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NATIONAL ENVIRONMENTAL SCIENCE ACADEMY

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From the Editor's

Dear Readers,

In the May issue of our Newsletter, we received several popular articles from diverse fields. All the authors deserve great appreciation for sharing articles in huge numbers. Please continue sending articles to our Publication team and share published newsletter with your friends also.

I would like to thank the Editorial team including Print, Designer and Publication committee for their efforts throughout the edition.

Your suggestions are always welcomed for improvement.

Dr. R. S. Tomar
Editor-in-Chief
Rani Lakshmi Bai Central Agricultural University, (RLBCAU)
Jhansi, Uttar Pradesh

Report of National Conference on Renewable Energy: Harnessing Nature Power to Empower Our Planet (REOPEN-2025)

The Earth Day 2025 Celebration

22-23 April 2024
Chaudhary Charan Singh University
Meerut, Uttar Pradesh

Jointly Organized by

Department of Environmental Science
Chaudhary Charan Singh University,
Meerut, Uttar Pradesh

National Environmental Science Academy (NESA),
New Delhi

Sponsored by:
Ministry of Earth Sciences, Govt. of India

Introduction

Renewable energy refers to energy sourced from natural resources that are naturally replenished on a human timescale, such as sunlight, wind, rain, tides, waves, and geothermal heat. In contrast to finite fossil fuels, which contribute significantly to environmental degradation, renewable energy sources like solar, wind, hydro, and biomass are sustainable and produce minimal to no greenhouse gas emissions. Utilizing these resources has become a key aspect of global efforts to combat climate change, reduce air pollution, and ensure energy security. With ongoing technological advancements and decreasing costs, renewable energy is reshaping the energy landscape, offering a cleaner, more equitable solution to meet the growing global energy demands while safeguarding the environment for future generations.

The Program

The conference theme, Renewable Energy: Harnessing Nature's Power to Empower Our Planet (REOPEN-2025), emphasizes the crucial role of natural, sustainable energy sources in securing a cleaner, greener, and more equitable future. The event will feature plenary sessions, keynote addresses, and invited talks from renowned experts, as well as interactive paper and poster sessions highlighting cutting-edge research. Researchers will be recognized with awards for exceptional scientific contributions in various conference categories. Furthermore, papers presenting significant findings may be selected for publication in the conference proceedings, enabling the scientific community to share valuable knowledge. Through insightful sessions, networking opportunities, and collaborative discussions, REOPEN-2025 aims to inspire innovation, forge new partnerships, and drive action toward a cleaner, greener, and more resilient world. Together, let's harness nature's power and embark on a journey to empower our planet for future generations.

Participation

The conference witnessed a participation of nearly 120 delegates including research scholars, faculty members, working professionals and PG students from various Universities, Institutions and colleges from various parts of the country. The Conference created a lot of excitement in the research fraternity which was reflected in the form of the abstracts, oral presentations and poster abstracts received from all over India. During the two day conference there were 4 Technical sessions.

Inaugural Session

On the eve of Earth Day, ***Dr. N. Khare, Scientist G, Ministry of Earth Science, Govt. of India, New Delhi*** inaugurated the two-day conference ***Renewable Energy: Harnessing Nature's Power to Empower Our Planet*** **(REOPEN-2025)**, in presence of Prof. Sangeeta Shukla, Vice Chancellor, Chaudhary Charan Singh University, Meerut, Prof. Javed Ahmad, Former President, National Environmental Science Academy (NESA), New Delhi, Prof. Beerpal Singh, Director-Research and Development, CCS University, Meerut, **Dr. Anand Sharma**, President, Indian Meteorological Society and Ex Additional Director General of Meteorology, IMD, New Delhi **Prof. Bindu Sharma, Prof. Pushpendra Dhaka** and **Prof. Jamal Ahmad Siddiqui,** organizing secretaries of the conference.

The dignitaries on the dais were then requested to light the lamp and the Chief Guest for the occasion was felicitated by the Vice Chancellor. **Prof. Bindu Sharma** Conference

organizing Secretary welcomed the dignitaries on dais and greeted one and all on the occasion of Earth Day and briefed the gathering about the conference and called it a platform to learn and exchange information, hence discussing the unexplored issues of Renewable Energy by eminent speakers. **Prof. Sangeeta Shukla,** Vice Chancellor, CCSU, congratulated NESA, New Delhi for its very first initiative towards highlighting the pressing issue of Renewable Energy. **Prof. Beerpal Singh,** Director Academics, CCSU, Meerut highlighted the salient features of the university including rankings, quality education, publications, patents and research publications in the last few years.

Further, **Prof. Javed Ahmad,** Former President, NESA, New Delhi, welcomed the delegates for the conference and gave a brief overview about the concept of NESA and enlightened the gathering about the aims, objectives and services being provided by NESA. He emphasizes the crucial role of natural, sustainable energy sources in securing a cleaner, greener, and more equitable future. The event will feature plenary sessions, keynote addresses, and invited talks from renowned experts, as well as interactive paper and poster sessions highlighting cutting-edge research. **Prof. Jamal Ahmad Siddiqui** extended the vote of thanks and expressed his gratitude to one and all for gracing the occasion.

Release of Souvenir

The dignitaries on the dais were then released the Souvenir comprising of invited talks and abstract of the guests, scholars and participants. *Dr. N. Khare, Scientist G, Ministry of Earth Science, Govt. of India, New Delhi, Prof. Sangeeta Shukla, Vice Chancellor, CCS University, Meerut, Prof. M. K. Gupta, Pro Vive Chancellor, CCSU, Meerut, Prof. Javed Ahmad, Former President, NESA, Prof. Beerpal Singh,* Director-Research and Development, *Dr. Anand Sharma,* President, Indian Meteorological Society, *Prof. Bindu Sharma, Prof. Pushpendra Dhaka and Prof. Jamal Ahmad Siddiqui*, organizing secretaries of the conference collectively released the Souvenir.

Memento Presentation

The organizers welcome the dignitaries by presenting mementos (token of Love) to maintain the tradition of the university.

Technical Session 1

Chair Session: Prof. H.S. Singh, Ex-V.C, M.S.U, Saharanpur Emeritus Prof., CCSU, Meerut
Co- Chair Session: Prof. J. A. Siddiqui, Head, Department of Library and Information Science & Organizing Secretary

Soon after the Inaugural session, the first technical session on ***"Climate Services for Reliable Renewal Energy Transition and Sustainable development"*** began. It was chaired by **Prof. H.S. Singh,** Ex-V.C, M.S.U, Saharanpur and Emeritus Prof., CCSU, Meerut. The Keynote Speaker for this session was Prof. Anand Sharma, President, Indian Meteorological Society, Ex Additional Director General of Meteorology, IMD, New Delhi. The first speakers of this technical session were Prof. Rakesh Pandey, Prof. Emeritus Scientist, CSIR-CIMAP, Lucknow, Dr. M. Muruganandam, Principal Scientist & Head, I.C.A.R-IISWC, Dehradun and Dr. V. K. Arora, Ex-Director, I.N.S.A, New Delhi. Prof. Anand Sharma, the keynote speaker of the conference talked on Climate Services for Reliable Renewal Energy Transition and Sustainable development. Prof. Rakesh Pandey delivered his invited lecture on Green Initiatives and Innovations for Safe Environment leading to better Plant and Human Health. Dr. M. Muruganandam delivered a lecture on Growing concerns of sustainable farming and environment conservation. Finally Dr. V. K. Arora deliberated on Exploring innovative approaches to harnessing renewable energy resources for a sustainable future.

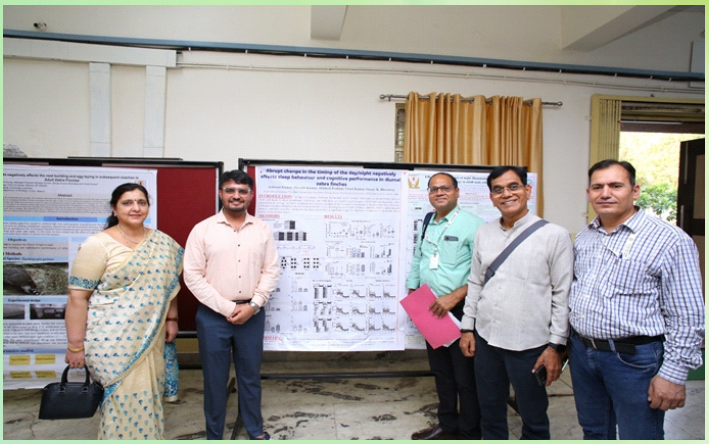
Technical Session 2

Chair Session: Prof. S. K. Bhardwaj, Department of Zoology, CCSU, Meerut
Co-Chair Session: Dr. Dushyant Chauhan, Department of Zoology, CCSU, Meerut

Prof. G. Suresh, Scientist-G, DGM. Indian Meteorological Department, Mausam Bhawan delivered an invited lecture on Fostering Earthquake Resilience in Renewable Energy: Installation and Development. Dr. Atul Kumar Srivastava, Scientist E,IITM, Ministry of Earth Science, Dehradun delivered a lecture on Air Pollution characteristics in India: small particles with big climate effects Dr. Pushpendra Singh, COT, SVPUAT, Meerut presented a paper on Green and Blue Water Accounting for sustaining Water and Food

Security. Finally Dr. Subodh Sharma, Kathmandu University (Online) presented his paper on A Macro invertebrate-Based Approach in Bio-monitoring of the Tributariesof River Ganga in India. Total Oral Presentation There were 42 oral and poster presenters in the conference.

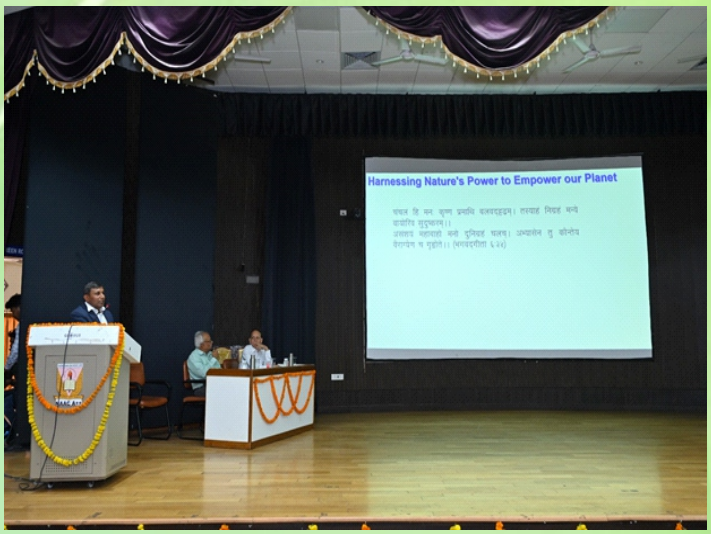
Poster Presentation



Technical Session 3

Chair Session: Prof. Rakesh Pandey, Prof. Emeritus AcSIR & CSIR Emeritus Scientist, CSIR-CIMAP, Lucknow
Co- Chair Session: Dr. Dushyant Chauhan, Department of Zoology, CCSU, Meerut

The Third technical session on 23rd April began with the invited lecture of **Prof. Sanjeev Kumar Sharma,** Department of Physics, CCS University, Meerut on "Green/ Indigenous Technology for Clean/Green/Sustainable Environment" and the session was chaired by **Prof. Rakesh Pandey,** Prof. Emeritus AcSIR & CSIR Emeritus CSIR-CIMAP, Lucknow. The second lecture of thScientist, is session was delivered by **Dr. Y. K. Gautam,** Associate Professor, Department of Physics, CCSU, Meerut who enlightened the participants with the Hydrogen as Clean Energy Source. **Dr. Pushpendra Kumar,** COB, SVPUAT, Meerut spoke on Advancements in Bio-Hydrogen production from algae: Current Perspectives, Challenges, and Future Prospects. This session ended with lunch.



Chair Session: *Prof. Ramakant Ojha, Department of Botany, CCS University, Meerut*
Co-Chair Session: *Dr. Juhie Agarwal, Assistant Professor, Department of Zoology, Vardhaman, College, Bijnor*

The first speaker for the session were Prof. Ramakant Ojha, Department of Botany, CCS University, Meerut, who presented a paper on **Waste Water Treatment & Biofuel Production By Algae**. The paper aimed at explaining the waste water treatment for renewable energy. The paper was conceptual in nature and focused on different events that took place in the country recently including *Mahakumbh*. The second paper of the session was presented by Dr. Sabita Aryal, Kathmandu University, through online on Integrated Water Resource Management (IWRM) and Hydropower Generation, A Case Study from Durlung Watershed, Nepal.

Finally Dr. Luv Kush from NIH, Roorkee presented a paper on Cryosphere and Climate Change: A Perspective on Himalaya Glaciers.

Throughout the session the conversation was about the Renewable Energy-and rightly emphasizes harnessing nature's power to empower our collective future in India. The session ended with the session chair and the delegates discussing about the exactly what does the concept of Renewable Energy and Nature's Power means? Many different views were given. Among those the accepted one was “Our Planet's Future lies in the Choices we make today”

AWARD CEREMONY

National Environmental Science Academy (NESA), New Delhi recognizes the merit and achievements of individuals who have contributed to the fields of environmental science, education and societal values by conferring various awards. This year 2025, the Women Excellence Award is awarded to Prof. Bindu Sharma, Department of Environmental Science, Chaudhary Charan Singh University, Meerut for her brilliant contribution in the field of Environmental Science in general and Water Conservation in particular. The dignitaries of the conference presented the award to Prof. Bindu Sharma.

BRAINSTORMING SESSION

After successful completion of all the technical sessions in two days 22-23rd April 2025, a brainstorming session was conducted where all participants discuss various issues and doubts with the experts of the conference. It was one hour session in which every participant was given the opportunity to share his/her experience during two days of the conference and also invited to say few word on what they learnt in last two days. This brainstorming session was well appreciated by one and all present.

VALEDICTORY SESSION

HERE IT ENDS……. "With the ending of this conference another brick to our under construction building of achievements was added"

The National Conference on Renewable Energy: Harnessing Nature's Power to Empower Our Planet (REOPEN-2025) on The Earth Day Celebration 22-23 April 2025 at Chaudhary Charan Singh University, Meerut added another brick to the under construction building of achievements of National Environmental Science Academy, New Delhi. The Chief Guest of the Valedictory session Shri Rajesh Kumar, Divisional Forest Services, Meerut expressed his views on the need and importance of Renewable Energy in the present global warming environment. The Chief Guest distributed the certificates to all the delegates and appreciation certificates to the organizers. Prof. Beerpal Singh, Director-Research and Development, CCS University, Meerut was the Guest of Honour, he congratulated to all the participants for their untiring efforts in two days by not only their presence but also in helping the members of the organizing team in one way or the other. At the end Prof. J. A. Siddiqui, Head, Department of Library and Information Science, CCS University, Meerut presented the Vote of thanks. The grand event ended with National Anthem.


NATIONAL CONFERENCE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ON
Renewable Energy: Harnessing Nature's Power to Empower Our Planet
(REOPEN-2025)
THE EARTH DAY CELEBRATION-2025
22-23 April 2025
Jointly organized by
DEPARTMENT OF ENVIRONMENTAL SCIENCE

RECOMMENDATIONS

As we draw this enriching conference to a close, it is our privilege to share a few key recommendations inspired by the vibrant discussions and diverse insights shared over the past two days.

1. ***Strengthening Interdisciplinary Collaboration*:** Tackling the complex challenges of energy sustainability and environmental preservation requires integrated efforts. We recommend establishing cross-disciplinary research networks that bring together scientists, policymakers, industry experts, and grassroots innovators.
2. ***Promoting Local Solutions for Global Impact*:** Solutions rooted in local ecological knowledge and tailored to regional needs are essential. We encourage further support for community-based sustainable resource management projects, especially in rural and underserved regions.
3. ***Accelerating Renewable Energy Adoption*:** To reduce dependency on fossil fuels, we recommend policy incentives and public-private partnerships that make renewable technologies—such as solar, wind, and bioenergy—more accessible and affordable.
4. ***Investing in Education and Awareness*:** Education remains the cornerstone of lasting change. We must integrate environmental literacy into mainstream education and use digital platforms to raise awareness on sustainable practices.
5. ***Data Sharing and Open Access*:** Scientific progress thrives on transparency. We recommend the creation of open-access repositories for environmental data and sustainable technology research to facilitate knowledge sharing and innovation.
6. ***Institutionalizing Sustainability in Policy*:** Finally, we urge governments and institutions to embed sustainability as a core principle in policy planning, urban development, and resource governance.

Let this conference not be a conclusion, but a new beginning—where these ideas evolve into action, and action into a sustainable future for all.

THE MYRIAD MIRID BUG, *Nesidiocoris tenuis*: FRIEND OR FOE?

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Introduction: The mirid bug, *Nesidiocoris tenuis* (Reuter) (Heteroptera: Miridae) (*AKA* tomato bug/ tobacco capsid/ tobacco leaf bug) (Fig.1), is a Zoophytophagous mirid bug that can derive nutrients from 3 trophic levels: plants, herbivorous arthropods, and other predators (Totin *et al.*, 2023). Zoophytophagous organisms are known for their dual nature as predators of pests and, under unfavorable conditions, pests themselves. This species is widely recognized for its effectiveness in integrated pest management (IPM) programs. They are utilized for controlling pests such as *Tuta absoluta, Bemisia tabaci*, *Spodoptera litura*, and *Helicoverpa armigera* by preying on their eggs and early larval stages (Sridhar *et al.*, 2012). However, when their population is at peak and the number of prey is less, *N. tenuis* resorts to phytophagy, causing brown necrotic rings around the tender shoots, leaves, and stems of the plant. Thus, causing flower abortion and drop, and poor fruit set and fruit malformations.

Life cycle: *N. tenuis* is native to tropical regions and thrives at an optimal temperature of 20- 30 °C. Adults are approximately 5 mm in length, with bright green bodies and bulging dark eyes. They have striped antennae and black spots on clear hind wings, which allow them to fly. Its

Fig. 1: The mirid Zoophytophagous bug, *Nesidiocoris tenuis.*

life cycle can last up to 29 days. A female adult can lay up to 60-80 eggs in the plant tissue. They lay eggs rapidly under favorable conditions in the plant tissue, which makes it difficult to spot the eggs with the naked eye. These eggs develop into a stage called a nymph. At this stage, they are wingless. They are usually found on the underside of leaves. However, they are fast-moving, which helps avoid predation. This allows a high survival rate. They go from yellow-green to bright emerald green as they develop. They require an optimal temperature of 15- 30 °C. *Nesidiocoris* nymphs are 1–4mm long. Adults are around 3-5mm in length. They are dark green. They are strong fliers and are very active. They reproduce rapidly under favorable temperatures of 30 °C. The short lifespan and high reproductive rate make *N. tenuis* a fast-establishing

organism. These same traits can lead to overpopulation, which ultimately leads to crop damage if not properly managed.

Applications in Agri-horticultural ecosystems: *N. tenuis* is used as a generalist predator in biological pest control as part of sustainable agriculture to manage *Tuta absoluta* (tomato leaf miner), *Bemisia tabaci* (tobacco whitefly), *Frankliniella occidentalis* (thrips), *Tetranychus urticae* (spider mites), etc. They are used in greenhouse pest control programs all across southern Europe and parts of Asia. Although it plays a major role as a biological control agent in many agricultural lands that support organic farming, it may become a pest under unfavorable conditions, such as scarcity of prey. This may lead to the formation of necrotic rings, wilting and yellowing of leaves, and in some cases, may also lead to a decrease in yield. Making their use as a biocontrol agent debatable. Also, there is little information about their parasites and predators.

REFERENCES

Sridhar V *et al.*, 2012. Population dynamics of zoophytophagous mirid bug, *Nesidiocoris tenuis* (Reuter) (Heteroptera: Miridae) and its prey, *Bemisia tabaci* Genn. (Hemiptera: Aleyrodidae) on tomato (*Solanum lycopersicum* Mill.). *Pest Mgmt Hort Ecosyst.*, 18(1), 35–38.

Totin *et al.*, 2023. Interactions between the omnivorous bug *Nesidiocoris tenuis* (Heteroptera: Miridae) and the tomato pests *Helicoverpa armigera* (Lepidoptera: Noctuidae) and *Phthorimaea absoluta* (Lepidoptera: Gelechiidae): predation, phytophagy, and prey preference. *J Insect Sci.*, 23(4), 6.

COASTAL BIODIVERSITY OF GANGA SAGAR ISLAND, WEST BENGAL

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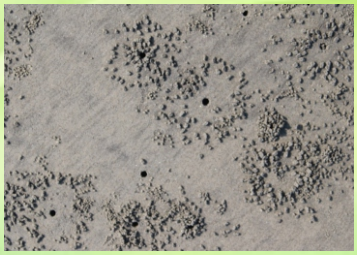
Sagar Island is a part of Sundarbans lying on the continental shelf of Bay of Bengal about 100 km (54 nautical miles) south of Kolkata, is a place of Hindu pilgrimage. This is also known as Sagar Community Development Block in Kakdwip subdivision of South 24 Parganas district in West Bengal. Though it is under Sundarban, but it does not have any tiger habitation or mangrove forests or small river tributaries as is characteristic of the overall Sundarban delta. It is a fragile coastal zone causing immense organic pollution of the water bodies around every year on the day of Makar Sankranti (14 January) when thousands of Hindus pilgrims, Naga Sadhus and disciples of different ashramas gather here to take a holy dip at the confluence of river Ganges and Bay of Bengal and offer prayers (puja) in the Kapil Muni Temple, commonly known as Sagar Snan. It is the second largest congregation of mankind after the triennial ritual bathing of Kumbha Mela.

Besides its cultural heritage, Sagar Island exhibits a mix of







terrestrial and marine ecosystems, including mangroves, salt marshes, and various aquatic and terrestrial species exhibiting a unique biodiversity due to its coastal and estuarine environment.

The island supports a very ruch and diverse range of invertebrates, including zooplankton, soil microbes, ciliates, hydrozoa, Annelida, Crustaceans, Dipterans, spiders, gastropods, and bivalves. Among vertibrates, various fish species, reptiles, birds, and mammals are found.

But due to its unique position at the sea mouth, this island is experiencing the direct effect of tropical storms that formed in the Bay of Bengal every year. With rising sea temperature, the frequency of formation of severe cyclonic storms in the Bay of Bengal have increased significantly.

Simultaneously rising sea levels and increased coastal erosion pose a significant threat to the island's ecosystems, particularly the mangrove forests and its fauna. A complex interplay of natural dynamics and human intervention is actually posing a threat to the sustainability of the island. Moreover, adverse anthropogenic activities and socio-ecological practices affect directly on the beach biodiversity and accelerates beach erosion.

Photo credit: **S. Mukhopadhyay**

ARTICLES INVITED

NESA members are requested to share articles on any scientific / research / innovation activities in Newsletter.

MEMBERS ARE REQUESTED TO PLANT ONE TREE IN YOUR NEIGHBORHOOD ON YOUR BIRTHDAY / SPECIAL EVENT AND SEND A BRIEF WRITE UP WITH PHOTOGRAPHS FOR PUBLICATION IN NESA NEWSLETTER TO EDITOR-IN-CHIEF

E-mail: nesapublications@gmail.com

RICH DIVERSITY OF DIFFERENT SPIDER SPECIES IN RANCHI, JHARKHAND

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India is important and significant for several ecological, scientific, and conservation-related reasons. The state of Jharkhand in eastern India originally means the 'Land of Forests'. Ranchi being the capital of the state features a subtropical climate situated at the Chota Nagpur plateau.The detection of diverse spider species in Ranchi highlights the biogeographic significance of the region and the need for more detailed biological surveys. Spiders are natural predators of many agricultural pests, including insects that damage crops. Their presence contributes to natural pest regulation, reducing the need for chemical pesticides, which helps maintain soil health and water quality. In an agricultural region in and nearby Ranchi, this natural pest control can have direct economic and ecological benefits. Spiders are highly sensitive to environmental changes like pollution, habitat degradation, and climate change. The diversity and abundance of spider species act as a bioindicator, reflecting the health and stability of local ecosystems (forests, grasslands, riverbanks). Discovering a rich spider biodiversity in Ranchi suggests that some habitats remain relatively undisturbed or are ecologically rich even in urban counterparts; but, may not be left undisturbed for long due to rapid urbanization , that's why need to identify hotspots and species.

Documenting spider diversity in urban areas like Ranchi adds to global biodiversity records. Some species may be endemic or new to science, offering potential for scientific discovery. Documenting new or rare spider species offers opportunities for taxonomy, evolutionary biology, and ecology research. Spider silk, venom, and behavior have inspired biomimicry and biomedical research, with applications in medicine and materials science. Local biodiversity studies also provide valuable educational resources and foster awareness among students and communities. Rich spider diversity implies the presence of complex habitats worth conserving. This can inform biodiversity management, ecotourism development, and conservation strategies in Ranchi.

Highlighting such diversity helps in protecting lesser-known species and habitats that are under threat from deforestation, mining, and human encroachment. The discovery of rich spider biodiversity in Ranchi is a crucial ecological finding. It reflects the health of local ecosystems, offers opportunities for scientific study, and highlights the importance of conserving habitats and species in the rapidly growing urban part of eastern India. These spiders are not just creepy crawlies; they are vital components of our natural world.

Random survey method was adopted by looking after suitable places and niches, under rotten leafs, on tree leafs and branches, ground of botanical garden of Dr. Shyama Prasad Mukherjee University, Morabadi, Ranchi. Observed best between onset of monsoon to autumn. These eight-legged creepy creatures when minutely observed in nature, are the most beautiful and intelligent creatures in the series of evolution. Spiders all placed under the Phylum-Arthropoda (creatures with jointed legs). Spider biodiversity is incredibly rich and diverse. Spiders have a long evolutionary history, dating back over 300 million years, and have evolved a wide range of adaptations for survival.

The diversity of spider species have been documented from Morabadi, Ranchi, Jharkhand and its surrounding areas within the Ranchi town of the Ranchi district. Ranchi located near the Tropic of Cance with humid subtropical climate; and an average elevation of 2136 ft from sea levels with average annual rainfall of 1430 mm. The geology constitutes tabular landmass, basically composed of archean granite and schists. The dominant soils are Alfisols covering 71.0 % of TGA (Thermo Gravimetric Analysis) followed by Inceptisols (17.2 %) and Entisols (9.6 %).

Spider biodiversity is both vast and vital to ecosystem health, with more still to be discovered and understood. As of 2024, scientists have described over 50,000 species of spiders; but, experts estimate the actual number could exceed 120,000. New species are discovered every year. Spiders are found on every continent except Antarctica. They inhabit nearly all terrestrial ecosystems—from rainforests and deserts to mountains and urban areas. Spiders belong to the order Araneae, which includes over 130 families and thousands of genera. This makes them one of the most diverse groups of predators in the animal kingdom.

Spiders play crucial roles as predators of insects and other small arthropods, helping control pest populations. Some have specialized behaviors like: Web-building (orb-weavers, cobweb spiders), Hunting (wolf spiders, jumping spiders), Trap-setting (trapdoor spiders, bolas spiders) etc. Spider species vary widely in size, color, web structure, hunting strategy, and reproductive behavior. For example, jumping spiders have exceptional vision and display complex courtship dances. Mimic spiders resemble ants or even bird droppings to avoid predators or deceive prey.

Spiders have superb eyesight in some families like the jumping spiders having compound eyes. Spiders comes

under the order araneae they have cephalothorax as prosoma and lower abdomen opisthosoma , prosoma have the prosomstic appendages a pair of chelicerate a pair of pedipalps which makes uses during copulations to transfer semen in the female reproductive tract and four pair of walking legs.

Spiders of many families have a unique quality of spinning webs in trapdoor spiders , living in silk lined tubes they create silk lined tubes with lids made from debris. Spiders in these silk lined webs detect prey through sensitive hairs on their prosomatic appendages(legs) and their traps are like springs , which create vibrations when they trap any prey.

Sexual dimorphism is exhibited and in jumping spiders females are choosier sex where the males spiders must perform dances to attract females .

Females often kill males who do not meet their expectations making the courtship process dangerous. Though the spider's sometimes show cannibalistic behaviour like some trapdoor spiders eating some wolf spiders.

Spiders have evolved with amazing skills to hunt, the bolas spider sends out a line of silk with a drop of glue on the end then whips it around, but this glue contains pheromones that attract certain months (Lepidopterans). Though spiders are mostly solitary, some of them show colonial behaviour like family theridiidae, araneidae etc . Spider webs are remarkable structures that showcase the diversity and sophistication of spider species. Each species has unique architectural blueprints for their webs, tailored to their hunting and survival needs. The silk produced by spiders is elastic, resilient, and can be regenerated as needed. The silk factory is located in the spider's abdomen. Spider silk is a protein that starts in liquid form and solidifies upon contact with air. This silk serves multiple purposes, help in trapping and effectively captures their prey; and wraps and preserves the spider's meal for later consumption.

Photo credit: **A. Gupta**

GREENING WITH GRATITUDE: LEVERAGING THE 'EK PED MAA KE NAAM' INITIATIVE THROUGH FOOD FORESTS FOR BIODIVERSITY AND NUTRITIONAL RESILIENCE

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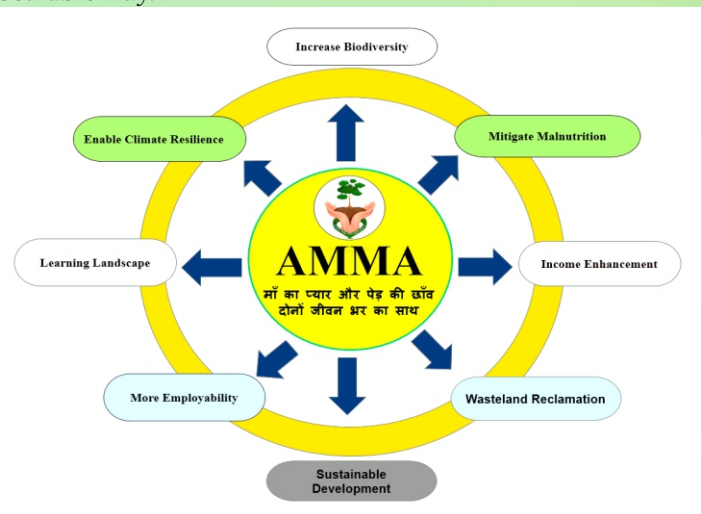
On June 5, 2024 i.e. World Environment Day-the Hon'ble Prime Minister of India, Shri Narendra Modi, launched the nationwide campaign '*Ek Ped Maa Ke Naam*' (A Tree in Mother's Name), calling upon every citizen to plant a tree in honor of their mother. This unique initiative not only promotes afforestation but emotionally connects individuals to the act of greening the Earth—linking the love for one's real mother to a commitment to Mother Earth. The burgeoning global population placing immense pressure on land and food resources, conventional agricultural systems are struggling to meet the rising demand without degrading the environment. Urban expansion, shrinking cultivable land, and unsustainable farming practices have led to declining soil fertility, loss of biodiversity, and increased food insecurity, especially in vulnerable rural communities. In this context, food forests offer a regenerative, land-efficient solution by mimicking natural ecosystems to produce a wide variety of fruits, vegetables, herbs, and medicinal plants in limited space. This heartfelt gesture has the potential to be transformed into a powerful community-driven food forest movement, aligning with key United Nations Sustainable Development Goals (SDGs) such as SDG 2 (Zero Hunger), SDG 3 (Good Health and Well-being), SDG 13 (Climate Action), and SDG 15 (Life on Land). These multi-layered food forest not only optimize vertical and horizontal land use but also improve soil health, sequester carbon, and ensure year-round food availability.

Under this initiative, Dr. Ashok Yadav, Scientist at ICAR-CAFRI Jhansi, has launched the development of a food forest model where each plant species is dedicated to mothers, planted by their sons and daughters as a heartfelt tribute to love and sustainability. These food forests aim to establish rich, biodiverse ecosystems comprising over 250 species of fruits, vegetables, herbs, and medicinal plants—enhancing local biodiversity and providing year-round nutritional security for rural communities. The symbolic act of planting a tree becomes a practical solution for climate resilience, food self-sufficiency, and biodiversity conservation, while also enhancing the emotional value of nurturing Mother Earth. This model serves as a farmer-friendly system that requires low inputs, and with proper integration and market linkage, enhancing the socioeconomic status of small and marginal farmers by providing an average monthly income of Rs. 5,000–Rs. 7,000.

Ultimately, this movement is not just about planting trees, but about cultivating a culture of gratitude, sustainability, and intergenerational care. It beautifully echoes the philosophy: "From Mother to Mother Earth"—a journey of love, life, and legacy rooted in soil and spirit. By blending personal affection with ecological action, '*Ek Ped Maa Ke Naam*' can grow into a transformative model of community-led greening, nutrition, and resilience for a sustainable future. By integrating food forests into rural landscapes and peri-urban areas, one can transform degraded or underutilized land into productive, climate-resilient spaces-addressing the dual crises of food insecurity and land degradation in a sustainable and scalable way.



(AMMA-Agroforestry for Mitigating Malnutrition and Adaptation)

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NOTIFICATION NO. 1

APPLICATIONS ARE INVITED FOR NESA ANNUAL AWARDS – 2025

LAST DATE: 30th September, 2025

This is to notify that applications are invited for the **NESA Annual Awards 2025** from the Life Members of the Academy. The prescribed application forms for the following categories can be downloaded from our website: www.nesa-india.org • https://nesa-india.org/nesa-annual-awards-2025/

Separate applications should be submitted for independent awards. For detailed guidelines the website of NESA may be approached by log in to website: https://nesa-india.org/nesa-annual-awards-2025/

The last date for all the categories of awards is 30th September, 2025.

The categories of Awards are given as under:

(1) NESA FELLOWSHIP AWARD - 2025
(2) NESA EMINENT SCIENTIST AWARD - 2025
(3) NESA DISTINGUISHED SCIENTIST AWARD - 2025
(4) NESA SCIENTIST OF THE YEAR AWARD - 2025
(5) NESA ENVIRONMENTALIST AWARD - 2025
(6) NESA GREEN TECHNOLOGY INNOVATIVE AWARD - 2025
(7) WOMEN EXCELLENCE AWARD - 2025
(8) NESA YOUNG SCIENTIST AWARD - 2025
(9) NESA JUNIOR SCIENTIST AWARD - 2025

Contact for more details:
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