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Saw-scaled Viper with ocular damage in Valsad, Gujarat

Echis carinatus (Schneider, 1801) commonly called the Saw-scaled Viper is found throughout India except West Bengal and the northeast (Whitaker & Captain 2004), and reaches the lower Himalayan region (Ananjeva et al. 2021). It has a relatively small and short, wide, pearshaped head distinct from the neck. The body is moderately slender and cylindrical, the dorsal scales are mostly keeled. However, the scales on the lower flanks stick out at a distinct 45° angle and have a central ridge, or keel, that is serrated, the tail is short and the subcaudals are single (Mallow et al. 2003). The species possesses a rounded snout and large independently evolved image-forming eyes in over 40 lineages (Salvini-Plawen &



Saw-scaled Viper *Echis carinatu*, a – detailed view with damaged left eye | b –normal right eye | c – distant full image from Pandev Hill Station (20.5028 N, 73.3238 E) Valsad, Gujarat, India. © Aadit Patel.



Mayr 1977), optimizing prey recognition through olfactory and chemical senses. However, eye damage poses a survival threat as they've adapted from nocturnal to colour vision for enhanced light capture in low-light conditions (Simões et al. 2016).

At about 1800 h on 12 March 2022 in Pandev Hill Station, Valsad (20.5028 N,73.3238 E), Gujarat, India, while crossing the natural trails we observed a Saw-scaled Viper approximately 23 cm in length, upon much closer observation we noticed that it had a damaged left eye. Above the amputated eyeball the dried optical veins could be seen clearly with a damaged pupil. The exact reason for this is however unknown, and this is an interesting documentation of a reptilian species demonstrating its survival instinct in the wild and being able to find its prey. Previously, similar instances in other snake species have been reported (Patel et al. 2022).

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Report of Assam Leaf Turtle and Asian Water Monitor from Dehing Patkai National Park, Assam

Facilitated by their distinct activity patterns, resource partitioning, and preference for specific ecological niches, mutual coexistence of different taxa is a common phenomenon in the wild. The Assam Leaf Turtle Cyclemys gemeli has widespread distribution in southern and southeastern Asia, encompassing regions of Bhutan, Bangladesh, the Indian states of Uttar Pradesh, West Bengal, and several northeastern states, including Meghalaya, Nagaland, Assam and Arunachal Pradesh (Thapa et al. 2021; Sinha & Nath 2022). The species is classified as 'Near-Threatened' by IUCN Red List. They are diurnal and mostly found in dense forest areas, freshwaters and lakes. Assam Leaf Turtle is consumed as delicacy and used as traditional medicine by the indigenous communities in some Asian countries (Thapa et al. 2021). Therefore, it is imperative to study and have an up-to-date information on their population and distribution.

The Asian Water Monitor *Varanus salvator* is second largest lizard having widespread





Pair of Assam Leaf Turtles *Cyclemys gemelli* sun basking on inclined tree log at Rangamati Beel, Dehing Patkai National Park. © Krittika Gogoi & Parthankar Choudhury.

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Asian Water Monitor *Varanus salvator*. © Krittika Gogoi & Parthankar Choudhury.

distribution across the Asian countries. IUCN Red List has classified it under 'Least Concern' category and as per Wildlife Protection Act, India 1972 it is a Schedule I species (Pal & Chatterjee 2022). They can easily adapt themselves in human inhabited areas, because of which sometimes they are prone to unabashed cruelty. Such coexistence also affects their natural behaviour (Uyeda et al. 2012).

Studies show the species as diurnal, but its activity pattern often varies in different habitats. They are usually scavengers, and the normal diet include insects, birds, and other small creatures (Mazumder et al. 2020). In some southern Asian and other countries the species is poached for traditional medicine, local cuisine and its skin for manufacturing leather products (Shine et al. 1995). Dehing Patkai National Park of Assam, India (DPNP) is one of the rainforests area and is habitat to both Assam Leaf turtles and Asian Water Monitors. DPNP is also known as 'Amazon of the East' and is a dipterocarp dominated landscape situated between Dibrugarh and Tinsukia districts of upper Assam. The park is geographically demarcated into two distinct ranges; the Soraipung range and the Jeypore range.

Some of the common tree species found here are *Dipterocarpus macrocarpus, Dillenia indica,* & *Shorea assamica,* and some rare orchids. The park serves as a tourist attraction due to its diverse avifauna. The featuring bipeds of the area include White-winged Wood Duck, Grey Peacock Pheasant, Sultan Tit, and Rudy Kingfisher amongst many others. Predominant mammalian fauna of the area includes Asian Elephants, seven different primate species, namely, Rhesus Macaque, Assamese Macaque, Slow Loris, Capped Langur, Pig-tailed Macaque, Stump-tailed Macaque and Hoolock Gibbon, and several species of felids.

Field study was originally conducted for a study of small carnivores during the months of October and November 2023, from 0900 h to 1400 h. Extensive exploration of forested regions and waterbodies was undertaken during this period. The observation and documentation of two distinct species during the study were sighted occasionally and thus is of incidental in nature, seen during the planned surveys.

REPTILE RAP

Observations

On 10 November 2023, during fieldwork in Dehing Patkai National Park, Soraipung Range, Rangamati Beel (27.325 N, 95.488 E), Dibrugarh district, around 1300 h at 180 m elevation, we encountered two Assam Leaf Turtle while they were sun basking on a fallen, partially inclined tree log.

Minutes after the first sighting, an Asian Water Monitor was seen swimming in the same area. The pair of turtles went into water before arrival of the lizard. The Water Monitor then moved away and finally disappeared from site within a short period. The size of the water monitor was approximately 2 m.

Presence of these elusive species in DPNP is a positive indication of the rich biodiversity of the area. Increased efforts need to be given for conservation of the rich biota of this area. Although Ahmed & Das (2010) reported 21 species of turtles and tortoises from assam, but they are facing quantitative decrease during recent years. It is therefore imperative that species conservation should be prioritised in DPNP areas to ensure healthy growth and survival of the endemic and endangered biota. & Rentile

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'Yayi Tamut Ponpik Olung (Tapon Dinam)': a traditional practice of bat hunting

The state of Arunachal Pradesh is ethnically diverse and is home to 26 major tribes and over 100 subtribes. The Panyang (Tosung) clan of the Adi tribe holds an annual bathunting festival to regulate the population with due attention to their conservation. The festival highlights the tribe's connection with nature and their commitment to preserving it.

Bats are mammals of order Chiroptera and they are the only existing mammal that is capable of true and sustained flight. They typically roost in caves, buildings, and trees. There are around 1,400 species of bats, among which most are insectivores, while a few are frugivores and nectarivores. A few are also reported as sanguivores, i.e., vampire bats. They play a significant role in the ecosystem by pollinating and seed-dispersing ((Soliman & Imam 2022). Bats are also significant in the field of traditional healing practices and medicines globally (Jugli et al. 2020). In India, the use of bats for medical purposes can be traced from the Ayurvedic literature (Lavekar 2008).



220th Ponpik-Adi Bat festival.



Men carrying the net to the cave. © NEIAFMR, Pasighat.

Recently, an interesting case study on the traditional bat hunting festival was observed at Upper Siang, Arunachal Pradesh among the Panyang (Tosung) clan of Adi tribe. The Panyang (Tosung) clan of Pongging village, Upper Siang District of Arunachal Pradesh organizes an annual bat harvest festival as part of their traditional practices. According to their report, the

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Equal distribution of bats to the clan members. © NEIAFMR, Pasighat.

practice has been passed down from generation to generation for 220 years. The villagers are always in close contact with their forest and surroundings therefore they believe that the conservation of bats or wild animals is necessary and they have implemented local laws which prevent any type of harm to the forest they live in. In other words, they protect the forest that surrounds the cave, and no hunting or human activity is permitted throughout the year, except during their bat-hunting festival. They even planted fruit trees such as Uriyam *Bischofia javanica* Blume and Lopsi/ Belam *Spondias pinnata* (I.f.) Kurz for the bats to feed on. The Panyang (Tosung) clan rears the bats for an entire year without disturbing their environment or habitat. They only hunt them on 06 January every year with the primary goal of bat conservation and infestation control, clan reunion, and for consumption. All clan members, including the sons-in-law, are required to participate to get to know one another and uphold peace and harmony within the clan. Bats are caught by hand, killed with bamboo poles, and collected in bamboo bags. After their hunt is complete, they distribute the bats equally to all clan members, whereas the women and children begin cooking the bats in their respective cleaned parts of the forest for a feast for their family members.

The clan member believes that the practice of eating bats protects them from various diseases and help in maintain good health. It has been also reported that over the years, there has been no outbreak of diseases from consuming bats, and despite all of the bites and scratches from the bats while catching them; they do not get any type of infections, pain, or skin-related issues. They believe it is beneficial to asthmatic patients and helps babies with bedwetting issues. Therefore, scientific investigation is required to validate their practice and the purported medicinal values of bats. Further research on traditional and indigenous practices is required so that we

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Bats tied together for distribution. © NEIAFMR, Pasighat.





can document and preserve age-old practices.

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The status of butterflies in Joychandi Hill, Purulia, West Bengal

Researches on butterflies had been conducted across different areas of the Purulia district (Samanta et al.; Das 2018; Deo & Mahato 2023; Mukherjee et al. 2023), which is the westernmost district of West Bengal and lies within the eastern expanse of the Chotanagpur plateau. Characterized by subtropical climate, it experiences an average annual precipitation ranging from 1,100–1,500 mm (Das 2016). The present study aims to enhance our

understanding of butterfly diversity and potential threats they face in Joychandi Hill (23.55 N & 86.67 E), located within Block No. 1 of Raghunathpur sub-divisional town in Purulia district.

Joychandi Hill comprises of three hills, namely Joychandi, Kalipahari, and Jugtila, with an average elevation of 155 m.



Map of study area, Joychandi Hill, Purulia District, West Bengal, India.

The area features light forests and bushes, boasting a diverse array of Angiospermic species, many of which serve as nectar and host plants for butterflies.

Some dominant plant species include Acacia concinna, Helicteres isora, Alangium salviifolium, Holoptelea integrifolia, Azadirachta indica, Mallotus philippensis, Butea monosperma, Lantana camara, Pergularia daemia, and Pennisetum polystachio.



Table 1. Family-wise checklist with common and scientific names along with Schedule WPA-1972 protected status and abundance rate. Abundance Index: W = Widespread; C = Common; LC = Less Common; R = Rare.

Family		Common name	Scientific name	Schedule WPA-1972	Status
	1	Common Pierrot	Castalius rosimon		W
	2	Striped Pierrot	Tarucus nara		С
	3	Common Cerulean	Jamides celeno		С
	4	Dark Cerulean	Jamides bochus		R
	5	Pale Grass Blue	Pseudozizeeria maha		W
	6	Dark Grass Blue	Zizeeria karsandra		LC
	7	Lesser Grass Blue	Zizina otis		W
	8	Tiny Grass Blue	Zizula hylax		LC
	9	Tailless Lineblue	Prosotas dubiosa	П	W
	10	Common Lineblue	Prosotas nora		W
	11	Pointed Ciliate Blue	Anthene lycaenina	11	R
	12	Common Guava Blue	Virachola isocrates		R
Lycaenidae	13	Common Hedge Blue	Acytolepis puspa		LC
	14	Indian Oakblue	Arhopala atrax		R
	15	Indian Cupid	Cupido lacturnus		R
	16	Gram Blue	Euchrysops cnejus		С
	17	Silverstreak Blue	Iraota timoleon		R
	18	Forget-me- not	Catochrysops strabo		С
	19	Black-spotted Grass Jewel	Freyeria putli		С
	20	Common Red Flash	Rapala iarbus		LC
	21	Indigo Flash	Rapala varuna	II	LC
	22	Pea Blue	Lampides boeticus		С
	23	Common Silverline	Cigaritis vulcanus		R
	24	Purple Leaf Blue	Amblypodia anita		С
	25	Zebra Blue	Leptotes plinius		С
	26	Common Palmfly	Elymnias hypermnestra		С
	27	Common Sailor	Neptis hylas		С
	28	Common Crow	Euploea core		W
	29	Great Eggfly	Hypolimnas bolina		С
	30	Peacock Pansy	Junonia almana		W
Nymphalidae	31	Blue Pansy	Junonia orithya		С
	32	Grey Pansy	Junonia atlites		W
	33	Yellow Pansy	Junonia hierta		LC
	34	Chocolate Pansy	Junonia iphita		С
	35	Lemon Pansy	Junonia lemonias		С
	36	Plain Tiger	Danaus chrysippus		W



Family		Common name	Scientific name	Schedule WPA-1972	Status
Nymphalidae	37	Striped Tiger	Danaus genutia		С
	38	Blue Tiger	Tirumala limniace		С
	39	Common Four-ring	Ypthima huebneri		W
	40	Common Leopard	Phalanta phalantha		С
	41	Common Bushbrown	Mycalesis perseus		W
	42	Common Evening Brown	Melanitis leda		W
	43	Anomalous Nawab	Charaxes agrarius		R
	44	Indian Nawab	Charaxes bharata		С
	45	Black Rajah	Charaxes solon	II	LC
Pieridae	46	Mottled Emigrant	Catopsilia pyranthe		W
	47	Lemon Emigrant	Catopsilia pomona		W
	48	Common Grass Yellow	Eurema hecabe		С
	49	Indian Pioneer	Belenois aurota		С
	50	Three-spot Grass Yellow	Eurema blanda		LC
	51	Common Gull	Cepora nerissa		С
	52	Striped Albatross	Appias libythea		С
	53	Common Jezebel	Delias eucharis		С
	54	Psyche	Leptosia nina		С
	55	Common Castor	Ariadne merione		С
	56	Indian Wanderer	Pareronia hippia		С
	57	Golden Angel	Caprona ransonnettii		С
	58	Oriental Palm Bob	Suastus gremius		LC
	59	Grass Dart	Taractrocera ceramas		LC
	60	Rice Swift	Borbo cinnara		С
Hosporiidao	61	Small Branded Swift	Pelopidas mathias		С
Hespeniuae	62	Bush Hopper	Ampittia dioscorides		С
	63	Chestnut Bob	Lambrix salsala		R
	64	Tree Flitter	Hyarotis adrastus		R
	65	Brown Awl	Badamia exclamationis		С
	66	Common Banded Awl	Hasora chromus		LC
	67	Blue Mormon	Papilio polymnestor		LC
	68	Common Mormon	Papilio polytes		W
Danilionidao	69	Common Rose	Pachliopta aristolochiae		LC
	70	Common Mime	Papilio clytia	1	С
	71	Lime Swallowtail	Papilio demoleus		W
	72	Tailed Jay	Graphium agamemnon		LC
	73	Common Jay	Graphium doson		С
	74	Common Banded Peacock	Papilio crino		R





Blue Mormon.



Black Rajah.



Common Cerulean.



Brown Awl.



Indian Nawab.



Bush Hopper.



Chocolate Pansy.



Common Gull.



Common Four-ring.



Common Hedge Blue.



Common Grass Yellow.



Common Jay.





Common Mormon.



Common Sailor.



Common Silverline.



Golden Angel.



Grass Demon.



Indian Cupid.



Indian Oakblue.



Oriental Palm Bob.



Lemon Pansy.



Pea Blue.



Mottled Emigrant.



Peacock Pansy.





Plain Tiger.



Tiny Grass Blue.



Red Flash.



Tailless Lineblue.



Purple Leaf Blue.

To document the butterflies, a combination of direct search technique (Sutherland 1996) and opportunistic sighting methods was applied for the present study.



Zebra Blue.



Striped Pierrot.

The survey was conducted from February 2020 to February 2023 and butterflies were photographed using a DSLR (Canon77D camera) and a Samsung A20s camera. Habitat types of the five



Silverstreak Blue.



Three-spot Grass Yellow.

sampling sites are presented in the table. Common species were identified in the field, while rare species were identified with the help of field guides (Bingham 1907;





Pie chart representation of total number of butterfly species recorded from each family.

Table 2. Name and habitat type of the five study sites.

Site No	Habitat Type
1	Mixed vegetation
2	Wetlands with swamp and bushes
3	Light forests, dominated by <i>Acacia concinna</i> , Holoptelea integrifolia, and Helicteres isora
4	Grasslands
5	Rocky slopes

Kehimkar 2016). Till date there are a number of published reports available about the butterfly diversity of entire Chota Nagpur Plateau ecoregion which includes the work of Mukherjee et al. (2023) that recorded 143 species from the Ajodhya Hills of Purulia, West Bengal; Singh (2010) reported 71 species from Ankua reserve forest while Patra et al. (2022) documented 72 species from the hilly terrains of Ghatsila, Jharkhand. The present study, which covered much smaller area than the above mentioned studies, reports 74 species of butterflies, representing 50 genera, and five families. Our research indicates a healthy ecosystem and the presence of rich floral diversity in the study area. Among the families, Lycaenidae emerged as the most dominant with 25 species.

Additionally, five species are listed under the Wildlife Protection Act of 1972. Due to increased urbanization and ongoing deforestation, peripheral forest patches bordering Joychandi Hills have significantly shrunk in recent years, endangering the very foundation of butterfly populations. Regular man-made forest fires at Joychandi Hill directly affects vegetation and may influence butterfly species composition (Kunte 2001).

As butterflies are very sensitive to environmental changes, these issues are major threats to the butterfly diversity of the area in the near future (Kunte 2000). The findings of these studies provide valuable data for the development of targeted conservation strategies aimed at preserving butterfly diversity in Joychandi Hill.

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Mammal Tales

Photographic evidence of Red Fox from Timli Range, Kalsi-Uttarakhand, India



Camera trap images of Red Fox in Timli Forest Range, Soil Conservation Forest Division, Kalsi, Uttarakhand. © WWF-India.

Three fox species are recognized in India: Indian Fox *Vulpes bengalensis*, Tibetan Fox *V. ferrilata*, and Red Fox *V. vulpes montana* (Sillero-Zubiri et al. 2004). While the Red Fox's distribution and ecology are globally researched, its Indian context remains limited (Macdonald & Reynolds 2004). The IUCN Red List categorizes the Red Fox as 'Least Concern' (Hoffmann & Sillero-Zubiri 2021). With an opportunistic diet, the Red Fox thrives in diverse habitats worldwide, thanks to its adaptability (Cavallini & Volpi 1995; Cagnacci et al. 2003).

In India, the Red Fox's range spans the Himalayan and Trans-Himalayan regions, from 2,100 to 5,200 m in altitudes, across Jammu & Kashmir, Himachal Pradesh, Uttarakhand, Arunachal Pradesh, and Sikkim (Maheshwari et al. 2013; Umariya et al. 2020). Despite their affinity for dry, mixed landscapes with scrub and woodland forests, Red Foxes are commonly found in urban areas and seem to flourish near human settlements due to the availability of food resources (Macdonald & Reynolds 2004; Umariya et al. 2020). No prior studies recorded Red Foxes in Kalsi Soil Conservation Division, Uttarakhand. It is conceivable that Red foxes might have been present in the area but remained unnoticed due to their timid and nocturnal behaviour.

The Timli Forest Range is situated in the Soil Conservation Forest Division, Kalsi, Uttarakhand,



Photo capture locations of Red Fox from Timli Forest Range, Uttarakhand. © WWF-India.

India. It shares borders with the Barkala Range of the Shivalik Forest Division to the south, the Malhan Range of the Dehradun Forest Division to the east, and is connected to the Kalesar National Park in Haryana via the Yamuna River to the West. Encompassing an area of approximately 70 km², the range is located around 45 km from Dehradun City. Summer temperatures range 16–46 °C, while winter temperatures plummet to as low as 6°C, occasionally even below freezing. Noteworthy ecosystems within the range include Sal forests Shorea robusta, mixed forests (dominated by Mallotus philippensis), and Himalayan forests (characterized by

Pinus roxburghii). The Timli range features distinct forest types such as dry Shivalik Sal forest, moist Shivalik Sal forest, northern dry mixed deciduous forest, moist Bhabar Dun Sal forest, and dry deciduous scrubs, each contributing to its ecological diversity (Singh et al. 2003).

The forest range has notable existence of mammals including Goral Naemorhedus, Sambar Deer Rusa unicolour, Chital Deer Axis axis, Barking Deer Muntiacus muntjak, Blue Bull Boselaphus tragocamelus, Indian Crested Porcupine Hystrix indica, Indian Wild Boar Sus scrofa, and Elephant Elephas maximus. Apart from the Red Fox, other carnivores such as Leopard Cat Prionailurus bengalensis, Small Indian Civet Viverricula indica, Masked Civets Paguma larvata, Palm Civets Paradoxurus hermaphroditus, Golden Jackal Canis aureus, and Leopard Panthera pardus are also found in Timli Range.

The region features undulating terrain, ranging 300-1,000 m, marked by elevated peaks, steep hills, deep valleys, and rocky streams (Raus). Rainfed seasonal rivers like Rau drain the lower Shivalik and Himalayan ranges. The northern part displays the characteristic hilly Shivalik range with steep slopes, while the southern portion contains extensive Sal forest patches, frequented by elephants. Timli Range includes numerous waterholes and forest streams along the Yamuna River, ensuring a consistent water supply for the local wildlife year-round.

Timli Range also functions as a vital wildlife corridor for Tigers, Elephants, Leopards, and other animals, facilitating their movement between Rajaji Tiger Reserve, Shivalk Forest Division in Uttar Pradesh, Kalesar National Park in



Habitat of Timli Forest Range, Uttarakhand. © Devavrat Pawar.

Haryana, and Simbalwara Wildlife Sanctuary in Himachal Pradesh (Kumar et al. 2022).

The Red fox was photo captured in three camera traps at 1920 h on 02 March 2022, at 0216 h and at 0232 h at two separate locations on 03 March 2022.

Red Foxes are rare in Uttarakhand's Shivalik Bhabar region, but some evidence exists of their presence in the Terai region. Previously, a Red Fox was spotted in Ramnagar Forest Division at 505 m, possibly the lowest in India (Anwar et al. 2014). The photos of the Red Fox from our study were taken at comparable elevations: 527 m, 594 m, and 619 m. These sporadic records in the lower Himalayan region could result from climate change and habitat shifts. Elevated temperatures are transforming alpine zones, leading to a preference for lower habitats. Human-induced changes, like farming and urbanization create fragmented landscapes, requiring adaption from red foxes. The interplay of climate shifts and human impacts shapes wildlife distribution in evolving environments.

Previously, no documented Red Fox records existed in the Soil Conservation Forest Division, Kalsi, nor have studies assessed their presence and distribution there. The photographic evidence in this report is vital to the forest department and other biologists. It offers insights into the spatial and temporal presence of Red Foxes in the area. Such insights are vital for holistic conservation strategies, ensuring the species' protection in its natural habitat within the Soil Conservation Forest Division, Kalsi. Moreover, understanding red fox coexistence and its interactions with other species underscores the need to investigate the impacts of habitat decline on inter-species dynamics and potential conflicts.

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Bird-o-soar

A note on the summer record of Ruddy Shelduck in Assam indicating possible breeding extension



Tadorna ferruginea pair from the agricultural land of Sonitpur district, Assam. © Rahul Sarma.

The Ruddy Shelduck *Tadorna ferruginea* exhibits an extensive distribution range across Asia, the Middle East, Europe, northwestern Africa, and Ethiopia (Salvador & Amat 2022). Breeding seasons vary geographically, with southern populations commencing laying in January, while their northern counterparts initiate the process around mid-April (Salvador & Amat 2022). Notably, the species' breeding records in India were initially reported in Ladakh (Ali & Ripley 1983; Pfister 2004), followed by sightings in Sikkim (Ganguli-Lachungpa 1990), Arunachal Pradesh (Choudhury 2000), and Himachal Pradesh (Thakur & Mehta 2016). A pair of *T. ferruginea* were observed in the outskirts of Gohpur town, Sonitpur District, Assam, at coordinates 26.8004 N & 93.5348 E. On 1 July 2023, at 0719 h, a pair was observed foraging in an agricultural field near Dipara village, amidst congregations of Asian Openbills and Cattle Egrets. Dipara village, situated on the northern bank of the Brahmaputra River, adjoins the northern boundary of Kaziranga National Park (Biswanath Division). Another pair of *T. ferruginea* was sighted in the vicinity of Dhonshri Nagachang area, Karbi Anglong, on 15 July 2023 at 1030 h with the geographical coordinates 25.8278 N & 93.6498 E. This

Bird-o-soar



Map showing the sighting records of *Tadorna ferruginea* pairs in summer.

pair was spotted flying over agricultural fields near railway tracks. Dhonshri Nagachang, located on the northern bank of Dhansiri River, is in Karbi Anglong district of Assam, and features a nearby lake called Dhimaraja Kharnai where the birds were observed.

The migration of *T. ferruginea* in India typically occurs between early September and mid-October, with breeding activities taking place from mid-March to early May (eBird 2021). The preferred breeding habitat comprises lakes and marshes with a minimum depth of one meter. Nesting sites, as described by Madge & Burn (1988), are often small depressions, located away from water bodies, and can be naturally formed or created by other animals. Suitable nesting locations may include vacant dwellings, barns, hollow trees up to ten meters tall, crevices in cliffs and rocks, and even nest boxes (Madge & Burn 1988). European populations breed predominantly in southern and eastern Europe, as well as southern and western Asia, with a significant population in Asia, where abundant suitable habitat is present, although precise quantitative data remain limited (BirdLife International 2023).

The floodplain areas of Assam are highly attractive to water birds due to the abundance of food resources, favourable climatic conditions, and the presence of suitable breeding grounds for various wetland avian species. The first-ever sighting from Dipara, Gohpur, and multiple observations from central Assam (including Kaziranga National Park and surrounding areas) indicate that Kaziranga National Park might serve as a potential breeding habitat for the *T. ferruginea*.

However, it is crucial to emphasize that further comprehensive studies are necessary to thoroughly evaluate and confirm the suitability of Kaziranga National Park as a breeding site for the T. ferruginea. Such studies should include detailed assessments of the nesting behaviours, reproductive success, and overall breeding ecology of the species within the park's ecosystem. Additionally, factors such as human disturbance, habitat availability, and potential impacts of climate change should be considered to gain a comprehensive understanding of the species' breeding prospects in the region.

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Bird-o-soar

Photographic record of Tickell's Thrush from Harike Wetland, Punjab, India

Harike is a birding hotspot that never ceases to amaze with its incredible sightings. On 4 February 2023, authors searched the sheesham forest along the Sutlej River for White-crowned Penduline-Tits. These thorny trees, bushes, and other plants in this dense mixed forest provide an ideal habitat for a wide range of bird and mammal species.

We encountered two mediumsized black birds in flight while exploring the woods in the morning. They appeared to us at first to be Indian Blackbirds. It was challenging to take pictures because of the birds' quick flight and hiding behaviors. One of them eventually landed in front of us on a clear perch, allowing us to take some pictures as we waited to photograph and study them in the open.

The bird appeared to sparkle in the magnificent morning light, making it easy to identify as a Tickell's Thrush *Turdus unicolor* Tickell, 1833. Tickell's Thrush was clearly identifiable by its



Tickell's Thrush Turdus unicolor.

pale, blue-gray upperparts and white belly plumage (Ali & Ripley 1983; Grimmett et al. 2011).

After conducting a literature review, we discovered that in north India species shows large variation in different states as in Jammu & Kashmir (common resident), Himachal Pradesh, (not common resident), Punjab (not common winter visitor), Delhi (vagrant), Rajasthan (not common winter visitor) & Uttarakhand (not common summer visitor) (Grimmett et al. 2011). With the emergence of ebird records of these bird become very much clear from the last decade we had clearly found that species was observed throughout the year in Himachal and Uttarakhand earlier considered (not common resident and not common summer visitor respectively), there are more records in Delhi, Rajasthan, as compare to Punjab.

Punjab shows significantly very low records of Tickell's Thrush without any photographic evidence probably there are more individuals of species that has to be identified for that this study will bridges the gaps. A few eBird checklists indicate that the bird is present in Punjab, specifically around the Shiwalik foothill range specifically form Siswan dam. S.A.S Nagar during winter seasons only (https://ebird.org/species/ticthr1/ IN-PB). Since the Tickell's Thrush prefers hilly and sub mountainous region regions, its appearance in the designs for the Harike Wetland caught us off guard. This sighting serves as a reminder of how unique Harike is as a birding destination.

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Bird-o-soar

Navigating the quantum realm: the enigmatic role of quantum physics in migratory birds

Bird migration, a complex and fascinating phenomenon, has attracted attention of scientists and nature enthusiasts for years. Each year, millions of birds embark on precisionguided journeys covering thousands of miles across the globe (Thakur 2019). The complexities of bird migration involve genetic factors (Justen & Delmore 2022), hormonal influences (Rankin 1991), physiological adaptations, and environmental cues. Birds undergo physiological changes, preparing for migration, storing energy, and navigating vast distances to exploit seasonal resources globally.

Certain birds, like homing pigeons, employ their beaks for navigation, possibly backed by magnetite crystals detecting earth's magnetic field (Neill 2013). Traditional explanations encompass visual cues, earth's magnetic field, and celestial navigation.

Recent research introduces the intriguing possibility of quantum physics contributing



Pallas's Gull (Ichthyaetus ichthyaeus).

to bird navigation (Holland & Kishkinev 2021). This article explores the connection between quantum phenomena and the remarkable migrations of these birds, unveiling the captivating mechanisms behind their journeys.

Quantum Mechanics: A Primer

Quantum physics delves into the behaviour of matter and energy at the subatomic level, where classical physics gives way to an inexplicable world. Particles can exist in multiple states simultaneously (superposition) and become intertwined, with the state of one particle instantly affecting another, regardless of distance. This field is experimentally validated and ranks among the most precise and clear scientific theories. Understanding these fundamental principles is essential before exploring the enigmatic connection between quantum physics and migratory birds.

The Quantum Compass: An Avian Enigma

For years, scientists believed migratory birds relied primarily on classical cues like landmarks, the sun,



Mechanism for birds receiving signals to navigate their migration routes (Hore & Mouritsen 2022).

stars, and Earth's magnetic field for navigation (Hore & Mouritsen 2022). However, as our understanding of quantum physics deepened, researchers began exploring the possibility that birds might harness quantum phenomena to enhance their navigational skills.

At the heart of this quantum mystery is cryptochrome, a light-sensitive protein found in birds' retinas (Weidensaul 2021). While cryptochrome exists in both plants and animals, scientists believe that birds possess a unique variant of this protein that serves as a molecular compass (Wu 2019). Cryptochrome is associated with a bird's ability to sense and interpret earth's magnetic field, providing a crucial reference point for orientation during long migrations. This discovery challenges traditional views of avian navigation and highlights the remarkable interplay between quantum physics and nature's wonders.

The Quantum Compass in Action

Migratory birds' enigmatic ability to navigate using Earth's electromagnetic field has been unravelled by recent research. Specialized light-sensitive proteins, cryptochromes in their retinas, interact with natural light, creating entangled electron pairs influenced by quantum physics and earth's magnetic field (Conover 2021). These electron pairs may act as a compass, aiding the birds in position and direction. This discovery of cryptochromes as a crucial factor in sensing Earth's magnetic field marks a breakthrough in understanding how migratory birds undertake their remarkable global journeys every year.

Experimental Evidence

Experimental evidence increasingly supports the existence of a quantum compass in migratory birds. Experiments mimicking migration routes' magnetic fields disrupted bird orientation, while manipulating cryptochrome's quantum states in their retinas affected navigation. These findings indicate cryptochrome's quantum properties are linked to birds' navigation, turning this concept into scientific reality.

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Challenges and mysteries

The connection between quantum physics and bird migration is increasingly clear, but numerous challenges persist:

1. Quantum Sensing Mechanism: While cryptochrome's role in quantum sensing is evident, the exact operational mechanism remains unclear. Researchers are actively probing how entangled electrons in cryptochrome interact with earth's magnetic field and how this information is processed by birds' brains.

2. Environmental Complexity: Migratory birds likely use a combination of navigational cues, including visual, celestial, and quantum sensing. Understanding how these cues interact and complement each other presents an ongoing challenge.

3. Social Learning: Young birds may learn migration routes from experienced individuals comprehending how social learning interacts with quantum sensing and other cues is a key area of investigation.

4. Evolutionary Mysteries: Exploring the role of quantum physics in bird navigation raises questions about the evolution of these capabilities. How did these quantum-based systems evolve, and why are they present in specific bird species? Unraveling the evolutionary history of these adaptations is an active research pursuit.

Conclusion

The connection of quantum physics and migratory birds' amazing journeys is a fascinating scientific mystery. What was once a mysterious enigma is now revealing how nature utilizes quantum laws. As research unravels the complexities of bird migration and quantum physics, we appreciate the complex amalgam of science and nature. This connection reminds us of the amazing surprises in the natural world, showing how diverse fields of science can intersect unexpectedly. Migratory birds, with their quantum compasses, showcase the beauty and complexity of nature and the wonders of quantum physics.

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Bird-o-soar

Observation of beak abnormalities in Indian Rock Pigeon at Udhagamandalam, The Nilgiris, India

Avian keratin disorder (AKD) is a disease primarily attributed to Poecivirus, and is emerging as a pervasive ailment affecting wild birds (Zylberberg et al. 2018). First identified in the late 1990s, the disorder exhibits a distinctive manifestation through beak outgrowth and has been spreading rapidly both geographically and in terms of host species affected (Zylberberg et al. 2016). An epizootic of beak deformities, referred to as "AKD" has been documented in Blackcapped Chickadees Poecile atricapillus in Alaska during the past decade and afflicts an average of 6.5% of the adult population annually (Hemert & Handel 2010). These deformities result in decreased ability of bird's feeding and preening capabilities, diet preferences, and higher susceptibility to various parasites and pathogens, ultimately leading to decreased fitness and survival (Handel et al. 2010; Wilkinson et al. 2016). Interestingly, this kind of case was documented in many parts of India, including



Observation of beak abnormality in the Indian Rock Pigeon *Columba livia* in Udhagamandalam, The Nilgiris. © S. Karthick.

recent documentation from the Udhagamandalam region (Shahir et al. 2023). Recently, a bird with such a defect has drawn the attention of researchers in the region.

On 26 December 2023, during our fieldwork, we observed a flock of Indian Rock Pigeon *Columba livia* in the middle of Udhagamandalam town (11.2442 N & 76.4227 E). On keen observation, we observed that one pigeon had an abnormal beak among the flock, and the individual was sick and lethargic. According to Shahir, et al. (2023), the previously recorded individual from the region was very healthy even though it had been affected by bill deformities. Thus, the researchers believe that this abnormality has not significantly affected the feeding abilities of this individual because the bird has survived and remained healthy to the age recorded. But, at the same time, the bird that we observed and recorded was unhealthy and sick, and its movement was restricted to one place. This behaviour could be due to the low fitness of birds with deformed beaks. Deformities in the structure of the beak may affect individual survival negatively through inefficient foraging or preening (Benkman & Lindholm 1991). A research study from Zylberberg et al. (2018) concluded a statistically significant relationship between Poecivirus infection and AKD and provided evidence that Poecivirus is indeed an avian virus, infecting and actively replicating in the beak tissue of birds.

The similarity in physical characteristics of the deformities and geographic distribution supports the hypothesis of common etiology (Handel et al. 2010; Hemert & Handel 2010). Although the causes of the defects are still unknown, examining these kinds of cases in various species provides insight into possible causes. Lack of knowledge about causative factors and subsequent physiological changes associated with beak deformities emphasizes the need for additional research into the pathology of AKD. The recurrent and constant documentation of this deformity in birds from the region will help raise awareness for abnormalities in this and other species of birds in the region. Finally, we strongly recommend to study that why this deficiency occurs in the Indian Rock Pigeon, especially in a particular region is something to monitor through longterm study.

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Second World Peacock Day celebrations to recognize historical, cultural, religious and ecological significance

The Indian Biodiversity Conservation Society together with World Pheasant Association took the initiative to celebrate 15 November 2022 as First World Peacock Day for national bird of India and peacocks all over the world. On 15 November 2023, the second World Peacock Day was celebrated with great fervor all over India. The theme for this year was Peacock: an iconic bird. Indian Peafowl is protected under Schedule I of the Indian Wildlife (Protection) Act, 1972 and in case of killing the bird imprisonment under section 51(1-A) that may extend to seven years, and financial penalty, but still they are unprotected due to the exemption for domestic trade in peacock tail feathers and the articles made from them, as stated in Sec. 43 (3) a and Sec. 44 (1) of the Act.

World Peacock Day was not just a day for admiration but also an opportunity to educate and engage people in activities that promote peacock conservation and preservation of their habitats. It is a day when individuals, organizations, and communities united to appreciate the beauty of these birds and acknowledge their ecological significance. For this collaborative celebration of World Peacock Day various events, workshops, and awareness campaigns were organized. These activities included photography, painting, *mehendi* and *rangoli* competition with peacocks as theme. Students also made beautiful craft on peacocks.

The nature lovers went for bird watching to observe peacocks in their natural environment. The students took pledge for no buying of peacock feathers or products made from them. The buying of a single feather put the beautiful peacocks into danger. Moreover, the peacock feather is degradable and after a span of time, it starts deteriorating. Besides these offline activities a national webinar was also organized on the theme "The Indian Peacocks: Time to acknowledge their historical, cultural, religious and ecological significance". An online quiz was also organized that included the questions based on interesting facts about peacocks. All the participants, winners and organizers

> were felicitated by certificates for actively participating in the events.

World Peacock Day made the participants to think about the importance of our national bird just like we give importance to our national animal,



Participants of coloring activity, Composite Upper Primary School-Maneripur, Ambedkarnagar-U.P.

Report

education



Rangoli Competition in Glorious Public school, Sihora-Madhya Pradesh.



Coloring activity in Kasturba Gandhi Residential Girls College, Jhansi.





Craft on Peacock by student of Smt GS RS Aadarsh Inter College Shahzad Nagar-Budaun, Uttar Pradesh.



Mehendi competition by students of Kasturba Gandhi Residential Girls College, Jhansi.

tiger. They have understood their duty towards this stunning bird. It created awareness about the threats faced by peafowl making their survival difficult. The day inspired various organizations to take up awareness initiative for our national bird. World Peacock Day also promoted proper scientific surveys for peacocks by the public. This important day helped to understand the gravity of human-peacock conflicts that are never taken seriously. With undemanding steps and responsibilities we can certainly make a difference. By coming together, we created a more significant impact and encouraged a broader audience to appreciate and support peacock conservation efforts.

World Peacock Day received immense response from the press media. The local newspapers supported the much needed initiative even prior to the event so that more and more people could join the campaign.

Submitted by Sonika Kushwaha, Akhilesh Kumar & Aman Singh, Indian Biodiversity Conservation Society, Jhansi, Uttar Pradesh 284001, India. Email: ibcsforall@gmail.com

Report

World Wildlife Day celebrations at Nehru Zoological Park, Hyderabad, Telangana

World Wildlife Day was celebrated at Nehru Zoological Park on 3 March 2024 to promote the importance of wildlife conservation and maintaining ecological balance. The United Nations General Assembly (UNGA) in its 68 session proclaimed 3 March as a day of significance as World Wildlife Day to celebrate and raise awareness of the world's wild animals and plants.

The programme was conducted from 1000 h till 1800 h, in the presence of assistant conservator of forests, education officer and other volunteers. The celebrations were monitored by Dr. Sunil S. Hiremath, IFS, curator and I/c director. This year's theme is "Connecting People and Planet: Exploring Digital Innovation in Wildlife Conservation" was explained to the visitors and school children through various activities based on this year's theme.

The visitors were given information about various conservation efforts and projects done in the zoo and how to integrate technology into wildlife conservation. The zoo education officer, public relations officer, zoo cops, volunteers from Forest College and Research Institute (FCRI), Mulugu organized several activities and talk shows for students and visitors.

The talk shows were focused on tiger conservation and were given information about camera traps and other software's used to monitor tigers in wild. The ZEO, PRO along with zoo cops organized activities such as drawing competition, quizzes, jumbled words, jumbled sentences, cross word puzzles, and have gifted away tiger masks and other refreshments to the participants. More than 500 individuals including children, youngster, parents and senior citizens participated in the activities organized throughout the day.

Speaking on this occasion the director of the zoo said that the zoo is committed to provide best in class experience to visitors in terms of conservation education. Smt. A. Nagamani, Dy. Curator emphasized on the importance of habitat and ecosystem conservation and urged everyone to switch to a sustainable lifestyle and maintain ecological balance.

Submitted by C.M. Deepak Tarun & H.M. Hanifulla, Nehru Zoological Park, Hyderabad, Telangana 500064, India. Email: deepaktarunm@gmail.com, hanif.zoopark2011@gmail.com

Report





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Communicating science for conservation

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Type — Articles of semi-scientific or technical nature. News, notes, announcements of interest to conservation community and personal opinion pieces.

Feature articles — articles of a conjectural nature — opinions, theoretical, subjective.

Case reports: case studies or notes, short factual reports and descriptions.

News and announcements — short items of news or announcements of interest to zoo and wildlife community

Cartoons, puzzles, crossword and stories

Subject matter: Captive breeding, (wild) animal husbandry and management, wildlife management, field notes, conservation biology, population dynamics, population genetics, conservation education and interpretation, wild animal welfare, conservation of flora, natural history and history of zoos. Articles on rare breeds of domestic animals are also considered.

Source: Zoos, breeding facilities, holding facilities, rescue centres, research institutes, wildlife departments, wildlife protected areas, bioparks, conservation centres, botanic gardens, museums, universities, etc. Individuals interested in conservation with information and opinions to share can submit articles ZOOS' PRINT magazine.

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Articles should be typed into a Word document with no more than 800 words of text and 10 key References (Tables, Images with copyright information, and Videos are encouraged) and emailed to zp@zooreach.org. Include the names of one or two potential reviewers when submitting a publication.

Articles which should contain citations should follow this guideline: a bibliography organized alphabetically and containing all details referred in the following style: surname, initial(s), year, title of the article, name of journal, volume, number, pages.

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