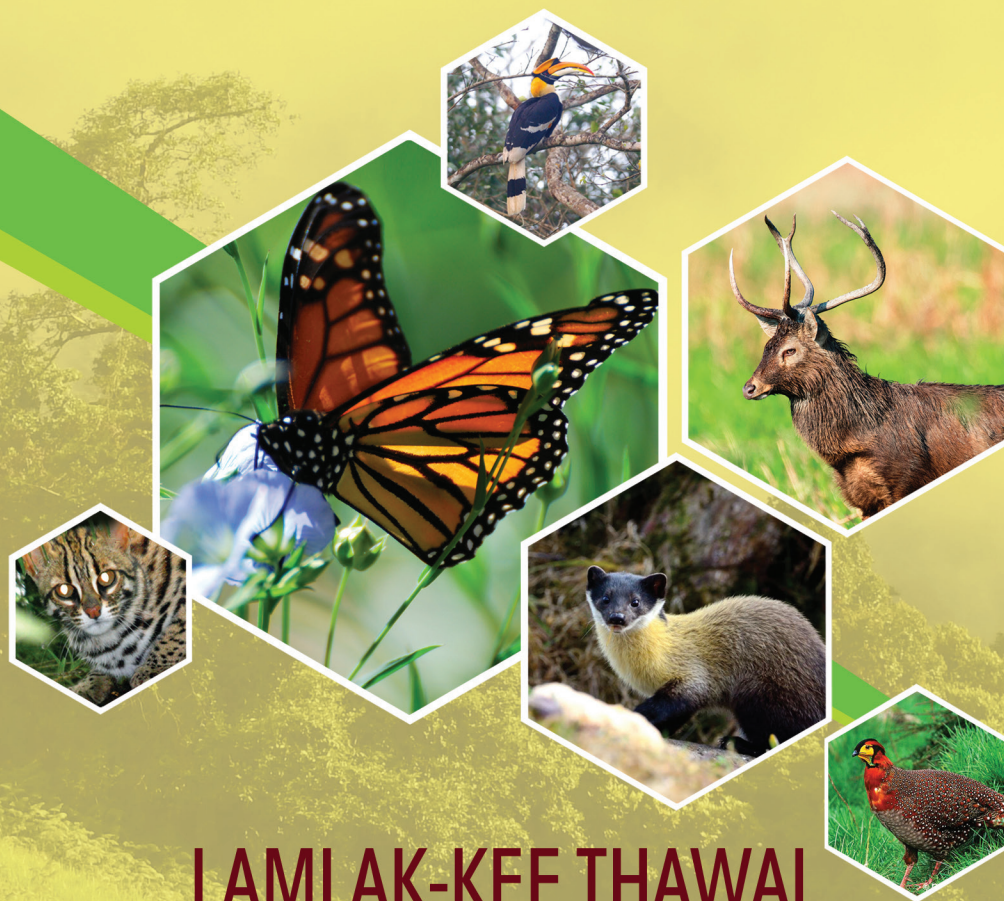




65TH সংস্কৃতিৰ সঁজুলি WILDLIFE WEEK CELEBRATION 2020

Sustaining all Life on Earth



LAMLAK-KEE THAWAI
The Soul of Nature



Wildlife Wing, Forest Department
Government of Manipur

SOUVENIR



65th WILDLIFE WEEK CELEBRATION 2020

"Sustaining all Life on Earth"

Souvenir

Lamlak-kee Thawai
The Soul of Nature



Wildlife Wing, Forest Department
Government of Manipur



Souvenir

65th WILDLIFE WEEK CELEBRATION 2020

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Dr. Najma Heptulla



GOVERNOR OF MANIPUR

Message

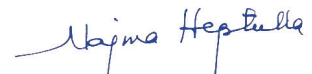
I am very happy to learn that the Wildlife Wing of Forest Department, Government of Manipur is bringing out a Souvenir under the title: **“Lamlak kee Thawai”** on the auspicious occasion of 65th Wildlife Week Celebration, 2020.

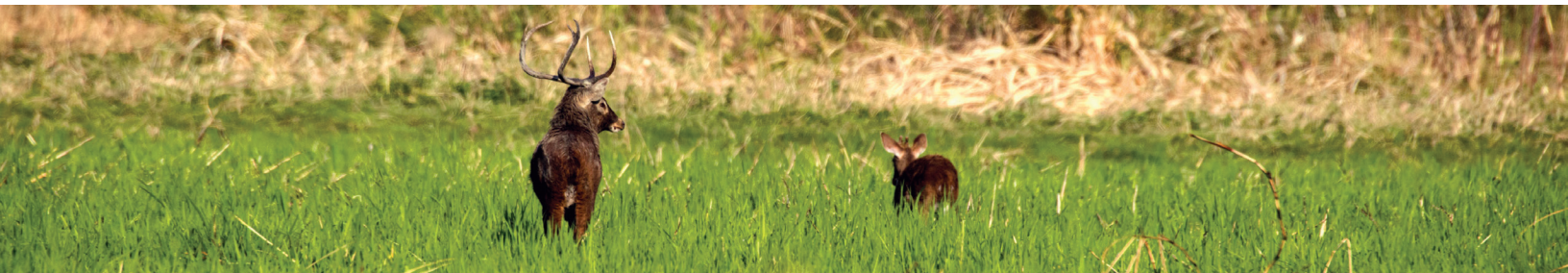
The observation of the Wildlife Week is organized every year in the country, coinciding with the birth anniversaries of Mahatma Gandhi and Lal Bahadur Shastri to offer an opportunity in raising awareness and invigorating the commitment for preservation of the unique flora and fauna diversity that we have inherited from our forefathers.

I am deeply concerned that the populations of wildlife are declining at a staggering rate as a result of mostly human-induced threats such as habitat loss, poaching, illegal trade, human-wildlife conflict and climate change. Statistics show that the world lost over 90 percent of its Tigers in the 20th century while Lion populations have fallen by two-fifths in just 20 years. We must do our utmost in protecting these magnificent and charismatic creatures. In Manipur our precious wildlife is Sangai (brow-antlered deer) available only in Manipur, and nowhere in the world. This is our bounden duty to protect this precious wildlife. Even today, Keibul Lamjao, a famous National Park has become a tourist destination.

Illegal wildlife trade is driven mainly by the huge profits earned by traders. Low risks and no penalties make this trade highly lucrative, while depleting our biodiversity. However, it is heartening to note that Government has imposed punitive penalty to those illegal traders. I sincerely appeal to the people of the State to co-operate with the Government and the concerned Department in curbing such wildlife crime. On this auspicious occasion of the 65th Wildlife Week Celebration, I, once again, appeal to all my fellow citizens of Manipur to extend their support to the Forest Department towards a concerted approach in protecting and conserving the rich wildlife of the State. Public support and participation is no longer a choice now but an absolute necessity in wildlife conservation.

I wish the Celebration a grand success.


(Dr. Najma Heptulla)





Sangai (*Rucervus eldii eldii*)



N. Biren Singh



CHIEF MINISTER MANIPUR

Imphal
September 19, 2020

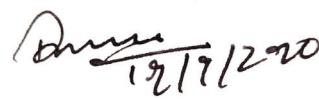
Message

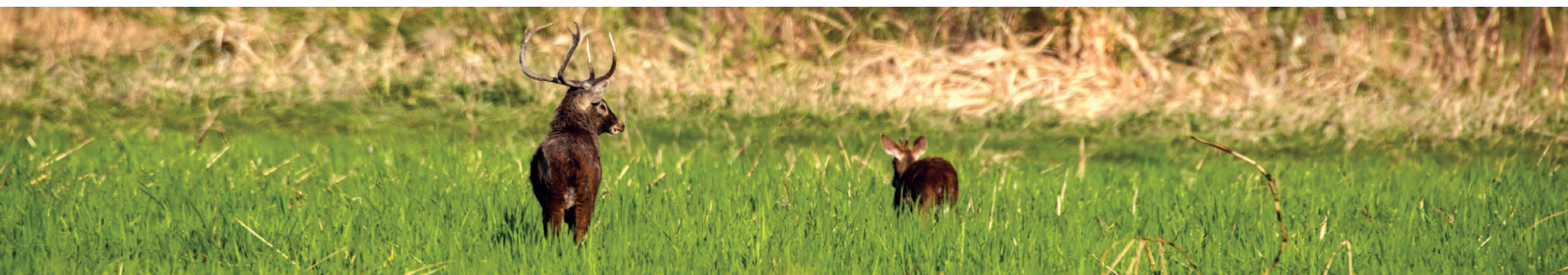
It gives me immense pleasure to learn that the Wildlife Wing of Forest Department, Manipur is bringing out a Souvenir titled. 'Lamlak kee Thawai' in connection with the 65th Wildlife Week Celebration 2020.

Manipur is home to thousands of flora and fauna species. However, we are slowly losing many of them every year due to over exploitation of natural resources, pollution, reduction in water flow, etc. As such, we need to put in a concerted effort to conserve biodiversity to sustain ecological integrity and ensure the survival of our important flora and fauna species such as the iconic Sangai, which is our State animal.

Celebration of Wildlife Week every year during the first week of October assumes huge significance as it not only spreads awareness among people but also promotes community participation in the conservation of biodiversity and wildlife. I hope, the information provided in the souvenir would be useful for future initiatives towards this end.

I wish for grand success of the Wildlife Week Celebration 2020 and publication of the souvenir.


(N. Biren Singh)





Nongin (*Syrnaticus humiae*)



Awangbow Newmai



MINISTER
Forest, Environment & Climate
Change and Sericulture, Manipur

Message

Humanity is indebted to nature and its biodiversity as they have benefited every single day from nature and wildlife since time immemorial. In our country, the nature and wildlife has been an integral part of our rich culture and heritage. We inherited the traditional beliefs and practices of nature and wildlife conservation from our ancestors who knew the intricate relationships of us with nature.

Revoking the age-old practices of wildlife and nature conservation, we celebrate the wildlife week every year in the first week of October to appreciate the marvels of nature and the beauty that thrives in biodiversity, and remind us about the yarn of lives given by them.

We have unsustainably exploited the wild flora and fauna and altered nature for our existence, threatening the life support system. Every organism on earth has their own unique role in the grand scheme of things and we are just a part of it. We need to realize that our shortsightedness will jeopardize the nature's benefits for our future generations. It is time that we take a pledge to change our behavior and ways of life that our planet's future is secured.

Manipur, the state of extraordinary natural heritage and unique wildlife is exemplary and trailblazer in conservation efforts. I congratulate the Manipur Forest Department for their dedication and tremendous amount of effort they have made for the protection of the forests and wildlife. I sincerely believe that this souvenir will spread the message of nature conservation and inspire the people of Manipur to take action towards wildlife conservation.



(Awangbow Newmai)





Amur Falcon (*Falco amurensis*)



Dr. Rajesh Kumar, IAS



CHIEF SECRETARY Government of Manipur

Message

Our planet is at a crossroads and we have the opportunity to decide the path ahead. We have known, for many years, that the astonishing decline in wildlife populations is a grim reminder and perhaps the ultimate indicator of the pressure we exert on the planet. Science has never been clearer about the consequence of our impact and the world has turned around in finding sustainable solutions for nature conservation. Today, we have the knowledge and means to redefine our relationship with the planet and there is no excuse for inaction. What we need now is the will to act and act quickly.

Manipur lies in the Indo-Burma Biodiversity Hotspot, thus, blessed with rich biodiversity including rare and endemic flora and fauna. The state also falls in the East-Asian migratory flyway of Amur Falcon and many other migratory birds. The protection and conservation of this unique assemblage of wildlife and serene wilderness pose greater challenges and over the years, the Forest Department, Government of Manipur has made unprecedented efforts in conserving our natural heritage.

I am pleased to note that Manipur Forest Department is observing this year's Wildlife Week from 1st to 7th October 2020 with the great vision of saving the state's wildlife. The celebration would make people of Manipur more aware of conservation and protection of wildlife, and create a platform to take forward the wildlife conservation in Manipur.

I congratulate the Manipur Forest Department for undertaking this important endeavour. I am confident that this event will immensely help in addressing the challenges and come up with solutions for nature conservation.

Rajesh Kumar
21/09/2020
(Dr. Rajesh Kumar)





Grey-headed Canary Flycatcher



M H Khan, IAS



ADDL. CHIEF SECRETARY
Government of Manipur
(Forest & Environment)

Message

It is a matter of immense delight for me to know that Forest Department, Government of Manipur, is celebrating Wildlife Week 2020, and that a souvenir is being published on this occasion. Wildlife serves an important role in maintaining the balance of various ecosystems. Since all organisms depend on one another, the survival of wildlife is ultimately linked to our own existence. Long term sustenance of species and their management requires co-operative efforts across entire landscapes.

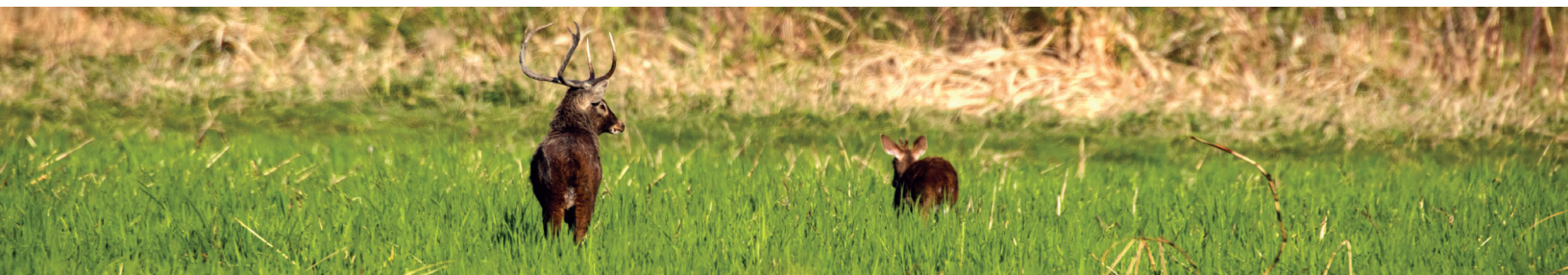
Anthropogenic activities are now the primary threat to wildlife and its environment. The need of the hour is to make people aware about the consequences of destroying wildlife and its environment.

Manipur is blessed with amazing varieties of flora and fauna. However, many of our species are threatened with extinction besides Sangai, the State animal. So, it is high time for us to escalate and expand our effort to save wildlife and the world from losing its rich natural resources.

I hope that through this souvenir, people learn more about the values of wildlife, and adopt sustainable practices in their everyday life.

I congratulate all the members of the Manipur Forest Department for the tremendous amount of effort they have put in to bring out this souvenir. I believe that this souvenir will aid in making a significant contribution toward the conservation of wildlife and its habitat. My best wishes to all the members for their future ventures.


(M H Khan)





Open-bill Stork



Principal Chief Conservator of
Forest & Head of Forest Force



Keireilhouvi Angami, IFS

Message

To be able to work with nature and wildlife, and to understand and cherish the beauty and complexity is the highest form of fortune one gets in this lifetime. And I would like to consider myself one of those fortunate people who is given the opportunities to know the ways of Nature. I am grateful to work with such dedicated and dutiful officers and frontline staff whose tireless contributions make all our conservation efforts visibly fruitful. All our efforts and dedication sometimes hides its light under a bushel and we need to pinch ourselves to enliven our spirit and come up with more passion towards our cause.

The Wildlife Week is celebrated across the country on the 1st week of October annually with the overall goal of raising awareness to serve the long term goal of safeguarding the wildlife and nature through critical action. Our state is not only the “Jewel of India” but also immensely contributes towards global biodiversity, as it lies in one of the biodiversity hotspots of the world. Our wildlife is our treasure. Our **Sangai**, Our **Shirui**, **Nongyin** or **U-ningthou**; they are the pride of Manipur. And there are many more yet to be discovered. All we need is to look with an empathetic eye towards the other life forms who share this beautiful land with us. So, this wildlife week, let us celebrate the wonderful wildlife which adds values to our life and remind ourselves our bounden duty to protect and preserve them along with their habitat.

On this account, the Manipur Forest Department came up with the idea of organizing various online activities intended to disseminate awareness regarding wildlife conservation keeping in view the ongoing Covid-19 global pandemic. As we celebrate **Wildlife Week-2020**, I am pleased to present this souvenir for the nature and wildlife enthusiasts to reminisce their participation on this momentous occasion.

Keireilhouvi Angami, IFS
Forest Department
Government of Manipur



Sangai at Keibul Lamjao National Park



**Addl. Principal Chief Conservator
of Forest Wildlife & CWLW**



Dr. A.K. Joshi, IFS

Preface

Nature has always had a profound effect on mankind. We hear bird songs and instantly feel the urge to know what our feathered friends might be telling us; we sit under the shade of a tree and feel the calmness that resonates within. The enchanting forests with their natural beauty, the allure of the wilderness with abundant wild animals and birds add value to our lives by providing a sense of stability and serenity. In the words of John Muir, *"God never made an ugly landscape. All that sun shines on is beautiful, so long as it is wild."*

Our planet is home to innumerable species, and these play an important role in balancing the environment. Expanding human demands on land, sea and fresh water, along with the impacts of climate change, have made conservation and management of wild areas and wild animals a top priority. Having recognized the importance of wildlife, and acknowledging the trend of changes that natural landscapes have been witnessing in recent times, it is essential that we must come together, and share our ideas in finding a common solution to conserve these invaluable assets of nature.

Wildlife comprises all living organisms (plants, animals, micro-organisms) in their natural habitats which have been neither domesticated nor tamed. According to the Wild Life (Protection) Act, 1972, *"Wildlife includes any animal, aquatic or land vegetation which forms part of any habitat"*. Conservation can be defined as the management of human use of the biosphere so that it may yield the greatest sustainable benefit to the present generation while maintaining its potential to meet the needs and aspirations of future generations. Wildlife conservation is crucial because wildlife and wilderness play an important role in maintaining the ecological balance and contribute to the quality of human life. Wildlife conservation includes protection, preservation, and perpetuation of rare species of plants & animals in their natural habitats.

India has adequate laws in place for protecting and conserving its wildlife and biodiversity resources, and for preventing wildlife crime; however, understanding their applications and their implementation has always been a big challenge. This is compounded by the limited enforcement staff capacity and the varied nature of wildlife crimes.



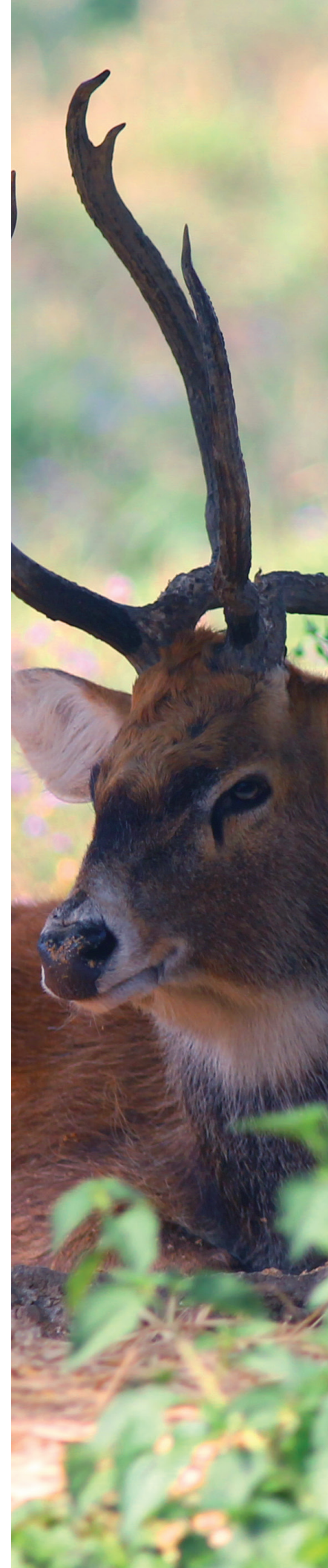
Manipur is endowed with rich floral and faunal biodiversity that associates with various social and cultural aspects of the life of its people. To safeguard the long-term sustenance of this natural and wildlife heritage, the Manipur Forest Department has been diligently implementing various programmes and schemes on different aspects of forest, wildlife and biodiversity conservation.

As part of its efforts towards wildlife conservation, and with an aim to generate awareness on the importance of wildlife conservation, the Manipur Forest Department is observing the **65th Wildlife Week** with assorted activities. Taking this opportunity, the Department is presenting a Souvenir entitled **“Lamlak-kee Thawai”**. It is ardently expected that this initiative would enlighten our readers to the importance of wildlife and its conservation in Manipur.

The articles contained in the Souvenir range from highlighting the National and Global conservation scenario, juxtaposed with the wildlife and biodiversity situation in Manipur. Articles on Keibul Lamjao National Park, Sangai, Shirui Lily, Waterfowls found in Loktak, conservation initiatives of the migratory Amur Falcon etc. provide an insight into the varied wildlife and biodiversity of Manipur. A few general articles covering issues such as effects of urbanization on urban biodiversity and the joys of bird watching have also been included.

I am extremely grateful to all the esteemed authors and wildlife & environmental experts, who have within the short time available contributed their articles for this Souvenir. I am also thankful to the team of officers and staff of the Wildlife Wing, Forest Department, for the special efforts put in by them in preparation of this Souvenir **“Lamlak-kee Thawai**.

Dr. A.K. Joshi, IFS
APCCF (Wildlife) & CWLW
Government of Manipur





ACKNOWLEDGEMENT

On the occasion of the 65th Wildlife Week Celebration 2020, Wildlife Wing of the Forest Department has come out with the Souvenir entitled LAMLAK-KEE THAWAI. This Souvenir is the fruit of wholehearted effort and encouragement of many wildlife lovers, naturalists and others to whom I owe my utmost gratitude.

I have the privilege to extend my deepest appreciation and gratitude to Dr. Najma Heptulla, Hon'ble Governor of Manipur for her message to the citizens of Manipur to extend their support to the Forest department in protection and conservation of the rich wildlife of the State on the occasion of 65th Wildlife Week Celebration.

I express my sincere appreciation and gratitude to Shri N. Biren Singh, Hon'ble Chief Minister, Manipur, for his vision, foresight and encouraging support to the forest Department for protection and conservation of wildlife.

I express my appreciation and gratitude to Shri Awangbow Newmai, Hon'ble Minister (Forest, Environment, Climate Change and Sericulture), Manipur for recognising the department in its efforts to conserve and protect wildlife, avifauna and the rich biodiversity in Manipur.

I express my special gratitude to Dr. Rajesh Kumar, IAS, Chief Secretary, Government of Manipur for his understanding, enthusiasm and continuous encouragement for conservation of our forests and wildlife.

I express my sincere gratitude to Shri M.H. Khan, IAS, additional Chief Secretary (Forest & Environment) Government of Manipur for his constant support and his appeal to everyone to be conscious about the consequence of destroying wildlife and its habitat. The guidance by Shri Shir Kereilhouvi Angami, IFS, Principal Chief Conservator of Forests & Head of Forest Force, Government of Manipur for bringing out the Souvenir in honoured and acknowledged.

The commendable initiatives, mentorship and contribution provided by Dr. A.K. Joshi, IFS, Additional Principal Chief Conservator of Forest (Wildlife) & Chief Wildlife Warden, Government of Manipur is thankfully acknowledged. He has been a constant guide and motivator throughout this endeavour to bring out the Souvenir.

I express my sincere thanks and gratitude to Shri M. Ashni Kumar, Member, SBWL, Shri Rajesh Salam, Member, SBWL, Wildlife Institute of India Research Team, Dr. Kh. Shamungou, Chairman, TC-MSWA, Shri K. Jugeshor, Principal, Kumbi College, Shri Akham Bonbirdwaja, IFS (Retd.), Shri Rahul Asem and Dr. R. Suresh Kumar, WII for contributing articles for the Souvenir 'LAMLAK-KEE THAWAI'.

I also express my sincere thanks and gratitude to all wildlife lovers, NGOs, Civil Society Organizations and environmentalist for their support to bring out this Souvenir. Finally, I express my gratitude to all officers and staffs of the Wildlife Wing of the Forest Department for their valuable cooperation, effort and support in the production of this Souvenir-LAMLAK-KEE THAWAI.

(L. Lukhoi Singh)

Chief Conservator of Forests (Wildlife)
Government of Manipur



Long-tailed Shrike Image Credit: Dhanabir Oinam



Wildlife Conservation and Management

- An Overview

(Dr. Aditya K. Joshi, IFS, CWLW, Manipur)

Introduction:

Wildlife conservation in India has a long history, dating back to the colonial period when conservation efforts were rather limited and only targeted to some of the species, and that too in a defined geographical area. One of the forerunning activities for conservation of wildlife in the early 1930s was the establishment of the Hailey National Park, in the Kumaon Hills, initially named after Lord Malcolm Hailey. The park was renamed as Jim Corbett National Park in 1957, in Jim Corbett's honour, the famous hunter, tracker, naturalist, author and conservationist; as he together with Mr. F.W. Champion had played a key role in establishing India's first National Park.

India is unique in its richness and variety of Wildlife and holds a multitude of species within its varying topographies and climate. In recent years, however, many floral and faunal species are declining due to a number of reasons ranging from deforestation, habitat degradation, hunting, poaching, human-animal conflict, pollution etc. It has been widely established that the biggest single driver of wild species loss is land-use change and diversion of forest land for non forestry purposes. This takes an immense toll on all wild species, who are denied their original habitat. Some of the species have become extremely rare and endangered given their declining numbers in the wild. Despite the various environmental issues being faced, India still has a varied wildlife. The need of the hour is to protect and conserve this rich heritage for future generations.

Conservation Scenario in India:

To protect, preserve, and propagate varied natural resources, the Government of India passed the Wild Life (Protection) Act, 1972 (WPA), under which Protected Areas could be created. This laid the foundation of the present day “wildlife conservation” era in India. Protected areas are ecological/biogeographical areas where wildlife is conserved by maintaining habitats, preserving natural resources, and preventing poaching. This Act provides for the protection of the country's wild animals, birds, and plant species, to ensure environmental and ecological security. Among other things, the Act lays down restrictions on hunting of wild species. Under the WPA, National Parks, Wildlife Sanctuaries, Community Reserves and Conservation Reserves have been set-up across the country for the conservation of its wildlife and wilderness. There is a total of 903 PAs in India which includes 101 National Parks 553 Wildlife Sanctuaries, 86 Conservation Reserves, and 163 Community Reserves (Table: 1). The launch of various projects and programmes for the conservation of specific species which are on the verge of extinction in the wild such as Project Tiger, Project Elephant, Project Snow Leopard, and the recently launched Project Asiatic Lion and Project Dolphin also bear testimony to the efforts of the Government in according protection to wildlife.

Table 1: Protected Areas of India (Source: ENVIS, Centre on Wildlife & Protected Areas, WII, Dehradun)

	Number	Total Area (km ²)	Coverage % of the country
National Parks (NPs)	101	40,564.03	1.23
Wildlife Sanctuaries (WLSs)	553	1,19,756.97	3.64
Conservation Reserves (CRs)	86	3858.25	0.12
Community Reserves	163	833.34	0.03
Protected Areas (PAs)	903	1,65,012.59	5.02

The other initiatives of the Government are to set up special organisations like Wildlife Institute of India (WII) to conduct research on conservation of wildlife and to establish the Wildlife Crime Control Bureau (WCCB) to curb illegal trade of wildlife and endangered species. Wetland (Conservation and Management) Rules, 2017 have been enacted to protect the wetlands of India. The Central Government has also initiated the Scheme, National Plan for Conservation of Aquatic Ecosystem that lends assistance to the States for sound management of all wetlands.

The Central Government had earlier initiated the Integrated Development of Wildlife habitat scheme for protection and conservation of endangered species; and the scheme has later been extended to include a new component: the Endangered Species Recovery Programme (ESRP). The Sangai (*Rucervus eldi eldi*), the State animal of Manipur, has also been included in the ESRP because of its highly endangered status as it exists as a single, isolated and small population in the most renowned National Park of Manipur, the Keibul Lamjao National Park.

India also became a member of all major international conservation treaties related to habitat, species and environment namely the Ramsar Convention, 1971; Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES), 1973; Convention on Migratory Species (CMS), 1979; Convention on Biological Diversity (CBD), 1992, among others.

Conservation Scenario in Manipur

Manipur –the “Land of Jewels” lies in the Indo-Burma biodiversity hotspot in the North-Eastern region of India. Hence, the state is blessed with an array of rare and endemic species. Many of the species found in Manipur are endemic from Shirui lily of Ukhrul to Sangai of Keibul Lamjao. Other species of conservation significance are the Hoolock

Gibbon (Yongmu), which commonly occurs in all hill districts of Manipur. The Slow Loris, the Stump Tailed Macaque, the Pig-Tailed Macaque, Clouded Leopard, Golden Cat, etc. are the rare primates and carnivores that occur in the forests of Manipur. The state is also bestowed with a rich diversity of avifauna both resident and migratory species. Some of the avifauna of conservation significance are the state bird Nongin, the migratory Amur Falcon, Hornbills, Tragopans Eagles and raptors, and the migratory water-birds.

Healthy forests are a must to conserve wildlife, and therefore the Department has been working extensively to restore the forest cover and conservation through both in-situ and ex-situ strategies. The state forest areas are being managed through well-defined and consolidated Forest Divisions as per prescriptions under the Working Plans through a well-established administrative setup. With more than 77% of its geographical area under forest cover, the forests have been providing invaluable ecosystem services to the people of Manipur.

A milestone in wildlife conservation is the growing area under the Protected Area Network (PAN) in the State which is now over 4.27% of the geographical area through notifications of National Parks, Sanctuaries, and Community Reserves for protection and *in-situ* conservation of wildlife in the state. The PAs and proposed PAs of the state are Keibul Lamjao National Park, Shiroi National Park, Yangoupokpi Lokchao Wildlife Sanctuary, Kailam Wildlife Sanctuary, Jiri-Makru Wildlife Sanctuary, Bunning Wildlife Sanctuary, Zeilad Wildlife Sanctuary, Khongjaingamba Ching Wildlife Sanctuary, Thinungei Bird Sanctuary, and 11 Community Reserves (CR) Pfunamai CR, Azuram CR, Sofi Khro CR, Banevehdeha CR, Chibvi & Veimairi CR, Mekrimai Ru and Kakramai Bu CR, Lungphu CR, Houphai CR, Chipeivao CR, Shangneme CR and M. Tanglian CR (Table: 2).

Table 2: Protected Areas of Manipur

	Number	Total Area (km ²)	Coverage % of the state
National Parks (NPs)	2	140.00	0.627
Wildlife Sanctuaries (WLSs)	7	708.543	3.173
Conservation Reserves (CRs)	-	-	-
Community Reserves	11	104.736	0.469
Protected Areas (PAs)	20	953.279	4.27



Despite these tremendous efforts of the Department and other stakeholders, a number of challenges in wildlife conservation still exist. A variety of cultures and land use practices are observed in the hills and valleys of Manipur. The local communities are dependent on the natural resources for their livelihood. Rapid deforestation and over-exploitation of resources has resulted in habitat destruction and have threatened many species towards extinction. Some of the major threats to wildlife in the state are habitat fragmentation and degradation, overexploitation of natural resources, hunting, pollution and climate change impacts.

Habitat destruction and fragmentation often leads to killing of animals and also reduces the carrying capacity of the remaining land available. Most man-animal conflicts are also the outcome of such habitat fragmentation and restriction in movement forcing the wild animals to come in contact with man, either in the homesteads or crop fields.

The land use practice of shifting or '*jboom*' cultivation puts tremendous pressure on our forest resources. It also leads to enhanced soil erosion, loss of soil fertility and land degradation; leading to siltation in the surrounding wetlands. In addition, forest fire has become more frequent in the forests of Manipur. This results in loss of forest cover and habitat for associated wildlife.

Hunting and poaching are other important causes of decreasing wild animal population. Hunting which used to be a part of the cultural and traditional practice of the people in the hills has now become a commercial practice. Even though hunting in all forms is prohibited under Section 9 of the Wildlife (Protection) Act, 1972, wild meat is sold in the open, under the guise of tradition. Smuggling of wild animal articles has also become a lucrative proposition due to the high market demand. The consequent illegal wildlife trade is having a devastating effect on most wildlife species.

Efforts of the Forest Department have led to reduction of hunting in many areas; however, it still persists in some parts resulting in loss of wildlife. Dependence of local communities on natural resources for livelihood is another major challenge

towards conservation. Increasing population has resulted in over exploitation of the natural resources resulting in degradation of the forest habitat for wildlife.

To mitigate these conservation challenges, support and cooperation from the local community needs to be gained through their participation in the conservation process. For this purpose, local communities have to be encouraged to be the frontline warriors by conserving and managing their forest areas and wildlife. The key factor for wildlife preservation is to prevent habitat fragmentation and degradation. One way for this is through the declaration of "Community Reserves" under the Wild Life (Protection) Act, 1972. The Community Reserves give liberty to the local communities to manage their resources in return for their commitment of protection and conservation of forest and wildlife. The State has so far declared Eleven Community Reserves since 2016 (Table 2).

Ecotourism is also an alternate option for reducing dependence on forests and moving from sustenance forestry to sustainable forestry. Creating grass root awareness and making people realize the perils of unsustainable utilization of natural resources is a crucial factor in any conservation strategy. The challenge is to convince the local communities and to deliver the important messages of wildlife and biodiversity conservation to the target group, particularly to the students and villagers. At the same time, capacity building of the local communities is also essential to involve them in future conservation programmes. The time has come to implement these strategies in a mission mode to make the right impact on people.

The law enforcement needs to be strengthened to curb the growing illegal trade in wildlife and wildlife articles. Simultaneously, the judiciary also needs to be sensitized to impose strict penalties and punishments to act as a deterrent against wildlife crimes.

Conclusion:

Over the past few decades, despite growing demographic pressure and ever increasing infrastructural developmental initiatives, Manipur



still has a relatively rich repository of wildlife largely because of its cultural heritage and value systems which encourage a positive and healthy man-nature dynamic. One of the biggest challenges in wildlife conservation and management is addressing the needs of local forest-dependent communities. Protecting the interests of the local communities living around protected areas are issues to be handled with sensitivity and with maximum participation of the affected people. Employment generation and adequate ecosystem services for these people are crucial for maintaining a symbiotic relation between the forests, wildlife and people.

The Forest Department of Manipur has contributed towards conserving Manipur's rich biodiversity and wildlife treasure. Through diligent administrative efforts the department is continuously conducting various trust-building activities including introducing and implementing various schemes on alternate livelihoods. The Department is adopting a holistic bottom-up approach in planning for wildlife management to introduce new programmes and eco-development activities.

To gain people's trust, the Forest Department of Manipur is continuously conducting various trust-building activities including introducing and implementing various people friendly schemes on alternate livelihoods and eco-development. Forest Department has taken up plantations of mixed species, fruit bearing species, bamboo, agar, medicinal plants and other NTFPs. Training

programmes are also organized in manufacturing of bamboo products, processing of NTFPs and medicinal plants. Efforts are also being made to help stakeholders develop market linkages.

To foster love for wildlife, mass campaigns to create awareness for protection and conservation of forests and wildlife are being proposed with the involvement of civil society organizations, NGOs, local community networks, academicians, community leaders, students, local clubs, through activities such as seminars, workshops, etc. Special focus is now on educating the youth and school children as they are the future of our society and nation. The message that the Forest Department is trying to instil in these young minds is that it is time to repay nature for all that it has given us by pledging to protect it, and that it is every individual's fundamental moral duty to conserve and save our wildlife.

In conclusion, we must remember that wildlife management is an evolving practice that must result in better wildlife conservation: more democratic, more ethical, and more scientifically grounded. Our wildlife is a resource that is to be managed as a trust for the benefit of all beneficiaries – and all citizens in perpetuity.

(The author is APCCF, Wildlife & CWLW, Manipur)



**ONLY WHEN
THE LAST TREE
HAS DIED;
THE LAST RIVER
BEEN POISONED;
THE LAST FISH
BEEN CAUGHT
WILL WE REALISE
WE CANNOT
EAT MONEY**



Reconnecting with wildlife to revitalize nature and human health

Salam Rajesh

The global discussions on the current novel coronavirus pandemic has brought to the forefront the common concerns on how depletion of forests and natural landscapes, and over-exploitation of wildlife, are connected with spread of diseases that are basically induced by human related activities. The co-related focus is then on an intensified activity of protection of forests, natural landscapes and the wildlife, with concentrated focus on the proactive participation of local communities and indigenous peoples towards wildlife protection and conservation in both short- and long-term measures.

The recent Living Planet Report 2020 (LPR 2020) brought out by the World Wildlife Fund (WWF) highlights the concerns on over-exploitation of wildlife globally, and the illegal trade on wildlife and their parts. The report specifically notes that the average size of wildlife populations has plummeted by two-thirds worldwide since 1970 as forests were felled to grow food and for commercial plantation. The inter-related finding is that harming ecosystems hikes the risk to humans of infectious diseases like COVID-19.

Worldwide and in Manipur, too, a major concern has always been on the conversion of forest lands to settlements and commercial activity areas, mostly unauthorized and illegally as have been seen in many of the Reserved Forest areas in the State, such as in the Langol Reserve Forest within Greater Imphal area. WWF's LPR 2020 report specifically mentions that 'land conversion for farming and the wildlife trade were key reasons for the 68% average drop across thousands of populations of mammals, birds, amphibians, reptiles and fish between 1970 and 2016'.

A co-related global concern is on the massive clearance of vital tropical rainforests around

the world, such as in the Amazon Basin and in Southeast Asia – Indonesia and Malaysia specifically, for commercial exploitation. The global monitoring service - Global Forest Watch - says that during 2019 tropical rainforests, whose preservation is considered crucial to curbing climate change, 'disappeared at a rate of one football pitch every six seconds'. At this virtual measurement, it indeed has become alarming that tropical rainforests are being axed discriminately without consideration of the long-term negative impacts.

WWF's LPR 2020 report, backed by contributions from about 125 experts, tracked almost 21,000 populations of nearly 4,400 vertebrate species, giving an overview of the state of the natural world. The report noted that species that live in freshwater suffered an 84% decline. Marco Lambertini, Director General WWF, says, "These serious declines in wildlife species populations are an indicator that nature is unraveling and that our planet is flashing red warning signs of systems failure."

This brings to concerns back home on how much of initiatives are being taken up to protect forests and the wildlife in Manipur. During these past few years, the State's Forest Department has done yeomen's work in organizing Tamenglong youths for the protection and conservation of the long-distant flying raptors Amur Falcon (*Falco amurensis*) during their winter stay here enroute from Amurland in Central Asia to their passage to Africa and back. The falcons were widely hunted for food in Tamenglong area some time back, but with the active collaboration of Rainforest Club Tamenglong, edged on by the concerned officers of Tamenglong Forest Division of the State's Forest Department who have succeeded in mobilizing the locals for protection of the migratory raptors. The success story on Amur Falcon conservation is in



international focus today, and this was reflected at the COP 13 Convention on Migratory Species at Gandhinagar, Gujarat in February 2020.

The other significant success story is the initiative taken up by the Directorate of Environment, Manipur to feature Phayeng village in Imphal West District as India's first carbon-positive village. This implies that the village sustains its landscape and the surrounding forest in a near natural state contributing significantly as a vital carbon sink. In other words, there is greenery in this landscape and it provides shelter for numerous birds, insects, animals and other vertebrates.

There are other localized initiatives taken up by village communities at their own scale. The need for constant water supply had initiated local endeavor in protecting and conserving community-controlled forest areas. For instance, at Khampi village in Kamjong District, this basic need pushed the locals to declare an 8x2 sq.km. area of Khampi Ching (hill) as 'protected' by the village community, inherently protecting the forest and the wildlife it sustains. Quite interestingly, the village authority prohibits hunting of wildlife in this protected forest and penalties are levied for offences including felling of trees and hunting of wildlife. At Shirui village in Ukhrul District, the local Shirui Youth Club has long been involved in protecting the habitat of the state flower, the beautiful Shirui Lilies, in the grassland meadows of Shirui-Kashong mountain range with some amount of conservation effort at their own level.

Nature lovers, wildlife enthusiasts and environmentalists the world over have been saying all this while that conserving existing forests and restoring damaged ones reduces the risk of flooding, soil erosion and landslips, while helping in limiting global warming by storing more carbon and protecting biodiversity. It also is common knowledge that protecting forest and wetland ecosystems contributes significantly in rejuvenating wildlife populations, which in its turn sustains the food chain in nature. Wetlands are natural habitats for migratory water birds, fish, aquatic plants and various forms of life including microorganisms. It, therefore, is equally important to conserve wetlands

to sustain wildlife populations. Loktak Lake harbours more than 26 species of migratory water birds during their annual winter sojourn from the colder regions of Central Asia.

Dr Jane Goodall, the famous primatologist, along with fellow activists and the UN's Executive Secretary for Convention on Biological Diversity, Elizabeth Maruma Mrema, are calling for restrictions on wildlife trafficking and the sale of live animals at "wet markets". The coronavirus outbreak is believed to have originated from a wet market in Wuhan, China, where wild animals were sold, and made the jump to humans from animals kept in close proximity. Dr Goodall says, "We have moved into this destructive and greedy period of human history where we are destroying the environment and putting economic growth ahead of environmental protections, even though we are thus destroying the future for our own children. Now we see this resulting in this current pandemic, which is having a horrific effect on the planet" (The Independent, 10 April 2020).

Reflecting on this, a current concern of global observers on wildlife crimes is the new 'illicit process' of trade in wildlife and wildlife products which is moving online. Citing an example, the World Wildlife Crime Report 2020 published by the United Nations Office on Drugs and Crime (UNODC), says the illicit pet reptile trade increasingly involves the use of social media platforms. "Criminals can be quick in switching online platforms whenever enforcement action is taken. This trade is particularly difficult to address due to its hidden nature, inconsistent regulatory frameworks, and limited specialized law enforcement capacities", the report cites.

The other concern reflected in the UNODC report is the headache on combating wildlife and forest crime which has not been seen as 'a priority when addressing organized crime'. The report stresses that 'legislation may be weak and the level of detecting and addressing wildlife crime may be very low because of limited law enforcement capacity'. This is particularly of abject concern in a region like North East India that has porous international boundary with China, Myanmar and Bangladesh, and through which illicit trade in wildlife and their



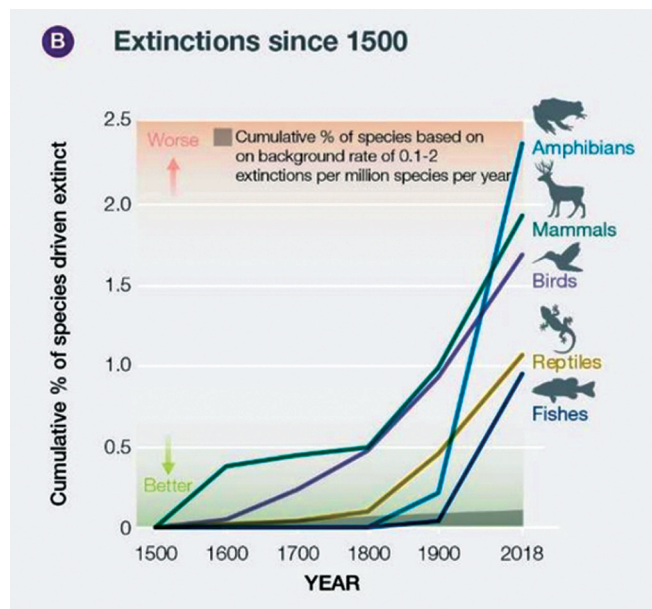
parts occur without check – despite vigil by forest staff, customs, the paramilitary and the military in sensitive pockets.

The UNODC's World WISE database reported that there has been a striking increase in the reported seizure of wildlife between 1999 and 2017, up scaling from 3,317 seizures in 1999 up to 20,762 seizures in 2017 worldwide. This perhaps could include the number of reported seizures in wildlife parts at the international border in Manipur's Tengenoupal area by forest, customs and the military. These seizures include leopard skin, tiger bone, pangolin scales, antlers, bear bile, etc. At the local level, there are reports of poaching of wildlife in national park and wildlife sanctuaries, and random hunting in forests controlled and managed by local communities. There are wet markets in Manipur, as in Churachandpur, Senapati and Ukhrul specifically where wildlife and their parts are sold illegally but these are not at the scale seen at Wuhan from where the Covid-19 virus is said to have emitted.

The emphasis for the State has to be on multi-pronged strategy to combat crime and illegal trade in wildlife in contributing towards global effort in curbing over-exploitation of wildlife to prevent further pandemics. In the short-term measure, State's forest department can formulate plans to incorporate local communities and indigenous peoples in awareness and capacity building to strengthen conservation strategies. This can be upscaled to funding and support to non-governmental organizations and local community networks as both short- and long-term measures in strengthening the functioning of forest staff in combating wildlife crime. The good example of forest department's support and recognition of Dailong Biodiversity Heritage Site in Tamenglong District is the right step in mobilizing community support across the State.

A system of State(public)-Community(private) Partnership strategy on a new note can hopefully generate more proactive participation of local communities in protecting wildlife and conserving natural landscapes. There are many examples of conflicts when State does not have understanding with local communities, whereas, there are also

instances where State works hand-in-hand with local communities. The role of the State Biodiversity Board is relatively important in garnering people's participation in this task which naturally will have some amount of repercussion as hunting is a pastime traditionally practiced in the uplands of Manipur through centuries. Whereas, people at large need to be made conscious of the emerging dangers of pandemics related directly to over-exploitation of forest ecosystem and the wildlife.



Source: UN Biodiversity



**The author is Member, State Wildlife Board, Manipur, and is associated with IPBES, IUCN CEESP & IUCN GCSG, International Society of Tropical Foresters, Nature Needs Half Network, and ICCA Consortium*



“Wildlife in the world can only be protected by a love of compassionate hearts”

M. Asnikumar Singh
Noted Conservationist and
Member, SBWL, Manipur

The Wildlife Week is often overlooked and it is beyond understanding of nature lovers and admirers; the extent to which people are busy trying to outdo each other in this age of rapid development and growth, often ignoring the things that truly matter to us; things that are crucial to earth's ecological equilibrium.

And growth at what cost? The current trend and trajectory of developmental practices will have serious consequences for the wildlife population not just of the nation but for the globe as a whole.

Biological diversity of a region ensures natural sustainability of all life forms within the region.

There is a saying 'We are what we make of ourselves'. The ongoing trends impose a heavy (which is on the verge of becoming irreversible) burden on the sustainability of wildlife; both in terms of habitat and food for numerous species on earth. The most visible analogy is the rapid melting of polar ice caps due to global warming and the trouble it spells for species such as polar bears, walruses, arctic foxes etc.

Environmentally ethical and sustainable techniques of utilising bio-resources ought to be at the apex of the development dialogue moving forward.

The Sangai question.

There's always a saying, "Think Globally, Act Locally".

Being someone who grew up in rural surroundings, in the vicinity of a floating National Park, one can't help but feel anxious about the state

of perhaps our state's most beloved animal, the Sangai (*Rucervus eldii eldii*). It is a highly endangered species which is endemic to the Keibul Lamjao National Park (the only floating National Park in the world). It is one of the purest God given treasures to our land. Unfortunately, due to rapidly changing environmental conditions, forced on by manmade activities, like the construction of Ithai Barrage as part of the Loktak Hydel Power Project, the natural cycle of the Loktak Lake has drastically changed and this in turn has deeply deteriorated the ecological balance of the National Park. The worsening water quality of the Park are indicated by record pH levels of 4 to 8.5. This is also directly linked to the ecological impacts of the Loktak Hydel Project on the park.

Prior to the Sangai's habitat being declared as a National Park in 1977, the local people of Keibul Lamjao cultivated crops, fished and even collected fodder for their domestic cattle in the premises of the Sangai's habitat. They also performed the task of protecting the Sangai from intruders who came from neighbouring areas with intentions to hunt the animal. This was a relationship of mutual love between man and animal.

Environmentally unviable development projects of the past are one of the main factors of the changing environmental cycle. It is deeply disturbing for nature lovers to see our natural treasures fading into oblivion right in front of our eyes. It is even more heart breaking for the local people who reside in the vicinity of the park.

The need of the hour is a review of the past projects as well as to strengthen the cohesion between all stakeholders; government authorities,



experts and local people to formulate an effective scientific management action plan both for short term and long term with thorough consideration of the above points to save this beautiful species and its habitat. Moreover, what is also required is changes in the relationship between the Forest department and the local people who live in the vicinity of the Park; the Forest Department can act as a social bridge for the locals, who even today feel it is their duty to safeguard the Sangai.

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An opportunity for redemption

The Wildlife Week presents the perfect opportunity to bring about some long overdue changes in the minds and ideas of policy shapers, legislators as well as local people, who have a crucial role to play in the journey of wildlife conservation in India. Perhaps the only question we ought to ask ourselves in these decisive moments is “Who are we to fiddle with nature’s balance?”.



Sangai Deer, Nongaitang Park



Conservation of the floating Keibul Lamjao National Park in Indo-Burma biodiversity Hotspot

CAMPA-SANGAI TEAM*, Wildlife
Institute of India, Dehra Dun

Introduction

It is fairly visible that a massive global transformation of nature is taking place that is declining at an unprecedented rate directly driven by changes in land and sea use, direct exploitation of organisms, climate change, pollution and invasive alien species and indirectly by demography, technology, economy, and governance. The current rate of global species extinction is higher compared to the average over the last 10 million years that around 1 million animal and plant species are now threatened with extinction. It is also reported that 75% of terrestrial and 66% of marine environments are severely altered to date by human actions. More than 85% of wetlands had been lost by 2000 and its pace is currently three times faster than the forest loss.

Among the megadiverse nations of the world, India occupies the 7th place with only 2.4% of the world's land area harboring 7-8% of all the recorded species including 45000 species of plants and 91000 species of animals (MoEFCC, 2014). And of the 36 global biodiversity hotspots of the world, four are present in India represented by the Himalaya, the Western Ghats, the Indo-Burma, and the Nicobar Islands. India has been a forerunner in conservation as it has developed a biogeographic classification for conservation planning and has mapped biodiversity-rich areas in the country.

Manipur lies in the North-Eastern state of India which encompasses the Indo-Burma biodiversity hotspot. The Indo-Burma biodiversity hotspot is ranked among the global top 10 hotspots for irreplaceability and in the top five for threats faced,

with only 5% of its natural habitat remaining and a high human population compared with other hotspots (Mittermeier et al., 2004). This hotspot supports a wide variety of habitats out of which freshwater ecosystems are most vulnerable. The main threats to these fragile freshwater ecosystems have been summarized into four categories viz. drainage basin disturbance, pollutants, water-resource development (i.e. dams and flow regulation), and biotic threats such as unsustainable resource extraction (Allen et al., 2012).

The Loktak Lake and the Keibul Lamjao National Park

The Loktak Lake which is the largest freshwater lake in Northeast India is one of the vital freshwater ecosystems under the Indo-Burma Biodiversity hotspot. The lake supports rich biodiversity which in turn is socially, culturally, and economically significant to the people of Manipur and hence is considered as the 'lifeline of the people of Manipur' (Trishal and Manihar, 2004). The lake is characterized by unique floating meadows, consisting of a heterogeneous mixture of dead and decaying plant materials of varied thicknesses that are locally known as phumdis. The vegetation, particularly of the floating meadows plays a significant role in governing the wetland processes and functions of the floating ecosystem. In March 1990 the lake was designated as a wetland of international importance under the Ramsar Convention, but in subsequent years it was included in the Montreux record because of its changing ecological character due to anthropogenic pressures especially water pollution. Encroachments through the construction of fishponds, roads, and settlements have gradually degraded the lake ecosystem (Trisal and Manihar,

2004). Most of the encroachments have subsequently been cleared by the Loktak Development Authority (LDA) in recent years but some still exist. Another report by Wetlands International suggests that the proliferation of phumdis and detrimental fishing practices like athaphums have resulted in the degradation of the lake. A study by Tuboi et al., (2017) found that the lake is hypereutrophic and is in a state of degradation due to anthropogenic pressures and an increase in nutrient inflow.

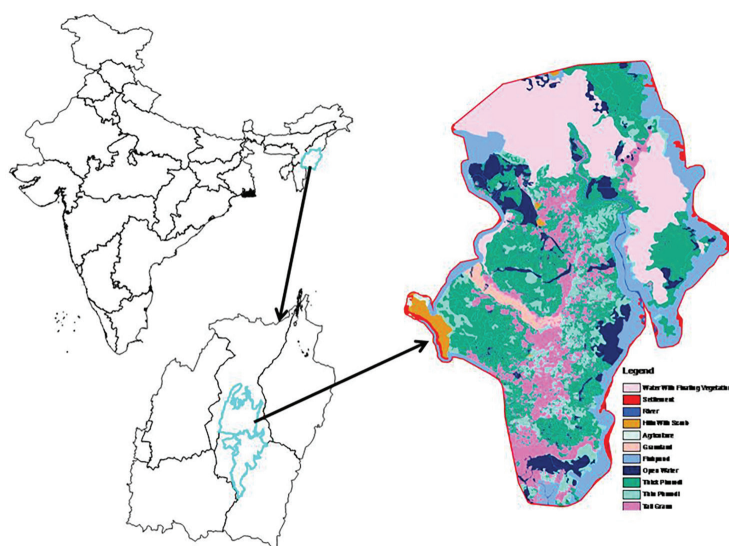


Figure 1. Map showing the location of Keibul Lamjao National Park, Manipur

The southern part of the lake with an area of 40 km² is protected as Keibul Lamjao National Park (KLNP) for the conservation of the globally endangered Sangai (*Rucervus eldii eldii*, McClelland, 1842). A total of 185 species of plants have been recorded in KLNP, of which 90 species occur in the floating meadows and open water, 19 species in terrestrial habitats, and 76 species in both terrestrial and floating habitats (Tuboi et al., 2012). The Park also supports around 131 bird species consisting of grassland and waterbirds, both migratory as well as resident (Rohikanta, 2016). Slender-billed babbler and black-breasted parrotbill listed as vulnerable in the IUCN Red List have also been recorded in the park. It also supports a significant population of reptiles, amphibians, and fishes such as Russell's viper, King cobra, Indian rock python, Malayan box turtle, Indian Green Frog, etc. (Singh 1992). Apart from the Sangai, the other mammalian species of conservation significance in the park is the Hog deer (*Axis porcinus*). Wild boar, Large Indian civet and Small Indian civet are also reported (Shamungou, 2002).

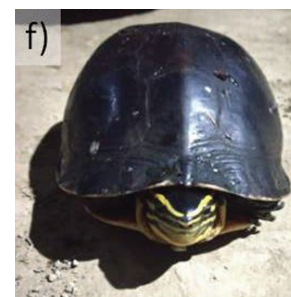
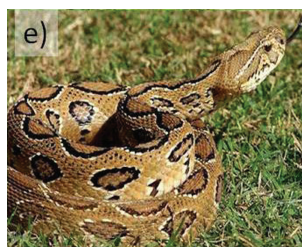
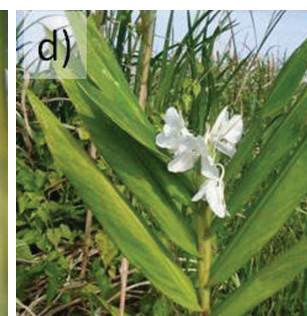
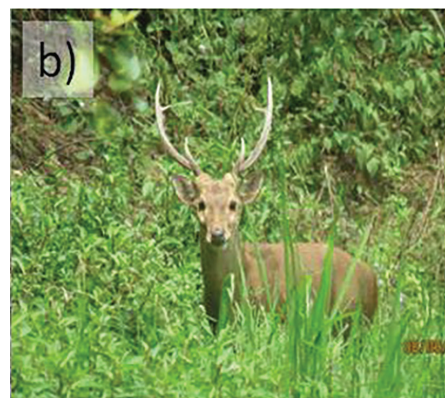


Figure 2: Biodiversity of Keibul Lamjao National Park; (a) Sangai, (b) Hog Deer, (c) Black-breasted parrotbill, (d) *Hedychium coronarium*, (e) Russell's viper, (f) Malayan Box Turtle

Conservation issues

Sangai is one of the most threatened cervids in India with a single, isolated and small population, confined to the KLNP as its last natural habitat in the wild (Hussain et al., 2006). The Park is a low lying lacustrine swamp supporting the largest concentration of floating meadows covering 22.3 km² (Sanjit et. al., 2005; Hussain et al., 2006) out of which 8.64 km² had meadows thickness >120 cm, 7.32 km² had a thickness ranging between 60-120 cm and 6.33 km² areas had thickness <60 cm (Tuboi, 2013). Sangai requires a phumdi thickness of at least 1 m or >1 m to support its weight. Though the thickness of phumdi is of utmost importance, it is declining in recent times. Change in the composition of the plant community, agriculture and aquaculture on encroached areas, degradation of water quality due to the accumulation of nutrients (Tuboi et al., 2017), extraction of biomass, and incidental forest fires etc. are some of the causes of habitat degradation inside the Park. The construction of the Ithai barrage in the downstream stretch of the Manipur River in 1983 exacerbated these impacts, changing the natural hydrologic regime of the lake (Trisal and Manihar, 2004; Tuboi and Hussain, 2018).

Lack of connectivity with the surrounding landscape for recolonization is also a major concern. As the Park is surrounded by human settlements in all the direction, the movement of wildlife is limited to only the small area inside the Park and due to close proximity with settlements, human disturbances is also high (Hussain et al., 2006). Despite its PA status, due to the poor socio-economic condition of the surrounding local communities, there is a high dependency on the Park resources for both commercial and subsistence purposes in the form of fodder, fuelwood, fishes, vegetables, etc.

The Sangai population being small and highly fragmented is subject to the small population paradigm making it susceptible to a higher chance of extinction because they are more vulnerable to inbreeding depression, genetic drift, resulting in stochastic variation in their gene pool, their demography, and their environment (Angom,

2012). Another major concern is the increased probability of disease outbreak and incidental mortalities due to catastrophic events in the Park such as incidences of fire.

Conclusion

Loss of biodiversity is not only an environmental issue but also a developmental, economic, security, social, and moral issue as well. Despite the collective efforts and progress to conserve nature and implement policies at different scales, the global goals for conservation and achieving sustainability is far to be obtained if it continues in this current track. The story of KLNP is also the same, as its unique habitat and ecosystem have been under threat due to extended anthropogenic pressures. Despite the intensive conservation measures being implemented since the declaration of KLNP in 1977, there still exist undeniable threats.

The Ministry of Environment, Forest & Climate Change (MoEF&CC), Government of India under its Endangered Species Recovery Programme has initiated a project entitled 'Conservation Action Plan for Manipur's Brow-antlered Deer or Sangai: An Integrated Approach' which is being implemented by Wildlife Institute of India (WII) and the Manipur Forest Department (MFD) and field conservation activities were started since 2016. This programme aims to (a) Secure existing population in Keibul Lamjao National Park through science and innovation, (b) Create a second population at a select site in Manipur, (c) Involve local communities in conservation process of Sangai in both Keibul Lamjao National Park and at the reintroduction site and (d) Conducting applied research on the ecology of this species.

The main threat for the continued existence for the species in the wild is that it occurs as a single and isolated population in a deteriorating fragile habitat. For this purpose, intensive advocacy for establishing a second home for Sangai through conservation breeding was initiated by WII in collaboration with the MFD. During 2017–2018, a series of intensive consultative meetings and workshops were conducted that involved multiple stakeholders at different levels of governance for advocating the establishment of a second population of the Sangai. For long term survival of Sangai in the wild, the creation of a second



population by finding a suitable second home is the need of the hour.

* Dr. S.A. Hussain, Dr. Ruchi Badola, Dr. Chongpi Tuboi, Nongmaithem Bijyaluxmi, Endrea Moirangthem, Mirza G. Ullah, Ak. Santikumar Singh, Tannison Gurumayum, Sharmila Naoshekpam, Padichunbou Newmai

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Shirui Lily A Species on the Edge

Kh. Shamungou
Chairman, Technical Committee
Manipur State Wetlands Authority

“The plant was named *Lilium mackliniae* by Mr. J. R. Sealy, in honour of my wife (Jean Macklin), who had done so much to help me bring it into cultivation on a bigscale.”

- F. Kingdon-ward

Shirui or Siroi Lily! Yes, it is the pride of Manipur. The flower is often admired by lyricists and naturalists as the loveliest flower on the peak of majestic Shirui-Kashong hill range, Ukhrul, between 1700-2500 m. The flower is rare, endemic and a symbol of love and pride, yet it is on the edge of extinction.

Geographically, Manipur is a region where two major climatic zones merge in a seemingly unnoticed transition. The result is that there is quite a harmonic coexistence of biological species that are found in the Indian subcontinent and those found in the Southeast Asian regions. A good example is seen in Ukhrul, where biodiversity typical in India, China, Myanmar and other Southeast countries are associated. The Himalayan Newt or Himalayan Salamander occurring in the regions of China, Nepal, Ladhak, Darjeeling, etc. finds its pockets in places of Ukhrul and Senapati districts.



Mr. and Mrs. Kingdon-Ward in Assam
Photo :image.keen.org

Frank Kingdon-Ward (November 6, 1885-April 8, 1958): F. Kingdon-Ward is an English botanist, explorer, plant hunter and author. He was in Manipur for an assignment to discover British aircrafts, crashed during the Second World War and found it among the white rhododendrons against the steep face of a ridge along the Shirui-Kashong hill range. He came over the places of North East India with his wife Jean Macklin for plant hunting and faced calamities including the great Assam earthquake (9.6 Richter scale) on 15th August 1950.

They stayed in the house, which the couple called ‘Cobweb Cottage’ to discover the Shirui Lily of Ukhrul in 1946. The Shirui flower expedition was his greatest ‘swansong’ in life. He was 68 years at that time and died at 72. A total of 25 books mostly travelogues on plant hunting expeditions across the Southeast Asia are to his credit and the Plant Hunter in Manipur, 1952 is one. A white-flowered rhododendron was named *Rhododendron wardii* after him.



Shirui Lily's Scientific Name: Shirui lily lovingly called Shirui/Kashong Timra-won by the local people is very tempting, but difficult to reach. They grow in open gritty soil with frost in the winter. Originally the plants could be 1-3 feet high with long and narrow leaves. A stem bears 3-7 bell-shaped, delicate pinkish flowers terminally. Today, most of the plants are hardly one and half feet tall with 3-4 flowers per stem at the most.



Shirui Lily is at its best during May-June. During this period Shirui peaks become heavenly garden. The blooming smile of the lilies during the prime looks so delicate and enchanting that very often it seems the heavenly clouds have been descending to see the flowers and many of them remain covering the lofty mountain as a silvery blanket ever after. These were the only past scenarios of the mighty hill. A blooming flower hangs looking down as if a modest girl does. The shape and colour of the flower may symbolize purity and innocence.

Kingdon-Ward dedicated Shirui Lily to his wife by saying it as 'a flower for Jean, who enjoyed every day of it'. It won the merit prize of the 1948 Royal Horticultural Society at a flower show in London. Scientifically the flower is named *Lilium mackliniae* Sealy after his wife.

Legend: From time immemorial Shirui Lily has been blooming only in the Shirui Mountain and nowhere else in the world. The flower is truly endemic. According to a local folktale, the Shirui Lily was in her previous life a charming daughter of Shirui Hill. She was in love with a warrior called Kashong. When the mighty hero was out for a fight with a waging war, she spent days and nights on the top of Shirui Hill waiting for Kashong's return and in due course her immortal soul transformed into a lovely flower- Shirui/Kashong Timra-won.

Shirui Lily was also believed to be the daughter of a mighty hill goddess, who ruled Shirui-Kashong hill range and resides on the now called Shirui Mountain. Hence, one cannot separate the love and affection between mother and daughter. There existed stories of a women in traditional dress sometimes appearing in a crowd or even inside the running vehicles as if she is looking for her near and dear one; one may hear echoes of crying and lamenting from the wooded Shirui peak.



Dziiku Lily: Dziiku Valley on the lap of high mountain ranges of the Manipur and Nagaland border is picturesque. The valley is the heaven of flowers. It is Dziiku/Dziikou for the people of Mao in Senapati district, Manipur, which means "dreamland" referring to its calm and quiet scenario as in a sweet dream. The valley spreads at 2500 m and it is prized for its wide range of flowers in every season, the most priceless being is Dziiku Lily. The flower was named *Lilium chitrangadae* by a young Manipur botanist H. Bikramjit after his mother in 1991. He became a victim of blood cancer tenderly at 37 years. There are sayings that Shirui Lily and Dziiku Lily are two names of same species. Whether

they are one or two, botanists have to say. For us, Dziiku Lily is a dream flower of a dream land, Dziiku Valley.

A Mao legend says when a loving duet sees the flowers of Dziiku Valley at night, the night looks like daytime with the moonlight shining as of the sun. The place is sung as an abode of heavenly damsels and their dreamland.

Conservation Concerns: In the course of the last century, several of the spectacular biological heritage of Manipur happens to be dwindling day by day. It seems that various provisions laid down in the Indian Forest Act, 1927; Wildlife (Protection) Act, 1972; Environment (Protection) Act, 1986; Biological Diversity Act, 2002, etc. have not really reached the hills of Manipur and the wildlife matter have not been prioritized, as it should be. A conservation action plan, exclusively or otherwise, does not appear to be working in the hills, despite the advantages of more stretches of forests, relatively low human population density, and far less developmental pressures. The hunting and poaching have been going on as traditional rights in these regions. A conservation model giving the hill peoples of their sustainable rights towards the lands and wildlife, which is slowly crumbling into non-biodegradable would be the need of the hour.

Today, the fate of Shirui Lily is under threat from various angles like increasing habitat destruction and fragmentation, wildfire, leftover plastic materials by the visitors, widespread uprooting of plant, over and above the impacts of global climate change. Being the flower of the remote hills, it gets little level of conservation concerns and media attention. Currently, environmental activists all over the state are raising concerns over the degradation of Shirui Lily and steps are being taken for *in-situ* conservation of this endemic flower.

Shirui National Park: The rolling Shirui-Kashong hills, range after range, have been home to several forms of unique plants and animals. The Anggo hill range here stretching along the north-south directions is a natural barrier between Manipur and Myanmar. The region has the most magnificent forest cover with luxuriant wildlife therein. Hoolock gibbon (Yongmu), Himalayan black bear (Saom),

Sambar (Sajal), Golden cat (Tokpa), Slow loris (Loudaobi/Yong-Ikaithibi), Serow (Sabeng), Hog badger (Okman), Clouded leopard (Keijeng), Mrs Hume Pheasant (Nong-in), Tragopan (Chibandong), Hornbills (Langmeidong), Pinus (Uchan), Michelia (Leihao), Magnolia (U-thambal), Phoebe hainesiana (Uningthou-Manipur State Tree), several rare orchids and rhododendrons, etc. are to name a few. The place is also frequented by elephants from Myanmar.

Recognizing the importance of Shirui Lily and its associated biological heritage, an area of 100 Sq. Km has been declared as Shirui National Park and initial notification has been issued on 25/11/1982.



Shiri or Grey-sided Thrush Photo: Wikipedia

Shiri Bird Episode: The ‘Shiri’ is the loving name given to a wintering small bird by the local people. It is the Grey-sided Thrush (scientific name: *Turdus/feae*). In the past, several thousands of these birds visited Shirui hill areas during winter to eat the fruits of Michelia, which are Leihao in Manipuri and Shirungthing in Tangkhul languages. The birds were killed mainly by using a locally prepared gum from certain plants on which they get stuck. The season coincides with the traditional festivals like ‘Chumph’ (harvesting) and ‘Luira’ (seed sowing) and the bird is hunted during that time.

The number of this wintering friend in the Shirui area has been dwindling over the years following destruction of Leihao trees which are inseparably associated with Shiri. There are sayings that a large flocking of the bird in winter indicates bountiful flowering of Shirui Lily in spring.

Manipur State Flower:

Recognizing the endemic nature, taxonomic rarity, cultural significances, legendary status, etc. Shirui Lily has been recognized as the Manipur State Flower since 1989.

Indian Postal Stamp: The Shirui Lily is truly endemic and endangered. To commemorate the lily and also towards increasing conservation awareness of the flower, an Indian postal stamp was issued in 2000 in its name.

Shirui Lily Festival: Like Sangai Festival during November every year, Government of Manipur celebrates Shirui Lily Festival at Ukhrul during May, the peak blooming season of the flower. Unveiling the importance of Shirui Lily and tourism potential in Manipur are the main objectives of the festival.

Conclusion: The Shirui Lily is the flagship flower of Manipur. It is indeed very impressive and innocent, yet it is a species on the edge and it may disappear at any moment unless immediate actions for its survival are not taken up. It would be an unforgivable sin for this generation to make this endemic flower extinct. Let's join our hands, Save Shirui Lily; whenever you happen to be at the Lily's Home.

Don't think anything but Pride

Don't leave anything but Love

Don't bring anything but Memory.





Geese and Ducks of Loktak An Overview

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Introduction

Loktak (24°25' - 24°42' N, 93°46' - 93°55' E), plays an important role in the ecological and economic security of the region. The lake covers an area of 289 Sq. Km at 768.5 m water level. It supports a wide variety of floral and faunal species. The Keibul Lamjao National Park (KLNP), the only natural home of the critically endangered Brow-antlered deer or Sangai, *Rucervus eldii eldii* is a part of the lake. Pumlun, Ikop, Sanapat, Utrapat, etc. are the associated wetlands around the lake. By virtue of its biological richness and uniqueness of habitat, Loktak was declared as a 'Ramsar Site' in 1990.

Birds of Loktak

Birdlife of Loktak is rich and colourful. It provides shelter to around 122 water bird species. Water birds refer to bird species dependent on aquatic habitats to complete portions of their life cycles. Besides, being a permanent home of many resident aquatic birds, the lake with - the Central Asian and the Australasia flyways passing through it, is also a favourite winter destination for many migratory waterbird species travelling from far-away countries. The arrival of winter migratory birds begins by the middle of October every year and stays up to the end of March. The peak period of migration is December and January.

Geese and Ducks of Loktak

The geese and ducks (waterfowl) belong to the family Anatidae. During early 1900's J.C. Higgins recorded more than 30 species of geese and ducks from Loktak wetland complex. Important among them are – Greater White-fronted Goose (*Anser albifrons*), Greylag Goose (*Anser anser*), Bar-

headed Goose (*Anser indicus*), Lesser Whistling-Duck (*Dendrocygna javanica*), Large Whistling-Duck (*Dendrocygna bicolor*), Brahminy Shelduck (*Tadorna ferruginea*), Common Shelduck (*Tadorna tadorna*), Northern Pintail (*Anas acuta*), Common Teal (*Anas crecca*), Baikal Teal (*Anas formosa*), Spot-billed Duck (*Anas poecilorhyncha*), Mallard, (*Anas platyrhynchos*); Gadwall, (*Anas strepera*); Falcated Duck (*Anas falcata*); Eurasian Wigeon (*Anas penelope*), Garganey (*Anas querquedula*), Northern Shoveller (*Anas chapeata*), Pink-headed Duck (*Rhodonessa caryophyllacea*), Red-crested Pochard (*Netta rufina*), Common Pochard (*Aythya ferina*), Ferruginous Pochard (*Aythya nyroca*), Baer's Pochard (*Aythya baeri*), Tufted Pochard (*Aythya fuligula*), Greater Scaup (*Aythya marila*), Mandarin Duck (*Aix galericulata*), Cotton Teal (*Nettapus coromandelianus*), Comb Duck (*Sarkidiornis melanotos*), White-winged Duck (*Cairina scutulata*), Common Goldeneye (*Bucephala clangula*) and Common Merganser (*Mergus merganser*).

Waterbird Census

Waterbird census of Loktak started in late 1990s by enthusiastic bird watchers and conservationists of the State to monitor trends in population size of waterbirds and also to understand the number of various aquatic bird species frequenting the region. But, the first systematic survey of winter migratory birds of Loktak and its adjoining smaller natural water bodies started since 2000-01 by the Environmental Social Reformation and Sangai Protection Forum (ESRSPF), Keibul Lamjao, Manipur. The Forum continued the exercise for 4 consecutive years supported by Loktak Development Authority. However, the present report is purely based on the data obtained from the waterbird census of Loktak lake since 2011 to 2020 conducted by the trained



volunteers of local clubs, forest officials, wildlife photographers, birdwatchers, etc. sponsored by the Wildlife Wing, Forest Department, Manipur.

Regardless of all odds, a total of 23 species of geese and ducks still wintering in the lake complex either regularly or sporadically during the last 10 consecutive seasons. They include -

Greylag Goose *Anser anser* (**Kang-nga khong-waobi**): It was a common regular winter migrant to Loktak but, now a rare visitor. Individuals numbering 9, 3, 1, 22 and 11 respectively were counted in 2014, 2015, 2016, 2017 and 2019 census.

Bar-headed Goose *Anser indicus* (**Kang-sel**): Rare. But, once a regular visitor in small numbers. Specimens numbering 3, 2, 2, 8 and 8 respectively were counted during 2012, 2013, 2016, 2018 and 2019 census.

Lesser Whistling-Duck *Dendrocygna javanica* (**Ting-i macha**): Partly resident, but the number augmented by seasonal visitors. It breeds in Loktak and other wetlands. This is the most dominant duck species in the lake. In 2019 a total of 18693 individuals were counted.

Large Whistling-Duck *Dendrocygna bicolor* (**Ting-i achouba**): A rare winter visitor. Very small number of 2 and 4 were reported in 2013 and 2014 counts. It is a Schedule-I species under Indian Wildlife (Protection) Act, 1972.

Brahminy Shelduck *Tadorna ferruginea* (**Thangong angangbi**): Regular winter visitor to Loktak and its surrounding areas in small numbers. The earliest record of its arrival at Tangjeng Khunjao-pat, in Kakching district was four individuals on 12th Nov, 2013. A joint team of Bombay Natural History Society, Mumbai, led by Dr. S. Balachandran, State Forest Officials and Local Bird Study Group radio-tagged three birds out of five trapped on 11 December, 2011 for radio-telemetry studies as a part of the waterbird migration study initiated by the Wildlife Wing, Forest Department, Manipur. The highest count was 80 in 2012.

Common Shelduck *Tadorna tadorna* (**Thangong araangbi**): Rare and irregular visitor. It is a striking duck. In 2014, 2015, 2016 and 2019 individuals numbering 2, 1, 2 and 1 respectively were counted.

Northern Pintail *Anas acuta* (**Meitunga/Leitunga**): Regular visitor. Once visited Loktak and its adjacent water bodies in huge numbers. In 2015 a total of 292 individuals were recorded.

Common Teal *Anas crecca* (**Surit**): The common teal, by far the most numerous duck in Manipur, especially during December and January (Higgins). A shooting record of 15,982 birds (highest amongst the ducks) by the then British officers during 1910-32. But, surprisingly not a single bird was recorded in 2011 waterbird census. In 2020, heads numbering 3443 were counted.

Spot-billed Duck *Anas poecilorhyncha* (**Nganu pirel**): Rare resident and occasionally migratory. A very small population breeds in and around Loktak.

Mallard *Anas platyrhynchos* (**Meitunga meikon**): Rare, and irregular visitor. During the 10 years exercise only a pair was spotted at Utrapat, Naorem (Nambol) for the first time in 2020 together with 13 other duck species in a moderate size congregation.

Gadwall *Anas strepera* (**Thoiding-nam**): Regular winter visitor to Loktak and other surrounding natural waterbodies. It arrives in Manipur in the middle of October and leaves by the end of March (Higgins). It occurs as the second most dominant duck species after the Lesser Whistling-Duck in the lake. The highest count was 6547 in 2015.

Falcated Duck *Anas falcata* (**Thoidingnam-maan**): Rare. It is a near threatened (NT) species globally. Body plumage finely vermiculated grey, with long sickle-shaped tertials. The large head is dark green with a white throat, and a dark green collar and bronzed crown. A small number of 1, 16 and 2 respectively recorded in 2016, 2019 and 2020.

Eurasian Wigeon *Anas penelope* (**Thang-gong-maan**): Regular visitor. It is a medium-sized open water duck. It is recorded in all the counts, but in very small numbers. However, in 2020 census 153 individuals were numbered.

Garganey *Anas querquedula* (**Surit angoubi/Khere-laobi**): Once visited Loktak in huge numbers becomes uncommon today. A total of 116 heads were counted in 2011.



Northern Shoveller *Anas clypeata* (Nganukhara): Regular visitor in very small numbers. It can easily be identified by broadened shovel-shaped bill and orange legs in both the sexes. The species was reported in all counts except in 2012 and 2018. The highest was 20 in 2016.

Red-crested Pochard *Netta rufina* (Thoidingnam kok-ngangbi): Regular visitor in small numbers.

Spectacular adult male with a rounded orange head, red bill and black breast. The highest count was 57 in 2014.

Common Pochard *Aythya ferina* (Eeruppi): Regular visitor. This is a diving duck. The adult male has a long dark bill with a grey band, a red head and neck, black breast, red eyes and a grey back. In 2020 census 692 individuals were recorded the highest in 10 years.

Ferruginous Pochard *Aythya nyroca* (Eeruppi mit-ngoubi): Regular visitor. Fairly scattered in most part of the lake. This diving duck is a near threatened (NT) species. A record of 858 specimens were reported in 2020.

Baer's Pochard *Aythya baeri* (Sa-daang mit-ngou): Rare, and occasional visitor. It is a diving duck similar in size and stance to its close relative, the Ferruginous Pochard. The duck is now a critically endangered (CR) species. Interestingly, 12 individuals were reported from Yawa Lamjao area of Loktak lake during 2020 census.

Tufted Pochard *Aythya fuligula* (Sadaang): The male bird has an occipital tuft. Some decades back visited the region in considerable numbers. In 2013 a total of 123 specimens were counted.

Mandarin Duck *Aix galericulata* (Sana nganu): The bird, particularly the male is handsome and charming. Only four sighting records from the State. A pair was reported from Toubul in Bishnupur district during 2014 waterbird census exercise.

Cotton Teal/Cotton Pygmy-goose *Nettapus coromandelianus* (Pedagot): Smallest and low-flying duck. Resident but also partly winter visitor. It was once very common and bred in and around Loktak

during monsoon rains in considerable numbers, even on the thatched roofs of dwelling houses. Spotted 44 individuals including 6 adults in a long pond inside the Manipur Kangla, in the heart of Imphal city on 29th September, 2012. During 2020 census 43 individuals were reported.

Comb Duck *Sarkidiornis melanotos* (Tok-nga): Rare and irregular visitor. Only a sighting record of a lone male in 2011, along with Lesser Whistling-Ducks at Chingnungshoi area of Loktak.

Observations

When the first census started in 2011, a total of 5281 waterfowl (geese and ducks) of 12 species were counted. This exercise was held just after the completion of removal of massive phumdi from the lake. Interestingly, in the following 5 years, i.e., 2012 to 2016, the population size of waterfowl remarkably increased to 16,720, 21,475, 19,672, 24,890 and 24,180 with species diversity of 11, 16, 18, 16 and 19 respectively. However, in 2017 and 2018 the population size had gone down to 10,467 and 9725 and, while the species diversity was 13 and 11 respectively. Again, in 2019 and 2020 the waterfowl population was 26,999 and 22,099 with an increase in species number to 18 and 17. This annual fluctuation in the population size as well as in species composition of waterfowl within a span of 10 years may be related to among others due to the following pressures:

1. Hunting and Poaching: Despite of having various protective Acts and Rules, hunting and poaching by using nets, light, guns and even by chemical poisoning have been practicing in the lake.
2. Environmental Pollution: Water pollution is another reason of endangering water birds. Pesticides, fertilizers and other chemicals which are being used increasingly and discriminately more particularly in the vast fields around the lake contaminate the water and affect birdlife. The stagnation of lake water because of Ithai Barrage has brought about a considerable change in the water quality of the lake. The tremendous inflow of wastes, sewage, nutrients and plastic materials from the catchment areas has increased the pollution of the lake in various ways.



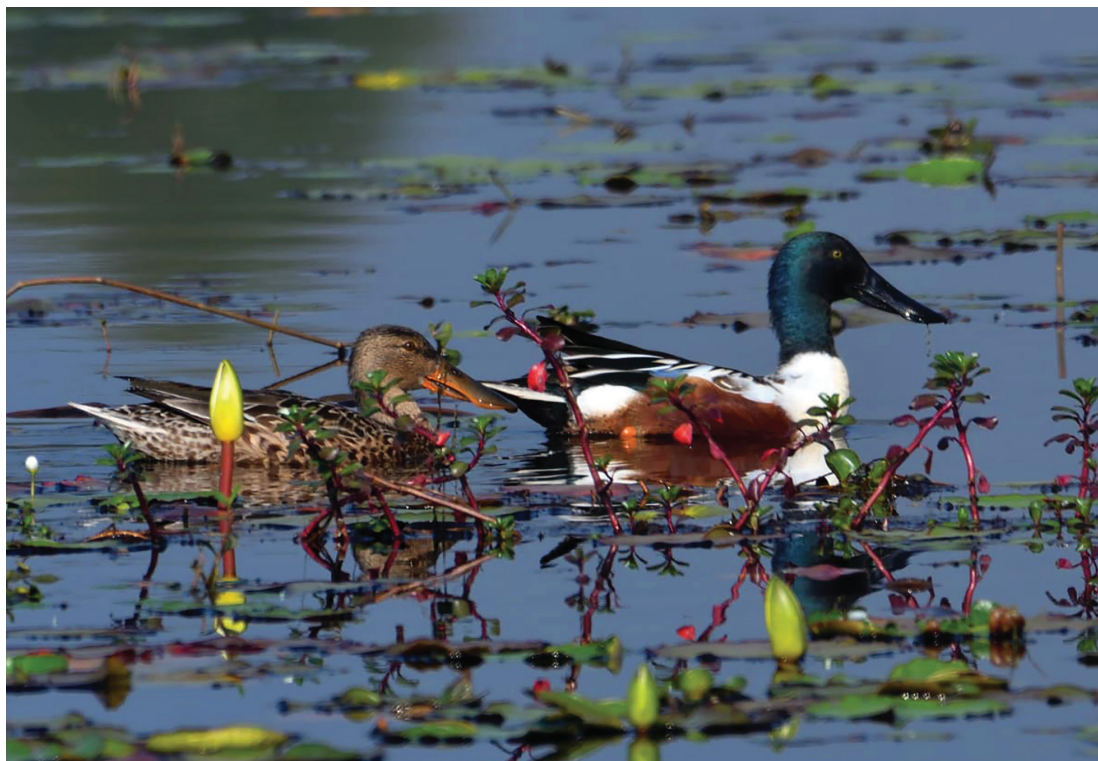
3. Anthropogenic activities: Wide spread human activities like fishing, fodder and vegetable collection, navigation and more recently the faulty practice of using LED lights in fishing at night seriously affect the birdlife particularly wintering water birds.
4. Habitat Destruction: The habitat destruction, alteration and fragmentation as the result of human developmental activities have remarkably changed the fragile ecosystem of Loktak immensely affecting the birdlife. The construction of Ithai Barrage across the Manipur River has upset the once delicately balanced wetland ecosystem thereby threatening and depleting the rich and unique biodiversity of the lake including the water birds. In fact, noting the negative changes in its ecological system Loktak was put under Montreux Record as a “Threatened Ramsar Site” on 16th June, 1993.

Conclusion

Water birds are the best bio-indicators for judging the health of a wetland. The combined effect of hunting and poaching, habitat destruction and alteration and other negative environmental factors are the reasons threatening the migration and survival of water birds. Of all the challenges, the degradation of Loktak’s ecosystem from various human activities is the primary reason for diminishing the water bird’s population in this internationally reputed lake. Hence, the only means to invite the migratory feathered friends is to improve the lake’s ecosystem since, water birds are inseparably associated with wetlands.



Spot-bill Duck
Image credit: Brajesh



Northern Shoveller
Image credit: Brajesh



Garganey
Image credit: Brajesh



Mallard

Image credit: Brajesh



Northern Pintail

Image credit: Brajesh



Urbanization and urban *thawai* vulnerability

Rahul Ashem

Urban animals need spaces for their living. Some of the animals will disappear soon as urbanization continues. The need of the hour is to prepare proper policy and documentation on urban species for better urban community in the long term.)

Basically ‘Thawai’ means life in Meitei dialect. Here, the term refers to ‘animal species’ living inside urban community. Obviously, the wild species share their habit and habitat with the most advanced species, the *Homo sapiens*. As a result, people’s introduction with wild species is neither accidental nor redundant in most cases. Like the enemy, conflict is a traditional issue between humans and animals, generally ending with killing of the latter one. The growing impact of conflict is disrupting the web of life and creating unforeseen challenges. The impact is more particular in smaller animals occurring in vast numbers in terms of the scale of their impact on humans. However, majority of bigger herbivores and large carnivores act as the greatest threat to humans and are responsible for the majority of human wild species conflict. Human induced wildlife mortality not only affects the population viability of some of the most endangered species but also has a broader environmental impact on ecosystem equilibrium and biodiversity preservation. More importantly, the modification of Imphal valley is making the species more vulnerable on the eve of urbanization. As new homes come for people, the homes of many wild species are shattered; some of them are forced away while other inhabitant faces extinction. During the lockdown of covid-19, signs of cruelty to animals are being observed; dogs are being sacrificed for no reasons. Others believed that dogs, cats and rodents are possible carriers for the novel corona virus. Even leikai (lane) fumigated old trees and dry leaves to drive away or killing anything that is perceived to be related to the viruses, like urban bats, mosquitoes etc.

Scientific studies suggest that increasing or decreasing of urban species depends on several variables. The truth is, more and more wild species are observed in Imphal valley. Scientists already describe the urban species as invisible hygiene and pest controller of most cities. By defining the urban wildlife, it includes both the species settled in urban areas and those occasionally appear in urban areas. Historically, the Imphal valley was established on fertile plains near four important major rivers, Imphal, Kongba, Iril and Nambul turels (Rivers) respectively as the cradle of civilization. The presence of more small water bodies like lok (streams), turel (rivers), pat (wetlands) makes the valley a breeding ground for local and migratory birds. Further, the conservation of urban corridors helps sustain small mammals, amphibians, reptiles’ populations and movement of birds.

Presently, the capital Imphal is the most urbanized region in Manipur. It stands at an elevation of 790 m above mean sea level (MSL). Greater Imphal or urban areas is formed by the combination of Imphal West (IW) and Imphal East (IE) district, neglecting the rural parts.. There is no dense forest cover in both the districts. As a result, wild species are closely associated with humans in urban environments and they have adjusted well. Most wild animals and urban wildlife in the State includes species like small cat’s family, dog’s family and even Mustelids, Viverrids and Sciuridae families, butterfly, reptiles and birds etc. Even the Manipuri ponies have entered into cities for food and shelter at present. Usually, animal needs four basic elements of life to survive: food, water, shelter and space. Like humans,



animals need space and shelter to successfully rear their young ones and to protect themselves from predators and the environments. In addition the sources of food and water must be within a certain distance of each other so that the animal can access them safely on a daily basis. Fortunately, many of this urban species receive little attention from the human population. Recently, some researchers have reported that human beings have a strong impact on the habitat, environment, and population sizes of wildlife communities, and as a result, some conflicts between wildlife and humans occur.

Technically, wild animals found in and around Imphal valley include small animals and large animals, warm blooded animals and cold-blooded animals. They roam through human habitation to avoid the cold winter or the heat summer times. Snakes are one of the common species that easily adapt in the urban backyards, urban gardens, roofed house (old style) and open sewages for easy prey like rats, frogs and lizards. Species like Rat snake, Bronze back and Keel back are commonly spotted slithering into homes along with cobras. Despite their importance, they are brutally killed in panic and disgust by urban people. All snake species are legally protected under the Wildlife (Protection) Act, 1972 from Schedule I to Schedule IV. Besides, snakes play significant role in the ecological system by controlling pests, as bio monitors and excellent eco-indicators owing to their high degree of sensitivity to even a minor change in the environment. Each year hundreds of amphibians are killed on the roads (frogs, salamanders, calotes, monitor lizards etc) that crawl off the road to die after being hit by vehicles. Even the mortality rate is more habitual on large herbivore animals like Manipuri's ponies and domestic cow, goats in comparison to other small species like Rhesus monkeys, Common mongoose, Squirrels, stray dogs or cats. Small predators like fishing cat are at risk of decline due to the loss of small water bodies and wetlands in urban areas.

The feline is a Schedule I species of the Wildlife (Protection Act), 1972 and listed as endangered in the IUCN Red Data and Appendix II part of Article IV of CITES, which governs International Trade of this species. Moreover, infrastructural development in the Imphal valley causes serious threat to many

nocturnal birds. The species, Barn owl (Maku) is the only owl to nest in buildings and around human settlements. As a tradition, the bird is feared as the ill symbol in several literary texts. However, at the same time, the barn owl is illegally trafficked for their body parts that are falsely considered to have medicinal and occult healing properties. The Barn owl is protected as a Schedule IV species under the Wildlife (Protection) Act, 1972. It is listed under Appendix II of CITES. The barn owl is included in IUCN as "least concern" although hunting and trading is totally prohibited. Sometimes, butterflies, doves, sparrows and swallows happen to fly into glass window panes and get killed. Moreover, urban wetland dependent birds are losing their breeding ground directly, translating into population losses due to human activities like encroachment, eutrophication and lack of educational and environmental awareness among the masses. Some species of urban flying fox are disoriented by anthropogenic LED light pollution. Several species of amphibians may be impacted primarily by loss of aquatic habitat or chemical runoff into waterways, and small carnivores can be poisoned by the bioaccumulation of pesticides and weedicides. Water bodies are getting polluted on daily basis due to exploitation and disposal of solid waste products in wetlands which in turn disturbs the ecosystem services and worsens the water and ground water table including fishes (Lata fish, Catfish or Anabas). The present scenario of climate variability and change is making the lives of urban animals more vulnerable. Some wild species are even more susceptible than others. Birds, amphibians and small mammals are considered susceptible to the effect of climate change. The increase in urban development is likely to increase the exposure of wild species to a range of contaminants. The urban associated predators also alter the composition of the rodent community in areas adjacent to urban development. Animal species with the highest population numbers are also the species most often killed by vehicles in urban areas.

Legally, no person shall hunt any wild species specified in Schedule I, II, III, IV and is punishable under law except as provided under section 11 and 12. Schedule I is the most protected and IV the



least. Species listed in Schedule III and IV are also protected but the penalties are much lower. Schedule V includes the animals which may be hunted. Hunting of any wild animal specified in Schedules I, II, III, and IV is punishable with imprisonment. It is not only the hunters and poachers who are liable for punishment under the Wildlife (Protection) Act, 1972 but also those who purchase and use such products. Hunting, killing, poisoning, snaring, trapping, injuring, destroying or taking any part of the body of any such animal, or in the case of wild birds or reptiles, damaging the eggs of birds, reptiles shall be considered as offence and punishable by law under the Wildlife (Protection) Act.

Looking forward, urbanization must be associated with green infrastructure strategies, building green roofs and introducing urban tree canopy, provide environmental and community benefits. New construction of houses should come with native plant gardens and native landscaping, backyard ponds to attract flying species and other small animals. Building with nest sites, bridges, footpaths and utility poles can provide places for some wildlife species to feed and rest. In fact, urbanization has led to the conversion of all forms of wild species to fit in this modern environment. Some reptiles have adapted to handle smoother surfaces such as glass windows, painted concrete and to the various typical of human habitation. Their toe pads which are coated in scales called lamellae are the key to their strong grip. The local Rhesus monkeys are well known for stealing packets from the nearby restaurants, shops etc. Even the warming climate is predicted to increase the geographic range of some of the urbanized mosquitoes. Urban populations often initiate breeding earlier in the season than their rural counterparts. In addition, the animals seem to be able to tolerate higher temperature as

well. Intrigued by such innovations, urban ecologists are studying whether urban animals are craftier than their rural kin at tackling challenges. Moreover, awareness programme must be well organized so that people continue the habit and practice of co-existence with urban wildlife. Fragmentation of urban wildlife should be avoided to the possible extent and proper care must be taken so that corridors are not disturbed. Information about local people's knowledge and perceptions about conservation is important in wildlife conservation. Along with researchers and conservationists, the need of the hour is to educate the public about urban wildlife.

Health departments, humane societies, parks departments, nature organizations, and conservation agencies have a responsibility to inform the urbanite that providing urban wildlife habitat benefits people as well as wildlife. A web-based portal is needed in order to provide conflict databases, remediation technologies, good management practices, and innovative solutions and their outcomes. Additionally, capacity building on the relevance of wildlife footprints in cities across different levels of political, economic and cultural institutions, to which WWF also has access, can be developed to facilitate the development of innovative solutions to urban challenges. However, many next generation ecologists, social scientists and the forest-dwellers themselves believe that human-wildlife co-existence is generally possible and must be promoted, if we humans have to develop a conservation policy that is effective and meaningful in the long run.

**(The author is a wildlife enthusiast Yaiskul Hirubanba Leikai, Imphal West)*

**WE DON'T OWN THE PLANET EARTH,
WE BELONG TO IT,
AND WE MUST SHARE IT WITH OUR WILDLIFE**

Steve Irwin



Wilderness at Home

Musings of a Birder

Akham Bonbirdhwaja Singh

I share my homestead with a few feathered denizens. A few of them reside here too, the white breasted Waterhens (*Urengkonthou*) and Sparrows (Sendrang). The Waterhens (*Amaurornis phoenicurus* Penant, 1769) are very punctual time keepers. The loud, unique and beautiful calls they have early in the morning at sunrise and again at sunset are familiar to me. After disappearing for almost two decades, the sparrows (*Passer montana* Linnaeus 1758) have returned. The sparrows are also early risers, the chirping can be heard at twilight. They are my wake up calls now as the crows are no longer here to caw. Among the visitors, the Spotted Doves (Lamkhunu) are early visitors; regular visitors at that. The Spotted Dove (*Streptopelia chinensis* Scopoli, 1786) make loud calls by now in September-October, their calls “kukru ku kukru ku” have been immortalised in Manipur by the melody king of Manipur. The call is different than they used to make in May-June, the subtle rumbling calls. So, now the list of wild friends at my backyard is complete, it is a full house now.

The insects are at its peak now in September-October, they have multiplied and matured and are ready for hibernation, come November, they would all go underground. Now, they are everywhere and in good numbers, so my winged friends are having a good time - worms for breakfast, caterpillars and larvae for lunch and grasshoppers and crickets for dinner. The rains are lesser now, the white ants often come out for nuptial flights indicating that the rains are almost over, and it is feasting time for my winged friends.

The drama in my backyard is absorbing. Patience is the keyword in wildlife but in my backyard, I don't have to be too patient, a slight patience would unfold the whole drama. The fast running black chicks have learned to leap and fly for short distances. They are maturing and have become young adults. The

dark black hairy coat of young chicks has turned to black and white feathers. I am busy, as I have added responsibility now: I have to be always on the lookout for those string happy delinquent urchins who might try a catapult shot on these beautiful darlings because my theatre is close to the roadside. There is always competition here. I collect whatever worms, grubs, flies, insects etc. that would come in my way in my kitchen garden and put in an earthen plate and place it near the bamboo clump, but the waterhens are a bit shy; they take some time to overcome the shyness, so the best of the worms would always go to the Bulbuls (*Pycnonotus cafer* Linnaeus, 1766) who are more acrobatic and daring. The tiny weaver birds (*Ploceus philippinus* Linnaeus, 1766) are not regular here, and make a guest appearance sometimes. The sparrows are more interested in stealing some grains from my balcony, and will take grains from gunny bags, piercing it with their little beaks; so, to save it nowadays, I would put some rice grains in a plate for them so that they stop stealing. That is the compromise I have worked out and it is working perfectly.

The small bamboo clump near the main roadside drainage water gives perfect protection for the waterhen family. Actually, there are only a few houses having a bamboo clump in the backyard and mine is one of them. Both the Father waterhen and Mother waterhen take care of the chicks, mainly to warn them in time in case of any danger and the chicks are incredibly fast, they would hide themselves in the bamboo clump, the clump is small but thick, and even cats would find it difficult to get inside. So, the family is quite safe here. On top of that, I am around to ward off all potential dangers. Whenever free, I would spend hours with them. With the watercock's (Uthum) unique rhythmic sound “toom, toom, toom” the wilderness drama would have



been complete, but the watercocks (*Gallicrex cinerea*, Gmelin, 1789) are long gone due to the water in the waterways (now drains) not being clean enough for their residing in the drains; and the delinquent boys finding them easy prey. There was a wetland nearby at about three hundred metres distance from my home; it is gone now encroached for offices and private individuals. No part of the wetland remains now. The fish pools from where I used to catch plenty of fish in my younger days have disappeared. The peculiar fish and unique birds of the wetlands are all gone including the watercocks. So, I have to manage with the rhythm of the tail movement of Wagtail (Khambrangchak), the wagtail's (*Motacilla alba* Linnaeus, 1758) tail movement being highly rhythmic. The nip of winter is here, so wagtails have arrived and joined the wilderness drama in my backyard.

And in winter, when worms and insects are hard to find, I am planning to put some grains, pea seed and some lentils in a few plates near the bamboo clump in the morning to supplement their food so that the wilderness doesn't leave my backyard.

One would find it funny if this mini theatre is compared with those big PAN areas of the country and abroad, but it can be assured that the drama here in my backyard is also equally absorbing, the same drama continues for days and months, but unlike the drama in public theatres, here one doesn't get bored of watching it every day again and again. During the long days of lockdown, this was an excellent entertainment. I missed the Myna (Chonga), my childhood friend. In childhood days, I used to make nests for mynas (*Acridotheres tristis* Linnaeus, 1766), they would stay in the nests I made for them. The mynas used to stage a strange drama in my childhood, as in the evenings, a few hundreds of them used to assemble in the bamboo clump and make loud noises in chorus heard from long distances before dispersing for going home. Now, they are no longer seen in the courtyard. I hope, with people now becoming kind to the feathered friends, they will return again very soon and join the drama.

(Ref for scientific names: Checklist of Birds of Manipur, Forest Department, Manipur).

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Amur Falcon Conservation Initiatives in Manipur

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&

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Amur Falcon (*Falco amurensis*) is a migratory raptor of the falcon family. Each year, these small hardy birds make a long journey from their breeding grounds in Siberia and Northern China to migrate across India, over the Arabian Sea, to their wintering grounds in Southern Africa. Due to their extensive migratory path, stop-over sites are important to rest and gain strength for the route ahead. The North-eastern part of India has been an important resting and roosting site for the Amur falcons during their migration from their breeding grounds in North China, Siberia, Amur-land, and Northern Mongolian region. With the onset of winter season, days become shorter and temperatures drop in their breeding areas. As most of the area is covered with snow, availability of food decreases. These birds therefore have to migrate to warmer regions in search of favorable climatic conditions and food.

The migration starts during October from their breeding grounds towards Southern latitudes. They fly towards Myanmar and then come to the forests of North East India for roosting and feeding before flying on to Central and Western India and further migrating to the South African Countries with non-stop flying over the Arabian Sea. The Amur falcons feed mainly on a wide range of insects in the air or on the ground. By the time they arrive in Southern Africa, the place is teeming with insects due to the rains, providing them with ample food.

The Amur falcons have been visiting the forests of Manipur for last many years. Amur falcon is locally known as *Akboipuina* or *Aboipuina* in the Rongmei dialect and is a small bird of prey weighing on an average about 170 grams. These birds arrive in large numbers in October-November every year and stop-over for a few weeks, specially, in the remote hilly tracts along the Barak river and its tributaries in the Tamenglong district. Earlier, the migration of this bird was taken as a good sign for a bounty harvest and the onset of winter season in Tamenglong District, and the village elders took them as messengers of God for a good harvest. In later years, however, local communities began hunting these birds in large numbers for human consumption and they faced severe threats of illegal trapping and killing during their stop-over in their migratory route.

The Amur falcon is protected under the Wildlife (Protection) Act, 1972 and is included in Schedule IV of the Act. Moreover, India being a signatory to the Convention of Migratory Species (CMS), it is mandatory to provide them safe passage and ensure their protection and conservation during their migration.



Tamenglong is one of the favorite roosting places of Amur falcons during their migration from North to South and also in its return journey from South Africa to Siberian and Northern China. Tamenglong with its varied geological formations of rivers, lakes, hill ridges, and caves, dotted through the length and

Club played a vital and significant role in these conservation and protection campaigns. From being hunted once in thousands for consumption, the Amur falcons today are protected by the local people in the region, and in the process the erstwhile hunters have turned into conservationists.



breadth of the District is an ideal site for these birds. Some famous landscapes are Barak River, Makru River, Irang River, Ijei River, Iring River, Leimatak River, Zeilad and associated Lakes, Mount Kisha, Tharon Cave etc. Efforts to accord them protection began in Manipur somewhere in the middle of this decade and the Manipur Forest Department initiated an awareness campaign for Amur falcon conservation in Tamenglong Division along with the help and support from Rainforest Club, a voluntary organization, community leaders and local communities. Creating awareness against hunting and poaching of these birds was an important step taken with mass awareness campaigns. Rainforest

Meanwhile, in the neighboring State of Nagaland, three Amur falcons were satellite tagged for the first time in November 2013 to assess their migration and to support conservation efforts so as to reduce and ultimately eradicate their hunting. This led to the local communities of Tamenglong, where the Amur falcons roosted in large numbers, to also wish that these birds should be satellite tagged in Manipur too, to track their migration. More importantly, they wanted the falcons to be named after their village or State.

Satellite Tagging of Amur Falcons: Wildlife Wing of the Forest Department, Manipur, in collaboration with Wildlife Institute of India started

the satellite tagging of Amur Falcons in Manipur in November 2018. For the first time two Amur falcons were captured and satellite tagged at the Chiuluan village roosting site along the Barak river in Tamenglong. At that time, Amur falcons were known to roost in Phalong, Bhalok and Chiuluan village roost sites in the district. The two falcons: one a male was named “*Manipur*” and the other a female was named “*Tamenglong*”. Coincidentally, the release of the tagged falcons was on the day of the 4th Amur falcon festival organized by the Forest Department at Tamenglong and was symbolic in many ways. This not only created awareness among local people but it was also an occasion to take a pledge to continue to protect the Amur falcons.

*Tamenglong* ♀

The successful tagging and release and the celebrations that followed were however short-lived as on 9th November, the DFO, Tamenglong received information about a falcon with a satellite tag attached having been hunted. Tamenglong district administration immediately issued orders strictly prohibiting use of air guns along the Irang river. The Forest Department with support of District Administration and Police along with village leaders

*Manipur* ♂

also stepped up monitoring and protection of the Amur falcons at all the roosting sites there. The news of the killing of the tagged Amur falcon named *Manipur* was widely reported in the local newspaper. This captured the attention of a number of people and in Imphal city a candle light march by animal activists along with local people followed, asking for immediate actions to stop hunting. While the killing of *Manipur* was unfortunate, this however did help in identifying other roosting sites in the area, and also brought to light the continued threats due to hunting.

The other bird tagged, i.e. the female Amur Falcon *Tamenglong* headed southwest flying non-stop over Bangladesh, then across the Bay of Bengal for 225 km to cross into Odisha state, and then flew across Telengana and then to the Karnataka coast covering 2500 km in two days and 15 hours. Then, continued on its nonstop flight over the Arabian Sea covering 3300 km in three days to arrive on 24th November at a stop-over site in Somalia. Thereafter, *Tamenglong* moved gradually down towards Southern Africa and arrived in North Luangwa National Park



in Northeast Zambia on 10th December. After few days there it ceased to transmit, ending its more than 38 days of tracking since release. This was clearly disappointing and a major setback in the efforts to track the migration of the falcons.

In its continued efforts the Tamenglong Forest Division launched the second phase of tagging in October – November 2019. In preparation for the same the district administration also issued orders for a four-month hunting ban from September to December, and directed that the guns owned by local people to be deposited to the respective Village Councils. This was promptly agreed to by the local people, marking an important step in the conservation efforts in the region and set an example for others to follow. The Amur falcons started arriving in late October.

After several attempts, two Amur falcons were tagged initially, one an adult female weighing 195 grams given the name “*Puching*” after the village, and the other a juvenile female named “*Irang*”. Later on, three other birds were tagged including an adult male named “*Chiuluan*” after the village *Chiuluan*, another adult male named “*Phalong*”, and finally an adult female named “*Barak*” after the famous river in the region. The tagged falcons along with the others were released on 1st November in the presence of the village headmen and others of *Chiuluan*, *Bhalok*, and *Puching* village along with government officials and local people.

The male falcon *Chiuluan* was the first to depart from Manipur on 14th November and was followed by *Irang* on 19th November. *Barak* the adult female departed after nearly a month on its south bound migration on 27th November. Unfortunately, the two other tagged birds *Puching* and *Phalong* stopped transmission few days after release. *Chiuluan* wintered the furthest in South Africa, while *Barak* remained in the Kalahari Desert in Botswana and the juvenile Amur *Irang* wintered on the banks of Lake Kariba along the Zimbabwe-Zambia border. In May 2020 all three Amurs successfully crossed the Arabian sea to return to Northeast India enroute their breeding grounds in North Eastern China. *Barak* stopped transmitting when it arrived at the Meghalaya – Bangladesh Border on 29th May 2020, while both *Chiuluan* and *Irang* reached their breeding grounds North of Beijing in June. *Chiuluan* reached close to the Amur river along the China – Russia border to breed, which is the furthest North that any



Barak ♀



Phalong ♂



Chiuluan ♂



Puching ♀



Irang (Subadult) ♀

of the Amur falcons has been tracked so far. It is expected that both *Irang* and *Chiu-luan* will once again return to Manipur in late October on their south-bound migration.

Conclusion: The Amur falcon conservation initiative is without doubt a successful conservation story; and one of the primary reasons for this is the involvement of local communities in this effort. The satellite tracking project clearly made people aware of the incredible journeys that these small raptors undertake every year. The tracking also educated local people of the different countries and landscapes that the falcons pass through, ranging from 49-degree latitude North of the equator to 30-degree South latitude. The conservation success is also evident from the fact that local communities in Tamenglong district have declared parts of their community land as “protected”, not only for falcons, but also for the rich biodiversity in the area. To celebrate the success of these conservation initiatives and efforts, every year Amur Falcon Festival is celebrated in Tamenglong in November by the State Forest Department.

The conservation efforts made by the people of Manipur were presented during the Convention of Migratory Species – Conference of Parties (CMS-COP) held in Gandhinagar during 15th -22nd, February 2020 and were widely appreciated. The message from the CMS-COP is to accord these migratory species maximum protection when they traverse areas falling in their migratory path; and also, that cooperation from communities, organizations and governments working together is of utmost importance to preserve these species as they become increasingly vulnerable.

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**WE DON'T INHERIT THE EARTH
FROM OUR ANCESTORS,
WE BORROW IT FROM OUR CHILDREN**



Scaly-Breasted Munia

