



ENVIROAMICA

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Netaji Nagar College for Women

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From the Desk of Teacher-in-Charge

I am thrilled to announce the release of the latest issue of Enviroamica, which shines the spotlight on the vital theme of Biodiversity. As we all know, biodiversity is essential for the very survival of life on Earth. Healthy ecosystems, complete with clean water and air, are the backbone of our planet's well-being. Unfortunately, human activities such as deforestation, pollution, and climate change are causing biodiversity loss at an alarming rate, putting our planet at immense risk.

It is high time for us to take stock of our actions and make amends before it is too late. Recognizing the importance of flourishing biodiversity is a crucial step in this direction. I extend my warmest wishes to the teachers and students of the Department of Environmental Science for their timely focus on this critical issue.

This special issue of Enviroamica promises to be an engaging and thought-provoking read, and I invite you all to dive in and explore the fascinating world of biodiversity.

Dr. Chaitali Bhattacharjee,
TIC

Wild Biodiversity Foraging: A Path to Sustainability and Environmental Conservation

Dr. Anindita Majumdar

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Biodiversity, the principal component of any ecosystem is critically important for long term survival of human species. Wild biodiversity foraging by humans is the practice of gathering wild plants, fungi and animals from their natural habitats. Nomadic hunting and gathering had been the most dominant mode of living for nearly 99.9 % of the history of modern man on earth. Only around some 10,000 years ago did settle agriculture way of life began and vast majority of cultures became agriculturists. Some cultures still maintain close association with the wild biodiversity resources and its foraging for their daily livelihood, particularly the indigenous peoples around the world. Wild biodiversity foraging taps into a diverse range of species that grow or live naturally in an ecosystem, offering contact with unique and nutritious foods that are not typically available through conventional agriculture. Wild edibles often contain higher levels of vitamins, minerals and antioxidants compared to commercially cultivated crops. Wild greens like Dandelion leaves, Nettles, or Wild Garlic are rich in vitamins A, C, and K, as well as various micronutrients, making them highly beneficial for human health. Wild fruits and mushrooms provide even more specialized nutrients not commonly found in farmed varieties.

Wild plants and animals are often grown or raised without the need for synthetic fertilizers, pesticides or monoculture practices, which are common in industrial agriculture. As concerns about climate change, biodiversity loss and the environmental impact of industrial agriculture increase, wild foraging is a way to reconnect with nature while minimizing the negative ecological footprint associated with conventional food production.

Wild biodiversity foraging requires a deep knowledge of the environment, as well as ethical and sustainable practices. Sustainability in foraging refers to responsible collection of wild resources in a manner that guarantees the health and survival of species, maintain ecosystem integrity, being aware of local traditional conservation practices and ensuring that the health of the ecosystem is not threatened. In many regions, foraging laws are in place to help protect certain wild biodiversity resources and foragers must respect these regulations to ensure long-term sustainability.

One of the primary benefits of wild foraging is its contribution to biodiversity conservation. Foragers have opportunity to harvest a variety of species that grow naturally in their environment, which are often more resilient and adaptable to changing conditions compared to monoculture crops, which are vulnerable to pests, diseases, and climate fluctuations. By supporting a diverse range of species, foraging helps preserve genetic diversity, which is critical for maintaining healthy ecosystems.

Contd. from page 1

Wild Biodiversity Foraging

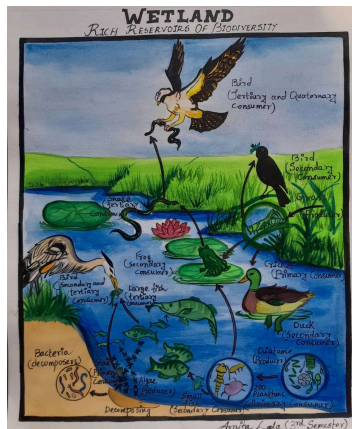
Foraging also has a lower Carbon Footprint than conventional farming. The transportation of store-bought produce from farms to markets is a significant contributor to greenhouse gas emissions. Wild foragers, on the other hand, gather food from their local surroundings, reducing the need for food transportation and packaging. This localized approach to food sourcing contributes to a more sustainable, low-impact lifestyle and it promotes a deeper understanding of the local environment and its seasonal rhythms.

The cultural importance of foraging cannot be overstated. For many indigenous communities, foraging is not just a means of obtaining food but is deeply embedded in spiritual, cultural and social practices. Foraging contributes to a strong sense of identity and connection to the land for the indigenous communities around the globe.

Presently, wild foraging has gained renewed interest, as individuals have become more aware of food sustainability, environmental degradation and the desire for healthier, more natural food sources. Urban foraging is becoming a growing trend, with individuals harvesting wild plants in city parks, neglected lands. This resurgence of interest in foraging reflects a broader desire to reconnect with nature and reclaim knowledge about the environment that has been lost to the modern world.

In conclusion, wild biodiversity foraging is central for sustainability as it promotes responsible harvesting of diverse, indigenous species, reducing dependence on industrial agriculture. Foraging encourages local, low-impact food sourcing, lowering carbon footprints and reducing waste from transportation and packaging. By tapping into diverse ecosystems, it implements a deeper understanding of nature and encourages ecological awareness. When practiced sustainably, wild foraging offers a healthy, nutrient-rich alternative to conventional food production, contributing to both personal well-being and environmental conservation.

Artistic Expressions



Arpita Lala, Student, Semester III



Arpita Lala, Student, Semester III
Gargee De Sarkar, Shreya
Mondal, Mrudusmita Padhiary,
 Student, Semester III

সবুজ চাদরে মোড়া এই পৃথিবীটা

তুহিনা কর্মকার

প্রাক্তন ছাত্রী, পরিবেশ বিজ্ঞান বিভাগ

জীববৈচিত্র্য শব্দটির অন্ত:নিহিত অর্থ
জীবের বৈচিত্র্য,

গাছপালা ও প্রাণিপ্রজাতির

অন্ত: ও আন্ত:প্রজাতিক পার্থক্য।

এই ধরাতে ফুল-ফলের বিভিন্নতা,
চারিদিকে সৃষ্টি হয়েছে মধুময় লাভণ্যতা।

সবুজ চাদরে মোড়া এই পৃথিবীটা
নীরবে হচ্ছে বিনীত ক্ষতযুক্ত সাড়া

সকালবেলার পাখিদের কিচির-মিচির ডাক
অশ্রুত হয়ে যায় যান্ত্রিক শব্দ, সংকেতে,

রয়েছে প্রাণীপ্রজাতির বিভিন্নতা,
ধরিদ্রীকে দিয়েছে যে এক প্রাণ

পেয়েছে পূর্ণতা।

জীববৈচিত্র্যের এই প্রাচুর্যে

কাস্তে -কুড়ালের আঘাতে

নিঃস্ব হচ্ছে গাছপালা

প্রাণিসম্পদ হচ্ছে সংকটময়, হচ্ছে বিপদগ্রস্ত

অদূর ভবিষ্যতে বিপদের অস্থিরতা কাটিয়ে
সেদিন হবে জীববৈচিত্র্য

গাছপালা ও প্রাণিদের ছায়ায় ছায়ায় ফিরে আসবে এই নাম।

Joint Forest Management

Sunita Rani Pal

Ex-student (Batch 2021-2024), Dept-Environmental Science

Joint Forest Management is a concept of developing partnership between forest user groups and the forest department on the basis of mutual trust and jointly defined roles and responsibilities with regard to forest protection and development. In realizing the need for community participation in forest protection, Joint Forest Management originated in West Bengal accidentally at the Arabari forest range in West Midnapore in 1971. The Govt. of Odisha was pioneer to adopt a policy of JFM even before implementation of National Forest Policy, 1988. Joint Forest Management Committee was established to manage forest in partnership with local communities. It is a democratic, decentralized and transparent institution comprising of members from the local villages and forest officials who work together to ensure the sustainable management of forest resources and protection of the forest.

Under the joint forest management programme, local communities are involved in the management and restoration of degraded forest. The major purpose of the JFM is to protect the forest from encroachment, grazing, theft, wildfire and also to improve the forest in accordance with an approved Joint Forest Management Plan. In return the member of the communities are entitled to intermediary benefits like access to non-timber forest products.

Wetland: Nature's Cradle of Biodiversity

Dr. Souravi Bardhan

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Wetlands are vital ecosystems supporting an incredible diversity of life, which is crucial in maintaining global biodiversity. These areas, including marshes, swamps, and peatlands, are home to approximately 140,000 described species, with freshwater habitats hosting 55% of all fish species. Wetlands provide essential services such as water filtration, carbon storage, and flood mitigation. Globally, notable examples include the Sundarbans, home to the endangered Bengal tiger, and the Okavango Delta, famous for its large elephant populations. In India, wetlands like Keoladeo National Park and Chilika Lake have demonstrated the success of conservation efforts, hosting hundreds of bird species and the returning Irrawaddy dolphin, respectively. The Ramsar Convention on Wetlands, established in 1971, aims to conserve these critical habitats through international cooperation. Despite their importance, wetlands face grave threats from human activities, with studies indicating that over 50% of these habitats have been lost since the 1900s, leading to a significant decline in species reliant on them. Wetlands face unprecedented threats due to climate change, pollution, and habitat loss; studies indicate that global wetland areas have declined by over 50% since the 1900s. This loss has dire consequences for biodiversity, with about 25% of wetland-dependent species now threatened. Recent initiatives under the Ramsar Convention have emphasized the urgent need for restoration and protection of these ecosystems. A landmark agreement reached at the United Nations Biodiversity Conference aims to restore at least 30% of degraded inland water bodies by 2030. For instance, Canada, with 37 Ramsar Sites, exemplifies international conservation efforts, safeguarding critical habitats such as the Nabish Wetland Complex, which protects at-risk species like the least bittern. As we confront biodiversity loss and climate challenges, preserving wetlands is vital not only for safeguarding species but also for enhancing ecosystem resilience. Their intrinsic value and essential role in sustaining life on Earth underscore the urgent need to prioritize wetland conservation in global environmental strategies.

Lesser Wild Cats in India

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Globally 41 species of Wild Cats belong to the family Felidae and 87% is recognized as small wild cats or lesser cats. There are 33 species of lesser wild cats found globally. Among which 10 are found in India and only 5 are commonly found in West Bengal. Huge number of studies focus mainly on charismatic big cats and very little is known about the lesser cats, regardless of their large distribution across the globe. The knowledge about the abundance, preferred habitats and behavior of the lesser cats are rare. As the big cats are often charismatic looking their familiarity among people are much more compared to the small wild cats or lesser cats. Lesser wild are key

players for the environment like the big cats, as they not only act as meso-predator but also minimize the annual food grain loss and limit the spread of disease by controlling pest population such as the rodents. India has one of the most diverse populations of lesser cats in the world that is 37% of global species diversity of lesser cats.

Due to various anthropogenic activities such as hunting, poaching, habitat loss, destruction and alteration of habitat, the existence of the member of the Felidae family has become threatened throughout the globe. Though conservation efforts, programs, activities are being taken all over the globe to conserve the species and their habitats but most of the efforts are limited to the conservation of 'Big cats' or 'charismatic cat' like Tiger, Lion, Leopard etc. The 'Small wild cats' or 'Lesser Wild Cats' like Jungle Cat, Fishing Cat etc. do not receive the same level of protection. In addition to being present in large cat habitats, a significant population of these small cats is also found in habitats adjacent to human settlements. The lesser wild cats face a much greater threat of extinction as their habitat changes very rapidly.

The lesser wild cats are meso-predators and show intra-guild segregation. The importance of these small cats has been recognized around the world and conservation efforts are being planned. The species of lesser wild cats belong to the Threatened category according to IUCN Red List of Threatened Species and Schedule 1 and 2 according to Wildlife (Protection) Act of 1972 i.e they need immediate conservation measures. The protection of small cats is of utmost important today and the Government of India along with forest authorities and NGOs have taken many steps to protect these small wild cats and their habitats and reduce human-animal conflict.

ধানের ঘরে সাপের বাসা

ড. অরিজিত চ্যাটার্জি

অধ্যাপক, পরিবেশ বিজ্ঞান বিভাগ, আশুতোষ কলেজ

ভারতবর্ষ পৃথিবীর এমন এক দেশ যেখানকার কৃষি এবং জৈববৈচিত্র্য দুই-ই দেশের বিচিত্রতায় আলাদা এক মাত্রা যোগ করে। আপাতদৃষ্টিতে মনে হতে পারে দেশের এই দুই উপাদান পারস্পরিকভাবে পৃথক, আসলে তা কিন্তু নয়। বরং চাষাবাদ এবং বন্যপ্রাণ বাস্তুতন্ত্রে একে-অপরের সাথে ওতপ্রোতভাবে জড়িয়ে পরিবেশের ভারসাম্য সঠিকভাবে রক্ষা করে চলেছে।

মানুষের সাধারণ ধারণা বন্যপ্রাণের স্বাভাবিক আবাসভূমি হল ঘন অরণ্য বা সামুদ্রিক পরিবেশ যেখানে সাধারণ মানুষের প্রবেশাধিকার নিয়ন্ত্রিত। যাতে সেখানকার বন্যপ্রাণ অবাধে কোন রকম বিশৃঙ্খলা ছাড়া নিজের স্বাভাবিক জীবনযাপন করতে পারে। আর অন্যদিকে গ্রাম বা শহরাঞ্চল হল মানুষের থাকার জায়গা। আর পশুপাখি বলতে সেখানে থাকবে গবাদি পশু বা অন্যান্য গৃহপালিতরা। কিন্তু আদ্যে ব্যাপারটা কি তাই? এই দেশের মাত্র মোট এলাকার পাঁচ শতাংশ জায়গা জুড়ে রয়েছে জাতীয় উদ্যান এবং অভয়ারণ্যের মত সংরক্ষিত এলাকা আর এটা বলে দিতে হবে না এই নগণ্য অংশের বাইরেও রয়েছে প্রচুর বন্যপ্রাণ (ছত্রাক, গাছপালা এবং জীবজন্তু) যারা প্রায় অবাধেই মানুষের বাসস্থানের আশেপাশে ঘুরে বেড়ায়।

অন্যদিকে চাষাবাদের মূল সমস্যা হচ্ছে তার পেস্ট। বিভিন্ন ধরনের উদ্ভিদ এবং প্রাণী (আগাছা, ছত্রাক, পোকা থেকে শুরু করে স্তন্যপ্রায়ী অবধি) প্রতিনিয়ত দেশের মূল শস্য যেমন ধান বা বিভিন্ন সব্জির ওপর আক্রমণ শানচ্ছে আর বার্ষিক ফলনের হার কমিয়ে দিচ্ছে। আর সেই পেস্ট তাড়াতাড়ি দেশের চাষি ভাইবোনেরা ব্যবহার করছে নানা ধরনের কীটনাশক, ছত্রাকনাশক, আগাছানাশকের। এখানে মনে রাখতে হবে চাষের জমি বিভিন্ন পোকামাকড় থেকে শুরু করে বিভিন্ন পশুপাখি আস্তানা গাড়ে, যাদের মধ্যে মাত্র গুটিকয়েক হয়তো পেস্ট। বাকিরা কোনভাবেই শস্যের কোন ক্ষতি করেনা। কিন্তু কীটনাশকের বেলাগাম প্রয়োগ (যার মধ্যে পারদ বা ক্যাডমিয়ামের মত ভারী ধাতু উপস্থিত) ভালো খারাপ নির্বিশেষে যেকোনো আগাছা বা প্রাণীদের শেষ করে দেয়। এদের মধ্যে বহু প্রাণী রয়েছে যারা পরিবেশের জন্য বিশেষভাবে উপকারী। যেমন চাষের জমিতে অনেক প্রজাপতি বা পাখি থাকে যারা পরাগ মিলনে সাহায্য করে। কোন কোন ছত্রাক তৈরি হয় যারা ভোজ্য। বহু মাছেরা বর্ষাকালে ডিম পাড়ার জন্যে ধানের জমিতে চলে আসে। যাদের মানুষ খাবারের জন্যে ঘুনি আঁটল দিয়ে ধরে। আবার কেউ কেউ থাকে যারা চাষের সরাসরি অপকার বা উপকার কোনটাই করেনা। এরা সবাই এই কীটনাশক বা আগাছানাশকের জন্যে ক্ষতিগ্রস্ত হয়। তবে একটু বুঝে শুনে চাষ করলে এত কীটনাশক প্রয়োগের কোন দরকারই পড়েনা। কারণ চাষের জমিতেই এমন অনেক প্রাণী থাকে যারা আসলে জমির জৈব কীটনাশক। যেমন পেঁচা এবং ফিঙে পাখি চাষের জমির বিভিন্ন পেস্ট (যেমন মাজরা পোকা ইত্যাদি) খেয়ে নেয়। কাঁকড়া ধানের গোড়া চিবিয়ে নষ্ট করে দেয়, সেই কাঁকড়া খায় হচ্ছে খাঁক শিয়াল। ধানের অন্যতম প্রধান শত্রু হচ্ছে মোঠো ইঁদুর। এরা ধান পাকলে প্রচণ্ড দ্রুত বংশবৃদ্ধি করে আর পাকা ধান কেটে জড়ো করে নিজেদের গর্তে। সেই ইঁদুরের বংশ নিয়ন্ত্রনে রাখে হল দাঁড়াশ সাপ।

দাঁড়াশ সাপের প্রিয় খাবার হল ইঁদুর, এই সাপের ইংরাজি নাম 'ব্যাট স্নেক' দেওয়াও হয়েছে এদের ইঁদুর খাওয়ার প্রবণতা থেকেই। তাহলে বোঝাই যাচ্ছে চাষের জমিতে বন্যপ্রাণের অবস্থান কতটা নিবিড় এবং গুরুত্বপূর্ণ। যা একদিকে শুধু জীবজগতের বিচিত্রতা বজায় রাখে না অন্যদিকে পরিবেশের ভারসাম্যও বজায় রাখে। যা পরিবেশের বাস্তুতান্ত্রিক এবং দেশের অর্থনৈতিক দিক থেকেও অত্যন্ত গুরুত্বপূর্ণ।

Conservation and Conflicts in Sundarban Biosphere Reserve

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The Sundarban Biosphere Reserve in West Bengal, India, is part of the largest mangrove forest ecosystem in the world. The reserve is a world heritage point and the last retreat for the exposed Bengal tiger at a pivotal time when global climate change threatens their actuality. The mangrove ecosystem and wildlife conservation have come the precedence for the state government of West Bengal. still, in getting so, the state government imposes restrictions on catching fish in the core and buffer areas of the biosphere reserve, which consolidate fishers's everyday resource- access struggles in the mangrove timber.

The marine ecosystems are the integral part of our biodiversity and provide many services to the human beings, particularly in the food security, fodder, and raw materials for many industries, building materials for coral and sand and protection against various natural dangers such as coastal erosion and floods. The Indian Sundarban Biosphere Reserve is very rich in floral and faunal biodiversity.

To date, the prime question remains how to balance biodiversity conservation while still providing a livelihood to the local population in the Sundarbans. In order to answer this question, the resource-management policy in the Sundarbans must directly involve fishing communities, including both men and women, who primarily depend on forest-based fishing.

To date, the prime question remains how to balance biodiversity conservation while still providing a livelihood to the local population in the Sundar-bans. In order to answer this question, the resource-management policy in the Sundarbans must directly involve fishing communities, including both men and women, who primarily depend on forest-based fishing. Fishermen are often charged fines more than once when different forest officials intercept them in the STR, and the frequency of fines need to be kept at a minimum. Finally, a more humanitarian spirit is needed while interacting with the fishing communities of the Sundarbans, as they are the ones who possess the capability of saving the world's largest mangrove forest region.