bacteria like *Salmonella* sps., *Shigella* sps., *Vibrio* sps. etc. An FC-FS ratio between 1.1-1.5 indicates that the river is polluted by both animal and human excreta. A sharp rise in the count of bacteria has been consistently reported during and immediately after mass baths. The study also records occurrence of water borne diseases like cholera, typhoid, gastrointestinal diseases and skin infections in people residing near the river. On, the same node a demarked correlation has been reported between bacterial density and physicochemical parameters like temperature, Dissolved Oxygen (DO), Biological Oxygen Demand (BOD), Chemical Oxygen Demand (COD) etc. Instant and quick measures should be taken by the concerned authorities to minimize anthropogenic activities like dumping of flower, oil, body ashes, coconut shell in the river so as to assure the conservation and restoration of this holy and sacred river.

**Keyword:** Kshipra river, Bacterial Count, Pathogenic bacteria, Waterborne disease.

**GAMMA RADIATION INDUCED GENETIC VARIATION IN THE  
CYTOMORPHOLOGICAL AND BIOCHEMICAL CHARACTERISTICS OF  
*ANETHUM GRAVEOLENS* L.**

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**ABSTRACT**

Gamma radiation has been widely used to create variation in crop Plants. *Anethum graveolens* L. is a major spice crop that is consumed as both, vegetables and spices around the world. Due to increasing demand and economic importance, its production must increase. In the present study, Fresh seeds of *Anethum graveolens* L. were exposed to various doses of gamma rays (50 Gy, 100 Gy, 150 Gy, 200 Gy, 250 Gy) through a Co<sub>60</sub> source. To raise the population for meiotic studies, the irradiated seeds were sowed in triplicate with one set of control seeds. Morphological (survival percentage, germination percentage) and biochemical (chlorophyll content) measurements were employed in addition to the meiotic investigation to examine mutagen sensitivity. In cytological study, TAB% demonstrated a direct relationship with increasing gamma radiation doses. A variety of chromosomal abnormalities, such as scattering, stickiness, unorientation, and disrupted polarity were observed, out of which stickiness was the most prominent abnormality.

**Keywords:** *Anethum graveolens*, Disturbed Polarity, Scattering, Stickiness, TAB%, Unorientation.

**HEAVY-METAL TOXICITY IN *CORCHORUS CAPSULARIS* L. AND ITS EFFECT  
ON CYTOLOGICAL AND MORPHOLOGICAL CHARACTERISTICS.**

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**ABSTRACT**

Increased concentration of heavy metals (HMs) is one of the consequences of human-induced disruption of natural biogeochemical cycles that is of utmost concern for ecological and environmental reasons. Heavy metal pollution in soil has received significant attention recently from agricultural researchers. This experiment examines the impact of heavy metals in the jute plant one of the most significant fibre-producing plants in the Teliaceae family with numerous other economic impacts. During experiment germinated seeds of jute were treated with three different concentrations of heavy metals (Cd and Pb) in triplicates along with control set. AMI% and TAB% were measured for the mitotic study, and their data shows reduction in the mitotic index and an elevation in TAB% as concentrations of heavy metals were increased. Several structural chromosome anomalies were also recorded including scattering, stickiness, precocious movement, c-mitosis, bridges, unorientation, and laggard chromosomes were frequently observed. Stickiness and bridge-formation are predominated. Morphological characters such as plant height, leaf variants and stem diameters were also affected negatively as concentrations of heavy metals were increased.

**Keywords:** Jute, Heavy-metal, AMI%, chromosomal anomalies.

**UV-B INDUCED CYTO-MORPHOLOGICAL EFFECTS IN *LEPIDIUM SATIVUM* LINN.**

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**ABSTRACT**

The UV- B is an ingrained part of solar system that reaches to earth's surface at a high level due to depletion of ozone and therefore causing an adverse effect on flora and fauna. To cope up with such problems plants are performing well and have evolved an array of strategies to protect themselves from UV radiation. Hence, considering UV-B as an important physical mutagen inducing stress and disturbance on biodiversity the present experimental work focuses on the main objective to summarize the plant responses towards the effect of UV-B radiation on Cytological and morphological parameters in *Lepidium sativum* Linn. The seedlings of *Lepidium sativum* Linn. were treated with 3 different exposures times. Set A for 10 min, Set B for 20 min and Set C for 30 min along with control, respectively. The UV-B irradiated seedlings along with control were transplanted to their respective pots and various observations were estimated during its growth and development. It was analyzed that lower dose of UV- B are stimulatory in its action. The remarkably effect can be seen on the lower dose on the parameters such as germination percentage, survival percentage, plant height, internodal length etc. The Total Abnormality percentage (TAB %) were found to be increased with the increasing doses. The various cytological abnormalities were also observed in irradiated seedling including stickiness, laggard formation, scattering, bridge formation, loop formation etc. and the frequency of stickiness and precocious movement was highly observable in meiotic slides.

**Keywords:** Cytological abnormalities, *Lepidium sativum* Linn., meiosis, UV- B, Total Abnormality Percentage (TAB%),

## **ENDEMIC MEDICINAL PLANTS IN THE MANAGEMENT OF DIABETES**

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### **ABSTRACT**

Indian traditional medicine has a significant utilization of herbs for diabetes management. They have shown potential anti-diabetic activities and have been since time immemorial by the indigenous tribes. Diabetes mellitus is the most common non-communicable disease that affects a large number of the population globally. The review is focused on the efficacy of reducing the blood sugar level the medicinal plants grown in India. Diabetes mellitus is a chronic metabolic disorder and the medicinal plants and extracts used for its management have shown no side effects. They have been the best alternative medicinal source with the least side effects and low cost. The active phytochemicals present in medicinal plants have been shown to possess the properties such as pancreatic beta cells regenerating, insulin-releasing and fighting the problem of insulin resistance. There has been an increase in the demand for phytochemicals and plant-based medicines on the industrial level to use as a substitute approach to treating diabetes mellitus. The use of natural sources in the management of diabetes mellitus could be done as it would increase the antioxidant potential and the capacity to overcome oxidative stress under disease conditions.

**Keywords:** Endemic medicinal plant, diabetes, pancreatic beta cells, insulin

## **NECESSITY OF WATER, AGRICULTURE AND FOOD SECURITY**

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### **ABSTRACT**

Water is necessary for all life forms, for all elements of socio-economic development, and for the preservation of thriving ecosystems. Water is critical to food security and is a necessary component of agricultural productivity. 20% of all farmed area is used for irrigation agriculture, which generates 40% of all food produced globally. In order to feed the world's expanding population, irrigated agriculture has increased agricultural output and helped keep prices stable. Competition for water resources is anticipated to increase as a result of population expansion, urbanization, and climate change, with an emphasis on agriculture. Therefore, improving agricultural water management is crucial for a sustainable and successful agro-food business. The challenges of expanding water scarcity for agriculture are made more difficult by factors such as soil erosion, groundwater depletion, rising pollution, the destruction of ecosystems dependent on freshwater, and the wasteful use of previously developed water supplies. Growth in irrigated cereal yields is slowed in emerging nations due to increasing water scarcity for agriculture, which also restricts agricultural area expansion. Nutrients, pesticides, and other toxins from agriculture are also a substantial source of water pollution, which, if left unchecked, can have serious social, economic, and environmental consequences. Agriculture currently faces three challenges as a result of shifting global agricultural markets. To meet a rising demand brought on by population growth, it must first expand the production of healthy food. Second, agriculture must contribute to the eradication of poverty and the expansion of rural economies by creating jobs and revenue. The sustainable management of natural resources, adaptation to, and mitigation of climate change, which is already having an impact on the livelihoods of many people, especially the most vulnerable, all depend heavily on agriculture.

**Keywords:** Water, Food, Agriculture and water scarcity.

**SUSTAINABLE INVENTORY MODEL FOR A THREE-LAYER SUPPLY CHAIN  
USING PRODUCT COLLECTION AND REMANUFACTURING**

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**ABSTRACT**

The major defiance faced by all the supply chains presently is to bring down supply chain (SC) costs while sustaining the flow of the items and reducing the pressure on the environment. In this paper, we have developed a model to induce pricing and collecting in a closed-loop supply chain, which consists of a manufacturer who also remanufactures their product, a retailer and a collector for a finite period. We have analysed the effect of product collection and remanufacturing on the profits of different chain members in the closed-loop supply chains. The profit functions are concave with respect to their decision variables. Also, the profit function of the retailer and the collector linearly decreases due to the increasing price-sensitive parameter. Finally, we have presented a numerical example to illustrate the proposed model. Sensitivity analysis is performed based on several parameters.

**Keywords:** Inventory, Pricing, Remanufacturing, Closed-loop supply chain

## **Environmental Sciences**

Environmental Ethic, Environmental Legislation,  
Environmental Impact Assessment, Environmental  
Management, Environmental Policies, Environmental  
Pollution, Natural Resources Conservation.

## **ENVIRONMENTAL PROBLEM DUE TO RIVER POLLUTION: A CASE STUDY ON YAMUNA RIVER**

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### **ABSTRACT**

River Yamuna is the largest tributary of the River Ganga. The main stream of the river Yamuna originates from the Yamunotri glacier near Bandar Punch (38° 59' N 78° 27' E) in the Mussourie range of the lower Himalayas at an elevation of about 6320 meter above mean sea level in the district Uttarkashi (Uttanchal). The catchment of the Yamuna river system covers parts of the states of Uttaranchal, Uttar Pradesh (U.P.), Himachal Pradesh, Haryana, Rajasthan, Madhya Pradesh and the entire state of Delhi. The river Yamuna traverses a distance of about 1370 km in the plain from Saharanpur district of Uttar Pradesh to the confluence with river Ganga at Allahabad. The major tributaries of the river are Tons, Betwa, Chambal, Ken and Sindh and these together contribute 70.9% of the catchment area and balance 29.1% is the direct drainage of main River and smaller tributaries. On the basis of area, the catchment basin of Yamuna amounts to 40.2% of the Ganga Basin and 10.7% of the country. Yamuna is the sub-basin of the Ganga river system. Out of the total catchment's area of 861404 sq km of the Ganga basin, the Yamuna River and its catchment together contribute to a total of 345848 sq. km area which 40.14% of total Ganga River Basin (CPCB, 1980-81; CPCB, 1982-83). It is a large basin covering seven Indian states. The river water is used for both abstractive and in stream uses like irrigation, domestic water supply, industrial etc. It has been subjected to over exploitation, both in quantity and quality. Given that a large population is dependent on the river, it is of significance to preserve its water quality. The river is polluted by both point and non-point sources, where National Capital Territory (NCT) – Delhi is the major contributor, followed by Agra and Mathura. Approximately, 85% of the total pollution is from domestic source.

**Keywords:** Yamuna river, Water Pollution, Industrial Effluents, Aquatic Ecosystem

**MITIGATION OF OPENCAST MINING DUST POLLUTION BY SELECTED  
PLANT SPECIES IN THE BUNDELKHAND REGION OF UTTAR PRADESH**

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**ABSTRACT**

Mining activities whether small or large scale are inherently disruptive to the environment, producing enormous quantities of dust that can have adverse impacts on ecology of adjacent areas. In developing country like India and stone crushing industry has been growing rapidly due to increasing demand from the construction industries and the present emphasis on developing the country's infrastructure. The potential adverse impacts of mining and stone crushing include displacement of local people, marginalization, air and water pollution, land degradation, biodiversity loss, ill health, harm to livestock and reduction in agricultural productivity and so on. The aim of the present study was to emphasis the effects of mining on air, especially dust particles and their effects on the plant species in and around mining areas of Jhansi, Bundelkhand region, India. The dust emissions and possibility of leaching of contaminants during the stone mining and its allied activities may contaminate the air and water therefore affecting the exposed living organisms. SPM and RSPM (Respirable Suspended Particulate Matter) were the major sources of emission from various open pit mining activities, whereas emission of SO<sub>x</sub> and NO<sub>x</sub> were negligible. The variation in terms of dust deposition with species specific result observed during the entire study. Diminishing of leaf pigment i.e., Chlorophyll, Protein, Carotenoid concentration indicate the positive impact of dust pollution. Species like *Ficus hispida*, *Tectona grandis*, *Calotropis procera*, *Datura metel*, *Psidium guajava*, *Mangifera indica* are shown the maximum deposition of dust on their leaf surface as compare with the control site. Present study may be helpful to find out some species which is resistant or to cope with open cast mining generated dust pollution in and around mining areas and adopt also for the beautification of adjacent areas.

**Keywords:** SPM, Opencast Mining, Bundelkhand region, Stone crushing, Dust pollution.

## **APPLICATION OF ECOLOGICAL RESTORATION TECHNIQUES TO RESTORE THE POLLUTED RIVER ECOSYSTEM**

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### **ABSTRACT**

Rivers play an important role in people's living and agricultural production. With the rapid development of industry and agriculture, the intensity in which human exploit and utilize rivers has gradually increased, thus, rivers have been experiencing great pressures from human activities, and some service functions of rivers even present trends of degradation. River restoration nowadays has become a need because rivers have been degraded in the terrible way leading to the disappearance of biodiversity. Pollution of major rivers and their tributaries ultimately responsible for causing ecological imbalance. Hence, there is a need to restore the natural water quality, flow of the river, and routine clean-up process of polluted water. The purpose of river restoration is to improve structure and function of the river ecosystem by increasing biodiversity of the river.

Commonly used techniques to restore polluted rivers around the world are physical methods, chemical methods and biological–ecological methods. Among these methods, chemical methods can cause secondary pollution, and should only be used as emergency measures to deal with a sudden water pollution. Physical methods are very expensive and time taking. Biological–ecological methods do not cause secondary pollution, which combine environment restoration with landscape improvement, and create a beautiful environment for the integration of mankind and nature. Therefore, biological–ecological methods are currently the most popular restoration methods for restoration of polluted rivers, which include aquatic plant restoration, bio-manipulation technique, aeration, microbial enhanced technique, bio membrane technique, activated sludge technique, land treatment technique, and so on. A brief description of various restoration techniques is discussed here.

**Keywords:** Ecological Restoration, River Ecosystem

**ANALYSIS OF PHYSICO-CHEMICAL CHARACTERISTICS OF GROUND  
WATER IN MANT TEHSIL OF MATHURA DISTRICT OF U.P. (INDIA)**

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**ABSTRACT**

“Water for life” is a true saying for the existence of life. Two third of the earth’s surface is covered by water, but the quantity of potable water is very limited. There are various source of potable water, but the ground water is considered to be most suitable. But now-a-days, even the ground water become unsafe for drinking purposes. The quality of ground water is influenced by the nature of the surface as well as the environment where the recharge takes place. The water used for industries, agriculture and human needs, adds continuously contaminants to the ground water. The physico–chemical characteristics of ground level water have been studied in Mant tehsil of Mathura district of Uttar Pradesh (India). Water samples from 20 bore wells at various locations were collected and analyzed for pH, electrical conductivity, dissolved oxygen, total dissolved solids, total alkalinity, chloride, fluoride, nitrate, phosphate, Na, K, Ca and Mg. Mostly all the samples of water were containing chemical constituents beyond permissible limits prescribed by WHO. The study indicates the need for periodic monitoring of ground water in the study area. This study shows that the quality of ground level water varies from well to well. Higher values of certain parameters at certain bore wells indicate that the water of those bore wells are not suitable for drinking. Based on these findings, it can be recommended that any ground water source in the study area should be tested before use for its suitability and usefulness for daily purpose.

**Keywords :** Ground water, contamination, Physico-chemical analysis, Mant tehsil, Mathura

## **BIODIVERSITY CONSERVATION THROUGH CONSERVATION OF NATIVE SPECIES**

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### **ABSTRACT**

Nature has given us everything, we in fact take benefits from nature but mostly we take it for granted. Mahatma Gandhi had once said that, ‘there is everything for our need, but not for our greed’. Unfortunately, the need of human beings today has taken the shape of greed. The large scale destruction of trees, the hunting of animals, the pollution of water bodies, the air we breathe, the degradation of soil and the loss of soil fertility all are the consequences of human being playing with nature. Playing with nature brought havoc on this planet. The most worrisome part is that the human interference with nature has resulted in a loss of biodiversity amongst different native species of different crops. In the last hundred years, more than 90 percent of crop varieties have disappeared from farmers' fields. Half of the breeds of many domestic animals have been lost, and all of the world's 17 main fishing grounds are now being fished at or above their sustainable limits. Locally-varied food production systems are under threat, including related indigenous, traditional and local knowledge. With this decline, agro biodiversity is disappearing, and also essential knowledge of traditional medicine and local foods. The loss of diverse diets is directly linked to diseases or health risk factors, such as diabetes, obesity and malnutrition, and has a direct impact on the availability of traditional medicines. Biological resources are the pillars upon which we build civilizations. The loss of biodiversity threatens our food supplies, opportunities for recreation and tourism, and sources of wood, medicines, and energy. It also interferes with essential ecological functions. Our personal health and the health of our economy and human society depend on the continuous supply of various ecological services that would be extremely costly or impossible to replace.

**Keywords:** Biodiversity Conservation, Native Species, Nature, Biological resources

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protect and restore the Nature”

**STRATEGIES FOR PROMOTION AND CONSERVATION OF ENVIRONMENT  
AND NATIVE SPECIES TO PROTECT AND RESTORE THE NATURE.**

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**ABSTRACT**

Medicinal plants are globally valuable sources of herbal products any they are disappearing at a high speed. This paper deals with strategies for medicinal plant conservation based on Studies on 3 plants species occurring in the Baihar tehsil Balaghat district in Madhya Pradesh. These plant are Kalmegh (*Andrographis paniculata*), Gurbel (*Tinospora cordifolia*), Bui-amla (*Phyllanthus amarus*) including their cultivation and wild population. We emphasized that both conservation strategies e.g. *In situ* conservation an ex situ conservation of native plant species.

**Keyword:** Medicinal plant, conservation

**A STUDY ON HIMALAYAN GORAL (*NAEMORHEDUS GORAL*) FOR  
CONSERVATION PLANNING IN KAZINAG  
NATIONAL PARK, KASHMIR**

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**ABSTRACT**

The present study on various aspects like diet, habitat use and conservation issues of Himalayan goral *Naemorhedus goral* was conducted from January 2020 to December 2021 at the Kazinag National Park (KNP) of Kashmir Himalaya. The seasonal vegetation availability in the KNP and adjoining areas was assessed by plot method. A total of 61 plant species were recorded whose availability differed significantly across seasons ( $F_{3,240} = 20.14$ ,  $p < 0.05$ ). The diet was analyzed through micro-histological analysis of faecal pellets. Seasonal variation was found in the diet composition of Himalayan goral depicting a strong relationship between plant consumption and dynamic availability in the study area. The diet was dominated by herbs (62.06%) in spring, grasses in summer (87.17%) and autumn (82.6%) and shrubs in winter (58.06%). The proportion of graze items in the diet showed a sharp decline from spring (90.67%) to winter (19.23%) whereas that of browse showed a huge increment from spring (4.67%) to winter (74.43%). This shift may be a survival or foraging strategy of Himalayan goral in harsh winter with limited forage availability in the KNP and adjacent areas. Habitat use of Himalayan goral in the KNP and adjoining areas was estimated by direct observations and indirect signs of presence using trails ( $n=21$ ) and vantage points ( $n=10$ ). The data of various topographical attributes was analyzed through chi-square test, One-way ANOVA and Principal Component Analysis (PCA). Linear regression determined nature of relationship between occurrence of goral evidences and livestock units at various elevations. Himalayan goral showed seasonal preference for different elevations and strongly avoided elevations with high livestock numbers. It predominantly utilized south-facing slopes within 50m from escape terrain and mostly used areas distant from human habitation ranging from 500 to 2500m. PCA showed that elevation, slope, distance from livestock, aspect and distance from nearest settlement are the major factors affecting habitat use by Himalayan goral in KNP and adjacent areas. This wild goat preferred cliff habitat (IEI= 0.42) and grasslands (IEI= 0.36) whereas conifer (IEI= -0.41) and riverine (IEI=-0.28) habitats were not preferred and alpine was altogether avoided (IEI= -1). Data on various conservation issues and threats like grazing by domestic livestock in goral habitats, resource extraction from the park and other developmental works which seemed to impair the recovery of this wild goat were also collected.

**Keywords:** Himalayan goral, Dietary shift, Habitat use, Threats

**ECTO-PARASITES INFECTING THE SKIN AND GILLS OF SOME  
FRESHWATER CATFISHES OF RIVER NARMADA.**

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**ABSTRACT**

Freshwater environment is highly diverse containing so many species of flora and fauna, especially Ichthyofauna. However, the state of knowledge of freshwater fish parasites in river water is still relatively poor. This study used opportunistic sampling to examine the target organs; skin and gills of several freshwater fish species for ecto-parasites with the aim of increasing knowledge of freshwater parasite biodiversity. Fish samples were collected in December, 2017 – November, 2019 on seasonally basis through local fisherman and some researchers of the Department and were stored, then anesthetized until dissection. The gills, opercula and skin scrapings were examined from freshly killed fish samples. Among 236 fishes of *Clarias batrachus* 113 specimens were found infected with ecto-parasites with the overall percentage prevalence of 47.88% and Mean Intensity of 1.65%. In *Clarias gariepinus* a total no. of 91 fishes were found infested with parasites out of 217 collected fishes with the overall percentage prevalence of 41.93% and Mean Intensity of 1.26%. Helminth ecto-parasites showing its occurrence and distribution in external organs of host fishes. During present updated investigation, two catfishes *C. batrachus* and *C. gariepinus* were recovered from skin and gills (*Dactylogyrus*, *Gyrodactylus* and *Lernea*). Present study throws light that the strong measures are to be taken to reduce parasitic load in fishes and also enforce control; measures to lower down pollution levels from the freshwater habitats of River Narmada.

**Keywords:** Ecto-parasites, *C. batrachus*, *C. gariepinus*, Skin, Gills, Narmada

## **A REVIEW ON WASTE WATER MANAGEMENT IN LEGAL PERSPECTIVE**

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### **ABSTRACT**

Wastewater generated from various sources, ultimately ends up in the water bodies like lakes, ponds, streams, rivers and the oceans. It is a counterfeit hypothesis that the ground water is pure, but unfortunately most of the water resources are consisting of contaminated minerals. It's a proven fact that 85% of water supply flows back into our ecosystem without any treatment which could be a grave health hazard affective on our environment also. The untreated water spreads diseases and contaminates our drinking water resources. Day-by-day the volume of the wastewater generated from domestic, industries and commercial sources is intensively escalating owing to the rising population, living standard and the developmental activities. The wastewater management is decidedly significant to control and manage the contamination of water resources so that the supply flows back into our ecosystem is safe for human lives and environmental friendly. The wastewater is usually treated under processes through industrial plants like ETP, STP and CETP. To control the wastewater management system, the government has also established regulations and enacted various Laws. Honorable Supreme Court of India has also passed order dated 22.02.2017 which mandates establishment and functioning of requisite ETPs/STPs/CETPs by 31.03.2018. This matter was also followed up by Hon'ble National Green Tribunal, Principal Bench New Delhi (O.A. 593/2017). The CPCB also submitted status report in this matter.

Although many papers have been reported on wastewater studies but this paper is aimed to review on wastewater management in legal perspective focusing the state of MP. The beneficial aspect of this study work will be to include the data of ETP/STPs which should be mandatorily installed and used at various sectors which are regularly generating the water waste.

**Keywords:** Waste water, Effluent Treatment Plant, Sewage Treatment Plants, Legal decisions, waste water treatment

### **AN OVERVIEW: GLOBAL WARMING**

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#### **ABSTRACT**

Global Warming is important role in environmental sustainable development. Global Warming is produced by increase of carbon dioxide levels in the earth's atmosphere and result of human activities. The average temperature is constantly rising by 1.5 degrees celsius over the last few years. The best method to prevent future damage to the earth, cutting down more forest should be banned, afforestation should be encouraged, start by planting trees near house and offices, glaciers have been melting and many countries have started water storages flooding and erosion. Human activities such as gases released from power plants, transportation and deforestation have increased gases such as carbon dioxide CFCs, and other pollutants in the atmosphere.

**Keywords:** Global Warming, sustainable development, carbon dioxide, atmosphere

## **CROP RESIDUE BURNING – A SERIOUS THREAT FOR ENVIRONMENT AND HEALTH**

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### **ABSTRACT**

Crop residue burning (CRB) poses a serious threat to the emission of greenhouse gases (GHGs) that contribute to global climate changes. In addition to that, enhanced levels of PM (Particulate matter) and other air pollution that cause health hazards, loss of diversity of agricultural land, and the deterioration of soil fertility. Short stalks and roots left called stubbles/straw found in the field after the harvest of the stems and spikes of cereals like wheat, barley, rye, millet, maize and paddy. The stubbles/straws constitute about 50- 75% of the total cereal biomass produced in a season. Undoubtedly, the lack of proper management of abundant crop residue has an adverse influence on the environment and human health not only in India but also in the world. In order to promote integrated straw management through sustainable agricultural mechanization in agricultural sector globally, it is recommended that awareness raising about the adverse effects of residue burning and the economic benefits accruing from more sustainable approaches should be prioritized. Moreover, support should be provided to farmers towards initial investments for the adoption of the required machinery and equipment while tailoring the solutions to match local conditions.

**Keywords:** Crop, Environment and health, Green House

**BREEDING BIOLOGY AND ECOLOGY OF *GYPS INDICUS* IN BUNDELKHAND  
REGION, INDIA**

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**ABSTRACT**

Breeding habitat play a vital role for the survival of individual bird. *Gyps* vulture breeds in colony. They construct their nests on trees, historical monuments and rocky cliffs. All the observations were recorded from the Bundelkhand region situated in the heart of India. Data was recorded with the help of binocular and canon camera. Their colonies are always found to the proximity of water. Vultures are the monogamous bird. They Pair up for the life, meaning they have one mate during their lifetime. This may be due to affections of the birds for successful nest sites, rather than loyalist to each other. If one of the pairs dies, the other often will take a new mate. There is no morphological differentiation of male and females in numerous species. And position of the bird during mating. They are slow breeding birds; they mature at the age of five years and lay maximum one egg per year. The breeding cycle starts from September to May every year. The breeding of *Gyps* Vultures follows in different phases which include an Aerial Display, Nest Site Selection, and defense, Courtship and Copulation, Nest building, Brooding and Parental care. Conservation of breeding, roosting and feeding sites of vultures plays a significant role in In-situ conservation. Therefore, extensive hard works are required for in situ conservation of vultures in India.

Bundelkhand region has potential breeding sites. The estimated breeding sites of only one critically endangered vulture (Long-billed vulture) are not a good sign for their survival. Apart from long billed vulture breeding sites, the sharing of breeding sites with Egyptian vulture at Shivpuri and Orchha, Tikamgarh is found. No breeding sites of other residential *Gyps* species such as *Gyps bengalensis* and *Gyps tenuirostris* recorded from Bundelkhand region. The presence of only one *Gyps* species out of three is the alarming sign for the vulture decline, it is necessary to take immediate action for conservation of these natural scavengers.

**Keywords:** Breeding, Vultures, Nest, Ecology, *Gyps indicus*

## ENVIRONMENTAL ETHICS FOR ENVIRONMENTAL MANAGEMENT

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Environmental ethics is one of the ethical frameworks that enable us to make decisions that have a positive impact on the environment. In the 1970s, philosophers began to formulate a new field called ‘Environmental Ethics’. Environmental ethics asks about the moral relationship between humans and the world around us, which concerns with relationship among people only.

“The proper use of science is not to conquer nature but to live in it.”  
—Barry Commoner

Natural disasters on hills specially in Kedarnath, recently in Joshimath, previously in Chamoli. These are alarming conditions. They attract our attention because these natural calamities affect our nature. Safety of all living beings is our priority. There are many causes of these alarming conditions. We must follow environmental ethics to protect forest wildlife, bio diversity, manmade disturbances etc. Global warming is one of them. we must use renewable energy resources.

“Environmental management on hills is the need of the hour”

Measures to protect our environment:

- *Control anthropogenic activities*
  - ✓ Deforestation
  - ✓ Check Unscientific use of land
  - ✓ Control Soil erosion
  - ✓ All hydro projects should be environment friendly
  - ✓ Recycle properly
  - ✓ Follow rules properly

We should consider how newer scientific fields devoted to environmental protection such as conservation biology and sustainability science are thus often described as "normative" sciences that carry a commitment to the protection of species and ecosystems; again, either because of their intrinsic value or for their contribution to human wellbeing over the long run.

**Keywords:** Environmental management, Deforestation, land, Control Soil erosion, environment friendly, Recycle

## **ROLE OF ENVIRONMENTAL ETHICS AND VALUES IN PRO-ENVIRONMENT CONSUMER BEHAVIOUR**

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### **ABSTRACT**

Most of us would agree to be sympathetic but inactive regarding environmental problems. Materialism, lack of consciousness, desire for luxury and comfort in present times often leads to mindless consumption leading to exhaustion of resources more than required. Theorists believe that people often act as “slaves to their whims” and find themselves “locked in” to unsustainable patterns of living. This barrier stems from the roots of ethics/norms, habits, values, expectations, societal pressures along with poor policy support. Our lifestyle, our consumption choices directly impact environment and indirectly our society’s well-being making pro-environment action an imperative topic of discussion. Pro-environment behaviour encompasses all the behaviours that result from ecological consciousness. It is mindful, deliberated choice of actions. Exploring deeper into the nature of pro-environment behaviours, the present study assessed the environmental ethics and environmental values among young adults and further explored the role of environmental ethics and values in promoting positive environment behaviour. The sample consisted of 150 young adults (male and females both) within the age group of 20-30 years. Self-report standardized measures for Environmental Ethics, Environmental Values, Recurring Pro-environmental Behavior, and Ethically Minded Consumer Behavior were used in the study for data collection. Correlational and regression analysis was applied to analyze and interpret the scores, and results are discussed while understanding and explaining the effect of environmental values and ethics on pro environmental behaviour and consumption.

**Keywords:** Environmental ethics, Environmental values, Ecological conscious, Pro-environment behaviour, Ethical Consumption

**PRESENT STATUS OF FISHERY OF KAITH KOLA, BEGUSARI (BIHAR), INDIA  
FOR CONSERVATION AND SUSTAINABLE EXPLOITATION**

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**ABSTRACT**

Kaith Kola, a tributary of Burhi Gandak length 15-16 km, width 100-124 meter, area 303.47 decimal and water depth ranging from 4-5-10 feet located in Begusari district (North Bihar) is being used by fisherman community for culture-based capture fisheries. Begusari Prakhanda Matsyajivi Sanyog Samiti Limited, Chandpura, Damdama (Begusarai) comprising 500 members is looking after the Kola. Membership Fee is Rs. 100/- (One Hundred only) but there is provision of shares (each share minimum of Rs. 100/-) to meeting the input in the water body. This society gives revenue of Rs. 3.0 lakh /year to the District Fisheries Officer (DFO), Begusarai. It is expected that a revenue of Rs. 30.0-50.0 lakh/year is being generated by the society from this water body. Initially, the water body was heavily infested with weeds like water hyacinth, *Vallisneria*, *Ipoma*, *Hydrilla* (sevar) but they have been managed by using dweedicide (2,4-D), manually and culturing grass carp.

Fingerlings of *Catla catla*, *Labeo rohita*, *Cirrhinus mrigala*, *Hypophthalmichthys molitrix*, *Ctenopharyngodon idella*, *Cyprinus carpio*, *Labeo bata* and bighead (*Aristichthys nobilis*), being collected from local hatcheries (Baheri, Rajvara) and also transported from Kolkata (West Bengal), are being reared in hatchery adjacent to the moun/chaour for 3-4 months and released in the water body during June-July and cull harvesting is being done during February/March. Fishes are being sold @ Rs. 100-120/kg (silver carps and exotic fishes) and Indian species (Rs. 160-200/) locally in markets of Begusarai, Manjhauli, Bakhari, Navkothi and Ballia because 60-80% human population in this area is fish-eater. Middlemen are collecting market margin @ 20%. Fish farmers are facing problem of water shortage during summer months because of 10 lift irrigation pumps are used draining water for agricultural purposes in the nearby fields. Since water column is found at 10 feet, they are managing fish culture by boring canals which drain the water through gravitation force when the column is high in river Burhi Gandak.

**Keywords:** Fishery, fisherman, *Catla catla*, *Labeo rohita*, *Cirrhinus mrigala*, *Hypophthalmichthys molitrix*, *Ctenopharyngodon idella*, *Cyprinus carpio*, *Labeo bata*

**Earth and Atmospheric Sciences**  
Mineralogy.  
**&**  
**Sustainable Development**  
Nutritional and Food Security,  
Biodiversity conservation,  
Promotion and conservation of indigenous species,  
Strategic and advocacy for nature conservation,  
Scientific approach of native species conservation,  
Scientific temper to protect and restore the nature,  
Livelihood

**INTEGRATED FARMING SYSTEM FOR SUSTAINABLE AGRICULTURE  
PRODUCTION UNDER CLIMATE CONDITION OF WESTERN U. P. (INDIA)**

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**ABSTRACT**

Green revolution was tremendous increase in the productivity of crops. System of agriculture production adopted during the green revolution era has been much exploitative and natural resources subjected to immense pressure beyond their carrying capacity which led to degradation of not only crop ecosystem but to life supporting system. Farmer of poverty planner and policy makers of country have to evolve new concepts of sustainable development with various farming system compound. It also offers enough scope of nutrient recycling with the system to economize the sustain system and minimized dependence on chemical fertilizers for crop production to aim more profit. Integrated farming system is a diversified multi crop farming practice where in the micro output of one culture becomes the input of others. There by enhancing soil fertility by a natural act of balancing all organic nutrients that ultimately provides way for sustainable environmental friendly organic agriculture. An experiment to identify an efficient farming system for imigated agro-ecosystem of Western U.P. Based on 2 years srop study rice, pea, okra was selected as cropping sequence with the highest rice grain yield. Dairy produced considerably higher net return than poultry and fishery but had lower benefit cost ratio than the fish component. The poultry component was found least profitable. The agriculture farming system comprising crop component as rice-pea-okra and sorghum-barseem-maize while dairy, poultry and fishery as identified as the most suitable and efficient farming system model. It is giving the highest system productivity of net return under irrigated agro-ecosystem of Western Uttar Pradesh (India).

**Keywords:** Integrated farming system, Climatic conditions, Integrated farming, sustainable agriculture

**EXOTIC VERSUS NATIVE PLANT SPECIES: A CASE STUDY IN RAMGARH  
VISHDHARI WILDLIFE SANCTUARY, BUNDI, RAJASTHAN**

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**ABSTRACT**

Ramgarh Vishdhari wildlife sanctuary of Bundi district, is a part of Haroti plateau. It is a single compact and large forest ecosystem in Haroti region. It lies in the south-eastern portion of Rajasthan between 24° 59' 11'' to 25° 53' 11'' North latitude and 75° 19' 30'' to 76° 49' 30'' East longitudes. In the present paper, an attempt has been made to record and enumerate the conflict between native and exotic plant species of Ramgarh Vishdhari wildlife sanctuary and their impact on ecosystem and natural habitat. Exotic species grows and spread fast and interfere the natural floristic composition of forest stand and thus, ultimately disturb the native biodiversity. These exotic species cause several negative impacts on forest ecosystem of sanctuary area. Therefore, some keystone plant species of angiosperms becomes threatened, so it is urgent need to conserve them into natural habitat. Exotic plant species does not allow the native species to grow naturally. The vegetation of the Ramgarh Vishdhari wildlife sanctuary of Bundi district is tropical dry deciduous. The Indigenous dominant trees and shrubs species of the area are *Anogeissus pendula*, *Butea monosperma*, *Manilkara hexandra*, *Mitragyna parvifolia*, *Acacia nilotica*, *Acacia catechu*, *Wrightia tinctoria*, *Sterculia urens*, *Balanites aegyptiaca*, *Bauhinia racemose*, *Acacia leucophloea*, *Grewia flavescens*, *Phoenix sylvestris*, *Ziziphus mauritiana*, *Ziziphus nummularia* and *Adhatoda zeylanica*. In order to present study indigenous versus invasive plant species according to different physical regions of forest ecosystem of Ramgarh Vishdhari wildlife sanctuary have been taken into consideration.

**Keywords:** Deciduous, Exotic, Floristic composition, Keystone species, Native

## **GREEN ENERGY TOWARDS GLOBAL ECONOMIC AND SUSTANABLE DEVELOPMENT**

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### **ABSTRACT**

Energy is required for every society with a view to meeting the basic needs, so the insecurity of its supply can creep-up the work of a nation's economy. In this regard, transition towards green energy has come to be known as a “premeditated product”. In this section, the transition toward green energy, green energy in the perspective of sustainable development and its four distinguishing contribution are discussed. These contributions are then used to discuss the sustainable development dimensions, which are stated in the literature review. Now-a-days, two issues regarding energy are drawing attention to the sustainability researchers. One is how to assure energy supplies in a sustainable manner which has low environmental impacts and low emissions capacity, and the other one is barriers to sustainable energy development and identifying the most efficient way of addressing such barriers. An outline is provided for reconstructing the agenda of sustainable development in such a way that the issues of agenda must be consistent with the goals and values of sustainability. As researchers and practitioners have struggled with the issue of energy sustainability, recognition has emerged out of the fact that if they are taken positively, they will lead to a sustainable economic and social development; the entry ends with conclusion. the existence of half of the world's populace, particularly people who are living in the coastal area might be in danger because of increasing global temperature on an average to 6.4°C from 1.10C and rising the sea level by about 16.5 to 53.8 cm respectively. “Global Climate Change” which is an alarming problem for attaining sustainable development in these days. Although the impact of global climate change is definite on human health and environment, therefore, it is difficult to predict the change and many people start realizing that unpredictable change of global climate is a key barrier for attaining sustainable development, while more than half of the global climate change is caused by the increasing concentrations of GHG emissions and contributed mainly by the energy sector.

**Keywords:** Green Energy, Global Economic, Sustainable Development

**FORAGING PREFERENCE OF INDIAN SARUS CRANE *GRUS ANTIGONE* IN  
UNNAO, U. P.**

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<sup>2</sup>Department of Sales tax, Uttar Pradesh, India

**ABSTRACT**

Unnao is one of the major areas dedicated to Indian Sarus Crane *Grus antigone* conservation in U.P., India. The identification and availability of major food items consumed by the cranes has already been documented in review literature, we assessed wheather these foraging sites selected by Indian Sarus Crane are influenced by the presence and abundance of different plant and animal species and edaphic factors of these site. The cranes densities varied significantly between foraging areas like agricultural fields, wetlands, canal side, ponds. The results suggests that sarus cranes in Unnao prefer foraging areas characterized by the abundance of water logged paddy fields during sampling plantation in crop cultivation , providing crustaceans, larvae, earthworms in form of food diet of Indian Sarus Crane , followed by canal side of Sharda canal. The study recommends both sites of Unnao, as prior sites where the cranes forage throughout the year as well as additional studies to improve understanding of its ecological requirements.

**Keywords :** Unnao, foraging preferences, Sarus crane.

**ICHTHYOBIODIVERSITY OF SHAHPURA DAM, SATNA (M.P.)**

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**ABSTRACT**

The present study deals with the study of diversity and seasonal fluctuation in the population of fishes in relation to different physico-chemical parameters at Shahpura dam (Latitude 24° 48' 45" and Longitude 80° 42' 30") is constructed near Shahpura village of Kothi, Satna district on the Kothiyari river in 1972-1973. The present investigation was carried out from November 2020 to October 2022. The species of the family *Cyprinidae*, *Siluridae*, *Bagridae*, *Claridae*, *Notopteridae* and *Channidae* were reported from this dam. It was found that seasonal fluctuations in the physico- chemical parameters play a vital role in distribution of the fishes. The physico-chemical parameters of the reservoir were also analyzed and the results were interpreted with the fluctuations of the available fish fauna. The present work undertaken to enlighten the biodiversity of fishes and their importance at Shahpura dam.

**Keywords:** physico-chemical parameters, seasonal fluctuation, *Cyprinidae*, *Siluridae*, *Bagridae*, *Claridae*, *Notopteridae*, *Channidae*, Dam

**MOVEMENT OF SATELLITE TAGGED CRITICALLY ENDANGERED WHITE-  
RUMPED VULTURE *GYPs BENGALENSIS* BETWEEN NEPAL AND INDIA  
HIGHLIGHTS THE NEED FOR WIDER TRANS-BOUNDARY COLLABORATION**

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Deelip Chand Thakuri<sup>1,2</sup>, Ankit Bilash Joshi<sup>1,2</sup> and John W. Mallord<sup>2,4</sup>

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**ABSTRACT**

Accipitridae vultures are one of the most threatened groups of birds in the world. Beginning in the mid-1990s, in South Asia, populations of *Gyps* species underwent catastrophic declines due to unintentional secondary poisoning by the painkiller drug diclofenac, which was commonly used to treat livestock in the region. In response, the governments of India, Pakistan, Nepal and Bangladesh banned veterinary use of diclofenac and promote safe alternative Meloxicam. In Nepal, a captive breeding program was initiated for the critically endangered White-rumped Vulture in 2008. Wider conservation initiatives were initiated as part of the Vulture Safe Zone program, which began in 2009. Following near-elimination of diclofenac from the environment, captive-reared and-bred vultures have been released between 2017 and 2022, fit with satellite tags to monitor their movements and survival. During the same period, a similar number of wild White-rumped Vultures have also been captured and fit with satellite tags to assess the safety of the Vulture Safe Zone. Both captive and wild birds spend a large amount of time in the cross border landscape, and regularly travel between Nepal and India, highlighting the need for wider trans-boundary collaboration.

**Keywords:** diclofenac, movement, satellite tags, trans-boundary, White-rumped Vulture

## **WASTE MANAGEMENT TECHNIQUES IN CONTEXT OF SUSTAINABILITY**

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### **ABSTRACT**

The management of waste is thought to be directly related to sustainable development. This paper emphasizes the out-of-date practice of conventional trash management and recycling technologies. It is extremely difficult for many rising and developing nations to improve their ineffective and unsustainable waste management systems. Pollution of the soil, air, and water are consistently putting sustainable development at risk. The paper underlined the need to stop disposing of waste in populated areas and unsafe and unregulated landfills. In order to address issues with trash disposal, a waste management hierarchy has been described in this study. Additionally, the paper explores the advantages of choosing sustainable waste management solutions as well as difficulties with garbage disposal. It has been determined that sustainable waste management offers an appropriate choice for adoption of It has been determined that establishing a strategy for waste reduction with the participation of all community stakeholders is best accomplished through sustainable waste management.

**Keyword:** waste management, recycling technologies, sustainability, community participation.

**A STUDY ON FLORAL BIOLOGY AND CYTOLOGY OF AN IMPORTANT  
VULNERABLE TREE SPECIES: *DALBERGIA LATIFOLIA* (INDIAN ROSEWOOD)**

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**ABSTRACT**

*Dalbergia latifolia* Roxb., commonly known as rosewood, is native to tropical deciduous mix forests of India. The tree species was widely distributed in the past, however, over-exploitation of natural habitat, deforestation, forest conversion for agriculture, illegal logging and the invasion of alien species resulted in the classification of this species as vulnerable by the IUCN (International Union for Conservation of Nature) category. The natural habitats of *Dalbergia latifolia* need to be more stringently monitored so that appropriate management interventions can be adopted to conserve the genetic resources of this valuable timber species. In course of species adaptation, meiotic process is a key for all sexually reproducing plants because it is responsible for halving the number of chromosomes during gametogenesis and subsequently the recombination process, which provides much of the genetic diversity. Although the genes that drive meiosis are largely conserved, but they are liable to be affected by biotic and abiotic stresses. A spectrum of chromosomal abnormality was screened in wild population of *Dalbergia latifolia* tree in the campus of TFRI, Jabalpur. The overall abnormality percentage was used to calculate the rate of chromosomal aberration (Tab%). An in-depth cytological assessment revealed normal meiotic phases were observed at various stages along with this induction of low frequency of chromosomal anomalies such as stickiness scattering, unorientantion etc. Micronuclei, Cytomictic behavior and intercellular fusion were visible among micromeiocytes of *Dalbergia latifolia*.

**Keywords:** *Dalbergia latifolia*, IUCN, Meiosis, Micronuclei and Cytomictic behavior.

**ON SOME ZOOPLANKTONS RECORDES FROM OOTY, NILGIRI DISTRICT OF  
TAMIL NADU**

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**ABSTRACT**

The paper deals with the diversity of zooplankton such as Rhizopoda, Rotifera, Cladocera and Ostracoda from the different localities of Ooty, Nilgiri district of Tamil Nadu. The present study comprises of a total of 37 species of Zooplankton which include 3 species of Rhizopoda, 19 species of Rotifera, 12 species of Cladocera and 2 species of Ostracoda from Ooty, Nilgiri district of Tamil Nadu. The study was conducted during the year 2013-2014. Rotifers were the dominant group representing 19 species. The polymorphic forms of the Rotifer genera *Brachionus* such as *Brachionus calyciflorus f. amphiceros* (Gosse, 1851) and *Brachionus quadridentatus brevispinous* (Ehrenberg, 1832) were also recorded during the present study. The diversity of Rotifers are more when compared to the other groups. The study reports several alkaline and eutrophic species of zooplankton too.

**Keywords:** Rhizopoda, Rotifera, Cladocera, Ostracoda, Diversity, Distribution, Species, Nilgiri, Tamil Nadu.

**WATER QUALITY ASSESSMENT OF MATATILA DAM DISTRICT LALITPUR,  
UTTAR PRADESH, INDIA**

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**ABSTRACT**

The present paper deals with the assessment of the water quality of Matatila Dam district Lalitpur (U.P.) India. The good water quality always produced a good health of human being then poor water quality. An analysis of the physio-chemical parameters of Matatila Dam was carried out during July 2021 to June 2022. The use of water mostly for irrigation, drinking and fishing purpose only. The monthly changes in physical and chemical parameters such as DO, BOD, water  $P^H$ , TDS, Total hardness, Phosphate Chlorides, Alkalinity, Sulphate were analyzed for a period of one year, all parameters were within the permissible limits. The present results indicated that the Matatila dam is non polluted and can be used for domestic, irrigation and fishing purpose.

**Keywords:** Physio-chemical parameters, Matatila Dam, district Lalitpur (U.P.)

**UV-RAYS INDUCED MORPHOLOGICAL AND CYTOLOGICAL VARIATION IN  
*STEVIA REBAUDIANA* BERTONI**

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**ABSTRACT**

*Stevia rebaudiana* Bertoni is a perennial herb of the Asteraceae family and is commonly known as the “sweet leaf” or “candy leaf”. Abiotic stress such as UV radiation exposure was reported to have a beneficial effect on morphological traits. Plantlets of *Stevia* (4 to 5 CM) were exposed with differential times viz. 20, 40, 60, 80, and 100 minutes, respectively along with the control set. The exposed plantlets were transferred to the greenhouse for further study and growth. After 45 days morphological studies were taken out and tabulated. at low irradiation 20- and 40-min. increase in leaf area, branching, and internodal elongation, along with enhanced plant productivity, and biochemical properties were reported. At the onset of flowering buds of appropriate sizes were fixed in Carnoy’s fixative. On cytological studies, different chromosomal arrangements were observed viz. scattering, precocious, stickiness, unorientation and bridge formation, etc. Scattering was found to be the most dominant aberration among all while stickiness was observed to be the least. However, at 40 minutes, bushy plants were more observed as compared to control plants and other irradiation times. Hence on the basis of morphological and cytological studies performed on *Stevia* after UV irradiation, it was concluded that in nature At shorter exposure to UV-B(40 minutes followed by 60 min) radiation induced essential traits as their qualitative and quantitative feature of plant which enhanced their cytomorphological properties.

**Keywords:** *Stevia rebaudiana*, UV rays, Carnoy’s fixative etc.

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protect and restore the Nature”

## **POSTER**

**BIODEGRADATION OF A POLLUANT: PETROLEUM BY MICROORGANISMS  
ISOLATED FROM SIDI M'HAMED BENTIBA DAM AT WATER TREATMENT  
PLANT OF ARIB (ALGERIA).**

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**ABSTRACT**

The Sidi M'Hamed Ben Taïba dam is located near the town of Arib. It is used both for drinking water supply and for irrigation. The objective of the study which done in two locations : Sidi M'Hamed Ben Taïba dam and Water Treatment Plant of Arib is to enhance the physico-chemical and bacteriological quality of water. As well as, to evaluate the biodegradation capacities of the microbial strains isolated from the water of the Sidi M'Hamed Ben Taïba dam. Our work consists first of all in determining the physico-chemical parameters of the raw water of the Sidi M'Hamed Ben Taïba dam on three levels (surface, 15 m and 30 m) mainly: temperature, pH, nitrate, nitrite , organic matter, etc. Then the bacteriological quality by accounting total coliforms, faecal coliforms, faecal streptococci and sulphite-reducing *Clostridium*. In the second part, we based on the biodegradation of an oil sample on solid medium Mineral Salts Medium by the use of microorganisms isolated from the water of the dam. Twenty-seven cells grouped into five genera: *Pseudomonas*, *Staphylococcus*, *Vibrio*, *Stenotrophomonas* and *Chryseobacter* are identified. The stumps assimilate oil as a carbon source giving degradation zones of different diameters. *Pseudomonas fluorescens* species showed significant degradative activity among other isolated bacterial species.

**Keywords:** Sidi M'Hamed Ben Taïba Dam, Water treatment plant, Arib, Physico-chemical parameters, Bacteriological quality, Water, Oil, MSM, Biodegradation.

**IN VITRO ANTHELMINTIC EFFICACY OF TWO HYDROXYCINNAMIC ACIDS  
AGAINST ZOONOTIC RAT TAPEWORM, *HYMENOLEPIS DIMINUTA*  
(RUDOLPHI, 1819)**

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**ABSTRACT**

Zoonosis is one of the major health problems in human. Lack of effective anthelmintic vaccine illustrates the reliance on small part of marketed anthelmintic drugs that leads to increasing resistance. Alternative drugs/compounds from natural sources are of urgent need. Ferulic acid (FA) and Sinapic Acid (SA) are two important naturally occurring hydroxycinnamic acids with diverse pharmacological properties, yet no anthelmintic activity of these compounds was explored. The present study evaluated the efficacy of these compounds against zoonotic cestode parasite *Hymenolepis diminuta*. Adult parasites obtained from infected albino rats were incubated with different concentrations (2.5, 5 and 10 mg/ml) of the two compounds in RPMI media at 37°C with praziquantel (PZQ) as a reference drug and another group of parasites were used as control. The efficacy was evaluated on the basis of motility and mortality of the parasites along with Relative Movability (RM) value. The paralyzed worms were immediately processed for morphological and ultrastructural studies through light and electron microscopy as well as histological study. Dose-dependent efficacy was observed in all the treated worms. Morphological alterations in the architecture of the tegument, scolex and irrevocable disruption in the overall body surface with sloughing off microtriches were significantly observed in the compound treated parasites compared to control. Further, these changes showed similar effect as that of PZQ which suggest that both compounds possess strong activity against the parasite as that of the drug and can be exploited further as an alternative therapy to cure helminthiasis.

**Keywords:** Tegument, microscopy, paralysis, architecture, drug resistance.

## **EFFECT OF HYDROXYCHLOROQUINE (HCQ) UPON DEVELOPMENT OF CHICK EMBRYO**

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### **ABSTRACT**

Rheumatic disease is a very common nick nowadays to women at their child bearing age. It includes various illnesses such as systemic lupus erythematosus (SLE), rheumatoid arthritis (RA), discoid lupus (DL) that are more common in female at their early and midlife. All these conditions are fatal and treating with medication are of extreme necessity. Hydroxychloroquine (HCQ) sulphate, the promising drug is very often prescribed in the treatment of rheumatological diseases. Very few preliminary reports claim about the unfavourable effects of hydroxychloroquine on developing foetus. In this study the chick embryos as a model have been used to understand the effect of hydroxychloroquine during development and to determine the dose and time window of its teratogenicity. For experimentation a window is formed on chick egg through which the drug was administered to the blastodisc dissolving in 0.9% sterile normal saline solution (NSS) vehicle at different concentrations viz. 0.625, 1.25, 2.5, 5.0 mg/ml at different incubation hours of 18, 24, 33, 48 hours. A control set was maintained with administration of sterile NSS. After drug administration the window was sealed by coverslip using a glue gun. The developmental outcome was observed after 48, 72 and 96 hours of incubation. Heart rate of the embryo was measured viewing through the window and subsequently whole mount was prepared for further study. Malformations in embryo if any were recorded under light microscope. The effects of the drug include reduced heart rate, stunted growth, deformities in neural tube, delayed or absence of angiogenesis, ophthalmic abnormalities, irregular cranial and cervical flexure. This study on chick embryos revealed that hydroxychloroquine can cause a wide range of deformities to the developing embryo and further study will be required to uncover the mechanism of its action.

**Keywords:** Rheumatic disease, hydroxychloroquine, teratogenicity, chick embryo

## THE TERATOGENICITY OF TELMISARTAN ON CHICK EMBRYO

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### ABSTRACT

Hypertension is one of the common medical conditions to a considerable number of people nowadays. It is manifested due to restlessness, indiscipline life style and more dependency on technology. This disturbance in circulatory homeostasis increases the use of different anti-hypertensive drugs drastically. Telmisartan, a promising drug belonging to the group Sartans, lowers blood pressure by blocking the Angiotensin II receptor subtype 1 (AT1). With no surprise the women in child bearing age very often come across telmisartan exposure managing this ailment. Very few sporadic case studies reported the adverse effect of telmisartan on developing fetus. However, there is a scarcity of confirmatory data on teratogenicity of telmisartan. In this study the chick embryos has been used as a model to understand the effect of telmisartan in development. For experimentation telmisartan was administered to the chick blastodisc through a window created on the shell. The drug was prepared in sterile 0.9% NSS vehicle and administered at different equivalent dosages of 0.0625 mg, 0.125mg, 0.25mg, 0.50mg per egg at different incubation time point of 18 h, 24 h, 33 h, 48 h. An experimental control was maintained with same volume of sterile 0.9% NSS. After drug administration the window was sealed with a coverslip using glue gun. Development of the embryos was observed at 48, 72 and 96 hours of incubation. Heart rate of the embryos was counted *in ovo* and subsequently whole mount preparation was done. The light microscopic and histological studies were performed to record the developmental outcome. The symptoms include decrease in heart rate, growth retardation, deformities in neural tube, dysgenesis of the embryo, delayed or no angiogenesis, abnormal cranial and cervical flexure. This study on chick embryos revealed telmisartan induces a wide range of deformities to the developing chick embryos. The result of the study will be the foundation of future research to uncover the mechanism involved in telmisartan induced developmental assault and to understand equivalent vulnerable time window for human embryonic development.

**Keywords:** Anti-hypertensive drug telmisartan, chick embryo, developmental assault

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## **HINDI SECTION**

**अथर्ववेद में भूमि संरक्षण एवं पर्यावरणीय चेतना**

वन्दना द्विवेदी

संस्कृत, नवयुग कन्या महाविद्यालय, राजेन्द्र नगर लखनऊ

**सारांश**

मानव सभ्यता और संस्कृति के इतिहास में अथर्ववेद का अपना स्थान है अथर्ववेद को दार्शनिक तथा सामाजिक दृष्टि से चारों वेदों में महत्वपूर्ण स्थान प्राप्त है समग्र देश तथा राष्ट्र का क्या स्वरूप होना चाहिए, कैसे राष्ट्र और विश्व का कल्याण हो सकता है ,पर्यावरण को मानव एवं जीव जंतुओं के लिए कैसे अनुकूल बनाया जा सकता है, इस सब का समुचित उत्तर अथर्ववेद में प्राप्त होता है। अथर्ववेद के भूमि सूक्त में भूमि संरक्षण एवं पर्यावरण संरक्षण के विषय में विशद चित्रण मिलता है -- शान्ति वा सुरभिःस्योना कोलालोहनी पयस्वती (अथर्ववेद 12/1/59) भूमि को शांतिदायिनी, सुगन्धिनी, सुखदायिनी , अमृतदायिनी पदार्थों वाली, दुग्ध आदि पदार्थों को देने वाली कहा गया है अथर्ववेद में भूमि को 'कामदुधा' भी कहा गया है । यदि इस संसार में ऐसा कुछ भी नहीं है जो कि हमारे वैदिक संहिताओं में न हो-- --यदिहास्ति तदन्तर यन्नेहास्ति न तत् क्वचित्(महाभारत आदि पर्व 62-53)

जैसा कि सामान्यतः सभी लोग यह जानते हैं कि गुरुत्वाकर्षणबल का सिद्धांत महान वैज्ञानिक न्यूटन के द्वारा ही दिया गया था किंतु अथर्ववेद के अध्ययन से पता चलता है कि न्यूटन से पूर्व ऋषि अथर्वा ने हजारों वर्ष पूर्व ही कह दिया था कि पृथ्वी में गुरुत्व है और गुरु पदार्थों को अपनी ओर खींचने और धारण करने की शक्ति भी है--मल्वं विभ्रती गुरुभृद " । अथर्व वेद ही नहीं अपितु सभी वैदिक ग्रंथ पर्यावरण जागरूकता के प्रति मानव समुदाय को सतत जागरूक करते रहे हैं जैसा कि यजुर्वेद में भी कहा गया है कि-- "पृथ्वी मातर्मा हिंसी मा अहं त्वाम्"।

हमें केवल अपनी मातृभूमि को ही नहीं अपितु समग्र पृथ्वी को अपनी माता तथा विश्व मानव को अपना बन्धु समझे, और इस तरह का उदार भाव व्यक्त हुआ है विश्व के प्रथम राष्ट्रगीत अथर्ववेद के पृथ्वी सूक्त में-- "माता भूमिःपुत्रोऽहं पृथिव्याः॥ भूमि सूक्त से ज्ञात होता है कि जो पहाड़िया आच्छादित पर्वत, नदियां एवं अरण्य सुखदायक होंगे भूरे अथवा भरण पोषण वाली, काले अथवा कृषि वाली अथवा लाल रंग वाली अथवा उपजाऊ अनेक रूपों वाली भूमि सुस्थिर होगी , तथा देवेंद्र अथवा सर्वोच्च नेता द्वारा सुरक्षित होगी तब उस शुद्ध पर्यावरण में मानव पूर्ण आयु वाला अहिंसित और अक्षत होगा -गिरयस्ते पर्वता हिमवन्तः ----अक्षतोऽध्यष्टां पृथिवीमहम्( अथर्ववेद 12/1/11) पर्यावरण संरक्षण में वृक्षों वनस्पतियों अरण्य नदियों आज की वायुमंडल में महती भूमिका होती है अतएव सबको धारण करने वाली और मानव द्वारा धारण की गयी ऐसी पृथ्वी का अभिवादन किया गया है जिस पर वृक्ष एवं वनस्पतियां सदा स्थिर खड़े रहते हैं। अथर्व वेद में भूमि की परिभाषा का भी उल्लेख मिलता है कि जिस भूमि में शिला -पत्थर व धूल है जो सुवर्ण आदि हितकारी और रमणीय पदार्थों को अपने भीतर धारण करती हो तथा मानवों द्वारा सम्यक प्रकार से धारण की गई हो उसे भूमि कहते हैं-(अथर्ववेद 12/1/26) तत्त्वदर्शी ऋषि- मनीषी आदि अपने प्रखर प्रज्ञा से पृथ्वी की सेवा करते हैं । क्योंकि पृथ्वी का अमृत हृदय परम व्योम में सत्य से आवृत है। ऐसी पृथ्वी उत्तम राष्ट्र में नागरिकों को दीप्त, तेज व बल प्रदान करती हैं--यार्णवेऽधिसलिलमग्र आसीद्यां मायाभिरन्वचरन् मनीषिणः।

यस्या हृदयं परमे व्योमन्सत्येनावृतममृतं पृथिव्याः॥

सा नो भूमिस्त्वर्षिं बलं राष्ट्रे दधातूतमे(अथर्ववेद 12/1/18) यदि भूमि की सभी दिशाएं प्रदूषित हो जाएगी तो मानव के समक्ष कष्ट पूर्ण स्थिति उत्पन्न हो जायेगी तब वह उन्नति के पथ से गिर जायेगा। अतः सभी दिशाओं के सुखदायी होने की कामना की गयी है(12/1/31 अथर्व०)

## पर्यावरण संरक्षण

सरोज गुप्ता

पं. दीनदयाल उपाध्याय, शासकीय कला एवं वाणिज्य महाविद्यालय, सागर (म.प्र.)

‘माता भूमि: पुत्रोऽम् पृथिव्या से विभूषित हमारी धरती माता ब्रह्माण्ड का सबसे अनमोल उपहार है। इसकी रक्षा का दायित्व प्रत्येक देशवासी को है। आज विश्वव्यापी उष्णता का बढ़ता स्तर, ओजोन परत का ह्रास, जैव विविधता की क्षति ने सभी को पर्यावरण के प्रति सजग बनाया है।

पर्यावरण का संरक्षण हम सबके लिए एक युग धर्म के समान है। जैसे-जैसे इस विधा पर गहन अनुसंधान होता चला जा रहा है सभी इस निष्कर्ष पर पहुँच रहे हैं कि पर्यावरण मात्र स्थूल प्रकृति तक सीमित नहीं है। ‘डीप इकोलॉजी’ के प्रवर्तकों ने ऐसी धारणायें व्यक्त की हैं, जिनसे ज्ञात होता है कि यह प्रकृति समग्र इकोसिस्टम के रूप में एक विराट हृदय के समान धड़कती भी है, श्वास भी लेती है। समष्टि में व्यक्ति रूपी घटक की तरह हम सभी उसके अंग हैं। यदि चैतन्यता के स्तर पर गहरा चिन्तन किया जाए तो प्रकृति व पर्यावरण को पहुँचाई गई थोड़ी सी भी क्षति भविष्य में आने वाली पीढ़ी के लिए हानिकारक हो सकती है।

लन्दन वि.वि. के वनस्पति इंजीनियर जेम्स स्मिथ ने पौधों के साथ किये गये सद्ब्यवहार व दुर्व्यवहार की प्रतिक्रियाओं को जानने के लिए लम्बी अवधि तक अनेकों क्षेत्रों, उद्यानों में विभिन्न प्रकार के पर्यवेक्षण किये हैं उन्होंने देखा कि वनस्पतियाँ प्रताड़ना तथा प्रतिकूलता उत्पन्न करने से खिन्न, कुम्हलाने मुरझाने लगती हैं। हँसी-खुशी का वातावरण जिस प्रकार मनुष्यों को पसन्द है वैसा ही अनुभव पेड़-पौधे भी करते हैं!

भारतीय संस्कृति में प्राचीन काल से ऋषि मुनियों ने इस अपार सम्पदा को सुरक्षित रखने के लिए वनस्पतियों को पवित्रता प्रदान की तथा भक्ति, धर्म, जन कल्याण एवं पुण्य फलों की प्राप्ति हेतु इन वनस्पतियों एवं जीव जन्तुओं में पर्यावरणीय पवित्र देवत्व एवं धार्मिक भावनाओं का स्थायी तथा बहुविध संचार किया। विज्ञान द्वारा प्रकृति पर विजय गर्वोदीप्त और संस्कार गत रूढ़िवादी मान्यताओं के कुहासे में भटकती छटपटाती मानव प्रकृति अब अधिक व्यापक परिपूर्ण और समुन्नत अभिव्यक्ति चाहती है। आज आवश्यकता है स्वच्छ पर्यावरण एवं स्वस्थ जीवन के लिए ऊर्जा और पदार्थों के सही उपयोग की, जैव सम्पदा के संरक्षण की। जन-जन को पृथ्वी पर उपलब्ध साधनों के सदुपयोग की सीख देने की। हम सभी प्रकृति, पर्यावरण, उद्यान, जीव जन्तुओं, वनस्पतियों एवं औषधि महत्व के पौधों के प्रति स्नेह, अनुराग, साहचर्य एवं सम्बेदन शीलता का अनुभव करते हुए श्रद्धा, विश्वास एवं पूजा भाव का परिचय दें। जब हम विज्ञान और टेक्नोलॉजी को नैतिकता के आधार पर प्रयुक्त करेंगे तभी हम सबका कल्याण होगा।

**पन्त जी के शब्दों में –**

सत्य, तथ्य, विज्ञान-ज्ञान,  
दो पक्ष एक बहु के द्योतक नित।  
लोक श्रेय जीवन उद्भव हित,  
रहे विषम-सम चरण समन्वित।।

## पर्यावरण का सामाजिक जीवन पर प्रभाव

राजीव खंडेलवाल

“पर्यावरण” (अंग्रेजी:—एनवायरमेंट) शब्द का निर्माण संस्कृत भाषा के दो शब्दों “परि” (उपसर्ग) और “आवरण” से बना है। “परि” जो हमारे चारों ओर है, “आवरण” जो हमें चारों ओर से घेरे हुए है, अर्थात् पर्यावरण का शाब्दिक अर्थ होता है चारों ओर से घेरे हुए। पर्यावरण उन सभी भौतिक, रासायनिक एवं जैविक कारकों की समष्टिगत एक इकाई है, जो किसी जीवधारी अथवा पारितंत्रीय आबादी को प्रभावित करती हैं तथा उनके रूप, जीवन और जीवित को तय करती हैं। पर्यावरण प्रत्येक जीव के साथ जुड़ा हुआ उन समस्त भौतिक एवं जैविक दशाओं का योग है, जो किसी जीव की अनुक्रियाओं के लिए उत्तरदायी होता है। अर्थात् सामान्य अर्थों में पर्यावरण हमारे जीवन को प्रभावित करने वाले सभी जैविक और अजैविक तत्वों, तथ्यों, प्रक्रियाओं और घटनाओं के समुच्चय से निर्मित इकाई है। यह ईश्वर द्वारा प्रदत्त एक अमूल्य उपहार है। इस प्रकार एक जीवधारी और उसके पर्यावरण के बीच अन्योन्याश्रय संबंध होता है।

पर्यावरण के जैविक संघटकों में सूक्ष्म जीवाणु से लेकर कीड़े-मकोड़े, सभी जीव-जंतु और पेड़-पौधे आ जाते हैं और इसके साथ ही उनसे जुड़ी सारी जैव क्रियाएँ और प्रक्रियाएँ भी। अजैविक संघटकों में जीवनरहित तत्व और उनसे जुड़ी प्रक्रियाएँ आती हैं, जैसे: चट्टानें, पर्वत, नदी, हवा और जलवायु के तत्व सहित कई चीजें इत्यादि रहती हैं।

मानव समाज और पर्यावरण का घनिष्ठ सम्बन्ध है क्योंकि पर्यावरण की अनुकूलता और प्रतिकूलता मानव-समाज को हर पल प्रभावित करती है। निश्चित रूप से सामाजिक जीवन के प्रत्येक आयाम की दिशा व दशा को पर्यावरण अनुकूल या प्रतिकूल रूप से प्रभावित करता है। आगे कुछ आयामों के विवरणों से स्पष्ट रूप से आपके सामने स्थिति स्पष्ट हो जायेगी।

जहां भौगोलिक पर्यावरण अनुकूल होता है, वहां जनसंख्या का घनत्व अधिक होता है, तथा प्रतिकूल में कम होता है। यदि किसी स्थान की जलवायु, ऋतुएं, भूमि की बनावट व पानी की सुविधाएं उत्तम हैं, तो वहां उत्पादन सरलता से और अधिक मात्रा में होता है। परिणामस्वरूप वहां अधिक संख्या में व्यक्ति रहने लगते हैं। उदाहरण के लिए भारत में केवल गंगा-यमुना नदी के मैदान में देश की कुल जनसंख्या का लगभग ४० प्रतिशत भाग निवास करता है क्योंकि यहां का पर्यावरण सुविधाजनक होने के कारण उत्पादन के साधनों की प्रचुरता होती है। दूसरी ओर देश में दूर-दूर तक फैले हुए पहाड़ क्षेत्रों में कुल जनसंख्या का केवल लगभग ५ प्रतिशत ही निवास करता है।

मकानों के निर्माण में भी वहां के भौगोलिक पर्यावरण का अधिक प्रभाव पड़ता है। गर्म प्रदेशों में बिलकुल खुले हुए हवादार मकानों का निर्माण होता है, जबकि ठण्डे प्रदेशों में शीशे के अधिक प्रयोग के द्वारा ऐसे बंद मकान बनाये जाते हैं, जिनमें धूप तो आ सके, हवा नहीं। टुण्ड्रा के बर्फीले स्थानों और ध्रुव प्रदेशों में बर्फ के मकान बनाये जाते हैं, जबकि जापान में भूचाल के भय से लकड़ी के मकान बनाये जाते हैं। पहाड़ी क्षेत्रों में पत्थर के मकान बनाये जाते हैं, जबकि मैदानों में ईंटों और कंकरीट से गगनचुंबी इमारतों का निर्माण होता है।

खान-पान का भी पर्यावरण से घनिष्ठ संबंध है। ठण्डे प्रदेशों के निवासी मांस, मछली, अंडा और इसी प्रकार की दूसरी गर्म वस्तुओं का सेवन करते हैं, जबकि गर्म प्रदेशों के निवासी शाकाहारी भोजन को अधिक पसंद करते हैं। समुद्र के किनारों के प्रदेशों जैसे-बंगाल, तमिलनाडु और केरल के निवासी मछली खाना अधिक पसंद करते हैं। प्रत्येक समूह के लोगों की वेष-भूषा पर भी पर्यावरण का विशेष प्रभाव पड़ता है। जिन प्रदेशों में बहुत ठण्ड पड़ती है, वहां व्यक्ति चमड़े, खालों और उन के बने चुस्त कपड़ों का प्रयोग करते हैं, जबकि गर्म प्रदेशों में ढीले कपड़ों का विशेष महत्व है। इस प्रकार व्यक्तियों का पहनावा पर्यावरण द्वारा पूरी तरह प्रभावित होता है।

धर्म का प्रभाव समस्त धार्मिक विश्वास भौगोलिक पर्यावरण से प्रभावित होते हैं। भारत एक प्रकृति-प्रधान देश है, अतः यहां वर्षा, पृथ्वी, गंगा, यमुना, वृक्ष आदि का पूजा की जाती है। कृषि-प्रधान देश होने के कारण यहां इंद्र अर्थात् वर्षा के देवता की पूजा का विशेष महत्व होता है।

भौगोलिक पर्यावरण से प्रभावित होने वाले मुख्य व्यवसाय इस प्रकार हैं—(१) पशुपालन, (२) मछली पालन, (३) शिकार करना, (४) हस्तशिल्प, (५) कृषि, (६) खान खोदना, (७) लकड़ी काटना। ये समस्त व्यवसाय भौगोलिक पर्यावरण के उपर निर्भर करते हैं। नदियों के मैदानों में पशुपालन और कृषि पर्याप्त होती है। जहां विशाल तालाब अथवा समुद्र

निकट है, वहां मछली-पालन या मछली पकड़ने का व्यवसाय होता है। वनों में लकड़ी एवं ऊन से संबंधित विभिन्न व्यवसाय किए जाते हैं।

शारीरिक लक्षणों पर प्रभाव-व्यक्ति का रंग, कद तथा आकृति भी पर्याप्तसीमा तक भौगोलिक पर्यावरण इस निर्धारित होती है। अन्य शब्दों में, मनुष्य का काला, गोरा, लम्बा, टिगना आदि होना भौगोलिक परिस्थितियों के कारण है। जहां जितनी अधिक गर्मी पड़ती है, वहां के निवासियों का रंग उतना ही काला होता है। शीतप्रधान देशों के निवासियों के रंग गोरा होता है। यातायात व आवागमन के साधनों पर भौगोलिक पर्यावरण का भी प्रभाव पड़ता है।

सामाजिक संस्थाओं का रूप भी पर्यावरण के अनुसार ही निर्धारित होता है। सामाजिक संस्थाओं में हम प्रमुख रूप से परिवार, विवाह, परम्पराओं, सामाजिक अधिकारों की व्यवस्था तथा सामूहिक जीवन को सम्मिलित करते हैं। यह विश्वास किया जाता है कि जिस स्थान पर धनोपार्जन के लिए व्यक्तियों को मिल-जुलकर प्रकृति पर विजय पाने के लिये अधिक प्रयत्न करने पड़ते हैं, वहां संयुक्त परिवारों का विकास होता है, जैसे-भारतीय ग्रामों में संयुक्त परिवार पाये जाते हैं। इसके विपरीत जलवायु अनुकूल होने की दशा में एकाकी अथवा मूल परिवारों का विकास होता है। प्रतिकूल होने पर अंधविश्वासों में वृद्धि होती है, जबकि अनुकूल होने पर अधिकांश सामाजिक अधिकार युवा वर्ग के हाथों में रहते हैं।

किसी देश के आर्थिक संगठनों पर भी पर्यावरण का विशेष प्रभाव देखने को मिलता है। आर्थिक जीवन का संबंध विशेषकर तीन संस्थाओं से है- १. उद्योग धंधे, २. व्यवसाय, ३. संपत्ति का संचय। सर्वप्रथम यह कहा जाता है कि पर्यावरण ही उद्योग धंधे की प्रकृति और उनके विकास को निर्धारित करता है। किसी देश में केवल वही उद्योग आरंभ किये जा सकते हैं, जिनके लिए प्रकृति ने वहीं कच्चा माल प्रदान किया हो। उदाहरण के लिए शक्कर का उद्योग बिना गन्ने के उत्पादन के विकसित नहीं हो सकता है। लोहे का उद्योग देश में लोहे की खाने होने पर ही संभव हो सकता है। इसके अतिरिक्त व्यवसाय की प्रकृति को भी पर्यावरण प्रभावित करता है। जहां केवल भूमि ही आजीविका का साधन है, वहां कृषि व्यक्तियों का प्रमुख व्यवसाय होता है। दूसरी ओर जिन स्थानों पर खनिज पदार्थों की अधिकता है, वहां विभिन्न प्रकार के उद्योगों का केन्द्रीकरण होता जाता है। अतः यह कहा जा सकता है कि आर्थिक जीवन को उन्नत बनाने में पर्यावरण का महत्व सबसे अधिक है। कला व साहित्य भी भौगोलिक पर्यावरण के प्रभाव से अछूती नहीं रही है। सुमित्रानंदन पंत की रचनाएं इसका श्रेष्ठ उदाहरण हैं।

आज का प्रदूषण भी जन-जन को हानि पहुंचा रहा है। बढ़ते कल-कारखाने, यातायात के साधन, नगरीकरण, आणविक कचरे का प्रभाव, नदियों का प्रदूषित जल और प्राकृतिक चक्रानुक्रम का परिवर्तन आदि प्रदूषण के कारण ही हैं। जल प्रदूषण और पर्यावरणीय असंतुलन ने मानव जीवन को अत्यधिक प्रभावित किया है। इससे विभिन्न प्रकार की नयी-नयी बीमारियां जन्म ले रही हैं। कैंसर और अस्थमा जैसी बीमारियों के साथ-साथ तूफान, भूकंप और भूस्खलन आदि भी अपना पूरा प्रभाव दिखा रहे हैं। इन सबसे बचने हेतु यद्यपि राष्ट्रीय और अंतर्राष्ट्रीय स्तर पर बहुत प्रयास किये जा रहे हैं। परन्तु सबसे अधिक आवश्यकता प्रत्येक व्यक्ति के स्वयं के जागरूक होने की है।

इस प्रकार कह सकते हैं कि पर्यावरण का सामाजिक जीवन पर पर्याप्त प्रभाव पड़ता है। पर्यावरण और मनुष्य के मध्य आदिकाल से ही घनिष्ठ संबंध रहा है। अतः पर्यावरण मानव को प्रत्यक्ष व अप्रत्यक्ष रूप से प्रभावित करता है। आधुनिक मानव समाज के वैज्ञानिक प्रयोगों के उत्पादों से मानव स्वयं को अलग रखने की कल्पना भी नहीं कर सकता, लेकिन वैज्ञानिक प्रयोगों से पर्यावरण पर पड़ने वाले व्यापक प्रभावों की भी अनदेखी नहीं कर सकते, क्योंकि मानव जीवन के अस्तित्व को बनाए रखना आवश्यक है। सरकार द्वारा पर्यावरण संरक्षण हेतु अनेक प्रयास किए जा रहे हैं। साथ-ही-साथ मनुष्य को स्वयं पर्यावरण संरक्षण हेतु जागरूक होना चाहिए। इसके लिए स्कूलों और महाविद्यालयों में भी पर्यावरण शिक्षा दी जा रही है, ताकि बच्चे पर्यावरण के प्रति अपने उत्तरदायित्व का निर्वाह कर सकें।

पर्यावरण से खिलवाड़ का ताजा दुष्परिणाम का उदाहरण जोशीमठ आपदा है। बुनियादी ढांचे का नाजुक परिस्थिति तंत्र में बिना नियोजन के हो रहा विकास इसका प्रमुख कारण बताया जा रहा है।

### पर्यावरण पर बहुपरत खेती का प्रभाव

वीना सोनी

शासकीय स्वायत्त कन्या पीजी कॉलेज ऑफ एक्सीलेंस सागर (म.प्र.)

#### सारांश

भारत एक कृषि प्रधान देश है। यहां पर कृषि पारंपरिक तौर पर देश के कई क्षेत्रों में कई प्रकार से की जाती है जैसे-एकल, मिक्स (मिश्रित) तथा बहुपरती खेती आदि। यहाँ पर अधिकांश कृषि खुले/ओपन में की जाती है जिसके कारण कृषि पर पर्यावरण का गहरा प्रभाव पड़ता है तथा साथ ही साथ कुछ लघु और सीमांत किसानों के पास खेती करने के लिए भूमि बहुत कम होती है, ऐसी स्थिति में किसानों को कई चुनौतियों का सामना करना पड़ता है, इसके साथ उन्हें खेती में अधिक जगह में अधिक संसाधनों जैसे-पानी, जैव उर्वरक, जैव खाद, जैव कीटनाशकों आदि द्वारा खेती करनी पड़ती है। तथा लागत भी कॉफी खर्च होती है और उन्हें खेती से फसल का कम उत्पादन मिल पाता है, जिस कारण उनकी आमदनी भी घट जाती है और उनके कम उत्पादन का कारण अधिकांश किसान को कॉफी नुकसान होता है और वे कर्ज में डूब जाते हैं जिसकी वजह से वे आत्महत्या तक कर लेते हैं।

मगर आज दुनिया भर में हम लघु और सीमांत किसानों को एक ऐसी तकनीक के विषय में बताने जा रहे हैं, जिसको अपनाकर किसान अपनी खेती को कॉफी बेहतर बना सकते हैं, हम मल्टी लेयर फॉर्मिंग की बात कर रहे हैं, जिसको कई किसान बहुस्तरीय खेती के नाम से जानते होंगे, आज खेती के लिए यह तकनीक बहुत महत्वपूर्ण एवं उपयोगी है। क्योंकि इस तकनीक में किसान कम जगह में सीमित संसाधनों में अधिक से अधिक फसलों का उत्पादन एक ही जगह से कर सकता है साथ ही साथ इस तकनीक में कम पानी, कम खाद, कम जैविक कीटनाशको अर्थात् सीमित संसाधनों के प्रयोग से एक ही सीजन में एक ही जगह से दो या दो से अधिक फसलों का उत्पादन किया जा सकता है जिससे यदि किसान की एक फसल खराब भी हो जाये, तो वह अन्य फसलों से उसकी भरपाई कर लेता है तथा फसलों के उत्पादन को भी बढ़ाया जा सके।

सरल शब्दों में, मल्टीलेयर फॉर्मिंग एकीकृत इंटरक्रॉपिंग का उन्नत तरीका है जो एक विशिष्ट समय में एक ही जमीन पर कई फसलों की अनुमति देता है यह एक प्रकार की अंतरफसल है। इसमें मुख्य रूप से नगदी फसल पर आधारित है और इसमें सब्जियां, फलों, फूलों की खेती शामिल है। इस खेती की में विभिन्न ऊंचाई, जड़ तथा अंकुर पैटर्न, प्रकाश संश्लेषक दर, परिपक्वता, समय की फसलों का चयन किया जाता है। तथा इसके तहत जैविक तरीके से जमीन की हर परत पर मौजूद पानी और पोषक तत्वों का लाभ उठाने की कोशिश की जाती है। जिससे किसानों को अच्छा मुनाफा प्राप्त किया जा सकता है।

**मुख्य शब्द** - बहुस्तरीय खेती, जैविक खेती, पर्यावरण प्रभाव, समर्थन-प्रणाली।

ESW X Annual Research Conference International Level. 29 to 31 January, 2023  
“Strategies for promotion and conservation of environment and native species to  
protect and restore the Nature”

**Brief Report of**  
**ESW 9<sup>th</sup> Annual National Research Conference on**  
**Impact of Environmental Stressors on Human and Disaster Management**

On 30 & 31 January, 2022.

**Organized by:** Environment & Social Welfare Society, Khajuraho, India.

**Website:** [www.godavariacademy.com](http://www.godavariacademy.com) and [www.ijgsr.com](http://www.ijgsr.com)



*Dr. Dhriti Banerjee, Director, Zoological Survey of India, Ministry of Environment, Forest and Climate Change, Government of India, Kolkata, West Bengal inaugurated ESW 9<sup>th</sup> Annual National Research Conference-2K22*

**A PRELUDE:** After the success of ESW 8<sup>th</sup> Annual National Research Conference on “Anthropogenic Impact on the Environment, Society and Human health” during 30 & 31 January, 2021 at Online Zoom app due to pandemic COVID-19 between 11:45 AM to 04:30 PM Environment & Social Welfare Society, Khajuraho, Madhya Pradesh, India organized its ESW 9<sup>th</sup> Annual National Research Conference on “**Impact of Environmental Stressors on Human and Disaster Management**” with MoU Institutes Dr. Bheem Rao Ambedkar University of Social Science, MHOW, Indore, Vikram University, Ujjain, Madhya Pradesh, Govt. Degree College, Chenani, Udhampur, Jammu & Kashmir, India in association with Rani Durgavati Vishwavidyalaya Jabalpur, Madhya Pradesh, Maharaja Chhatrasal Bundelkhand University, Chhatarpur, MP, Global Indian Scientists and Technocrats Forum, USA, Mahakoushal Vigyan Parishad, Unit of Vigyan Bharti, Jabalpur. Assisted by Godavari Academy of Science & Technology, Chhatarpur, Madhya Pradesh.

**OBJECT:** To provide a platform to Policy makers, 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 **Environmental Stressors on Human and Disaster Management**.

**GOAL:** The principal goal of this conference will be to present some of the latest outstanding breakthroughs in **Environmental Stressors on Human and Disaster Management**, 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:** To take some positive steps towards improving our Environment, Society and Human health for our future generation.

**INAUGURAL FUNCTION:** The **ESW IX Annual National Research Conference inaugurated on 30 January, 2021** by Dr. Dhriti Banerjee, Director, *Zoological Survey of India*, Ministry of Environment, Forest and Climate Change, Government of India, Kolkata, West Bengal. Preside by **Dr. Shiv Ji Malviya**, Deputy Secretary, Uttar Pradesh Higher Education Service Commission, Prayagraj, Uttar Pradesh, Guest of Honour Prof. S. P. Singh, Govt. College, Satna, Dr. Ashwani Kumar Dubey, Founder President, Environment & Social Welfare Society, Khajuraho, Madhya Pradesh, Fellow/Member of Environment & Social Welfare Society

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Khajuraho, India, Mrs. Vandana Dubey, Managing Director, Godavari Academy of Science and Technology, Chhatarpur, MP and other distinguished guests, participations from various part of country and Two hundreds+ participants/ viewer/ listener including social media were participated in conference.

**Souvenir released** with Message of Dr. Dhriti Banerjee, Director, ZSI, GoI, India, Prof. Kapil Deo Mishra, Honourable Vice Chancellor, Rani Durgavati Vishwavidyalaya, Jabalpur, Prof. Akhilesh Kumar Pandey, Honourable Vice Chancellor, Vikram University, Ujjain, Dr. Bharat Mishra, Honourable Vice Chancellor, Mahatma Gandhi Chitrakoot Gramodaya Vishwavidyalaya, Chitrakoot, Dr. Pragya Khanna, Principal Govt. College Chenani, J&K. and Dr. Anil Kothari, Director General and Scientific advisor, Madhya Pradesh Council of Science and Technology, Bhopal, Govt. of MP. Nineteen nine abstract related with Biological Sciences, Environmental Sciences, Earth and Atmospheric Sciences, COVID-19 and Disaster Management from various States of India viz. Madhya Pradesh, Uttar Pradesh, Uttarakhand, Rajasthan, Telangana, Bihar, New Delhi, Jammu & Kashmir, Haryana, Maharashtra, Ladakh as well as from Kenya and Argentina were received. Its available online <https://godavariacademy.com/godavarinew/wp-content/uploads/2022/02/ESW-IX-annual-national-research-conference-souvenir-30-31-January-2022.pdf>

**Book release by Guest:** “Environmental Studies and Disaster Management” Authors Prof. Ashwani Kumar Dubey, Dr. Shiv Jee Malviya and Priyansha Kushwaha. The present book is divided into two parts. The first part of the book covers environmental studies, covering the multidisciplinary subject, natural resources, ecosystems, biodiversity and its conservation, environmental pollution, social issues and the environment and human population and the environment. In the second part disaster management have been covered with emphasis on - introduction to disasters, man-made disasters, disaster management and COVID-19 and its impact on environment. This book will be highly useful for the students undergoing the course of environmental studies and disaster management. This book is intended to give easy readability, and it covers almost all the basic aspects of Environmental Science and Disaster Management. We hope that this book will be of greater use for the students of undergraduate courses of Indian Universities, researchers and policymakers interested in improving the environmental quality



**Chief Guest** Dr. Dhriti Banerjee, Director, *Zoological Survey of India* addressed on Role of human on environmental stressors, natural and manmade disaster and its management. She said Sensitivity is essential for environmental protection. If decisions are not taken at the right time and immediately, the consequences can prove to be even more disastrous. While releasing the book written by Dr. Ashwani Kumar Dubey on Environmental Studies and Disaster Management, she said that you have written this book at the right time, it will prove to be very useful for the present and future time.

**President** Dr. Shiv Ji Malviya, Deputy Secretary, Uttar Pradesh Higher Education Service Commission, Prayagraj, Uttar Pradesh, highlighted on Role of higher education in society.

**Guest of Honour** Dr. Shivesh Pratap Singh focused on ecosystem management.

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**Dr. Ashwani Kumar Dubey**, Executive Director, ESW Society and Organizing Secretary of conference addressed the role of ESW Society in the Environment, Society and Human health.

**TECHNICAL SESSION:** After the inauguration, the technical session started where Research papers and posters presented in the technical session by research scholars & academicians.



The general topics discussed in the conference as follows in Five Scientific Session and One Poster session.

- 1. Biological Sciences:** Biological Sciences, Agricultural Science, Anthropology and Behavioral Sciences, Animal Husbandry, Aquaculture, Biodiversity, Biotechnology, Biochemistry, Bioinformatics, Cell and Molecular Biology, Fish and Fisheries, Home Sciences, Immunology, Life Sciences, Limnology, Medical Sciences, Microbiology, Nutrition, Plant Sciences, Taxonomy, Tissue Culture, Toxicology, Veterinary Sciences, Wildlife Conservation, Zoology.
- 2. Environmental Sciences:** Environmental Ethic, Environmental Legislation, Environmental Impact Assessment, Environmental Management, Environmental Policies, Environmental Pollution, Natural Resources Conservation.
- 3. Earth and Atmospheric Sciences:** Mineralogy, Wildlife.
- 4. COVID-19:** All aspect
- 5. Disaster Management**

**22<sup>nd</sup> FOUNDATION DAY OF ESW, VALIDICTORY & AWARD CEREMONY ON 31 January:**

**Chief Guest:** Dr. Dhriti Banerjee, Director, *Zoological Survey of India*, **Guest of Honour** Dr. Nandita Pathak, National Social Entrepreneur, New Delhi, **Special Guest** Mr. D. P. Dwivedi, SDM, Tahseel Rajnagar, **Guest of Honour** Dr. Bharat Pathak, Brand Ambassador Namami Gange, Govt. of India, **President** Dr. Anil Kumar Dhagat, Honourable Vice Chancellor, Shri Krishna University, Chhatarpur and President ESW Society Dr. Ashwani Kumar Dubey, were the Guest of the Valedictory and Award ceremony of the conference and other eminent scientists were present on this occasion.

**Book release by Guest:** “Vertebrates and Evolution” Prof. Ashwani Kumar Dubey and Prof. Sunita Singh. Vertebrates and Evolution is written bearing in mind that the modern trends of studies on the chordates have changed drastically from classical study of one or two commonly available representative types to rather detailed comparative account of organs and organ systems present in all available extant forms. Vertebrates have evolved more complex digestive systems to adapt to their dietary needs. The evolution of modern cells is arguably the most challenging and important problem the field of Biology has ever faced. In Darwin's day the problem could hardly be imagined. For much of the 20th century it was intractable. Evolutionary biology is the subfield of biology that studies the evolutionary processes that produced the

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diversity of life on Earth, starting from a single common ancestor. These processes include natural selection, common descent, and speciation. The book provides an introduction to structure-function concept at the level of organs and organ systems, which is fundamental to the understanding of synthesis of comparative anatomy.



**AWARD CEREMONY:**

**National Amazing Godavari Memorial Award (NAGMA)** “Excellence in Education and Science” Dr. Dhriti Banerjee, Director, *Zoological Survey of India*, Ministry of Environment, Forest and Climate Change, Government of India, Kolkata, West Bengal.

**Godavari Academy Impact Award:** Dr. Akhilesh Kumar Pandey, Former Scientist, NBFGRI-ICAR, Lucknow

**ESW Recognition Award:** Dr. Amit Pal Professor, Institute of Environment & Development Studies, Bundelkhand University, Jhansi, UP

**Dr. Sangeeta Mashi**, Professor of Zoology, Pt. S. N. Shukla, University, Shahdol, Madhya Pradesh

**Dr. Md. Mansoor Alam**, Department of Zoology, L. N. Mithila University, Darbhanga, Bihar,

**Dr. Prahlad Dubey**, Former Professor of Zoology, Government College, Kota, Rajasthan

**ESW Appreciation Award:** Dr. Ruby Yadav Uttar Pradesh

Dr. Sandeep Kushwaha, ZSI, Jabalpur

Mr. Atanu Naskar, ZSI, Kolkata

Mr. Shaligram Soni, President, Vasundhara Institute of Bioagricultural Research & Development, Champa, C.G. Baba Tabsum DAV, Indore, MP

**Social Innovative ESW National Award:** Dr. Rajesh Kumar Pandey Asst. Professor of Botany, Bundelkhand University, Jhansi, Uttar Pradesh

**ESW Fellowship:** Dr. Lakavath Ramsingh, Associate Professor, Veterinary Gynaecology & Obstetrics, College of Veterinary Science, Rajendranagar, Hyderabad

**Dr. Parveen Kumar**, Scientist, Krishi Vigyan Kendra, Leh, SKUAST-K

**Dr. Awanish Kumar Singh**, Asst. Prof of Botany, SGN Govt. PG College, Muhammadabad, Mau, Uttar Pradesh

**Dr. Ranjana Verma**, Asst. Prof of Zoology, Bherulal Patidar Govt. P. G. College, Mhow, Madhya Pradesh

Dr. Sandeep Arya, Assistant Professor, Institute of Environment and Development Studies, Bundelkhand University, Jhansi, UP

Prof. Vandana Rai, Department of Biotechnology, V B S Purvanchal University, Jaunpur, Uttar Pradesh

**Lifetime Achievements Award:** Prof. Ashok Kumar Chaubey, Nematology Laboratory, Department of Zoology, Chaudhary Charan Singh University, Meerut, Uttar Pradesh

**Best Scientist Award** Dr. Sandeep Arya, Assist. Professor of Environmental Science, Bundelkhand Uni., Jhansi

**Young Environmentalist Award:** Dr. Sajjad Ul Akbar Wani, Assistant Prof. Zoology, I. K. College, Indore, MP

**Best Paper Presentation:** Dr. Amita Yadav, Jiwaji University, Gwalior

Ms. Trapti Yagik, Institute of Environment & Development Studies, Bundelkhand University, Jhansi

Anil Kewat, Tamil Nadu Dr. J. Jayalalithaa Fisheries University, Thoothukudi, Tamil Nadu

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protect and restore the Nature”

Miss Shivani Pathak, College of Fishery Science, NDVSU, Jabalpur, M.P.

Dr. Ruby Yadav, Biodiversity and wildlife Conservation Lab, Dept. of Zoology, University of Lucknow, Lucknow

Amita Yadav, Department of Energy and Environment, MGCGVV, Chitrakoot, Madhya Pradesh, India

Dr. Rashmi Kulkarni, Global Indian Scientists and Technocrats Forum

Dr. Kanhiya Mahout, R. P. P. G. College, Kamalganj

Mahendra Kumar Yadav, College of Fisheries, GB. Pant Agriculture and technology Uni. Pantnagar, Uttarakhand



**MoU** Done during this conference by: ESW Society, Khajuraho with Pt. Sambhunath Shukla University, Shahdol Madhya Pradesh & ESW Society Khajuraho with Vikram University, Ujjain.

**Vote of thanks:** Dr. Prahlad Dubey, Former Professor of Zoology, Government College, Kota, Rajasthan has given vote of thanks to our all respected guest and participants..

**Beneficiary:** Two Hundreds+ Listeners/ Research scholars/ Students/ Academician/ Social workers were present online and offline in this research conference.

#### RECOMMENDATIONS:

- Vaccines are chief weapon in fighting against the covid 19 pandemic. The efficacy of vaccines against Alpha variant is documented more than Beta Gamma Delta and omicron variant.
- The threats faced by the Indian Sarus Crane in Unnao district of U.P. are mainly due to the damage caused to the wetlands which are primarily habitat of the cranes. Restoration and management of the existing wetlands need to be implied by forest department.
- Mining and Stone crushing has caused potentially adverse impacts on natural environment, society and cultural heritage, health of workers and communities in close proximity to operations.
- Proper maintenance of plant and good work practices, health and hygiene conditions, proper medical care and housekeeping are also to be improved in stone crusher units. Moreover, to prevent ill health and accidents the safety and engineering measures should be employed. Provide personal protective equipments. Construction of wind breaking walls. Construction of metallic roads within the premises.
- Proper environment impact assessment. Awareness about the health hazards caused by dust inhalation of people. Training to workers. Need to promote research on widespread occupational health improvements in the existing stone crusher units in this region.

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Group Photo

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

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

**ईएसडब्ल्यू का 9वां वार्षिक राष्ट्रीय शोध अनुसंधान अधिवेशन खजुराहो में  
बायोलोजिकल साइंस पर्यावरण पृथ्वी एवं जलवायु विज्ञान आपदा  
प्रबंधन तथा कोविड के संबंध में शोधकर्ता करेंगे मंथन**

कमिशन गेट ऑफ ऑनर डॉ नंदिता पाठक वरिष्ठ समाजसेवी सहित प्रोफेसर पर्यावरणविद शोधकर्ता एवं विषय विशेषज्ञ उपस्थित रहेंगे। इस अवधिशन में डॉ भीमराव अंबेडकर यूनिवर्सिटी ऑफ सोशल साइंस मह, शासकीय महाविद्यालय चिनानी जम्मू एवं कश्मीर, विक्रम विश्वविद्यालय उज्जैन, रानी दुर्गावती विश्वविद्यालय जबलपुर, महाकौशल विज्ञान

परिचय जलवायु, ग्लोबल इंडियन साइटिस्ट एंड टेक्नोकॉस्मेट फोरम अमेरिका, राजपुताना सोसायटी ऑफ नैचुरल हिस्ट्री राजस्थान, महाराजा छत्रसाल बुंदेलखंड विश्वविद्यालय छतरपुर, इंडियन कार्बोसैल एवं एप्रोक्लिचरल रिसर्च झांसी, गोदावरी एकेडमी ऑफ साइंस एंड टेक्नोलॉजी छतरपुर के प्रतिनिधि कुलपति, निदेशक, प्रोफेसर, विषय विशेषज्ञ, शोधकर्ता, प्रवर्णनविद्, वैज्ञानिक, शासन के प्रतिनिधि, प्रशासनिक अधिकारी एवं गणमान्य नागरिक सामिल हों। कार्यक्रम के आयोजक एवं अध्यक्ष डॉ अश्वनी कुमार दुवे ने बताया कि इस अविवेशन में बायोलाॅजिकल साइंस पर्यावरण पृथ्वी एवं जलवायु विज्ञान आपदा प्रबंधन तथा कांविड के संबंध में शोधकर्ता मथन करेंगे। अविवेशन उपरांत प्रतिवेदन स्थानीय प्रशासन, राज्य सरकार एवं केन्द्र सरकार को भेजी जाएगी।

**नेशनल सेमिनार** खजुराहो में चल रही दो दिवसीय शोध संगोष्ठी के पहले दिन जूलॉजिकल सर्वे ऑफ इंडिया के निदेशक रहे खास मेहमान

## पर्यावरणीय तनाव का मानव जीवन पर प्रभाव और आपदा प्रबंधन पर कर रहे वैज्ञानिक गहन मंथन

खजुराहो | एक होटल में दो दिवसीय सेमिनार के पहले दिन पुस्तक विमोचन हुआ।

एनवयरमेंट फॉरिस्ट एंड क्लाइमेट  
चेंज भारत सरकार कोलकाता  
रहे। विशिष्ट अतिथि डॉ शिविषे  
प्रताप सिंह प्राचार्य शासकीय  
विज्ञान महाविद्यालय सतना रहे।

फिशरिज साईंस जबलपुर  
रूबी यादव बायोडायवर्सिटी  
एंड वाइल्ड लाइफ कंजर्वेशन  
लखनऊ विश्वविद्यालय, अमृत  
यादव डिपार्टमेंट ऑफ एनर्जी  
एंड एनवायरनमेंट महारणा गांधी  
चित्रकूट ग्रामोद्योग विश्वविद्यालय  
चित्रकूट, डॉ राजेश कुमार  
पांडे वनस्पति विज्ञान विभाग  
बुंदेलखंड यूनिवर्सिटी झांसी  
सहित अन्य शोधार्थियों ने अपने-  
अपने शोध पत्र का पावर पॉइंट  
प्रजेंटेशन के माध्यम से प्रस्तुत  
किए। डॉ प्रहलाद दुबे, डॉ अमिता  
पाल, मोहम्मद मंसूर आलम,  
राजेश कुमार पांडे, डॉ संदीप  
आर्य ने चैयरमैन की महत्वपूर्ण  
भूमिका अदा की।

Mon, 31 January 2022  
<https://epaper.bhaskarhindi.com/c/65965705>

**डॉ धृति बनर्जी निदेशक जूलॉजिकल सर्वे ऑफ इंडिया भारत सरकार ने किया ईएसडब्ल्यू की नवीं वार्षिक राष्ट्रीय शोध अनुसंधान अधिवेशन का उद्घाटन**

-नेशनल अमेजिंग गोदावरी मेमोरियल अवार्ड डॉ धृति बनर्जी को उनके उत्कृष्ट शैक्षणिक एवं वैज्ञानिक योगदान के लिए दिया गया

-बायोलोजिकल साइंस पर्यावरण पृथ्वी एवं जलवायु विज्ञान आपदा प्रबंधन तथा कोविड के संबंध में शोधकर्ता कर रहे हैं मंथन



अगर सही समय और तुरंत निर्णय नहीं लिया गये तो परिणाम और भी घातक सिद्ध हो सकता है। उक्त उद्धार डॉ. बिजुनी ने राष्ट्रीय सोशल संगीठी में व्यक्त किये। एनकाउन्टेर्मेंटल स्टडीज एवं डिजाइन स्टडीज में प्रोफेसर डॉ. अश्विनी कुमार गुप्ता द्वारा लिखी गई पुस्तक का विमोचन करते हुए कहा कि यह पुस्तक आपने यह सही समय पर लिखी गई है। ये वर्तमान समय के लिए बहुत उपयोगी साबित होगी। उद्धार में ई.एस. डब्ल्यू. सोसायटी द्वारा दिए जाने वाला नेशनल अमेजिंग मोटावाथी मेमोरियल

[illegible]

अपने शीघ्र पत्र का पावर पॉइंट प्रेजेंटेशन को माध्यम से प्रस्तुत किया है। यह प्रस्ताव दुबई में अगला साल सोमर्सद मैसूर आगमन के रास्ते कुमार पॉइंट जैव संदीपन एवं वैश्वीय को महत्वपूर्ण भूमिका अदा की एनवायरनमेंट एंड सोसाइटी वेल्फेयर सोसाइटी द्वारा सभी सम्माननीय अधिकारियों को स्मृति निवृत्त कर सम्मानित किया गया। कार्यक्रम का संचालन डॉ. अश्वनी कुमार दुबई एवं आचार्य शशिष्य प्रताप सिंह प्राचार्य शासकीय विज्ञान महाविद्यालय सलता ने किया।

# ESW X Annual Research Conference International Level. 29 to 31 January, 2023

## “Strategies for promotion and conservation of environment and native species to protect and restore the Nature”

### नई शिक्षा नीति पर आधारित वरटीबेटस एंड इवोल्यूशन डॉ. अश्वनी कुमार दुबे एवं डॉ. सुनीता सिंह द्वारा लिखित पुस्तक का हुआ विमोचन

**ईएसडब्ल्यू सोसाइटी के 22 वें स्थापना दिवस पर हुआ पुरस्कार वितरण, दो दिवसीय राष्ट्रीय शोध संगोष्ठी का हुआ समापन**

**प्रकार मोहम्मद इमरान सता सुधार व्यूटो वीफ छतरपुर सहित अन्य प्रकारों को किया गया सम्मानित**

प्रधानमंत्री नरेंद्र मोदी के शिक्षण नीति पर आधारित पुस्तक 'नई शिक्षा नीति पर आधारित वरटीबेटस एंड इवोल्यूशन' डॉ. अश्वनी कुमार दुबे और डॉ. सुनीता सिंह द्वारा लिखित पुस्तक का हुआ विमोचन। पुस्तक का विमोचन डॉ. अश्वनी कुमार दुबे और डॉ. सुनीता सिंह के द्वारा किया गया। पुस्तक का विमोचन डॉ. अश्वनी कुमार दुबे और डॉ. सुनीता सिंह के द्वारा किया गया। पुस्तक का विमोचन डॉ. अश्वनी कुमार दुबे और डॉ. सुनीता सिंह के द्वारा किया गया।

**राजनगर एसडीएम डीपी विदेटी ने कला पर्यावरण को अलग-थलग (पर्यावरण) करने में मानव की जिम्मेदार**

राजनगर एसडीएम डीपी विदेटी ने कला पर्यावरण को अलग-थलग (पर्यावरण) करने में मानव की जिम्मेदार बताया। उन्होंने कहा कि मानव ने पर्यावरण को अलग-थलग करने में जिम्मेदार है। उन्होंने कहा कि मानव ने पर्यावरण को अलग-थलग करने में जिम्मेदार है। उन्होंने कहा कि मानव ने पर्यावरण को अलग-थलग करने में जिम्मेदार है।

**लोकसभ के चौथे स्तर पर प्रकारों को स्मृति विमोचन किया गया**

लोकसभा के चौथे स्तर पर प्रकारों को स्मृति विमोचन किया गया। लोकसभा के चौथे स्तर पर प्रकारों को स्मृति विमोचन किया गया। लोकसभा के चौथे स्तर पर प्रकारों को स्मृति विमोचन किया गया। लोकसभा के चौथे स्तर पर प्रकारों को स्मृति विमोचन किया गया। लोकसभा के चौथे स्तर पर प्रकारों को स्मृति विमोचन किया गया।

### नई शिक्षा नीति पर आधारित वरटीबेटस एंड इवोल्यूशन पुस्तक का हुआ विमोचन

**दो दिवसीय राष्ट्रीय अधिवेशन में हुआ पर्यावरण की सुरक्षा पर गहन मंथन**

दो दिवसीय राष्ट्रीय अधिवेशन में हुआ पर्यावरण की सुरक्षा पर गहन मंथन। अधिवेशन में पर्यावरण की सुरक्षा पर गहन मंथन हुआ। अधिवेशन में पर्यावरण की सुरक्षा पर गहन मंथन हुआ। अधिवेशन में पर्यावरण की सुरक्षा पर गहन मंथन हुआ। अधिवेशन में पर्यावरण की सुरक्षा पर गहन मंथन हुआ।

**दो दिवसीय राष्ट्रीय शोध संगोष्ठी का हुआ समापन**

दो दिवसीय राष्ट्रीय शोध संगोष्ठी का हुआ समापन। संगोष्ठी का समापन हुआ। संगोष्ठी का समापन हुआ। संगोष्ठी का समापन हुआ। संगोष्ठी का समापन हुआ। संगोष्ठी का समापन हुआ।

**हिन्दुस्तान डा. अश्वनी कुमार को मिला फेलोशिप अवार्ड**

हिन्दुस्तान डा. अश्वनी कुमार को मिला फेलोशिप अवार्ड। डा. अश्वनी कुमार को फेलोशिप अवार्ड मिला। डा. अश्वनी कुमार को फेलोशिप अवार्ड मिला। डा. अश्वनी कुमार को फेलोशिप अवार्ड मिला। डा. अश्वनी कुमार को फेलोशिप अवार्ड मिला।

### एनवायरमेंटल स्टडीज एवं डिजास्टर मैनेजमेंट पुस्तक का हुआ विमोचन

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**इन्होंने दिया व्याख्यान**

इन्होंने दिया व्याख्यान। व्याख्यान दिया गया। व्याख्यान दिया गया। व्याख्यान दिया गया। व्याख्यान दिया गया। व्याख्यान दिया गया।

**एनवायरमेंटल स्टडीज एवं डिजास्टर मैनेजमेंट पुस्तक का हुआ विमोचन**

एनवायरमेंटल स्टडीज एवं डिजास्टर मैनेजमेंट पुस्तक का हुआ विमोचन। पुस्तक का विमोचन किया गया। पुस्तक का विमोचन किया गया। पुस्तक का विमोचन किया गया। पुस्तक का विमोचन किया गया।

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**ORGANIZING COMMITTEE MEMBERS**

**ORGANIZING COMMITTEE MEMBERS**

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Dr. Shivesh Pratap Singh, Secretary, The National Academy of Sciences, Bhopal Chapter  
Dr. Sunita Sharma, Professor of Zoology, Govt. Science College, Jabalpur, M.P.  
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**ESW ADVISORY COMMITTEE MEMBERS**

Dr. U. C. Shrivastava, (NAGMA-2014). Former Prof. of Zoology, University of Allahabad, Allahabad, UP  
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Dr. Sandeep Kushwaha, Assistant Zoologist, Zoological Survey of India, CZRC, Jabalpur, MP  
Dr. Sajjad Ul Akbar Wani, Assistant Prof. Zoology, I. K. College, Indore, Madhya Pradesh

**ACCOMODATION/ TRANSPORT**

Mrs. Vandana Dubey, Managing Director, Godavari Academy of Science & Technology, Chhatarpur, MP

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Dr. Amit Pal, Professor, Institute of Environment & Development Studies, Bundelkhand University, Jhansi, **UP**.  
Dr. Narendra V. Harney, Asst. Prof. Zoology, Nilkanthrao Shinde Science and Arts College, Bhadrawati, **Maharashtra**  
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Mr. Manoj Kumar, Chhatarpur

**STAGE MANAGEMENT/ PHOTOGRAPHY/ VIDEOGRAPHY**

Mr. Ramesh Soni, Khajuraho  
Mr. Tulsidas Soni, Khajuraho  
Mr. Satish Gupta, Khajuraho

## **Guidelines of Fellow of Environment and Social Welfare (FESW) award**

The Executive Board of the ESW Society, Khajuraho India has approved a Fellow of Environment and Social Welfare (FESW) award to recognize members of the FESW for distinguished contributions to the field of Environment and Social Science, and for promoting and sustaining the professional stature of the field.

A **fellow** is a member of a group of people who work together in a **fellowship** pursuing mutual knowledge or practice. A **fellowship** is a monetary award connected to a specific field. Usually given to scientist, professor, assistant professor and researcher.

Such accomplishments will have advanced the Education, Environment, Art and science & technology, as evidenced by:

- Sustained service and performance in the advancement of science and technology
- Publication of papers, articles, books, and standards which enhance the knowledge of Science
- Innovative development of new technology
- National and international service contributions
- Professional recognition

### **Requirements and Conditions will**

- Candidates will have a minimum of one year's active participation in ESW.
- Candidates will be nominated by their national delegation of FES Fellow. Each delegation may nominate at maximum of two (2) candidates per year.
- Nominations shall be submitted on the official form available from the ESW Secretariat.
- Nominations must be submitted to the ESW Secretariat no later than December 31 of the year prior to that in which the individual is recognized as Fellow.
- Nominations will remain valid for three years.
- All information on nominees will be held in strict confidence.
- Fellows will be selected by the Executive board based on the Performance of Applicant.

### **Number of Fellows**

- Maximum of 06 Fellows will be selected each year, as determined by the Executive committee.

### **The Award**

- The ESW Chair will present the Fellow of FESW Award at the ESW Conference of the ESW Society or Annual assembly.

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**Letter for ESW Membership**

**ENVIRONMENT & SOCIAL WELFARE SOCIETY, KHAJURAHO**

Dedicated to Environment, Education, and Science & Technology entire India since Bi-millennium,

Under Government of M.P., Firms & Society Act 1973

Accredited by JAP Govt. of MP & NITI Aayog, Govt. of India

Dear,

Applications are invited from the Eminent Scientist, Professor, Academic Institutes, University, Their affiliated Colleges, Deemed Universities, Autonomous Research Institution, and Industrial R & D Units for **Member** of Environment & Social Welfare Society, Khajuraho India. Membership form may be downloaded from Website <http://www.godavariacademy.com>.

An application filled dully sign by you in all respects should be submitted to President of ESWSociety. Payments are accepted only through Bank or NEFT online transfer in the account.

**Name of Beneficiary:** Environment and Social Welfare Society

**Account Number:** 77352200000561

**IFS code:** CNRB0017735

**Name of Bank:** Canara Bank, Branch 2, Chhatarpur, Madhya Pradesh, India

**MICR Code:** 471015002;

**SWIFT code:** CNRBINBBBM

Please mail us complete membership form dully signed by you along with fee. Please inform us when you transfer payment to ESWSociety account so that we can track your payment (mail scan copy as proof to [eswsociety320@gmail.com](mailto:eswsociety320@gmail.com) ).

**Membership Fee**

**A. Patron member** Rs 10,000/- or more; **B. Life member** (10 years) Rs.5000/- or more;

**C. Annual member** Rs. 600/- per year; **D. Honorary member**

Board of Directors may offer honorary membership time to time the eminent scientist and distinguished persons. You will receive attractive certificate from ESWSociety, you can display on your office wall.

Only selected Life Members are privileged to write the abbreviation **F.E.S.W.** (Fellow of the Environment & Social Welfare Society) with their names.

With Regards,

**All correspondence to:**

Executive Director

Environment and Social Welfare Society (ESWSociety)

**Head Office:** Vidhyadahr Colony, Khajuraho Madhya Pradesh, India

**Regional Office:** Godavaripuram, Bajrangnagar, Ward No.31, Chhatarpur-471001, India

**Email:** [eswsociety320@gmail.com](mailto:eswsociety320@gmail.com), Mobile: +91-9425143654

**Website:** <http://www.godavariacademy.com>

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## MEMBERSHIP FORM

Regd. No.SC2707-2K

## ENVIRONMENT & SOCIAL WELFARE SOCIETY, KHAJURAHO

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Accredited by JAP Govt. of MP & NITI Aayog, Govt. of India

**Website:** <http://www.godavariacademy.com> **Mobile:** 9425143654 **Email:** eswsociety320@gmail.com

To  
The President/Secretary  
Environment and Social Welfare Society  
Regional Office, Chhatarpur 471001

Photo

Dear,

I wish to be a Petron member/ Life member /General member of **ENVIRONMENT & SOCIAL WELFARE (ESW) SOCIETY**, Khajuraho, India and agree to abide by your rules and regulations. (For details see **Letter call for Membership**)

1. Name Dr.....
2. Designation.....
3. Date of birth.....
4. Address  
Office.....  
.....
- Mailing.....  
.....
5. Mobile /Telephone:.....
6. Email:.....
7. Academic Qualification:.....  
Graduation (Year/Subject).....  
Post Graduation (Year/ Subject) .....  
Ph. D. (Year/ Subject).....  
Others.....
8. Field of specialization:  
(1).....  
(2).....  
(3).....

Signature of applicant

ESW X Annual Research Conference International Level. 29 to 31 January, 2023  
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protect and restore the Nature”

**DR. ASHWANI KUMAR DUBEY** (FESW, FIASc., FSLSc.) is a Environmentalist & Leading Scientist in the of 21<sup>st</sup> century in India. He is serving as Assistant Professor (Guest Faculty) of Zoology, Department of Higher Education, Govt. of MP. Also serving as Executive Director, Godavari Academy of Science & Technology, Environment and Social Welfare Society, Chhatarpur, Madhya Pradesh, India. *He has devoted his life in Academic and Scientific research because of not having fulltime employment.* He is graduate in 1989 & Post Graduate in Zoology in 1991 of Government Maharaja College, Chhatarpur, APS University, Rewa, Madhya Pradesh and obtained his Ph. D. Degree in 1995 at School of Studies in Zoology, Vikram University, Ujjain Madhya Pradesh, India.

**Served as Scientist (R&D)** Rank Industries Ltd., Nellore, Andhra Pradesh (1995-97). Assistant Professor of Zoology at RBS College, Rajnagar, MP (1997-2004). Guest Lecturer of Zoology, in Higher Education Department, Govt. of MP (2004-17). Officer, Information Technology, Maharaja Chhatrasal Bundelkhand University, Chhatarpur, MP (2017-18). Professor of Zoology in Shri Krishna University, Chhatarpur, MP. (2018-2022). Presently serving as Guest Faculty in Zoology, Govt. College Piprai, Ashokmagar.

**Serving Honorary as Co-ordinator**, DNA Club, DBTs Natural Resources Awareness Club, The National Academy of Sciences, India (2006 to present). **Casual Announcer**, All India Radio, Chhatarpur. (2014-2016). **Mentor (Trustworthy Advisor)** Chitrakoot Gramodaya University, Chitrakoot, Madhya Pradesh (2015 to 2017). **Academic Counselor**, (Honorary) Environmental Sciences, Indira Gandhi National Open University (IGNOU), New Delhi, CES Programme, Chhatarpur, MP (2016-present). **Volunteer** Science Portal India, New Delhi (2017-present). **Volunteer Educate**: Earth Day, Washington, DC, US (2020- Present). **Volunteer** World Wide Fund, Switzerland. **Active Member** of International Union for Conservation of Nature, Commission on Education and Communication, Switzerland (2017 - present), Empanelled with Centre for Entrepreneurship Development Madhya Pradesh (CEDMAP) Bhopal MP as **Resource Person**. **Member Advisory Committee** for Rejuvenation of Lakes in India, AICTE, Ministry of Education, GoI.

**Research field**: Zoology, Ichthyology, Biochemistry, Free Radical Biology, Toxicology and Stress Monitoring. Aquaculture Pathology, Water Quality Assurance, Biodiversity, Environmental Impact Assessment and Bio-Resources Conservation.

**Many Research papers** have been published in International, National Journals, Proceeding and Chapters in *Book*. Twelve reference and text **Book** published by reputed publisher from India & Germany for higher education; **Research abstract published** in Souvenir/Abstract book. **Interdisciplinary** academic articles published in Standard Magazine, **Scientific talk broadcasted** by All India Radio. **More than hundred Lectures presented/ delivered** in International and National Conferences/ Seminar/ Symposium/Webinar as Invitee lecture, Resource person and Delegates. Also organized several Academic & Cultural events at National & International Levels.

**Dr. Ashwani** is widely regarded as one of India's foremost experts on Zoology & Environmental sciences. He **awarded** many prestigious awards by National and International institution. He is Member of many reputed scientific organization including Indian Science Congress. He is in editorial board member of Research Journals in India, America, United Kingdom, Egypt, France, Syria, Nepal, Iraq, Sudan, Malaysia, Romania, Japan and Advisor of Research Board of America, USA and Editor-in-Chief of Int. J. Glob. Sci. Res.

**Research output**: Proposed peroxidative theory of mucous secretion in *Heteropneustes fossilis*

**His personal interests** in Reading, Writing, Traveling and Photography.

**Currently**: Honored for **International Pride of Educationist Award 2022 in Dubai, UAE**

ESW X Annual Research Conference International Level. 29 to 31 January, 2023  
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**ESW 10<sup>th</sup> Annual Research Conference International Level** on “Strategies for promotion and conservation of environment and native species to protect and restore the Nature” to be held during 29 & 31 January, 2023 (Sunday to Tuesday) at Khajuraho, Madhya Pradesh.

### Brief schedule

Date	Event	Time
<b>29/01/2023</b>	<b>Spot registration &amp; Breakfast</b>	<b>08:00 to 09:00</b>
	Inaugural Session	09:30 am to 11:30 am
	Tea Break	11:30 am to 11:45 am
	TECHNICAL SESSION I (ORAL PRESENTATION)	11:45 am to 12:45 am
	TECHNICAL SESSION II (ORAL PRESENTATION)	12:45 pm to 01:45 pm
	Lunch	01:45 pm to 02:45 pm
	TECHNICAL SESSION III (ORAL PRESENTATION)	03:00 pm to 04:00 pm
	President Meet with ESW Members	06:00 pm to 07:00 pm
	Cultural Programme	07:00 pm to 09:00 pm
	Dinner	09:00 pm to 10:30 pm
<b>30/01/2023</b>	<b>Break Fast</b>	<b>07:00 am to 07:50 am</b>
	TECHNICAL SESSION IV (ORAL PRESENTATION)	08:00 am to 09:30 pm
	TECHNICAL SESSION V (ORAL PRESENTATION)	09:30 am to 10:30 am
	TECHNICAL SESSION VI (POSTER PRESENTATION)	10:30 am to 11:00 am
	High Tea	11:00 am to 11:10 am
	Valedictory Session & Award ceremony	11:20 am to 01:30 pm
	Lunch	02:00 pm to 03:00 pm
	Dinner	08:00 pm to 09:30 pm
<b>31/01/2023</b>	<b>Break Fast</b>	<b>07:00 am to 08:00 am</b>
	Khajuraho Temples Visit	08:00 am Onwards