Aaranyak

Nourishing nature to secure our future

Biolink

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ABOUT AARANYAK

Aaranyak is registered society working towards nature conservation in Northeast India, since 1989. Our strength lies in applied research in biological and social fields and our thrust area of work is the Northeastern India and Eastern Himalayas.

MISSION

Our mission is to foster conservation of biodiversity in Northeast India through research, environment education, capacity building and advocacy for legal and policy reform to usher a new era of ecological security.

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COVER ILLUSTRATION

Credit: Ivy Farheen Hussain

BACK COVER

Credit: Udayan Borthakur

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Editorial

PEOPLE'S CALL

It was so heartening to witness the mass rising among the residents of Guwahati recently against the proposal of the authorities concerned to cut those centuries' old trees on the bank of Dighalipukhuri in the heart of the city to pave the way for construction of a flyover. The People were gravely concerned and appalled at the looming prospects of those trees being razed to the ground.

These trees have been standing witness to the city's growth for several decades besides immensely enriching the natural environment in the locality. Obviously, the citizens were not able to imagine a Guwahati city without those quintessential trees that form a unique aesthetic landmark around the historic Dighalipukhuri.

The banner of protests raised by the people was in no time supported by various organisations of different hues including those working in pursuit of conservation of the environment and bio resources. Within a few days it metamorphosed in a vociferous mass movement of sorts making the authorities concerned and even the judiciary to take note of it.

The outcome of this disciplined but strong movement of the people to protect the trees on the bank of Dighalipukhuri was more heartening as the state government of Assam has decided not to disturb those trees for construction of the flyover.

This has reflected how the common people when standing united can do a world of good for conservation of the natural environment when the demand is justified and the way of raising the demand is disciplined and sans any bias or vested interests. It reminds the common people of their common responsibility and tremendous strength in respect of conservation of environment and biodiversity.

The people are the major stakeholders in the efforts for conservation of environment and the efforts of government and non-government agencies can hardly make sustainable impacts without the cooperation of common people in this regard.

Not only those invaluable trees surrounding Dighalipukhuri in Guwahati, there is a need for sustainable conservation of the numerous hills and wetlands in Greater Guwahati area for conservation of biodiversity, the fast depleting ground water resources and to sustain all types of lives in the area for generations to come. The people living in the area must remain alert and guard against any wrongdoing that harms those hills and remaining wetlands. It is the people's call – if they steadfastly decide not to haphazardly disturb those hills and wetlands in and around Guwahati anymore, no one will be able to do so. The same is true for the entire region which is part of a global biodiversity hotspot.

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FEATURE ARTICLE

Importance of birds and migratory birds in ecosystems

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Introduction

Birds are an essential component of ecosystems worldwide, contributing to their balance and functionality. They are found in virtually every habitat on Earth, from dense forests and wetlands to open grasslands, mountains, and urban areas. Birds are vital agents for critical ecosystem services such as pollination, seed dispersal, pest control, and nutrient cycling. In many regions, migratory birds further amplify these benefits, connecting ecosystems across continents. Their migratory routes span thousands of miles, demonstrating nature's intricate interconnections. In places like Assam, where biodiversity is particularly rich, birds play key roles in maintaining ecological health, supporting human livelihoods, and enriching cultural heritage.

Migratory birds, in particular, are a vital link between different ecosystems. They contribute to global biodiversity by transporting genetic material across geographic regions and enriching ecosystems far from their breeding grounds. However, despite their ecological importance, birds and migratory birds face significant threats due to habitat loss, climate change, pollution, and human activities. Protecting them is critical not only for biodiversity but also for sustaining ecosystem services that benefit humans.

Photo: Nejib Ahmed

A pair of Ruddy shelduck

Birds as ecosystem engineers

Birds contribute significantly to the structure and function of ecosystems through their roles as ecosystem engineers. Species like woodpeckers, for example, create cavities in trees that provide habitats for other animals such as mammals, insects, and other bird species. Scavengers like vultures help clean the environment by feeding on carcasses, which prevents the spread of disease and contributes to nutrient cycling. Raptors, such as hawks and eagles, help control the populations of smaller animals, ensuring that food webs remain balanced.

Seed dispersal is another vital role that many bird species play, particularly fruit-eating birds like hornbills and parrots. By consuming fruits and then excreting the seeds in new locations, these birds facilitate the growth of plant species, which can lead to forest regeneration and habitat expansion. This process is especially important in areas recovering from deforestation or other forms of habitat degradation. The presence of birds in these areas not only helps restore plant diversity but also supports the recovery of other wildlife, demonstrating their role as critical agents of ecological resilience.

The role of migratory birds in global ecological networks

Migratory birds are crucial in maintaining global ecological networks. Their migratory behavior allows them to link ecosystems that are thousands of miles apart. As they travel between breeding and wintering grounds, migratory birds transport nutrients and seeds, fostering genetic diversity and supporting plant reproduction in far-flung areas. In Assam, migratory birds such as Bar-headed Geese, Siberian Cranes, and Northern Pintails bring ecological benefits by sustaining the health of wetlands and other habitats they temporarily occupy. These birds act as bio-indicators of ecosystem health. Their presence or absence in an ecosystem can indicate the overall state of biodiversity and environmental quality. Since migratory birds are sensitive to changes in their habitats, their population trends often provide early warning signals of environmental issues such as habitat destruction or climate change. The decline in migratory bird populations in certain areas, for instance, may indicate broader ecological problems that could eventually affect other species, including humans.

Furthermore, migratory birds play an essential role in pest control across vast areas. During migration, many birds consume large quantities of insects, helping to control pest populations in agricultural landscapes. Without these natural pest controllers, farmers would need to rely more heavily on pesticides. Thus, the ecological services provided by migratory birds contribute not only to biodiversity but also to sustainable agricultural practices.

Economic and socio-cultural significance of birds

In addition to their ecological roles, birds hold significant economic and cultural value. Ecotourism, particularly birdwatching, is a growing industry in many parts of the world. In Assam, for example, the presence of both resident and migratory bird species attracts tourists from across India and beyond, generating income for local communities. Sanctuaries like Kaziranga and Dibru-Saikhowa National Park, hosts diverse bird species, draw bird enthusiasts and nature lovers who contribute to the region's economy.

Photo: Udayan Borthakur

Amur falcon taking a flight

Birdwatching tours and festivals centered around migratory birds bring direct financial benefits to rural communities, often providing jobs and supporting local businesses. This economic incentive encourages communities to engage in conservation efforts, as they recognize the long-term value of protecting bird habitats. Birds, particularly migratory species, are an important part of Assam's eco-tourism strategy, and their conservation is linked to the preservation of critical habitats such as wetlands and grasslands, which in turn benefit other wildlife. Many cultures in Assam and beyond revere birds in their mythology, art, and traditions. They are often seen as symbols of freedom, peace, and renewal. Birds also feature prominently in local festivals, songs, and folklore, enriching cultural heritage and fostering a deep connection between people and nature. This connection to birds is not only a source of inspiration but also encourages conservation efforts at the grassroots level, where community-based initiatives play a key role in protecting bird populations and their habitats.

Migratory birds and conservation of critical habitats

The migration of birds is closely linked to the conservation of critical habitats such as wetlands, forests, and grasslands. Migratory birds rely on these habitats for breeding, feeding, and resting during their long journeys. In Assam, wetlands like Deepor Beel and the Brahmaputra River basin provide essential stopover points for migratory birds. These areas are critical for the survival of many bird species, and their conservation has a cascading effect on the protection of other species that share these habitats.

Wetlands, for example, are among the most productive ecosystems on the planet. They support a rich diversity of plant and animal life, store carbon, regulate water cycles, and act as natural buffers against flooding. The presence of migratory birds in these ecosystems highlights the importance of preserving wetlands for their biodiversity and ecosystem services. Protecting these habitats benefits not only the birds but also the broader environment and the human communities that depend on these ecosystems for water, agriculture, and flood control.

Photo: Nejib Ahmed

A flock of Bar-headed goose

Birds and ecosystem services: Pollination and pest control

Birds provide several essential ecosystem services that benefit humans and the environment. One of the most important services is pollination. While insects are the most well-known pollinators, certain bird species, such as hummingbirds, sunbirds, and honeyeaters, also play a crucial role in pollinating plants, especially in tropical and subtropical regions. These bird pollinators help maintain plant diversity by facilitating the reproduction of flowering plants. In regions like Assam, where agriculture is a significant part of the economy, bird pollinators contribute to the productivity of crops that rely on pollination for fruit and seed production.

Pest control is another critical service provided by birds. Many insectivorous birds, such as warblers, flycatchers, and swallows, consume large quantities of insects, including those that are harmful to crops. By keeping pest populations in check, birds reduce the need for chemical pesticides, which can have harmful effects on the environment and human health. In agricultural landscapes, birds help maintain the balance of ecosystems by controlling pest populations, thereby contributing to sustainable farming practices and reducing the risk of crop losses.

Threats to Bird Populations: Habitat Loss and Climate Change

Habitat loss is one of the primary drivers of bird population declines. Deforestation, wetland drainage, agricultural expansion, and urban development have led to the destruction and fragmentation of many bird habitats. In Assam, large areas of forest and wetland have been converted into farmland or urban areas, reducing the availability of suitable habitats for both resident and migratory birds. Climate change is another major threat to bird populations, particularly migratory species. Rising temperatures, altered precipitation patterns, and more frequent extreme weather events are affecting the availability of food and suitable habitats along migratory routes. Birds that rely on specific timing for their migration, such as when food sources become available, are particularly vulnerable to these changes. As climate change disrupts these delicate ecological processes, many migratory bird species are experiencing declines in population, with some facing the risk of extinction.

Photo: Udayan Borthakur

Northern Pintails fly in flock

Habitat protection key to biodiversity conservation in NE India: Dr. Anwaruddin Choudhury

Interviewed by Jayanta Kumar Pathak
(Sr. Manager, Environment Education and Capacity Building Division, Aaranyak)

Dr. Anwaruddin Choudhury is a renowned naturalist, conservation scientist, ornithologist, mammalogist, artist, photographer and a prominent author. Dr. Choudhury is one of the pioneers in wildlife conservation in Northeastern India who is popularly known as the 'Birdman of Assam'.

Dr. Choudhury's efforts in the creation of 13 Wildlife Sanctuaries and two Elephant Reserves in Northeast India are testaments to his visionary leadership. His contributions to the restoration of the Manas World Heritage Site have been widely appreciated.

Dr. Choudhury's discovery of three new species of flying squirrels, a subspecies of the Hoolock gibbon and rediscovery of the Manipur Bush Quail are significant landmarks in his illustrious career.

In the year 2008, Dr. Choudhury earned his degree of 'Doctor of Science'. He has 28 books & monographs, more than 250 scientific papers, 960 popular articles and 51 survey reports to his credit.

Dr. Choudhury's lifelong contributions to academia, public service, and environmental stewardship underscore his multifaceted impact on the region.

Currently, he is an active member of eight IUCN Species Survival Commissions, and also associated with many government organisations and NGOs as well as different journals of national and international repute.

The conservation journey of Dr. Choudhury is driven by passion, self-interest and a deep sense of responsibility toward the society of Northeastern India.

Q *What unique characteristics have you observed in Assam and Northeast India's biodiversity?*

Each and every region has their uniqueness. This small region of India has parts of two zoogeographic regions, four subregions, and two Endemic Bird Areas. In just 8% of the country's geographic area there are 65% of mammals and 70% of birds.

Q *In your opinion, what are the key priority areas in biodiversity protection and conservation in Assam and Northeast India that require immediate action for the well-being of both nature and humans?*

First and foremost is habitat protection. Very dense forest cover as classified and reported in the State of Forest Report, which is negligible in most of the Northeastern state other than Arunachal Pradesh needs to be protected at any cost, especially those fragments that are outside the protected areas. These are perhaps the only primary forest left in the region. There are fewer tall grassland areas outside the protected areas, mainly in Arunachal Pradesh along the Dibang and Lohit rivers, these also should be protected, maybe with support and involvement of local communities. Human-elephant conflict, which is being addressed in various ways, needs a relook. Poor villagers whose houses are prone to severe damage should be covered by special housing schemes such as PMAY. The amount of compensation should also be enhanced substantially.

Many of the key biodiversity areas where I worked and identified as potential conservation areas have already been notified as protected areas. However, some more areas need to be protected such as Dum Duma-Dangori, Kakojan, Tirap complex, Patharia Hill, Simleng River, Barail (Dima Hasao part), Dulung-Kakoi, Bogoli (part of Ranga reserved forest), Dhansiri (all in Assam), Saipung (in Meghalaya), Angko range (in Manipur) and several areas as community conserved ones across the region.

Q *Have you identified any critical gaps in current conservation efforts where urgent intervention is needed?*

There are noticeable gaps in the level of protection measures. If Kaziranga's case is taken as the benchmark then others across the region are far below. In forested and hilly protected areas SMART patrolling needs to be introduced. Then there is the knowledge gap. Bats, murid rodents and herpetofauna are still very poorly covered by research in almost all the protected areas. Then there is a need for more involvement of the local communities as a major stakeholder in conservation.

Q *How can we ensure effective community engagement in the protection and conservation of nature and natural resources in Assam and Northeast India?*

Through motivation, awareness and examples. There should be exchange visits to share knowledge and experience of volunteers/members between the good examples. Even members from potential areas should be encouraged to visit good examples such as Bugun conservation initiative in Arunachal Pradesh and Khonoma in Nagaland. The fringe community should be made to feel by the Forest Department as well as NGOs that they are important stakeholders in conservation.

Q What is your perspective on the convergence of different stakeholders-government, NGOs, local communities, and private entities-in driving conservation initiatives in this region?

Ideally this should have been in practice but unfortunately, it is not so in the field. Even various government departments are often unable to work in convergence. However, the concept is fine and hence, at various levels it is going on. The success; however, depends upon the key officials taking interest as some could be indifferent. As I have mentioned earlier of PMAY houses for affected families, this can be taken up jointly by Forest and Rural Development departments as an example of convergence.

Q What are your suggestions for NGOs and the youth in contributing to the conservation of biodiversity?

First is to keep on acquiring knowledge as power lies there in. Both youth and NGOs need to keep themselves updated. Baseline documentation for taxa that have been poorly covered or not covered at all should be the priority for youth and NGOs as part of their research programmes. NGOs should be the main agencies to supplement governmental efforts in conservation. Awareness and motivation of local communities should be mainly done by NGOs, individuals as conservationists and youth as young naturalists with or without support from Forest Departments or other governmental agencies.

Petaurista mechukaensis

Petaurista siangensis

Petaurista mishmiensis

Artworks by TONI LLOBET

In Fig.: The three new species of flying squirrels discovered by Dr. Anwaruddin Choudhury

FEATURE ARTICLE

Environmental impacts of electronic waste & potential pathways for its management

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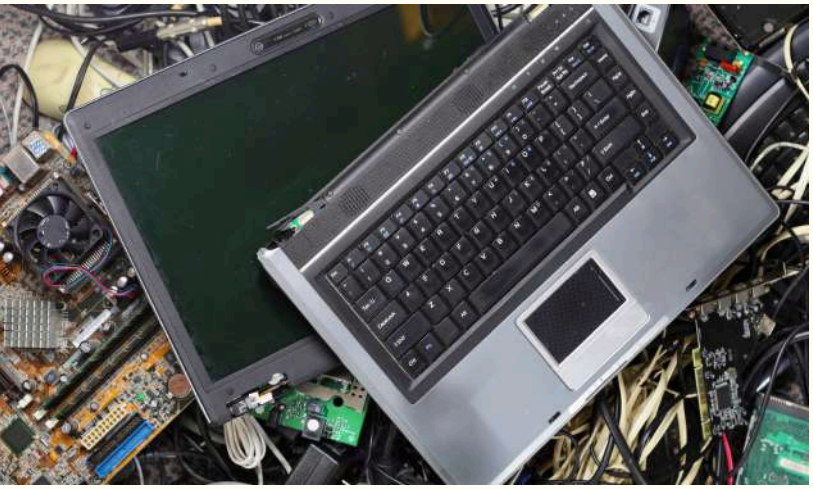
(Er. Ankuran Pathak, an Assistant Executive Engineer in Pollution Control Board, Regional office, Assam, is a passionate and insightful writer specialising in e-waste management)

Discovery of electrons, followed by the invention of semiconductor devices and development of computers thereafter, have profoundly impacted our way of life and consequently shaped the world, we live in today. Often it is said that we live in a digital age and it is evident from the plethora of electrical and electronic gadgets, we are surrounded with. Although, advancement in electronics and information technology has benefited a large section of the human society, the environmental footprint associated with it is quite significant. Humankind's insatiable demand for electronic devices is creating the world's fastest-growing waste stream, 'E-Waste'; it can be defined as any discarded product with a battery or plug, and contains toxic and hazardous substances such as mercury, cadmium, chromium etc. that can pose severe risk to human and environmental health.



Magnitude of the problem

Over-consumption is one of the root causes of the exponential increase in generation of waste materials as well as the environmental hazards associated with them. According to United Nations Institute for Training and Research (UNITAR), a colossal quantity of around 62 million tonnes (Mt) of e-waste was produced globally in the year 2022, around 82% more than that of the generation in 2010 and with the prevalent consumption patterns, it is likely to increase by around 32% to a whopping 82 Million tonnes (Mt) by 2030. Globally, society only deals with around 22% of e-waste appropriately and there is little data on what happens to the rest, most part of it ends up in landfill, or is disposed of by informal workers in poor conditions. Owing to the rapid urbanization, India has emerged as one of the biggest generator of E-waste after China and United States. As estimated, around 1.6 Million tonnes of e-waste was generated in our country during the year 2021-22. With respect to the ever increasing quantum of e-waste generation, the available e-waste management infrastructure to deal with this massive problem is undoubtedly inadequate.

Hazards associated with E-Waste

Electronic and electrical equipment (EEE) contains a wide range of substances which are potentially hazardous in nature. For example, Mercury a toxic element is present in certain components of electrical and electronic items such as computer monitors, switches, fluorescent lamps etc. Mercury is a known bioaccumulant, and once it enters into the food chain can pose serious threats to the human health by affecting the nervous system and other vital organs. Apart from Mercury, heavy metals like Cadmium, Chromium, Lead etc. and brominated flame retardants like poly-brominated biphenyls (PBBs) are integral part of Electronic components. Such products after end of their usable life needs to be disposed of and if not properly handled can release the toxic elements and compounds embedded in them into the environment. For example, open-air burning and acid baths being used by the informal waste sector, to recover valuable materials from electronic components release these toxic materials leaching into the environment. These practices can also expose workers to high levels of these contaminants and subsequently lead to irreversible health effects, including carcinogenic effects and neurological damage. As reported by UNITAR, around 58 thousand kg of mercury and 45 million kg of plastics containing brominated flame retardants are released into the environment every year as a result of non-complaint e-waste management.

Management and mitigation

Considering the severity of the threat, unscientific handling and disposal of electronic wastes poses on all of us as well as the natural environment, a multi-pronged strategy is needed to deal with it effectively. An e-waste management strategy should necessarily encompass the following aspects:

Ø Development of adequate e-waste recycling & refurbishing infrastructure to cater to increasing quantities of e-waste generated.
Ø Strengthening Circular economy pathways through reverse logistics systems.
Ø Augmentation of research and innovation for development of clean e-waste recycling technologies as well as for reduction of hazardous substances in electrical and electronic equipment.
Ø Effective enforcement of the legislations formulated for e-waste management.
Ø Awareness among the common people with regards to the detrimental effects of improper e-waste disposal and behavioural changes required for its reduction.

One of the most important requirements for proper e-waste management is a robust as well as compliant e-waste recycling & refurbishing infrastructure. Recycling of e-waste can be referred to as a series of physical and chemical processes which aim at recovering valuable resources in the form of precious metals including Gold, Silver, Palladium, Copper, Tin and Nickel from the discarded products without causing harm to the environment as well as human health. Pyro-metallurgical processes, hydro metallurgy/ chemical leaching and electrometallurgical operations are some of the commonly used technologies for recovery of valuable metals. On the other hand, e-waste refurbishing is the process of separating unusable components from usable components present in a discarded electronic product and restoring the product to a working condition thereby extending its usable life. Refurbishing of e-waste is comparatively less complicated but has numerous benefits from the environmental perspective. Refurbishing can reduce the quantum of e-waste which needs to be recycled thereby conserving energy required as well as emissions associated with conventional recycling processes.

There is enormous scope for innovation in the field of e-waste recycling especially in developing of nature based, less energy intensive technological solutions which have reduced environmental impact. Although significant research has been done with respect to technologies such as bio-metallurgy where extraction of valuable metals can be achieved by help of microorganisms, however, such nature based technologies are not often observed to be utilised in a commercial scale. Therefore, there is profound need for policies to bring in industries and academia together to create an ecosystem where sustainable technologies thrive to mitigate the ill-effects of e-waste.

Isolated e-waste recycling units cannot be completely efficacious without a proper reverse logistics system for discarded products. A reverse logistics system is a supply chain process that moves products from consumers back to the producer and subsequent channelization to refurbishers or recyclers enabling recovery of valuable resources. In absence of a well-established supply chain process, there is a likelihood for e-waste generated in areas which do not have access to a recycling facility to enter into the informal sector or end up in sanitary landfills. Leachate, laden with toxic elements and compounds from such municipal waste dumpsites can potentially contaminate the soil and water causing serious environmental hazards.

Therefore, a comprehensive network of e-waste deposition centres possibly at all municipal wards, rural development blocks, commercial distribution centres of Electrical and Electronics companies, authorised repairing centres, retail stores for electrical and electronic goods etc. connected with a robust collection and transportation system , and subsequent channelization of the e-waste thus collected to compliant recycling units can help the modern society achieve circular economy in the E-waste management sector.

Our country has a comprehensive legislative framework for effective e-waste management. The Ministry of Environment, Forest and Climate Change, Govt. of India had notified the first regulation on E-waste Management in the year 2011, which was superseded by the E-waste Management Rules, 2016 and subsequently by the E-waste Management Rules, 2022 which is currently in force. These Rules have introduced a new Extended Producer Responsibility (EPR) regime for augmentation of e-waste recycling. Producers of electrical and electronic equipment (EEE) are given annual E-Waste Recycling targets based on the e-waste generation from the products produced and sold by them. Moreover, provision for transaction of EPR Certificate between Producers and Recyclers/Refurbishers has been introduced thereby incentivizing the whole E-waste management industry. This EPR regime has, therefore created a suitable ecosystem for industries in the waste management sector to flourish. It also mandates every electronic product manufacturing and selling company to ensure reduction of hazardous substances such as Lead, Mercury, Cadmium, Hexavalent Chromium, polybrominated biphenyls and polybrominated diphenyl ethers in electrical and electronic equipment produced by them, and restrict them below the prescribed limits.

Way forward

Although considerable efforts have been made to mitigate the harmful impacts of e-waste, the gap between the quantum of e-waste generated and the quantum adequately recycled is staggering. In an era of conspicuous consumerism, it will be very difficult to bridge this gap unless and until we acknowledge the environmental footprint of these products we unmindfully consume. Understanding the facts pertaining to harms caused by unscientific disposal of e-waste generated by us can help us as a society to refrain from overconsumption and thereby reducing e-waste generation. Small behavioural changes such as opting for refurbished products, repairing old computers, mobile phones and other electronic gadgets and extending their usable lives to the extent possible and refraining from getting lured by ever evolving features of these gadgets can yield great results in minimizing e-waste. Small steps towards circularity can lead us towards ensuring a sustainable future.

FEATURE ARTICLE

Wild elephants and farmers of Udalguri, Baksa, Tamulpur districts of Assam–strategies to reduce elephant crop raiding behaviour

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Photo: Field Team, Aaranyak

Wild elephants on a crop field in Tamulpur, Assam

The proliferation of the human population into or adjacent to wildlife territories, along with the modification of natural ecosystems for settlement, agricultural and other economic activities, exacerbates conflicts between humans and wildlife.

In order to satisfy their significant caloric requirements, elephants commonly forage on agricultural crops, favouring specific human cultivars rather than relying solely on natural forage. This issue of elephant crop raiding is particularly acute for those who reside near forest areas, as these farmers consider elephants as a significant threat to their livelihood.

While the challenge of human-elephant conflicts is a global concern, it is particularly critical in certain areas of Assam, where most individuals rely on agriculture as a livelihood source. In the north-west part of the state, lies the districts of Baksa, Udalguri and Tamulpur within the Indo-Bhutan Border. Here, numerous marginalized farmers find themselves in competition with elephants in a struggle for land, food, water, and other natural resources against wildlife, often without realizing that their activities have resulted in encroachment upon the natural habitats or territories of elephants. The ongoing conflict jeopardizes the food and economic well-being of farmers, obstructs conservation initiatives for elephants, and poses risks to the safety of both humans and elephants and as well also affects the traditional lifestyles of these rural communities. The challenges are further intensified by drought conditions prevalent in the bhabar terai region of the eastern Himalayas.

The coexistence of these local communities and elephants has persisted for many years; nevertheless, the current pressures from unregulated development and changing climate conditions are now intensifying the issue. The majority of damage occurrences by wild elephants are mainly recorded in fields throughout the paddy harvest, and afterward, they frequently invade residences, granaries, and food storage areas.

In light of the challenges outlined, farmers adopt a diverse array of strategies to safeguard their crops. Predominantly, they utilize traditional optic and auditory deterrent methods, such as shouting, creating loud noises, igniting fires, throwing stones, and lighting to deter elephants.

However, there are instances when these deterrent techniques prove ineffective; for example, the use of noise and lights can induce panic in elephants, leading them to inadvertently trample and damage the crops. Additionally, the early warning system, which involves alerts disseminated by local residents regarding the presence of elephants, along with night guarding, proves to be effective in minimizing elephant-related crop damage.

This initiative is of considerable importance and relevance to community members, as local volunteers, such as those from the ADS under the forest department and the Elephant Conservation Network of Aaranyak, would often accompany the villagers and play an active role in managing the movement of elephants. Meanwhile, some farmers have begun to utilize modern technologies like solar fencing; however, the extent of this adoption is largely dependent on the financial means of the farmers.

The phenomenon of elephant crop-raiding is particularly troublesome for farmers, not due to how often it occurs, but rather because of the severity of the damage caused. There are instances where a farmer's diligent efforts are devastated in the span of a single night. Planting crops that elephants find unappetizing could help to decrease their attraction to agricultural lands.

The significance of agricultural crops in elephant crop raiding behaviour

In these conflict-affected regions, small-scale agriculture serves as the main source of income where they cultivate high-value cash crops such as paddy, potatoes, pumpkins. However, due to significant damage caused by elephants, compounded by the drought conditions prevalent in the bhabar belt, many farmers have transitioned these fertile lands into small tea plantations or have left them abandoned and unproductive. In such circumstances, growing crops that are less preferred by elephants and drought resilient varieties could offer farmers some respite.

However, a thorough analysis of the factors influencing crop depredation is essential for developing effective management strategies, as the frequency and nature of these occurrences differ from one location to another.

Photo: Field Team, Aaranyak

Integrated cropping pattern in a crop field of Baksa showcasing coexistence

It is apparent that the primary factors contributing to crop damage include the types of crop varieties, the population of wild elephants, the proximity of the farm to the forests, as well as the ecological context of the surrounding area. For example, crops like 'yam' are preferred in Baksa and Tamulpur, are not favoured by elephants in Udalguri. This highlights the need for site-specific management techniques to minimize the crop raiding occurrences by wild animals.

In a proactive effort led by Aaranyak to reduce elephant crop raiding behaviour, a program is aimed to encourage farmers to adopt cultivation of alternative crops alternative crops by providing them with tuber crops such as yam, ginger, and turmeric, as well as lentils and oilseeds like niger and mustard, which are less favoured by elephants. This initiative is designed with careful consideration of the crop raiding behaviour of elephants, the suitability of the region's climate, the availability of seeds, and the accessibility of local markets.

Through evidence of past experiences, these crops have undergone minimal or no damage as the elephants don't prefer to feed upon these crops. Although trampling may cause some damage, the tuber crops are resilient to the damages and revive again. Additionally, the traditional knowledge that farmers hold regarding the behaviour and migration of elephants is essential to the success of such initiatives.

Photo: Field Team, Aaranyak

A lady of Udalguri harvesting her yam cultivation

As of now, there has been a limited amount of research into the patterns of crop-raiding activities by wild elephants, as well as broader management strategies that can be employed for the same.

The palatability of crops significantly influences the behaviour of elephants when raiding fields which act benefitting for the farmers by reducing the frequency and severity of elephant crop-raiding incidences. As a result, this could lead to reduced crop losses and an enhancement of their economic stability, food security and overall wellbeing of self and the society.

Photo: Anushka Saikia

A mother elephant and her calf

FEATURE ARTICLE

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Photo: Partha Pratim Das

পাহাৰঃ চহৰৰ অভিভাৱক

গুৱাহাটীক আগুৰি আছে নীলাচল, চুনচালি আৰু নৰকাসুৰ পাহাৰে। এই পাহাৰবোৰে চহৰখনৰ বাবে এক সুন্দৰ পটভূমি প্ৰদান কৰাই নহয়, পৰিৱেশগত ভাৰসাম্য বজাই ৰখাতো গুৰুত্বপূৰ্ণ ভূমিকা পালন কৰি আহিছে। এই পাহাৰ কেইখনে প্ৰাকৃতিক সুৰক্ষা কৱচ হিচাপে কাম কৰে, উষ্ণতা আৰু বতাহৰ ধৰণ নিয়ন্ত্ৰণ কৰে আৰু বিভিন্ন ধৰণৰ উদ্ভিদ আৰু প্ৰাণীৰ বাসস্থান প্ৰদান কৰে। পানী সংৰক্ষণৰ বাবেও এই পাহাৰসমূহ অতি প্ৰয়োজনীয়। এই পাহাৰ সমূহে বৰষুণৰ পানী ধৰি ৰাখে আৰু গুৱাহাটীৰ ভূগৰ্ভস্থ পানীৰ ভড়াল পুনৰ ভৰাই তোলে। কিন্তু নিয়ন্ত্ৰণহীন নগৰীকৰণে এই সেউজ স্থানসমূহৰ প্ৰতি ভাবুকি কঢ়িয়াই আনিছে, যাৰ ফলত ইয়াৰ সুৰক্ষা আৰু বহনক্ষম ব্যৱহাৰৰ বাবে ব্যৱস্থা গ্ৰহণ কৰাটো অতি প্ৰয়োজনীয় হৈ পৰিছে।

প্ৰাকৃতিক জলাশয় আৰু পুখুৰীঃ প্ৰকৃতিৰ জলাশয়

গুৱাহাটী অসংখ্য জলাশয় আৰু পুখুৰীৰে সমৃদ্ধ, যেনে দীপৰ বিল, শিলশাকো বিল, আৰু দীঘলীপুখুৰী। চহৰখনৰ পৰিৱেশ ভাৰসাম্য বজাই ৰখাৰ বাবে এই জলভাগসমূহ অতি প্ৰয়োজনীয়। ইহঁতে বিভিন্ন ধৰণৰ জলজ জীৱক সহায় কৰে আৰু পৰিভ্ৰমী চৰাইৰ বাবে গুৰুত্বপূৰ্ণ 'ষ্টপ অভাৰ পইণ্ট' হিচাপে কাম কৰে। জলাশয়বোৰে প্ৰাকৃতিক বান নিয়ন্ত্ৰণ ব্যৱস্থা হিচাপেও কাম কৰে আৰু ভূগৰ্ভস্থ পানী পুনৰ ভৰোৱাত সহায় কৰে। দুৰ্ভাগ্যজনকভাৱে বেদখল আৰু প্ৰদূষণ এই পৰিৱেশ তন্ত্ৰসমূহৰ বাবে ডাঙৰ ভাবুকি। এই প্ৰাকৃতিক জলাশয়সমূহ সুৰক্ষিত কৰিবলৈ সংৰক্ষণৰ প্ৰচেষ্টাসমূহ শক্তিশালী কৰাৰ প্ৰয়োজন, যাতে ইয়াৰ দ্বাৰা চহৰখনৰ জৈৱ বৈচিত্ৰ্যক সুৰক্ষিত কৰি ৰখাটোক নিশ্চিত কৰিব পাৰি।

Photo: Wasima Begum

নদীঃ মহানগৰীৰ জীৱনৰেখা

গুৱাহাটীৰ মাজেৰে বৈ যোৱা প্ৰবল ব্ৰহ্মপুত্ৰ নদীখনে কেৱল পানীৰ উৎসই নহয়, হাজাৰ হাজাৰ লোকৰ জীৱিকাৰ বাবেও সহায় কৰে। আন আন উপনদী যেনে ভৰলু, বাহিনী, আৰু কলং আদিয়ে চহৰখনৰ জটিল জল সূত্ৰ গঢ়ি তোলাত অৰিহণা যোগায়। এই নদীসমূহত বিভিন্ন মাছৰ প্ৰজাতি আৰু জলজ উদ্ভিদৰ বাসস্থান গঢ়াত আৰু স্থানীয় পৰিৱেশ তন্ত্ৰত গুৰুত্বপূৰ্ণ ভূমিকা পালন কৰে। কিন্তু প্ৰদূষণ আৰু পলসৰ ফলত ইহঁতৰ বিপদ ক্ৰমাৎ বৃদ্ধি পাইছে। ভৱিষ্যত প্ৰজন্মৰ বাবে এই জীৱনৰেখাসমূহ সংৰক্ষণৰ বাবে বহনক্ষম নদী ব্যৱস্থাপনা পদ্ধতি অৱলম্বন কৰাটো অতি গুৰুত্বপূৰ্ণ।

বনাঞ্চলঃ গুৱাহাটীৰ হাওঁফাওঁ

আমচাং বন্যপ্ৰাণী অভয়াৰণ্য আৰু গৰভংগা সংৰক্ষিত বনাঞ্চলকে ধৰি গুৱাহাটীৰ বনাঞ্চলসমূহ মহানগৰীৰ হাওঁফাওঁৰ দৰে কাম কৰা অতি গুৰুত্বপূৰ্ণ পৰিৱেশ মণ্ডল। এই অৰণ্যসমূহ জৈৱ বৈচিত্ৰ্যৰে সমৃদ্ধ, ইয়াত হাতী, নাহৰফুটুকী, বান্দৰকে ধৰি অসংখ্য প্ৰজাতিৰ গছ-গছনি, উদ্ভিদ, চৰাই আৰু জীৱ-জন্তু থাকে। বনাঞ্চলসমূহে কাৰ্বন নিষ্কাশনতো সহায় কৰে, যাৰ ফলত জলবায়ু পৰিৱৰ্তনৰ প্ৰভাৱ কম হয়। বৰ্তমান বনাঞ্চল ধ্বংস আৰু বাসস্থানৰ খণ্ডিতকৰণ হৈছে ডাঙৰ সমস্যা, যিবোৰ জনসাধাৰণৰ দ্বাৰা পৰিচালিত সংৰক্ষণ ব্যৱস্হাপনা আৰু পৰিৱেশ আইন কঠোৰ বলবৎ কৰাৰ জৰিয়তে সমাধান কৰিব লাগিব।

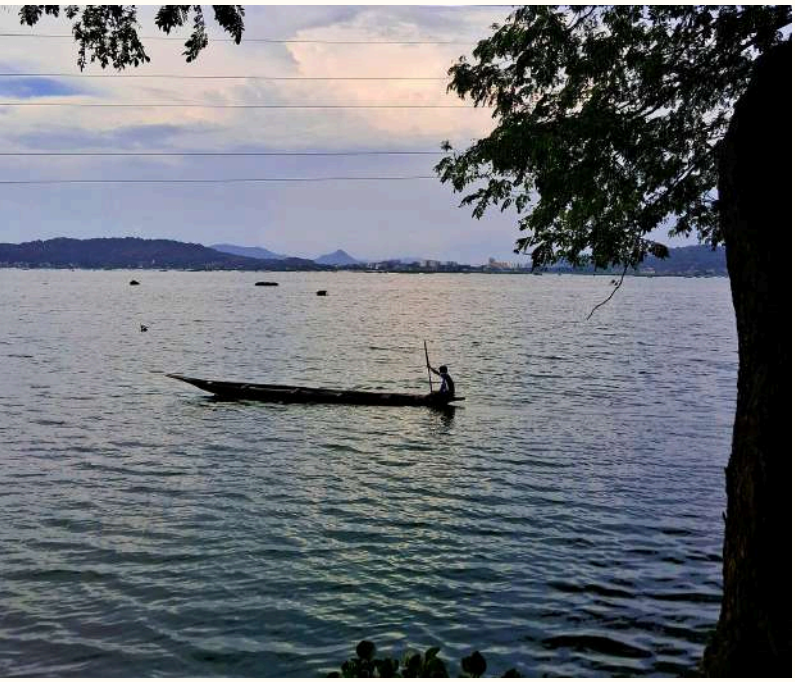

Photo: Kakali Baishya

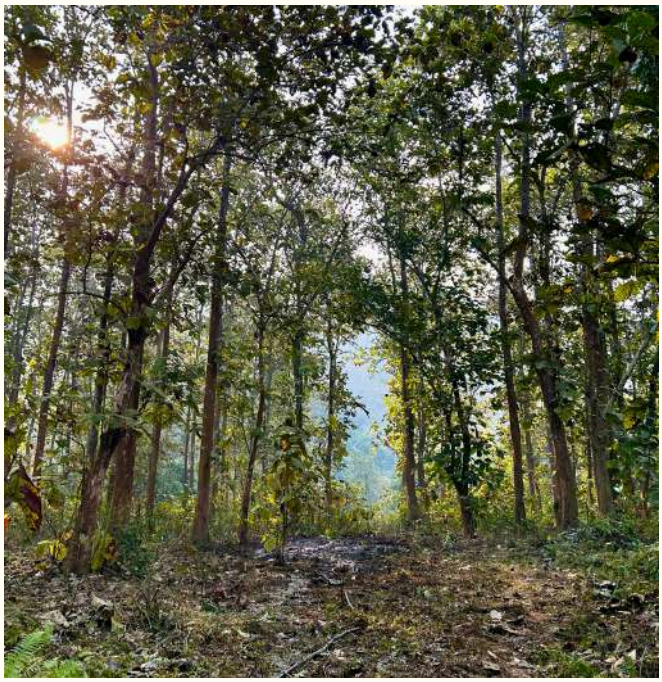

Photo: Wasima Begum

উদ্ভিদ আৰু প্ৰাণীঃ জৈৱ বৈচিত্ৰ্যৰ অমূল্য আধাৰ

গুৱাহাটী জৈৱ বৈচিত্ৰ্যৰ হটস্পটত বিভিন্ন ধৰণৰ উদ্ভিদ আৰু প্ৰাণীজগত আছে। পৰিৱেশ ভাৰসাম্য বজাই ৰখা আৰু গুৱাহাটী যাতে এক সজীৱ পৰিৱেশ মণ্ডল হৈয়েই থাকে তাৰ বাবে এই জৈৱ বৈচিত্ৰ্যৰ সংৰক্ষণ অতি গুৰুত্বপূৰ্ণ।

পৰিৱেশ অনুকূল ঐতিহাসিক স্থানঃ প্ৰকৃতিৰ সৈতে সামঞ্জস্যপূৰ্ণ ঐতিহ্য

গুৱাহাটীৰ ঐতিহাসিক স্থান যেনে কামাখ্যা মন্দিৰ, উমানন্দ দ্বীপ, বশিষ্ঠ আশ্ৰম কেৱল সাংস্কৃতিকভাৱে উল্লেখযোগ্য নহয়, পৰিৱেশ অনুকূল স্থাপত্যৰ আৰ্হি হিচাপেও কাম কৰে। এই স্থানসমূহ প্ৰাকৃতিক পৰিৱেশৰ ভিতৰত সোমাই আছে, যিয়ে মানৱ সভ্যতা আৰু পৰিৱেশৰ মাজত এক সুসম্পৰ্ক প্ৰদৰ্শন কৰে। এই স্থানসমূহৰ সংৰক্ষণৰ লগতে পৰিৱেশ অনুকূল পৰ্যটন পদ্ধতিয়ে ঐতিহ্য আৰু প্ৰকৃতি দুয়োটাকে সন্মান কৰা বহনক্ষম উন্নয়নৰ উদাহৰণ হিচাপে কাম কৰিব পাৰে।

সামৰণিঃ গুৱাহাটীৰ বহনক্ষম উন্নয়ন

আধুনিক চহৰ হিচাপে গুৱাহাটী হ'বলৈ হ'লে পৰিৱেশ সংৰক্ষণক অগ্ৰাধিকাৰ দিয়া বহনক্ষম উন্নয়নক আকোৱালি ল'ব লাগিব। মহানগৰখনৰ চহকী পৰিৱেশ মণ্ডল— ইয়াৰ পাহাৰ, জলাশয়, নদী, বনাঞ্চল, আৰু জৈৱ বৈচিত্ৰ্য—নগৰীকৰণ আৰু প্ৰদূষণৰ পৰা অহৰহ ভাবুকিৰ সন্মুখীন হৈছে। এই প্ৰাকৃতিক সম্পত্তিসমূহ সংৰক্ষণৰ বাবে চৰকাৰ, স্থানীয় সম্প্ৰদায়, আৰু পৰিৱেশ সংস্থাসমূহকে ধৰি সকলো অংশীদাৰৰ এক সংহত প্ৰচেষ্টা অতি প্ৰয়োজনীয়। পৰিৱেশ অনুকূল পদ্ধতি, বহনক্ষম নগৰ পৰিকল্পনা, আৰু পৰিৱেশ শিক্ষাক প্ৰসাৰিত কৰি গুৱাহাটীয়ে ভাৰতৰ অন্যান্য চহৰৰ বাবে এক মাপকাঠী স্থাপন কৰিব পাৰে আৰু উন্নয়ন আৰু প্ৰকৃতিৰ মাজত সুষম সহাৱস্থান নিশ্চিত কৰিব পাৰে।

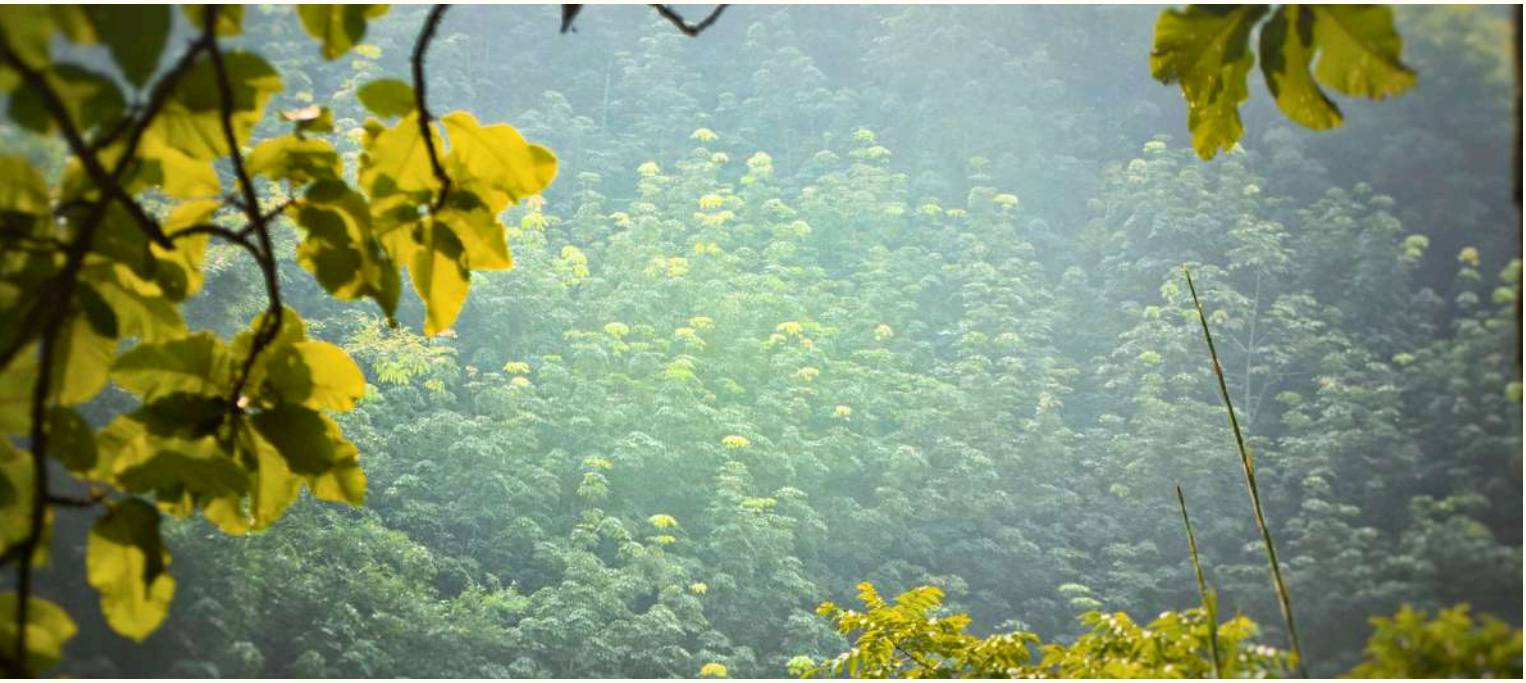

Photo: Partha Pratim Das

দেৰি হ'ল নেকি?

কঙ্কনজ্যোতি কৌশিক
অঃবঃসেঃ
বনাঞ্চলিক বিষয়া
পৰিবেশ আৰু বন বিভাগ, অসম চৰকাৰ
ফোন নম্বৰঃ ৭০০২৬০৬৫৭৭

আপুনি অফিচলৈ ওলাইছে। খুব জৰুৰী মিটিং এখন আছে। কিন্তু ৰাস্তাত সাংঘাতিক যান-জঁট। আপোনাৰ দেৰি হৈছে।

বিয়া এখনলৈ ওলাইছে। পত্নীয়ে আইনাৰ সন্মুখত থিয় হৈ এখন-এখনকৈ কাপোৰ সলাইছে, পছন্দ নহয়হে নহয়। আপুনি বিৰক্ত হৈ উচপিচাইছে, আপোনাৰ দেৰি হৈছে।

আমাৰ সকলোৰে ব্যক্তিগত জীৱনত কেতিয়াবা নহয় কেতিয়াবা কিবা কামলৈ দেৰি হয়। শিশুৰ পৰা বৃদ্ধলৈ ইয়াৰ ব্যতিক্রম দেখাটো অতি দুৰূহ । কিছুমান মানুহৰ কাচিৎহে কিবা কামলৈ দেৰি হয়, আন কিছুমানৰ ক্ষেত্রত আকৌ দেৰি হোৱাটো প্রায় নিয়মীয়া। বিশেষজ্ঞ সকলে ইয়াৰ কাৰণ হিচাপে নিয়মানুৱর্তিতা-সময়ানুৱর্তিতাৰ অভাৱ আৰু procrastination (পশ্চাদপন্নমুখিতা?) লৈ আঙুলিয়াই দিয়ে। নিয়মীয়াকৈ দেৰি হোৱাজনেও জানে যে এইটো বেয়া কথা, তথাপি তেওঁ ওপৰোক্ত কাৰণসমূহৰ বাবে এই অভ্যাসৰ পৰা মুক্ত হ'ব নোৱাৰে।

আমোদজনকভাৱে, আমি অভিযান্ত্রিক মহাবিদ্যালয়ত পঢ়ি থকা দিনত আকৌ 'দেৰি হ'ল' খণ্ডবাক্যষাৰি এক বিশেষ ব্যংগাত্মক অর্থতহে বহুলভাৱে ব্যৱহৃত হৈছিল। তলৰ পৰিস্থিতিভিত্তিক উদাহৰণকেইটা এইক্ষেত্রত বুজাত সহায়ক হ'ব বুলি উল্লেখ কৰিলো।

১) গোটেই কলেজৰ ভিতৰতে ধুনীয়া ছোৱালী বুলি নিশাৰ এটা 'নাম' আছে, কথাটো নিশায়ো জানে। বহুতে তাইৰ প্রেমাস্পদ হ'বলৈ মন মেলে। দিগন্তয়ো আঁতৰৰ পৰা তাইক চাই থাকে, কিন্তু বৰ বিশেষ 'পাত্তা' নাপায়। কেৱল লগৰবোৰৰ আগত খাওঁতে-শোওঁতে নিশাৰ নাম লৈ, নিশাক লৈ মনতে সজা কাল্পনিক কাহিনী কৈ সকলোৰে কাণ ঘোলা কৰি থাকে। কিন্তু সাহস কৰি কিবা এটা কৈ নিশাক 'পটাই' লোৱাৰ দম যে দিগন্তৰ নাই সেই কথা তাৰ লগৰবোৰে ভালকৈ জানে। হোষ্টেলত তাৰ নাম পৰিছে 'আশিক'। এদিন বহুবন্ধী দিগন্তই কলেজৰ পৰা আহি হোষ্টেলৰ বাৰাণ্ডাত বহি থকা বিশ্ব আৰু নিবিড়ক দেখি এনেই ফুটনি মাৰিলে, "ঐ, আজি নিশাক প্র'প'জ মাৰি দিলোঁ।" বিশ্ব আৰু নিবিড়ৰ নির্বিকাৰ উত্তৰ, "হুঃ, দেৰি হ'ল।"

২) টিভিত ভাৰত-পাকিস্তানৰ খেল সম্প্রচাৰ হৈ আছে। হোষ্টেলৰ 'কমন ৰুম' গিজগিজাই আছে। অসংখ্য উত্তেজনাপূর্ণ মুহূর্ত পাৰ হোৱাৰ পিছত ভাৰত লাহে লাহে জয়ৰ কাষ চাপি আহিছে। শেষৰ দুই অ'ভাৰত জয়ৰ বাবে পাকিস্তানক তেইশ ৰাণ লাগে, হাতত আছে চাৰিটা উইকেট। উনপঞ্চাশতম অ'ভাৰটো কৰিব লৈ শ্রীশান্তে প্রথম দুটা বল 'ৱাইড' দিয়াৰ পিছত ক্রমাগতভাৱে এটা 'ছয়' আৰু এটা 'চাৰি' খালে। কমন ৰুমত বহি থকা প্রায় সকলোৱে একমুখে চিঞৰি উঠিল, "ইয়াৰ (শ্রীশান্তৰ) যে দেৰিয়ে হ'ল।"

৩) পৰহিলৈ চেমিষ্টাৰ পৰীক্ষা। ঋষভ আৰু মানসে আজি ছিলেবাছ-ন'টছ আদি গোটাইছে। বাকীবোৰ বিষয় যেন-তেন, কিন্তু 'ডিজিটেল চিগনেল প্ৰ'চেছিঙ'ৰ ছিলেবাছখন দেখি দুইজনে গম পাই গৈছে, "এইবাৰলৈ দেৰি হ'ল।" অহাবাৰ 'বেক' দিব লাগিব।

আজিকালি কলেজত এই বিশেষ কথাষাৰি চলে নে নাই নাজানো, কিন্তু ওপৰোক্ত উদাহৰণ কেইটাৰ পৰা আপোনালোকে হয়তো অনুমান কৰিব পাৰিছে যে "দেৰি হ'ল" মানে এক নিৰাশাজনক পৰিস্থিতি। "দেৰি হ'ল" মানে সময় পাৰ হৈ গ'ল, পৰিস্থিতি হাতৰ পৰা ওলাই গ'ল, এতিয়া আৰু লাগি লাভ নাই । "দেৰি হ'ল" মানে point of no return. দেৰি হ'ল মানে সেইটো মুহূর্ত য'ত মনত জাগি উঠে এক অদম্য বাসনা "কেনেবাকৈ এবাৰ অতীতলৈ ঘূৰি যাব পৰাহেঁতেন ! সকলোবোৰ 'ঠিক' কৰি দিব পৰাহেঁতেন!"

কোৱা বাহুল্য, অসন্তৱ বুলি জানিও আমাৰ সকলোৰে মনত এই সহজাত বাসনা জাগি উঠে। ক্ৰিষ্টোফাৰ নোলানৰ চিনেমাত সময়ৰ অৰৈখিক প্ৰদৰ্শন চাই আপোনাৰ কল্পনাৰ জগততো নিশ্চয় খেলা কৰিছে সেই চিৰাচৰিত প্ৰশ্ন "সময়ৰ লগত 'খেলা' কৰা সম্ভৱনে? সম্ভৱনে ওভতনি যাত্ৰা?" আপুনি বাৰু এৰি অহা দিনলৈ উভটি যাব পাৰিলে কি কৰিব? কাক লগ কৰিব? অতীতৰ কি ভুলৰ শুধৰণি কৰিব বিচাৰিব?

কেতিয়াবা কাৰোবাক মনৰ কথা এষাৰি ক'ম ক'ম বুলি ভাবিও কোৱা নহয়। কেতিয়াবা কিবা এটা কাম কৰিম কৰিম বুলি ভাবিও ৰৈ যায়। কেতিয়াবা আকৌ নক'বলগীয়া কথা কৈ বা নকৰিবলগীয়া কাম কৰি অনুতপ্তও হোৱা যায়। কিন্তু সেই কথা অনুভৱ হোৱালৈ আমাৰ দেৰি হৈ যায়। জনপ্ৰিয় জাপানীজ লেখক ট'শ্বিকাজু কাৱাগুছিৰ এখন বহুল-পঠিত উপন্যাস হৈছে Before the Coffee Gets Cold. টকিঅ'ৰ এখন কাল্পনিক কেফে' ফেনিকুলি ফেনিকুলাক পটভূমি হিচাপে লৈ লিখা চাৰিটা কাহিনী সম্বলিত এই উপন্যাসখনৰ (উপন্যাসিকা?) চৰিত্ৰ সমূহে অতীতলৈ ঘূৰি যোৱাৰ সুযোগ পায়।

কেফে'খনৰ এক বিশেষ আসনত বহি গ্ৰাহকে অতীতলৈ ঘূৰি যাব পাৰে, কিন্তু তেওঁক পৰিবেশিত কফি কাপ ঠাণ্ডা হোৱাৰ আগতে সেৱন কৰি তেওঁ বৰ্তমানলৈ ঘূৰি আহিব লাগিব। কিন্তু মজাৰ (নে দুখৰ?) কথা এইটোৱেই যে অতীতলৈ ঘূৰি গৈ তেওঁ যিয়েই নকৰক, তেওঁৰ বৰ্তমানৰ একো সলনি নহয়।

গতিকে সময়ৰ শৰ সময়ত মৰাৰ বিকল্প নাই। ব্যক্তিগত জীৱনত বাৰু সকলোৰে দেৰি হয়, ইয়াৰ বাবে হোৱা প্ৰত্যক্ষ বা পৰোক্ষ লোকচানৰ মূল্য আমি ভৰিবলগীয়া হয়। পিছে প্ৰজাতি হিচাপে মানুহৰ বাৰু এই পৃথিৱীত কিমান দেৰি হৈছে সেই কথা কেতিয়াবা চিন্তা কৰি চাইছেনে? বিজ্ঞানীসকলে ঠাৱৰ কৰা মতে হ'ম' চেপিয়েন্স আজিৰ পৰা প্ৰায় তিনি লাখ বছৰ আগতে এই পৃথিৱীত অস্তিত্বলৈ আহিছিল। আনহাতে, পৃথিৱীৰ আয়ুস প্ৰায় চাৰে চাৰি বিলিয়ন বছৰ। সেইটো হিচাপত চাবলৈ হ'লে মানুহে এই ধৰাত বসবাস কৰিবলৈ লোৱাৰ বহুত বেছি দেৰি হোৱা নাই।

মানুহৰ আগতেও কিমান প্ৰজাতি আহিছে আৰু কিমান এই পৃথিৱীৰ বুকুৰ পৰা নিশ্চিহ্ন হৈ গৈছে তাৰ সঠিক অনুমান লগোৱাটো টান। কিন্তু এইটোও সত্য যে যোৱা কেইটামান দশকত মানুহৰ জনসংখ্যা অভূতপূর্বভাৱে বৃদ্ধি পাইছে আৰু অন্যান্য বহুতো প্ৰজাতিৰ সংখ্যা চিন্তনীয়ভাৱে হ্ৰাস পাইছে। ১৯৭০ চনত মানুহৰ জনসংখ্যা আছিল প্ৰায় চাৰে তিনি বিলিয়ন, যি এতিয়া আঠ বিলিয়ন অতিক্ৰম কৰি গৈছে। WWF ৰ দ্বাৰা প্ৰকাশিত শেহতীয়া লিভিং প্লেনেট ৰিপৰ্ট ২০২৪ (Living Planet Report 2024) অনুসৰি পৰ্যবেক্ষিত বন্য-জীৱ (monitored wildlife)ৰ সংখ্যা যোৱা পঞ্চাশ বছৰত (১৯৭০-২০২০) প্ৰায় ৭৩% হ্ৰাস পাইছে।

দ্বিবাৰ্ষিক এই প্ৰতিবেদনত উভচৰ,স্তন্যপায়ী, চৰাই,সৰীসৃপ আদিৰ ৫৪৯৫ টা প্ৰজাতিৰ প্ৰায় ৩৫,০০০ জনসংখ্যাৰ ধাৰা (trend) সাঙুৰি লোৱা হৈছিল। ইয়াৰ ভিতৰত নিৰ্মল পানী (fresh water)ত বসবাস কৰা জীৱৰ সংখ্যা সৰ্বাধিক ৮৫%, সাগৰীয় জীৱৰ সংখ্যা প্ৰায় ৫৬% আৰু স্থলচৰ জীৱৰ সংখ্যা প্ৰায় ৬৯% পৰ্যন্ত হ্ৰাস পাইছে। লেটিন আমেৰিকা আৰু কেৰিবিয়ান দ্বীপপুঞ্জত সৰ্বাধিক ৯৫% পৰ্যন্ত পৰ্যবেক্ষিত বন্যজীৱৰ সংখ্যা হ্ৰাস পাইছে; আফ্ৰিকা আৰু এছিয়াৰ প্ৰশান্ত মহাসাগৰীয় অঞ্চলত এই সংখ্যা ক্ৰমে ৭৬% আৰু ৬০%।

প্ৰকৃতি আৰু বন্যপ্ৰাণীৰ সুৰক্ষা তথা সংৰক্ষণৰ বাবে ভাৰততে বিভিন্ন সময়ত প্ৰাসংগিক আইন আৰু বিধি প্ৰণয়ন কৰা হৈছে। ভাৰত চৰকাৰে লোৱা কিছুমান প্ৰজাতি-ভিত্তিক সংৰক্ষণ (যেনে- বাঘৰ সংৰক্ষণৰ বাবে প্ৰজেক্ট টাইগাৰ) ব্যৱস্থাৰ সুফলো কিছু পৰিমাণে দেখা পোৱা গৈছে। কিন্তু মানুহৰ জনসংখ্যাৰ অবাধ বৃদ্ধি, জীৱন-ধাৰণৰ শৈলী আৰু ইয়াৰ পৰা উদ্ভাৰিত কাৰক সমূহৰ বাবে অন্যান্য বহুতো প্ৰজাতিৰ ক্ষেত্ৰত ভাৰতৰ পৰিস্থিতি বৰ এটা সন্তোষজনকজনক নহয়। উদাহৰণস্বৰূপে, ষ্টেট অফ ইণ্ডিয়ান বাৰ্ডছ (State of Indian Birds) প্ৰতিবেদন অনুসৰি ভাৰততে বহুতো চৰাইৰ প্ৰজাতি, বিশেষকৈ শগুণৰ সংখ্যা উদ্বেগজনকভাৱে হ্ৰাস পাইছে। প্ৰকৃতিৰ ভাৰসাম্য ৰক্ষা কৰাত শগুণৰ গুৰুত্ব অপৰিসীম। ইয়াৰ লগতে মৌ-মাখি, পখিলা আৰু অন্যান্য বহুতো পোক-পতংগৰ সংখ্যাও প্ৰকৃতিত দ্ৰুত-গতিত হ্ৰাস পাইছে।

জনসংখ্যাৰ লগতে বন্যজীৱৰ বসতিস্থলো চিন্তনীয়ভাৱে হ্ৰাস পাই আহিছে। ইয়াৰ মুখ্য কাৰণ হৈছে খাদ্যৰ বাবে মানুহৰ কৃষিভূমিৰ ওপৰত নিৰ্ভৰশীলতা, যিয়ে বনাঞ্চল হ্ৰাস পোৱাত প্ৰধান ভূমিকা লৈ আহিছে। ইয়াৰ উপৰিও প্ৰাকৃতিক সম্পদৰ মাত্ৰাধিক ব্যৱহাৰ, আক্ৰমণাত্মক প্ৰজাতি (invasive species) আৰু বিভিন্ন বেমাৰ-আজাৰৰ বাবেও বন্য জীৱকুলৰ সংখ্যা উদ্বেগজনকভাৱে হ্ৰাস পোৱা বুলি ইতিমধ্যে বিভিন্ন প্ৰতিবেদনত আঙুলিয়াই দিয়া হৈছে। ইয়াৰ বাহিৰেও জলবায়ুৰ পৰিৱৰ্তন আন এক প্ৰধান সমস্যা যাৰ বাবে পৃথিৱীৰ বিভিন্ন অঞ্চলত জীৱকুলৰ বাবে আজি মৃত্য-ঘণ্টা বাজিছে।

কেতিয়াবা বাৰু আমি কল্পনা কৰিছিলোঁ নে যে ছাহাৰা মৰুভূমিতো বানপানী হ'ব পাৰে? অবিশ্বাস্য, কিন্তু সেয়াই আজি সত্যত পৰিণত হৈছে। চলিত বৰ্ষৰ আগষ্ট আৰু ছেপ্টেম্বৰ মাহত হোৱা অভূতপূৰ্ব বৰষুণৰ ফলত দক্ষিণ মৰক্কোৰ ছাহাৰা অঞ্চল বানপানীত বুৰ গৈছে। দাৰা নদীত জলস্ৰোত ইমানেই বৃদ্ধি পাইছে যে বৃহৎ দলং পৰ্যন্ত উটি গৈছে। স্থানীয় বাসিন্দাই সমতল এৰি পাহাৰীয়া ওখ ঠাইত আশ্ৰয় ল'বলগীয়া হৈছে। আনহাতে, সংযুক্ত ৰাষ্ট্ৰৰ অধীনস্থ বিশ্ব বতৰ-বিজ্ঞান সংস্থা (World Meteorological Organization)ৰ প্ৰতিবেদন অনুসৰি ২০২৩ বৰ্ষটো গোটেই পৃথিৱীৰ নদীসমূহৰ বাবে সভ্যতাৰ ইতিহাসৰ আটাইতকৈ শুকান বছৰ আছিল।

এফালে যদি খৰাং, আনফালে বানপানী। আপাত দৃষ্টিত পৰস্পৰ বিৰোধী যেন লগা এই বাস্তৱৰ নামেই হৈছে জলবায়ু পৰিৱৰ্তন। অৰ্থাৎ ই হৈছে বিশ্বৰ বিভিন্ন ঠাইৰ উষ্ণতা, বৰষুণ, বতাহৰ ধৰণ আৰু জলবায়ুৰ অন্যান্য পৰিমাপকসমূহৰ কেইবা দশকৰ ভিতৰত ঘটা ব্যাপক পৰিৱৰ্তন। ১৯৬০ চন পৰ্যন্ত আৰাল সাগৰ আছিল পৃথিৱীৰ ভিতৰত চতুৰ্থ বৃহত্তম লুণীয়া পানীৰ উৎস। কাজখস্তান আৰু উজবেকিস্তানৰ মাজত অৱস্থিত আৰাল সাগৰ ১৯৬০ চনত প্ৰায় ৬৮,০০০ বৰ্গ কিঃমিঃ এলেকাজুৰি বিস্তৃত আছিল আৰু আজিৰ তাৰিখত ইয়াৰ মাটিকালি মাত্ৰ ৩,৩০০ বৰ্গ কিঃমিঃ। অৰ্থাৎ যোৱা ছটা দশকত নব্বৈ শতাংশতকৈও অধিক পানী শুকাই আৰাল সাগৰৰ বুকু বালিময় হৈ গ'ল। কিমান সাগৰীয় প্ৰজাতি তাৰ বুকুৰ পৰা বিলুপ্ত হৈ গ'ল। বহুতৰ মতে আৰাল সাগৰৰ বিলুপ্তি প্ৰক্ৰিয়া যোৱা অৰ্ধ-শতিকাজুৰি ঘটা বৃহত্তম প্ৰাকৃতিক বিপৰ্যয়।

জলবায়ু পৰিৱৰ্তন কেতিয়াবা স্বাভাৱিকো হ'ব পাৰে, কিন্তু যোৱা ডেৰ শতিকাজুৰি, বিশেষকৈ ঔদ্যোগিক বিপ্লৱৰ আৰম্ভণি পৰাই মানুহৰ কার্যকলাপ জলবায়ু পৰিৱৰ্তনৰ মূল চালক হৈ আহিছে, মূলতঃ জীৱাশ্ম ইন্ধন (যেনে কয়লা, তেল, গেছ ইত্যাদি)ৰ মাত্রাধিক ব্যৱহাৰৰ বাবে। এটা কথা নিশ্চিত যে বিপর্যয়ৰ চৰম সীমা অতিক্রম কৰাৰ আগতেই প্রকৃতিয়ে নিজ নিয়ম অনুসৰি ভাৰসাম্য ৰক্ষাৰ চেষ্টা চলাব। বন্য জীৱ-জন্তু বাচি নাথাকিলে মানৱ প্রজাতিৰ অস্তিত্বও সংকটৰ গৰাহত।

তেনেহ'লে কি প্রজাতি হিচাপে মানুহৰো 'দেৰি হৈ গ'ল' নেকি? আমি point of no return পালোঁ নেকি? ইয়াৰ পৰা ঘূৰি যোৱাটো আৰু সম্ভৱ নহয় নেকি?

সকাহৰ খবৰ এইটোৱেই যে আমি এতিয়াও দুর্যোগৰ চৰম বিন্দু পোৱা নাই য'ৰ পৰা নেকি উভতি অহা সম্ভৱ নহয়। লিভিং প্লেনেট ৰিপ'র্ট ২০২৪ অনুসৰি অহা পাঁচ বছৰত আমাৰ কার্যকলাপে মানৱীয় ভৱিষ্যতৰ দিক-নির্ণায়নত গুৰুত্বপূর্ণ ভূমিকা ল'ব। প্রকৃতিয়ে আজি সন্মুখীন হোৱা প্রত্যাহ্বানৰ মোকাবিলা কৰিবলৈ আমি প্রকৃতিৰ ধ্বংসৰ প্রধান চালকসমূহ পদ্ধতিগতভাৱে নিয়ন্ত্রণ কৰাৰ লগতে অধিক ফলপ্রসূ সংৰক্ষণ প্রচেষ্টাত (conservation efforts) গুৰুত্ব আৰোপ কৰিব লাগিব।

তাৰ লগত খাপ খোৱাকৈ আমাৰ খাদ্য, শক্তি আৰু বিত্ত ব্যৱস্থাৰ সংশোধন সাধিব লাগিব। ৰাষ্ট্রীয় আৰু বিশ্ব নেতৃত্বই সংযুক্ত ৰাষ্ট্রৰ দ্বাৰা প্রণয়িত বহনক্ষম উন্নয়ন লক্ষ্য (sustainable development goals)ৰ প্রাপ্তি নির্ধাৰিত ২০৩০ চনৰ ভিতৰত নিশ্চিত কৰিবলৈ অধিক শক্তি-সমন্বয়-উৎসাহেৰে কাম কৰিব লাগিব। আটাইতকৈ ডাঙৰ কথা প্রতিজন ব্যক্তি এইক্ষেত্রত সজাগ হ'ব লাগিব।

এতিয়াও 'দেৰি হোৱা' নাই, যদিহে আমি সময়ৰ সদ্ব্যৱহাৰ কৰো। অতীত আমি সলাব নোৱাৰোঁ, কিন্তু ভৱিষ্যত সদায় মুকলি আৰু সম্ভাৱনাময়।

Reawakening the Wild: My transformative journey of environment education at Pakke Tiger Reserve

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In today's fast-paced, technology-driven world, one of the most pressing challenges is reconnecting individuals—especially youth and adults—with nature. Amid the hustle of daily life and the constant bombardment of digital distractions, many have lost touch with the environment, making it difficult to appreciate its beauty and understand its importance. This disconnection not only weakens our bond with the natural world but also hampers our collective ability to take responsibility for its preservation. The need for intentional efforts to foster environmental stewardship has never been more critical.

In response to this challenge, the Nature Conservation Foundation (NCF) and Canopy Collective organized a transformative five-day workshop at Pakke Tiger Reserve, Arunachal Pradesh. This event brought together educators from across India, including myself, to collaborate on developing engaging educational activities designed to foster a deeper connection between people and nature. Facilitated by Dr. Pranab Trivedi and Sangeetha Trivedi, the workshop aimed to create interactive experiences that would not only raise awareness about environmental issues but also instill a lasting sense of responsibility for the planet.

The workshop unfolded against the backdrop of the Pakke Tiger Reserve, a region rich in biodiversity. We had the unique opportunity to engage with nature firsthand, exploring various locations within the reserve while designing activities that could inspire others to connect with the natural world. The immersive environment served as a powerful catalyst for creativity, allowing us to craft experiences that were both educational and emotionally resonant.

A key component of the workshop was our interaction with local school students. We designed a series of activities that blended education with enjoyment, beginning with storytelling that sparked the students' imaginations. From there, we moved to a dynamic game focused on climate change, which illustrated the intricate connections between human life and the environment. These activities were not just theoretical lessons but tangible experiences that helped the students understand the urgent need for environmental conservation.

At the end of the workshop, the students expressed their gratitude in deeply heartfelt notes, sharing how the activities had touched them emotionally. Their messages reflected the profound impact the workshop had on them, particularly the game that emphasized the interconnectedness of all life. It was clear that these hands-on experiences had not only educated them but also fostered a genuine emotional bond with nature. Their words were a powerful reminder of the transformative power of interactive education, and how meaningful connections with the environment can be forged through creative and immersive experiences.

Reawaken your bond with nature, preserve earth

Living in harmony: Majuli's story of coexistence with Rhino

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The Majuli I am describing here is not the same as the one we are familiar with. The world's largest riverine island is tucked away in the powerful Brahmaputra River and is a place where nature and mankind coexist in a beautiful way. The island is renowned for its thriving community and rich cultural legacy. That is what the internet will tell you if you search for Majuli and it is accurate, but the Majuli I will be discussing is a very different matter. I had the chance to conduct a field survey in Majuli as part of my research work. My visit was intended to do a survey on rhinos that wander into Majuli from Kaziranga National Park.

On March 16th , 2024, at approximately 4:00 am, I arrived in Dergaon. Around 5:30 am, my local guise arrived to take me from Dergaon because the ferry ghats open at 5:00 am.

"This" Majuli is unique. How is it different? The major island, "The Majuli," can be reached by crossing Jorhat and arriving at Ni-mati Ghat. From there, you must take a ferry to Kamalabari Ghat, marking your arrival. However, the Majuli I was visiting is about 25 kilometers to the left of Dergaon (if you're travelling from Guwahati). The Majuli I'm referring to was formerly a part of the main Majuli Island, but it has drifted close to the south bank of the mighty Brahmaputra after the entire island split away from the main island owing to erosion and flooding. The entire island is made of three small islands namely Sesuguri, Lobak Huttar and Sorufakuwa and you can't rely on four-wheelers to reach these islands.

The island has a thriving community and a cultural tapestry. There are about 4,000 people living there, distributed among 24 different villages. Assamese make up the majority of the population, followed by the Mising community and others. The island's rich and distinctive identity is a result of this multicultural fusion.

I am grateful to Jodu Kai (Jodu Borah) for providing me with a place to stay at his home. Even though I was an outsider to them, I felt like I belonged to the family because of their kindness and the hospitality the family showered on me. Jodu Kai and his family's hospitality to me exemplifies the island's close-knit people-to-people bonding.

It would be intriguing to live in the 21st century without electricity, wouldn't it? The inhabitants of these islands have accepted a life of darkness for almost seven years. Solar panels, which supply energy during the day, are its only power source. But at dusk, the whole island is enveloped in darkness. The lack of electricity presents difficulties, particularly for the kids who study by using lanterns. When inquired, the villagers expressed their contentment with this way of life. They accept it with little resentment since it is ingrained in their routine. However, for someone like me who relies on my cell phone for almost everything, this experience was an eye-opener.

The houses built on this Island are predominantly Kutcha houses. As these Chaporis (river isles) are more prone to erosion and there is always a risk of the island being washed away during flood, that’s why kutcha houses are more convenient for them. The islanders are well aware of the flood situation and so they built their homes with the possibility of migration.

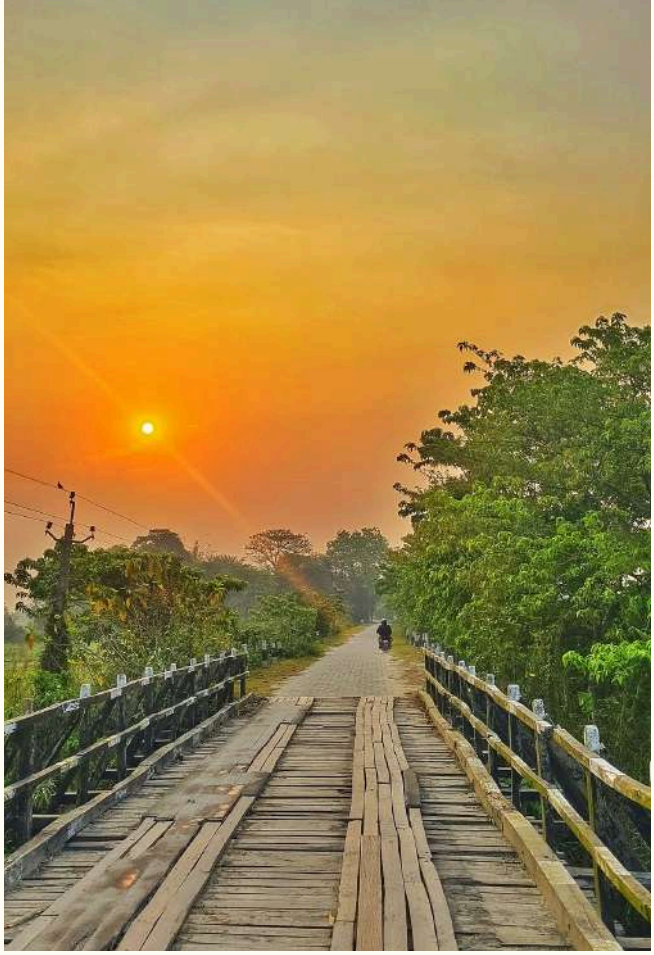
The primary occupation of people on these islands is agriculture, with farmers mostly growing crops rice, wheat, potatoes, sugarcane, and various pulses like Indian pea and black lentils. In particular, sugarcane is cultivated to make jiggery that is sold in nearby cities and local markets.

The community makes a lot of money from the processing of sugarcane into jaggery. Cattle rearing is another common practice in addition to agriculture. The main reason for raising cattle here is to produce milk, which is also one of these inlanders' main sources of income.

The women play pivotal roles to support the family. Apart from being the support system of the household, they also involve themselves in agricultural activities such as sowing and harvesting crops etc. And they are also skilled weavers. Weaving handmade textiles such as Gamocha, shawls and stoles etc., which they sell for additional income.

I came here basically for a survey. So, what is this survey about? These islands are about 12 to 15 kilometers from the Kaziranga Wildlife Sanctuary’s boundary. It's interesting to note that there have been tales of five or six rhinoceros wandering outside the boundaries of the sanctuary and landing on these islands. The history of rhino migration from Kaziranga dates back to 1993, three rhinos were seen in upper Majuli, and one was seen close to the outskirts of Jorhat town. Surprisingly, these rhinos never went back to the main sanctuary, instead chose to live in Majuli. Forest officials try to steer them away, but they keep coming back. Humans and these giants interact in a remarkable way as a result of their travels from upper Majuli to these three islands.

Imagine discovering a huge rhino grazing close to your crop field when you wake up to the sound of leaves rustling. Better yet, imagine a rhino relaxing just outside your veranda when you open your front door.



The islanders here are accustomed to these remarkable experiences. The inhabitants of these islands do not consider these gentle giants to be mere intruders, rather their interaction with the rhinos is symbiotic. The locals think that the rhinos only eat their fair portion of the crops when they arrive, leaving the rest for the humans. Rather than resorting to unconventional methods like loud noises or explosives, the islanders maintain a respectful distance. They patiently wait for the rhinos to finish their nocturnal feasting before quietly retreating. Remarkably, this coexistence has persisted for over six years without any major conflicts. Occasionally, a rhino may chase a person, but such incidents are rare.

Building bridges-

Working here has given me the opportunity to have meaningful conversations with local communities and help them feel as though their problems are valid. Instead of being merely a data gathering exercise, my time in the field was a rich and rewarding journey of connection and learning. Despite my first statement that I was a modest researcher with no further resources to contribute, the group welcomed me. They were thrilled to tell their story and were always willing to help. Their collaboration and same goal made the study process easy and effective. Instead of simply passing by, time was filled with new insights and the growth of lasting connections. The days just blended together, producing several treasured memories.

As Lailah Gifty Akita once quoted, “There is an end to every journey”. My survey, too, came to an end. Although my stay here was short-lived, I felt like I am a part of this community. I engaged in open conversations with them and not once I felt like an outsider. Their acceptance and willingness to share their stories has left an ever-lasting impression. Despite the challenges they face with rhinos, not a single person I spoke to expressed animosity towards them. Instead, they emphasized the need to protect these wild animals. They understand that the rhinos are not an adversary but a fellow inhabitant of these islands. The people of these islands stand out as an example of coexistence, where both the species are thriving side by side.

Acknowledgment

I would like to express my deepest gratitude to everyone who has made the completion of this survey and article on stray rhinos in Majuli possible.

First and foremost, I am immensely thankful to my supervisors Dr. Bibhab Kumar Talukdar and Dr. Deba Kumar Dutta for arranging and supporting this survey. Their guidance and encouragement have been invaluable throughout this research project.

I extend my heartfelt thanks to the entire community of Majuli, specially Jodu Borah and Siddharth Bora whose cooperation and assistance were crucial in conducting this survey. The warmth and hospitality of the local people, as well as their willingness to share their knowledge and experiences, have significantly enriched this study.

I am also deeply grateful to the Assam Police and Forest Departments for their support and assistance. Their efforts in ensuring the safety and smooth execution of the survey were essential in overcoming the challenges faced during the research.

Without the combined efforts and contributions of all these individuals and groups, this article would not have been possible. I hope this work helps to shed light on the unique challenges and opportunities in preserving the stray rhino population in Majuli.

PEOPLE SPEAK

The Kamlang Diary: A chronicle of adventure

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In the northeastern corner of India, cradled by the rugged landscapes of Arunachal Pradesh's Lohit district, lies the Kamlang Tiger Reserve—a sanctuary of untouched biodiversity and breathtaking natural beauty. Our first visit to this enchanting wilderness took place in July 2023, marking the beginning of what would be an extraordinary journey into one of India's most remote and awe-inspiring protected areas.

Our work centered around the Western Hoolock Gibbon *(Hoolock hoolock)*, India's only ape species. Listed as endangered and protected under Schedule I of The Wild Life (Protection) Amendment Act, 2022, this magnificent primate was the focal point of our research. We officially began our data collection at Kamlang on November 10, 2023, following a two-day workshop on gibbon conservation at the Range Office in Wakro.

Photo: Akshay Upadhyaya

Entry Gate, Sinabri of Kamlang Tiger Reserve

Our team started out small—just three members. But one of our researchers was soon called back to Guwahati, leaving us shorthanded. A week later, we hired two local porters to help us venture deeper into the reserve. Our immediate goal was to reach Glaw Lake, a site that had fascinated us since the onset of our research. Located over 1,100 meters above sea level and spanning about 150 hectares, the lake is steeped in Mishmi cultural lore and holds great religious significance. It's roughly 16 kilometers from the Range Office, and we hoped to establish a base camp there for two weeks of data collection.

Kamlang's terrain is rugged and densely forested, presenting both beauty and challenges. The thick canopy, even in late fall, made spotting the gibbons and other wildlife difficult. Each day, before dawn, we would leave camp, navigating the wild to reach our pre-assigned observation points, hoping to hear the gibbons' calls. Meanwhile, our local colleagues stayed behind, keeping the camp running, preparing meals, and organizing our equipment. We started by collecting data from closer locations, beginning at Champa Bridge, about four kilometers from the sanctuary's entrance.

Photo: Akshay Upadhyaya

Camping at Champa bridge

One unforgettable day, I was stationed alone on a makeshift bench I had fashioned from bamboo and banana leaves when I heard a gibbon's call from the hill behind me. Excited, I grabbed my camera and GPS, leaving the rest of my gear behind, and began climbing. Fifty-three meters up, I spotted three gibbons, singing in the trees. As I tried to steady myself against a tree for the perfect shot, disaster struck—the tree gave way. I tumbled down the slope, fearing I'd break bones. But, miraculously, a wild banana tree caught me. Bruised and with my camera sustaining small damage, I was relieved to be safe, even if I hadn't captured that elusive photograph.

Photo: Akshay Upadhyaya

The makeshift bed

As nightfall came early—sometimes by 4 P.M.—we would gather by the campfire, often near the river or lakeshore. The cold winter winds would howl through the hills, but the clear, starry skies above made it all worthwhile. For us, city dwellers, the sight of such an unblemished sky was a revelation. Living in the wilderness was humbling, reminding us of how much we take modern conveniences—running water, electricity, smartphones—for granted.

After wrapping up our first round of data collection, we set off for Glaw Lake again. It took us a full day, carrying all our luggage and equipment, to reach the lake. Glaw, at over 1,160 meters above sea level, offers stunning views of the snow-capped Dafa Bum peak during the winter months. Our campsite became a regular haunt for Gayals (Bos frontalis)—large, wild bovines known as mithuns—who would wander in at night to snack on our leftovers. We spent over 20 days at the lake, and it left such an impression on me that I penned this reflection:

Tell them I like to tell stories
All stored as precious gems
In pockets of my memories
Stories of the voiceless yet vocal
Unreal yet very real
Tell them I share visuals
Of the roads less travelled
Where you need no car
Or planes to reach beautiful places
In the warm yet cool caress of Mother Nature
And her evergreen embrace

Our third visit was to the infamous Lham block, one of the most challenging areas of Kamlang, as described by the forest officials. Setting off early one morning, we hitched a ride on a pickup truck arranged by Sunil Bhaiya, one of the local forest staff. The journey to the boundary of the sanctuary was supposed to take two days, and we had heard countless stories about the difficulties of reaching this remote block. As the day wore on, the light began to fade by early afternoon, and we scrambled to find a suitable campsite before darkness enveloped us. Finally, we found a narrow, plain spot by a nearly dried-up stream.

Photo: Akshay Upadhyaya

The Glaw Lake

Photo: Akshay Upadhyaya

Dafa Bum

After walking about seven kilometers through tough, elevated terrain, we were exhausted. The space was too small for more than one tent, so we had to get creative, covering our belongings with banana leaves and squeezing four people into a tent designed for two. That night, as we huddled for warmth, something unexpected happened. Around 10:30 P.M., I felt a heavy presence sitting on my feet outside the tent. My heart raced as I realized it was some sort of animal, its heartbeat vibrating against my legs. We stayed still, not daring to check what it was. Eventually, it left without disturbing us, and we all drifted off, oddly comforted by the rugged ground beneath us.

During our field work stay at Glaw lake, we had the privilege of meeting the then PCCF and current DCF of Arunachal Pradesh. Our conversations about gibbons, elephants, and tigers added depth to our experience, reminding us of the immense responsibility we share in protecting these creatures and their habitats.

Photo: Akshay Upadhyaya

Campsite in Lham block

Lham Block

Our fieldwork in Kamlang Tiger Reserve came to a close in the first week of March 2024. It was a transformative experience, one that not only enriched our understanding of wildlife and conservation but also strengthened our bond with the wild—a connection that needs to be cherished and preserved for future generations.

Photo: Kamlang T.R staff

Team with then PCCF (3rd from the right) of Arunachal Pradesh

Photo: Akshay Upadhyaya

Team at Glaw Lake. L to R- Gobin Chetry (Field assistant); Pitam J Gore (Researcher); Sanju Rai (Field assistant); Akshay Kr. Upadhyaya (Researcher)

During field data collection Photo by: Aditya Das

Adult male hoolock gibbon Photo by: Akshay Upadhyaya

Acknowledgement:
Kamlang Tiger Reserve, Arcus Great Apes, Dr. Dilip Chetry, Primate Research and Conservation Division, Aaranyak, Arunachal Pradesh Forest Department, Gobin Chetry, Sanju Rai, Aditya Das, Simanta Medhi and Pitam J Gore

Reference:
IUCN Red List of Threatened Species.

In pursuit of the last butterflies

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Butterfly, butterfly,
Flying so high,
Floating in the air,
Up in the sky.

Photo: Kakali Baishya

Painted jezebel

As a child growing up in the serene neighborhood of Uzan Bazar in Guwahati, I was always enchanted by the sight of butterflies. Their delicate, colorful wings fluttered through our gardens and fields, creating a magical dance that filled my young heart with wonder. Common Mormons, Blue Glassy Tigers, and Lime Butterflies were regular visitors, adding splashes of vibrant color to the city's landscape. But now, these beautiful creatures are becoming a rare sight, and it saddens me deeply.

Over the years, I've noticed a steady decline in butterfly populations here. The reasons are all too evident. Rapid urbanization has turned lush green spaces into concrete jungles, leaving little room for butterflies to thrive. Native plants, which once provided nectar and shelter for caterpillars, have been replaced by ornamental varieties or completely removed. This loss of natural habitat has made it harder for butterflies to find food and breeding grounds.

Climate change has also disrupted their life cycles, making survival more difficult. Pollution from vehicles and industries harms their delicate ecosystems, while excessive artificial lighting in the city interferes with their natural behaviors, especially during migration. All these challenges have pushed these gentle pollinators to the brink.

But I believe there's still hope. Small, thoughtful actions can make a big difference. By planting native flowering plants like marigolds, cosmos, hibiscus, and jatropha in our gardens, we can create safe havens for butterflies. I've started planting a few flower trees at home, and every time I see a butterfly visit, I feel a renewed sense of purpose.

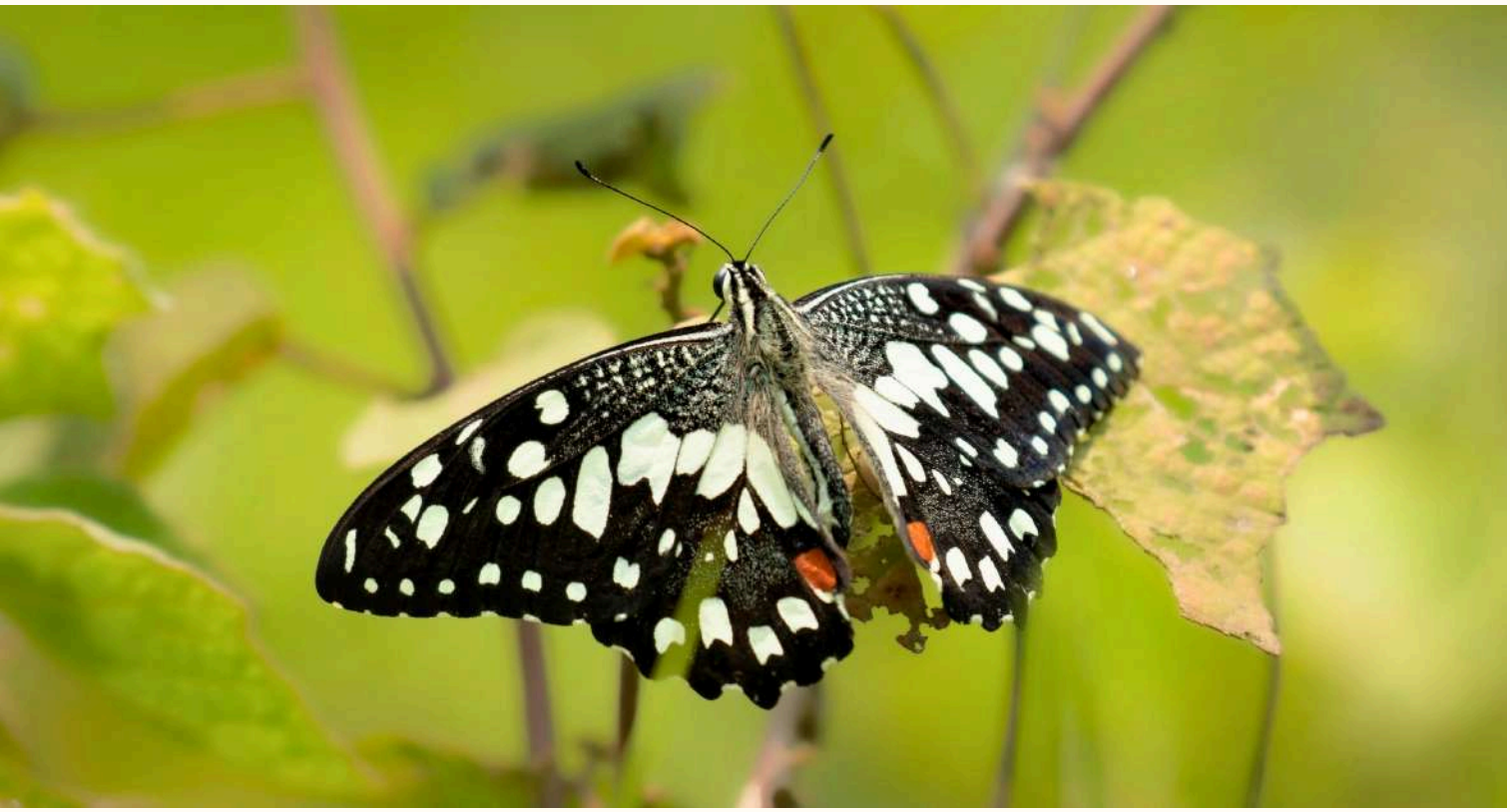

Photo: Partha Pratim Das

Lime

Equally important is protecting and restoring green spaces in Guwahati. Community efforts, like creating small home gardens or terrace gardens in apartments, can make a huge difference. Limiting artificial lighting near natural habitats is also crucial to avoid disrupting the natural behaviors of these winged wonders.

Through these collective efforts, I hope that future generations will experience the same joy and wonder I felt as a child, watching butterflies float gracefully in the air with their vibrant hues. Let's work together to bring back the magic of butterflies to our city.

Photo: Kakali Baishya

Pasha

Photo: Partha Pratim Das

Blue Admiral

Workshop insights: Integrating One Health to address zoonotic diseases

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I attended an engaging workshop on zoonotic diseases organised by the National One Health Programme for Prevention and Control of Zoonoses (NOHPPCZ) in collaboration with Aaranyak on November 2, 2024. This event, held at Aaranyak's office in Guwahati, brought together experts and participants to discuss diseases that spread between animals and humans.

The session was led by distinguished experts -- Dr Rajeev Kr Sharma, Professor and Nodal Officer at NOHPPCZ, and Dr Dilip Kr Sarma, a former professor and consultant at the Department of Microbiology, Assam Agriculture University, Khanapara. Their insightful discussions set the tone for a comprehensive dialogue on zoonotic diseases —a pressing concern in the context of global health.

Key takeaways

The workshop emphasised two critical objectives. Firstly, the need to sensitise citizens, foresters, veterinarians, health workers, NGOs, and villagers about zoonotic diseases—illnesses transmitted between animals and humans. Secondly, it focused on capacity building and fostering intersectoral coordination to prevent and control these diseases.

Did you know that 60% of human infections come from animals? Diseases like Dengue, Anthrax, Bird Flu, and NIPAH are on the rise, fueled by climate change, wildlife consumption, and habitat loss. The workshop stressed how small actions like early diagnosis, responsible use of antibiotics, and better food safety practices can save lives.

Domestic animals play a significant role in the transmission of various diseases to humans and in many cases, they work as amplifiers of pathogens emerging from wild animals.

The positive association between domestic animals and humans in influencing pathogen diversity was first hypothesized a long time ago. About 60% of human infectious diseases come from vertebrate animals.

Direct human contact with animals has expanded with the introduction of domestication of different vertebrate animals. The possible transmission patterns of zoonotic bacteria, virus, parasites, or fungi are via direct contact, ingestion, inhalation, through conjunctiva, or biting (Rahman et al. 2020).

The link between zoonotic disease prevalence and factors such as climate change, population growth, wildlife consumption, and biodiversity loss was a significant focus. It became evident that judicious use of antibiotics, early diagnosis, rapid testing, and better wildlife facilities are essential to tackling this growing threat.

Food safety and public health

Another critical component of the workshop was addressing food-borne zoonotic diseases. The discussions highlighted pathogens like Salmonella, Escherichia coli, Listeria monocytogenes, Clostridium perfringens, Shigella, and Vibrio, emphasising their transmission through food contamination. The factors contributing to foodborne diseases—such as inadequate handwashing, cross-contamination, improper cooking, and storage practices—were discussed with practical preventive measures.

Guidelines for maintaining food safety across all stages—from farms to markets, slaughterhouses, and food processing units—were underscored as vital to minimising these risks.

One Health: A collaborative path forward

A highlight of the workshop was its emphasis on the One Health approach, which calls for collaboration among veterinary, health, and civil society stakeholders. By fostering coordinated communication and data sharing, the One Health framework aims to strengthen efforts to prevent and control zoonotic diseases effectively.

This workshop was a profound learning experience, reinforcing the importance of proactive measures in safeguarding both human and animal health. The insights gained have further deepened my understanding of the intricate links between human activity, environmental changes, and disease transmission—an urgent call to action for all sectors of society.

Acknowledgement:
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