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Rest assured, are we safe?

It's tiring to constantly think of a negative world. Yet, here we are, at least some of us who live in a world constantly exposed to the misgivings and the misdoings of the popularity movement of unsustainable development. Complementarily, the governments are turning away from the commons to the elites, with weak justifications. We can turn a blind eye or remain ignorant, but is that an option? And at what cost? Do we just go along with the flow? See what happens?

It's becoming abundantly clear with many common folks facing solastalgia, filled with missing out on what used to be and ruing what's become. Eco anxiety, stress, and depression are rising and more common than they used to be a few decades ago. Times change for the better or for the worse, but the debate when new inventions get popular is increasing in frequency keeping us on our toes of what is to come and what is to be? Pondering the impacts, despite keeping a positive frame of mind brings some of us back to the consequences of such popularities and the establishment of new practices. Do we just go along with the flow? See what happens?

It's Artificial Intelligence or Natural Stupidity? Are we in a race to understand which one of these is going to rule us? Both seem to be racing each other in different spheres of life, feeding into each other and feeding off each other. Are we to blame technology for the former or are we to blame fiction for the latter? Or are we to blame anything or anyone at all? Do we just go along with the flow? See what happens?

It's factual or fictional? Our lives are yo-yoing constantly between the two again feeding off of each other, justifying the behaviors, promoting the unthinkable. The world runs on equal quantities of both facts and fiction, but the latter responsible for all absurdities unleashing all around us, encompassing all that we touch, smell, breathe, drink, eat, see, hear, sense, well anything really. So, do we correct the imbalance and lean more towards facts and bring about a sense of balance? Do we just go along with the flow? See what happens?

It's rapid changes in a world that is unable to digest the previous shift. We've depleted one major natural protein source and are moving to harness yet another source with nothing learnt from previous experiences. Additionally, our sustained activities have ensured the alternate source to decline in visibly disturbing signs over just a few decades. Will we be able to sustain this change in focus, promoting false justifications along the way? Or are there alternatives? Do we just go along with the flow? See what happens?

It's a tight corner for us. Where do we go? The majority of us seem to be quite contented relying on misinformation, ignorance, failed models, getting rich, materialistic comforts, biases, prejudices, cult tendencies, among others failing to see what is unfolding in full glory, of increasing pollution of the air, sound, water, food, soil, of increasing temperatures, uncertain weather, unreliable forecasts, landslides, floods, droughts, of rapid declines in biodiversity, ecosystems, natural spaces, ecological sustainability, of ... well, I can go on and on, but you get it, I'm sure. Do we just go along with the flow? See what happens?

It's bothering me as its bothering many of you, I'm sure. Can we rely on each other as similar-minded buddies? Can we band together to provide each other a shoulder? Can we reach out to each other? Or remain in our silos sobbing into our pillows? Can we afford for our own stability do something about it? Do we just go along with the flow? See what happens?

It's right here that I implore you write to me and share your experiences and feelings. Let's begin somewhere, why not here? Do we just go along with the flow? See what happens?

Dr. Sanjay Molur
Editor, Zoo's Print



Fireflies during the day

Fireflies are hardly seen during the day. At the Anamalai Tiger Reserve, we've observed fireflies of the species *Abscondita terminalis* perching on large leaves. Detesting sunlight, they perch against the sun, on large, green leaves. While they prefer this for resting, they fly away to leaves high up in the canopy for their synchronous flashes. For their displays, they prefer trees that are interspersed so their flashes can be seen from a distance.

Recorded by Sriram Murali and Chandrasekar Rathnam of Wild and Dark Earth, an NGO that conserves nocturnal habitats in India. wildanddarkorg@gmail.com

Fireflies warming up

Fireflies of the species *Abscondita terminalis* perch on large leaves during the day, avoiding sunlight. We were curious how they prepare for a night of synchronous displays. In 2023 at the Anamalai Tiger Reserve, as the sun went down, the birds went to roost and the bees started buzzing, the fireflies, perched on the leaves, began flashing with slow pulses. Their light frequency and intensity kept increasing after every break. Then, one firefly moved around, touching the others, seemingly waking them up. The ones that were touched started flashing in quick, bright bursts. This lasted for about thirty minutes and when the place was dark enough and it was time for the synchronous displays, they flew away to the leaves high up in the canopy.

*Click this link
to watch video*



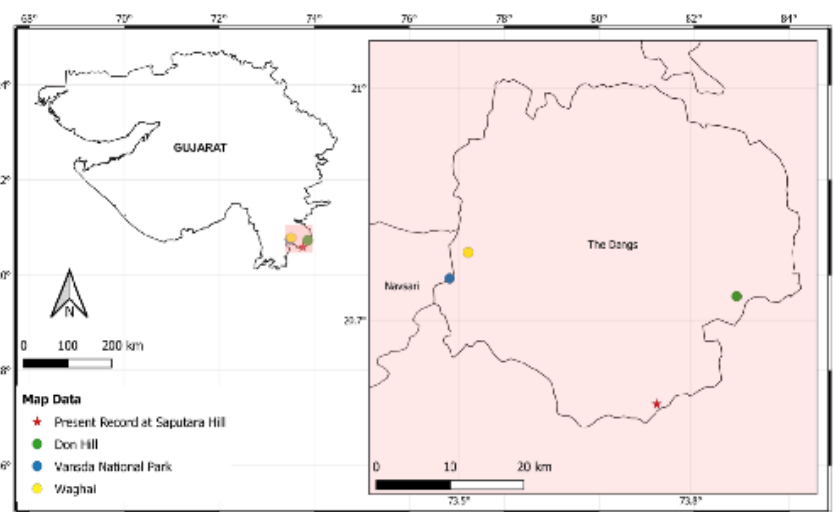
#263
21 February 2025

Additional record of Travancore Wolf Snake from Gujarat Western Ghats, India

The Travancore Wolf Snake *Lycodon travancoricus* (Beddome, 1870) is a nocturnal species of colubrid snake endemic to the hills of peninsular India, especially the Western Ghats and parts of the Eastern Ghats (Whitaker & Captain 2004; Ganesh et al. 2020). This terrestrial to semi-arboreal species is found in tropical wet evergreen forest areas and looks very similar to many other wolf snakes occurring here, especially the most widespread Common Wolf Snake *Lycodon aulicus* (Linnaeus, 1758). *Lycodon travancoricus* was first reported in Gujarat by Sharma & Jani (2015) from Vansda National Park (VNP), Navsari (based on photographic documents). Later on, the species was reported from Dangs by Patel et al. (2019) from Gujarat State. This



Lycodon travancoricus from Saputara Hill, Dang District, Gujarat. © Bhargav Parmar.



New location of *Lycodon travancoricus* (Red Star) from Saputara Hill, Dang District, Gujarat.



article is an additional report of the species from Gujarat. On the 20 July 2019, an adult *L. travancoricus* was sighted at the side of the road at night on Gujarat State Highway 174 (20.5915 N, 73.7560 E, 730 m), Saputara Hill, Dang District, Gujarat. The snake didn't bite during handling (Whitaker & Captain 2004).

Description of the live uncollected specimen: total length 398 mm; tail length 76 mm (Male). Head elongate; depressed laterally where the eyes are placed; snout broad; convex laterally; compressed upwards; projected beyond the lower jaw; rostral broad; curvature; notched ventrally; appeared from above; large flanked nostrils; dark large eyes; bigger than internasals; round pupil; loreal elongated; in contact with 1st, 2nd, and 3rd supralabials ventrally; preocular prolong to dorsal surface of head; in contact with frontal; frontal subtriangular; smaller than parietal; supraocular not in contact with prefrontal; nasal plate divided; subequal; in contact with the 1st supralabial ventrally; 1st supralabial subtriangular, 1st postocular rich to upper surface of the head; 2nd postocular on the right side in contact with the 5th supralabial and temporal scale ventrally; on the left side in contact with 5th and 6th supralabials ventrally; mental broad; triangular; among 10 infralabials 1st to 5th touch with the anterior chin shield; 5th (half) and 6th touch with the posterior chin shield; 1st higher; 6th largest; neck distinct; dorsal scales rows smooth; with apical pits; ventrals angulated laterally.

A loreal (on right side loreal in contact with the ocular; in broad contact with prefrontal; ventrally in contact with 1st, 2nd and 3rd

supralabials); supralabials 9, 4th and 5th in contact with the eye on the left side, 3rd to 5th in contact with the eye on the right side; 2 preoculars (2; find) (Smith 1943) on the left side, 1st (upper) preocular large than 2nd (lower), in contact with the prefrontal anteriorly; supraocular, frontal & prefrontal dorsally; ventrally in contact with loreal & 2nd preocular; 2nd preocular small; square-shaped, in contact with the loreal anteriorly and the 3rd supralabial ventrally, 1 preocular (2; find) (Smith 1943) on right side; anterior temporal scales 3–1 (2 or 3; find) (Smith 1943); posterior temporal scales 3. Purplish-brown shiny body; less dark laterally as compared to dorsal side; faded yellow crossbar on the dorsal body; disappeared posteriorly, base off white, supralabials light brown to off white (1st & 2nd are darker), frond chine speckled with dark brown color.

Earlier from Gujarat *Lycodon travancoricus* has been reported from Navsari District (VNP), Waghai and near Don Hill which is situated in Dangs District (Sharma & Jani 2015; Patel et al. 2019). Current findings show the existence of *Lycodon travancoricus* in Saputara Hills, Dang District, Gujarat.

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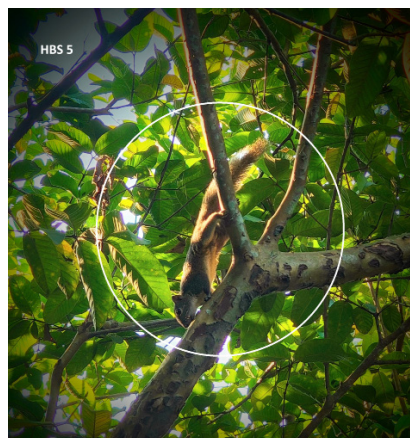
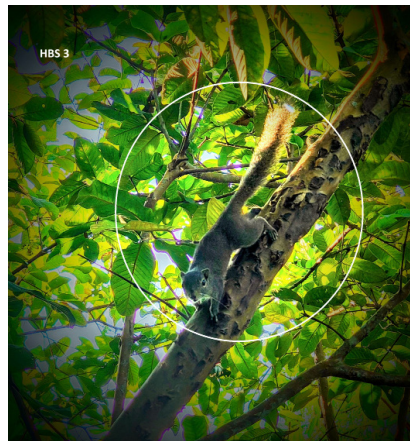
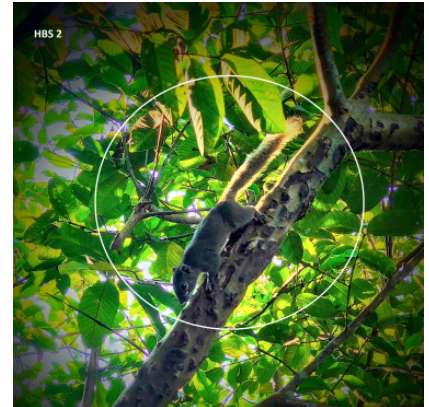
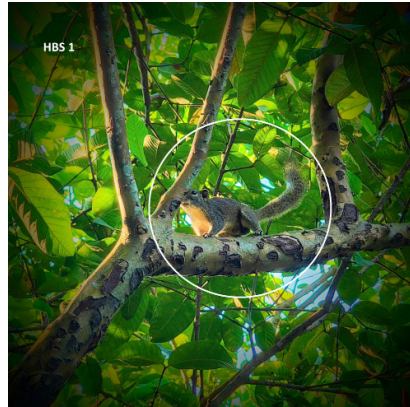
Citation: Parmar, B., P. Vaghela, R. Patel & M. Patel (2025). Additional record of Travancore Wolf Snake from Gujarat Western Ghats, India. *Reptile Rap* #263, In: *Zoo's Print* 40(2): 05–07.



The sighting record of Hoary-bellied Squirrel in Rangia College, Assam, India

Rangia College is one of the leading institutions of higher education located on the northern bank of the river Brahmaputra (26.4271 N, 91.6143 E) in the Kamrup District of Assam, and it falls within the demarcated space of the Himalayan Biodiversity Hotspot although it is not a prescribed part of the hotspot. The campus of Rangia College hosts a great floral diversity with both fruit and non-fruit plants. The predominant fruit plants include *Mangifera indica* L., *Cocos nucifera* L., *Phyllanthus emblica* Linn., *Dillenia indica* L., *Syzygium cumini* (L.) Skeels, *Spondias mombin*, *Carica papaya* L., and *Musa* sp.

During a random walk inside the campus of Rangia College on 3 August 2024, I encountered a total of five Hoary-bellied Squirrels (HBS) *Callosciurus pygerythrus* (I. Geoffroy Saint Hilaire 1832) dwelling on the fruit and non-fruit plants in the campus, which was the very first sighting record of such a high density of HBS inside the



college campus. HBSs were observed inhabiting a vertical range of approximately 10–15 m and frequently foraged on seasonal fruiting plants, such as guava *Psidium* sp., within the campus.

Some photos (HBS 1, HBS 2, HBS 3, HBS 4, and HBS 5) of Hoary-bellied Squirrel spotted inside the campus of Rangia College. © Nitul Ali.

This was a sudden encounter of the species while randomly walking on the campus, as explained by Rawat et al. in 2023. To have a closer look at its morphology, I used a binocular (Nikon Action EX



8x40) and clicked some photographs. It is a species from the family Sciuridae of the order Rodentia belonging to the class Mammalia (Rawat et al. 2023) and one of the major squirrels reported from India (Kalita 2009). HBS is mainly distributed in Bangladesh, Bhutan, China, India, Myanmar, and Nepal. In India, it is mainly distributed in Assam, Manipur, Meghalaya, Sikkim, Tripura, and West Bengal (Kalita 2009; Rawat et al. 2023; Thapamagar et al. 2021). The IUCN Red List placed it under the 'Least Concern' category (Duckworth 2016), while it is enlisted as a Schedule-II species under the Indian Wildlife Protection Act (WPA) 1972.

The dorsal side of HBS is exhibited by brown pelage. Its ventral side is characterized by a grey venter and a buffy belly, while at the base of the limbs it is slightly rufous. HBS body is covered by a grizzled or hoary coat. Length of the tail (17–19 cm) is almost the same as the head-body length (18–23 cm). They possess a blunt muzzle and a relatively larger tail characterized by dirty white fur and alternating blackish and yellowish-to-white bands along its length (Rawat et al. 2023).

HBS is generally found to use human-dominated landscapes. They mainly prefer evergreen forests that fall under tropical or subtropical regions (Thapamagar et al. 2021). Their food habits mainly include fruits, nuts, buds, flowers, bark-born fungus, and insects infesting (Kalita 2009; Rawat et al. 2023).

Our college campus provides essential resources for the squirrels, but urban challenges and anthropogenic activities threaten their well-being. Ensuring their protection is not just a

matter of legal compliance but a testament to our commitment to biodiversity and ethical stewardship of the natural world. I urge the college administration, students, and local community members to collaborate on measures to minimize disturbances, raise awareness, and support research for the conservation of this species.

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Additional sighting of the invasive Purcell's Hunter Slug from Gangasagar, West Bengal, India

Slugs are gastropod molluscs that typically lack a prominent external shell or have a reduced one. They are part of the same biological group as snails. Some slugs can indeed be plant pests, especially those that feed on higher plants. Their feeding habits can result in defoliation, causing damage akin to caterpillars and other plant-damaging insects (Cowie et al. 2008). Human activities have unintentionally contributed to the spread of certain terrestrial slugs and snails beyond their natural ranges (Lakshmi & Edward 2010). Slugs and snails can thrive in new regions, often colonizing less disturbed areas. The economic impact and potential damage they cause may go unnoticed until their presence becomes more apparent, making early detection and management challenging (Hutchinson et al. 2014). The introduced exotic terrestrial slug, *Laevicaulis haroldi* Dundee, 1980 is a

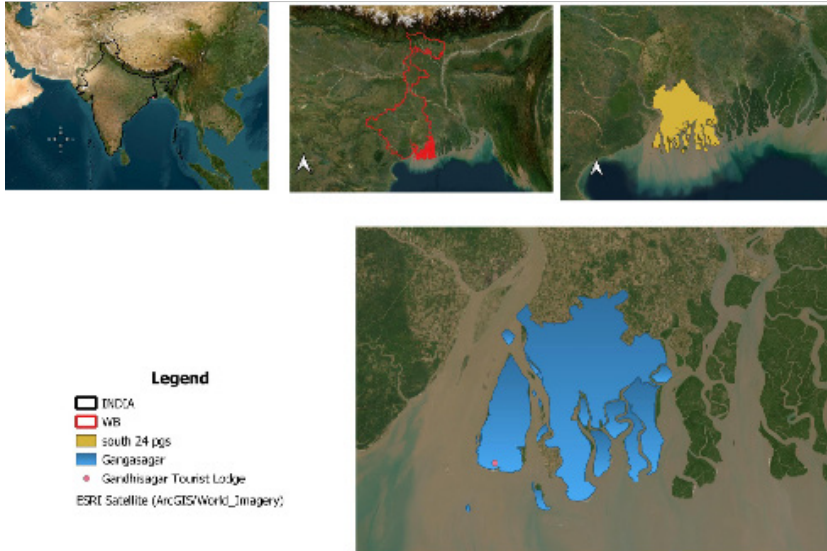


Purcell's Hunter Slug *Laevicaulis haroldi* Dundee, 1980 (Systellommatophora: Veronicellidae). © Md. Abu Imran Mallick.

serious crop pest and threat to the local species in most of the parts of India and is still spreading to many interior parts of the country (Sajan et al. 2018, 2021).

The Veronicellidae family, commonly known as leatherleaf slugs, consists of terrestrial herbivorous slugs found in tropical and

subtropical regions. Species like *L. haroldi*, known for its invasive and agriculturally damaging nature, stand out due to distinguishable external morphology (Khan 2019). However, identifying other members within this family to the species level can be challenging due to intra-specific variability, particularly in body colour



Map of study area and recent distribution of *Laevicaulis haroldi* from Gangasagar, West Bengal.

and pigmentation patterns (Hutchinson et al. 2014; Khan 2019).

Laevicaulis haroldi, a horticulturally and agriculturally damaging invasive slug, was observed in the Gangasagar region during our survey in South 24 Parganas, West Bengal, India. The presence of such species in specific areas can have implications for local ecosystems and agriculture.

Systematic Account

Kingdom: Animalia
Phylum: Mollusca
Class: Gastropoda

Order: Systellommatophora
Family: Veronicellidae
Laevicaulis haroldi Dundee, 1980

Common names: Purcell's Hunter Slug, Caterpillar Slug

Study Area

The study area, Gangasagar, is situated at approximately 21.6417 N & 88.0756 E.

As one of the largest estuarine island systems at the confluence of the River Hooghly in the Sundarbans, it has a very low elevation. The central part of the Gangasagar ranges 2.22–2.23 m, while the peripheral portion is at an elevation of 2.18–2.22 m

(Chakraborty 1995). Its low elevation, particularly during cyclones and tide surges, the margins of Gangasagar Island are susceptible to inundation, the vulnerability of the area to extreme weather events (Gopinath & Seralathan 2005). The coastal zone of Gangasagar Island exhibits a diverse composition, comprising mudflats, salt marshes, and mangroves, along with sandy beaches and dunes. The western coast has a higher sand content, while the eastern side is characterized by a predominance of silt. Gangasagar Island, encompassing an area of approximately 282 km², serves as the western fringe of the Sundarbans Biosphere Reserve.

Observation

Laevicaulis haroldi was observed during an Indian Horseshoe Crab survey inside the Gangasagar Island, South 24 Parganas, West Bengal, India (21.6417 N, 88.0756 E). The survey was conducted in December 2023.

Species description

The upper part of *L. haroldi*

are creamy yellowish mantle with white lateral bands, blackish-brown ends, and the beige, narrow foot with distinct coloration on the unique appearance of these slugs. The upper brown tentacles with eye spots and translucent white lower tentacles add further nuances to their distinctive features (Dundee 1980; Sreeraj 2021). The observation that *L. haroldi* was found feeding on the leaves of shrubs belonging to the Ureicaceae family provides valuable insights into its ecological interactions and potential impact on plant species in the study area. Understanding the feeding habits of invasive species is crucial for assessing their ecological role and managing any potential negative effects on local flora.

Distribution

Laevicaulis haroldi is found in the base line of Satpuda mountains, extending from Maharashtra to Gujarat. The recorded habitats in Nasik, Dhule, Dehradun, Nandurbar, and Ahmedabad districts indicate their presence in varied regions (Magare 2015). *L. haroldi* has been widely reported across India, with sightings in Udaipur, Delhi, Kolkata, Mumbai, and Kancheepuram. The species continues to be present in Kolkata, West Bengal, with recent reports confirming its ongoing presence in this region (Sajan & Tripathy 2020). Their preference for marshy lands or areas around watersheds, especially in agricultural and horticultural lands, aligns with the observed concentration in the Sundarbans Biosphere Reserve around Gangasagar in West Bengal.

Discussion

The identification and documentation of rare species like *L. haroldi* carry significant ecological importance, particularly in the context of declining biodiversity. Human-induced environmental changes, habitat loss, and fragmentation can have detrimental effects on various species. Prioritizing ecology-based inventories, especially in un-surveyed areas with rich biodiversity, become crucial for understanding, conserving, and managing ecosystems.

Conservation Status

Laevicaulis haroldi is endemic to South Africa and holds the classification of being 'Endangered' on the global IUCN Red List. This indicates a heightened level of conservation concern for the species in its native range (Herbert 2013; Sajan & Tripathy 2020).

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Distribution record of Blue-spotted Forester Moth in Bhopal, Madhya Pradesh, India

Episteme is a genus of moths belonging to the family Noctuidae, first established by Jacob Hübner in 1820. The genus is known for its widespread distribution, with six species recorded in India (Anon 2024). Among these, the Blue-spotted Forester Moth *Episteme adulatrix* (Kollar, [1844]) is a day-flying species distinguished by its vivid wing colouration, featuring striking patterns of blue in the forewing base, with two orange spots in hindwing towards the tornus. This species is prevalent across southern and southeastern Asia, with notable populations in India (Anon 2024). *E. adulatrix* plays a crucial ecological role, as its larvae feed on a diverse range of host plants. Originally described by Mr. Vincenz Kollar, an Austrian entomologist in 1844, the species has significantly enhanced our understanding of Lepidoptera diversity in the region. This note specifically reports the distribution of *E.*



Episteme adulatrix recorded in BNHS-VCBC Bhopal, Madhya Pradesh, India.
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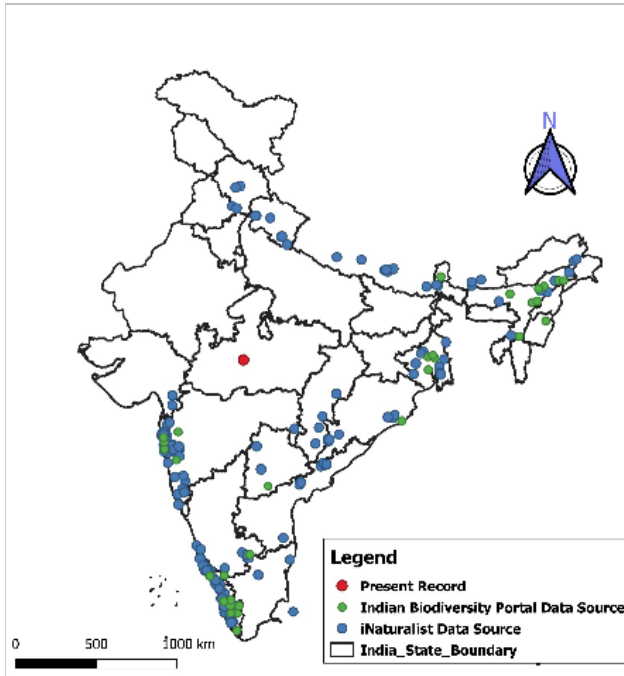
adulatrix in Bhopal, Madhya Pradesh, India.

On 16 August 2024 at 1145 h, we recorded the mating of a moth species at the BNHS-Vulture Conservation Breeding Centre (77.375 E, 23.173 N; 672 m), Bhopal, Madhya Pradesh, India. The mating event lasted for 17 minutes, during which photographs were taken for species identification. The moth exhibited distinctive

morphological features: the upper side of the forewing was black with large yellow markings, a row of small white spots, and pale blue spots at the base. The upper side of the hindwings was also black, featuring small white submarginal spots and two orange spots near the tornus. The head, thorax, and abdomen with black and orange bands. Whereas, *E. nigripennis* Butler, 1875 (Sri Lankan species) does not

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Map representing the present and past distribution records of *Episteme adulatrix* in India.

have any orange basally on the HW. These characteristics confirmed the species as *Episteme adulatrix*.

The distribution of *Episteme adulatrix* is largely confined to specific biogeographical regions in India, predominantly the Western Ghats, Eastern Ghats, and Himalayan regions. Hampson (1894) stated that this species was very common and widely distributed throughout India and Burma. These findings suggest that *Episteme adulatrix* has a strong preference for mountainous habitats. Within the central Indian landscape, this species has been recorded in Chhattisgarh, yet there are no confirmed records from Madhya Pradesh. Although some published literature on moth distribution in Madhya Pradesh exists, these studies have not documented the presence

of *Episteme adulatrix* (Chandra & Nema 2008; Dubey et al. 2021) Consequently, this observation may indicate both a potential range contraction and a new distribution record of *Episteme adulatrix* in Madhya Pradesh. Further research is essential to better understand the inter-specific interaction of the species distribution patterns within the state.

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First photographic record of Indian Grey Wolf in Birbhum District, West Bengal, India

The Indian subcontinent is the home of two subspecies of wolves, the Indian Wolf or Indian Grey Wolf *Canis lupus pallipes*, widely ranging over most of peninsular India, and the Tibetan Wolf *Canis lupus chanco* inhabiting the trans-Himalayan region (Wildlife Institute of India 2018). Indian Grey Wolf was once considered one of India's most widespread land mammals. However, owing to land use and land pattern changes, its population is shrinking sharply due to the loss of suitable habitats (Sheldon 1992). Thus, this species is listed as a Schedule I species in the Wildlife (Protection) Amendment Act of 2022. This species is found across arid, semi-arid forest patches, open plains, grasslands, and vast agricultural fields and deserts. In eastern India, they mostly prefer dry deciduous forest patches and open forest plains, grasslands, scrublands, and agricultural lands (Saren et al. 2019). Additionally, due to the loss of natural prey base, a considerable shift in their dietary preferences towards



Photograph of the female Indian Grey Wolf taken at Birbhum district.
© Saikat Das.



Study site where the photographs were taken. © Manish Kumar Chattopadhyay.

domestic livestock is visible throughout India, which can instigate retaliatory hunting. Nowadays, the conservation of this apex predator species is prioritized throughout India as it plays several vital roles in maintaining ecological integrity.

Jhala et al. (2022) meticulously studied the status of Grey Wolves in India, and that study recorded nearly 3,300 wolves in India, with Madhya Pradesh harboring the highest population, followed by Rajasthan. Saren et al. (2019) also did a wide-ranging survey

on the richness of Indian wolves in three districts of West Bengal, namely Bankura, Purulia, and West Midnapore, and encountered 11 wolves. Biswas et al. (2008) mentioned that this species is restricted to only small pockets of southern West Bengal, primarily due to habitat loss. However, no previous record about the distribution of Grey Wolves from the Birbhum District was prevalent.

During a field visit in February of 2024, authors found and successfully photographed a female Indian Grey Wolf strolling through the agricultural fields of Paschim Bahadurpur (23.65623N, 87.62967E) village of Birbhum District at around 1450 h. The individual photographed had sandy brown fur, well-developed nipples, and a long tail. This species was identified from field guides (Menon 2014). The dog-like appearance, large head, higher leg length to body ratio, elongated muzzle, and slightly curved tail were good indicators of the species. This is the first photographic evidence of this species from Birbhum District.

Our study has confirmed the presence of the Indian Grey Wolf in the Birbhum District, and this baseline information will surely encourage more detailed studies on the abundance and behaviour of this apex predator of pastoral ecosystems. This species mainly resides outside the protected area networks near human settlements. Meticulous information on their distributions and abundance will aid in framing future management and conservation strategies for the species.

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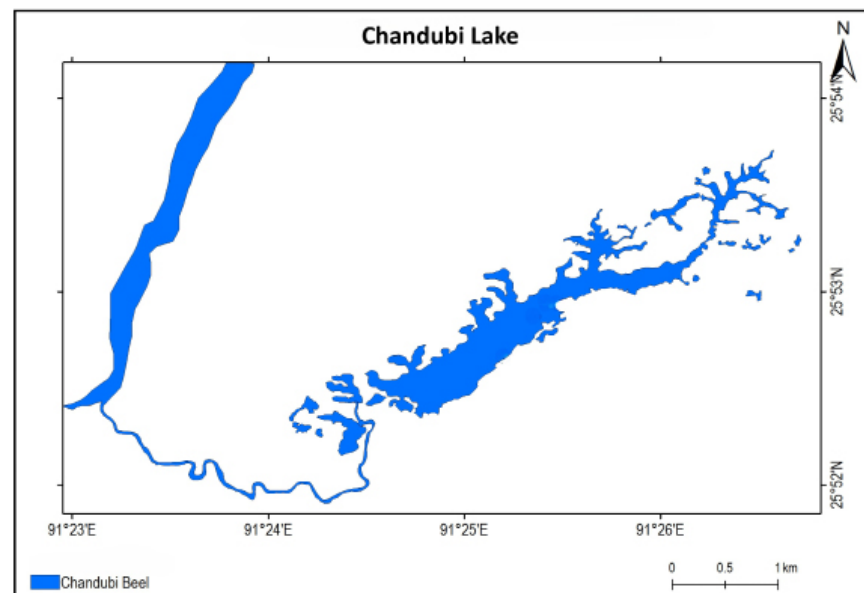
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Documentation of macrophytes from limnetic zone of Chandubi Lake, Assam, India

Wetlands are recognized for their biodiversity and play an important role in terms of the economic, social, ecological wellbeing of the region (Abujam et al. 2014). Aquatic macrophytes are key components of aquatic and wetland ecosystems, through providing ecosystem goods and services. Macrophytes as primary producers, provide food to macroinvertebrates, fish, and birds, and organic carbon for bacteria, a substrate for periphyton, and a shelter for numerous invertebrates, fish, amphibians, and reptiles (Timms & Moss 1984; Dvořák 1996). Submerged macrophytes have major effects on productivity and biogeochemical cycles in freshwater because they occupy key interfaces in stream and lake ecosystems (Carpenter & Lodge 1986). The limnetic zone is generally classified as the open water area of the lake or pond (Holz 2022). Limnetic macrophytes have high removal potential organic contaminants from



Limnetic zone macrophytes from Chandubi Lake: a—*Salvinia cucullate* | b—*Nelumbo nucifera* | c—*Najas minor* | d—*Marsilea quadrifolia* | e—*Nymphaea pubescens* | f—*Hydrilla verticillate* | g—*Trapa natans* | h—*Cladophora* sp. © Aminur Rahman.



Chandubi Lake linked with Kulsi River (on left).

aquatic environments (Steward 1970; Wooten & Dodd 1976). During our study, the limnetic zone was considered beyond 80 m from the lake shore

line. The macrophytes were documented from Chandubi Lake (25.8815 N, 91.4235 E) located in Kamrup District under Rajapara Beat Office of

Table 1. Macrophytes from limnetic zone of Chandubi lake.

	Species	Family	Habitat
1.	<i>Nymphaea pubescens</i>	Nymphaeaceae	Floating emergent
2.	<i>Nymphaea alba</i>	Nymphaeaceae	Floating emergent
3.	<i>Hydrilla verticillata</i>	Hydrocharilaceae	Submerged
4.	<i>Trapa natans</i>	Lythraceae	Floating
5.	<i>Najas minor</i>	Hydrocharilaceae	Submerged
6.	<i>Nelumbo nucifera</i>	Nymphaeaceae	Floating
7.	<i>Utricularia vulgaris</i>	Lentibulariaceae	Submerged
8.	<i>Sagittaria guayanensis</i>	Sagittariaceae	Submerged
9.	<i>Marsilea quadrifolia</i>	Marsileaceae	Submerged
10.	<i>Salvinia cucullata</i>	Salviniaceae	Floating
11.	<i>Cladophora</i> sp.	Cladophoraceae	Submerged

Assam Forest Department (Western Division-Loharghat Range) in the region of Assam-Meghalaya border.

The Chandubi Lake presents a great diversity of limnetic zone macrophytes within the lake. In our study, 11 species of limnetic macrophytes have been reported belonging to eight families, of which three species belong to Nymphaeaceae family, two species belong to Hydrocharilaceae and one species each belongs to Lythraceae, Lentibulariaceae, Sagittariaceae, Marsileaceae, Salviniaceae, and Cladophoraceae families. These limnetic macrophytes were reported beyond 80 m from the shore line where the average Secchi disk transparency of water is 113.42 ± 4.128 cm and have an average turbidity of 5.22 ± 0.331 NTU. The macrophytes from the limnetic zone determine the physicochemical parameters and

are breeding grounds for fishes, especially for demersal egg fishes like *Chitala chitala*, *Botia* sp., etc.

These macrophytes play vital roles in supporting biodiversity, maintaining ecological balance, and sustaining the aquatic ecosystem.

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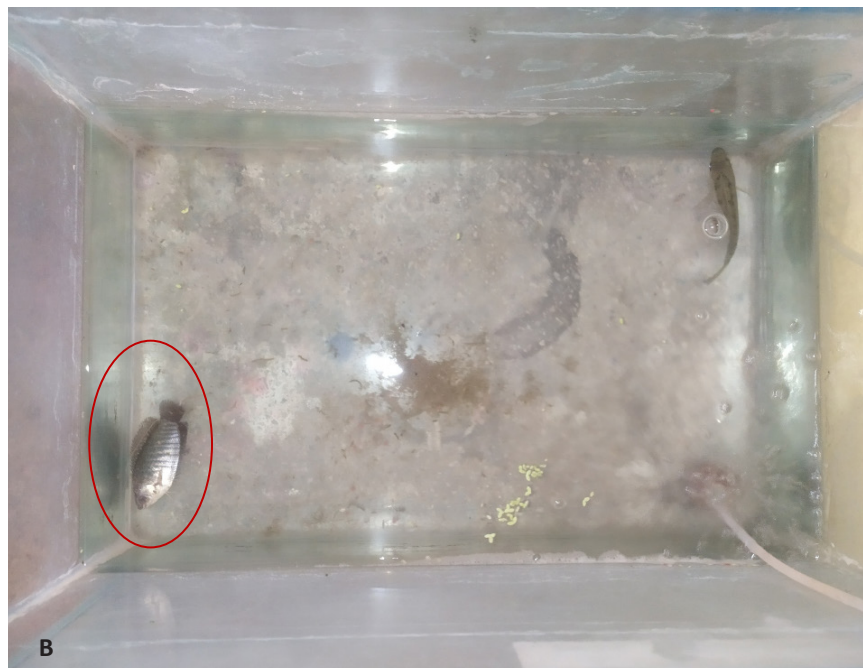
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Competitive interaction between invasive fish Mozambique Tilapia on native fish Banded Gourami based on food preference

Biological invasions of non-native fish have a negative effect to the structure and function of native ecosystems, which is a critical environmental issue regarding the aquatic life (Martin et al. 2010). The increasing number of invasive species and the demise of native species are the result of agonistic interactions, where aggressive behaviors by invasive species push native species out of their preferred habitat. These agonistic interactions can result in an increased movement, ultimately making the fishes to consume more food, increase predation risk and reduce growth.

The Mozambique Tilapia or *Oreochromis mossambicus* Peters, 1852 is an extensively distributed invasive fish species worldwide, causing environmental and ecological problems in many places of Assam. Thus, *O. mossambicus* is listed in the IUCN Invasive Species Specialist Group-Global Invasive Species Database



A – *Oreochromis mossambicus* and *Trichogaster fasciata* were kept together | B – Critical condition of *Trichogaster fasciata* (red colour circle) after the aggressive behaviour between *Oreochromis mossambicus* and *Trichogaster fasciata*. © Bandita Talukdar.

(2024) as being in the top 100 invasive alien species on the planet (Ganie et al. 2013). It is possible therefore, that the effects of tilapia may have been disastrous for native biodiversity, especially if their invasion resulted in the aggressive exclusion of native species from protection of structured habitats as would be speculated based on their aggressive nature (Martin et al. 2010). Tilapia created a major problem in the pond culture system in Assam and northeast India because of the difficulty in removing tilapia from the local culture pond and it dominates the system for food and space creating a havoc in growth and development. So, this subtle experiment is to analyze common problem faced by many in the field of fisheries and a threat to the aquatic ecosystems. Therefore, the present study was conducted to investigate competitive interaction between invasive fish Mozambique Tilapia *O. mossambicus* on native fish Banded Gourami *T. fasciata* based on food preference.

To study the food preferences and the behavioral interaction between the invasive and the native fishes, invasive fish Mozambique tilapia *O. mossambicus* and one native fish Banded Gourami *T. fasciata* was selected and collected from a freshwater pond located in Ramhori, Darrang District, Assam, India. In the laboratory, fishes were acclimatized separately in different aquarium and observed carefully. Prior to the initiation of the experiment no food was provided. Each time after giving foods, the competitive interactions between the different species in the tank was noted for the food preference and behaviour.

In this experiment (Martin et al. 2010) with modification, one tilapia and one native fish were used to document the food preference and behavioral interactions between the species stocked in a glass tank. The experiment was conducted for a period of seven days. Fish were fed twice per day, around 1000 h and around 1400 h. After the food was provided, the fishes were observed for 30 minutes each time. Based on the diet composition (Sakhare & Jetithor 2016) of these fish species, the food that were provided mainly included earthworm cut into many tiny pieces, some phytoplanktons and algae, and fish feed used for aquarium fishes.

The results showed that on the first day both the fishes were maintaining a noticeable distance without any competition for the feed but from the next day onwards there was a fierce competition between the two fishes. Poking or stabbing behaviour of tilapia was observed which deteriorated the health of other fish. Also, there was a decline in the food intake of *T. fasciata* from this competitive interaction. On fifth day, *T. fasciata* was found dead succumbed to its injuries from the attacks of the tilapia.

The most preferred food from the choices that were provided (i.e., algae, commercial fish feed and earthworm) in experimental tank with both the fishes was the earthworm. The consumption rates are; algae 13.4 ± 1.66 %, commercial fish feed 28.2 ± 2.03 % and earthworms 58.4 ± 2.7 %.

In this study, we observed that the native fish, *T. fasciata* was highly affected by the aggressive

behavior of the invasive fish *O. mossambicus* when kept in the same fish tank for a certain period of time and ultimately leading to the death of *T. fasciata*. The experiment done based on the food preference of the fishes. Additional research is needed to identify the other native fishes that are vulnerable to the direct and indirect effects of *O. mossambicus* presence. Experimental results showed that the unintended release of the common aquaculture fish, tilapia, can have negative impacts on the survival of native fishes and suggested that these findings are applicable to a number of systems containing tilapia and perhaps other aggressive invasive fishes.

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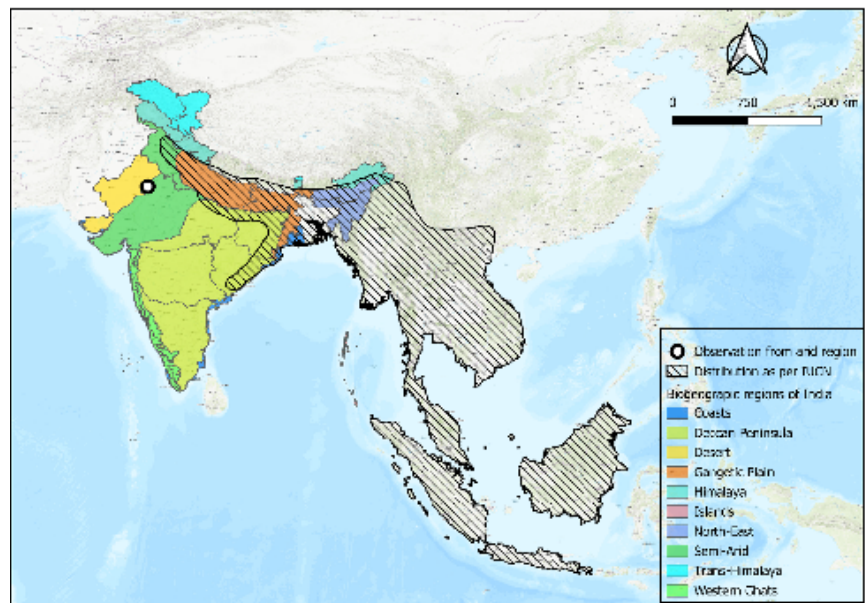
Sighting of Oriental Pied-Hornbills from arid region of Rajasthan, India

The Oriental Pied-Hornbill *Anthracoceros albirostris* is a distinctive and primarily southeastern Asian avian species, commonly found in secondary growth and river-margin forests of countries such as Thailand, Malaysia, Indonesia, and certain parts of India (Datta 1998). In India, its habitat extends from the Himalayan foothills, spanning from Arunachal Pradesh to Assam, Meghalaya, Mizoram, and Manipur (Rasmussen & Anderton 2012). However, the recent observations from semi-arid (Bhardwaj & Sangha 2022) and arid regions (present observation) of Rajasthan, far from their recognized native range, necessitates a closer examination for their geographic distribution.

The sighting was recorded during a field survey conducted on 8 March 2023 in the eastern arid region of Thar Desert in Didwana-Kuchaman District of Rajasthan, India. The presence of the Oriental Pied-Hornbill was documented through direct visual encounter



Oriental Pied-Hornbill roosting in Thar Desert, Rajasthan. © Pawan Singh.



Observation point and distribution of Oriental Pied-Hornbill as per BirdLife International (2020).

and even has photographic evidence of the same. Geographic coordinates and habitat characteristics were recorded to contextualize the

sighting.

The Oriental Pied-Hornbill pair was sighted within the arid region (27.0928 N & 74.7085 E), an area primarily

characterized by thorn scrub and dry deciduous forests, an environment vastly different from their native habitats. The pair was observed feeding on figs of *Ficus benghalensis* and photographed while roosting on *Azadirachta indica*.

The observed pair may be part of a pioneering population dispersing over considerable distances, possibly exploring unique food sources within the arid region (Kinnaird & O'Brien 2007) or could be influenced by competition for resources or changes in their native habitat (Lenz et al. 2015). The presence of Oriental Pied-Hornbills in the arid region of Rajasthan, far from their documented native range (BirdLife International 2020) emphasizes the need for further research to explain the factors behind this range expansion and its ecological implications. This sighting draws attention to the dynamic nature of wildlife distribution and adaptation in response to environmental changes.

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First sighting of the Red-crested Pochard in Satajan Wetland of Lakhimpur, Assam, India

The Red-crested Pochard *Netta rufina* is naturally found in a wide range extending from southern and central Europe across central Asia, as far west as Mongolia. They are migratory, flying between breeding grounds and wintering sites. Red-crested pochards that migrate from central Asia disperse to India, Pakistan, and Myanmar.



Male and female Red-crested Pochard *Netta rufina*. © Lakhijoti Saikia.

Satajan is a small perennial wetland, located between 27.2115–27.2068 N & 94.0520–94.0523 E and at an altitude of 94 m. The area of the protected part of the wetland is 39 acres and the maximum depth of water remain in winter is around 6.5 m (Mohammed 2013; Boruah & Riba 2015). Satajan is home to many flora and fauna including seasonal, migratory and resident birds.

In Assam, the Red-crested Pochard has been reported from Maguri beel (Dibru-Saikhowa NP) and Deepor beel (Guwahati) before. From Parbatipur No. 1 of Lakhimpur

district, it was first spotted in 17 January 2021 (eBird 2021).

We were on a birding expedition on 5 February 2024 in Satajan wetland. At 0825 h, we saw eight unfamiliar ducks swimming in the north-west part of the wetland. We photographed the ducks and also took a video of them for record. We observed the birds with binoculars for almost an hour. The bird had large, square-shaped head, red bill, and rusty-orange head. It also had white flanks with black breast and ventral region. Another one had pale cheeks with brown cap and brown bill with pink towards tip.

We identified the birds using available literature (Grimmett et al. 2011; Grewal et al. 2016). After careful observation and study, the birds were identified as male (with large, square-shaped head, red bill, and rusty-orange head) and female (pale cheeks with brown cap and brown bill with pink towards tip) Red-crested Pochard.

The Red-crested Pochard has not been recorded before in Satajan wetland. This is the first citation of this species from Satajan wetland, Lakhimpur, Assam.

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Predation of Indian Tent Turtle *Pangshura tentoria* by the Large-billed Crow *Corvus macrorhynchos* in Ghaghara River, Northern India

The global diversity of freshwater turtles encompasses 478 species, nearly half of which are threatened with extinction. India is home to 24 species of freshwater turtles, with 17 species listed in the IUCN threatened categories (Mendiratta et al. 2017). The Ganga-Brahmaputra floodplain is recognized as a Turtle Biodiversity Hotspot, hosting 21 species of freshwater turtles, including seven species endemics to India (Deepak & Vasudevan 2009). The lower Gangetic plains of India supports 18 species, with 14 species found in Uttar Pradesh, which rank among the top five Eco-regions globally for freshwater turtles, thereby Uttar Pradesh is designated as a Global Turtle Priority Area (Buhlmann et al. 2009; Mital 2016).

The Indian Tent Turtle *P. tentoria* is found in peninsular India (Uetz et al.



Corvus macrorhynchos feeding on the *Pangshura tentoria* in the Ghaghara River, India. © G. Gokulakrishnan.

2024). It is listed as a Least Concern species in IUCN Red List (Choudhury et al. 2021). Three subspecies have been discovered from the *Pangshura tentoria* species namely; *Pangshura tentoria tentoria* (Gray, 1834), *Pangshura tentoria circumdata* (Mertens, 1969) and *Pangshura tentoria flaviventer* (Günther, 1864). All three subspecies of *P. tentoria* are widely distributed across the Ganga River and its tributaries as well as the lowlands of the Brahmaputra

and Godavari rivers (Iverson 1992; Das 1995). These turtles are herbivorous in nature inhabitants to aquatic and live in freshwaters with lush vegetation (Van Dijk et al. 2000). *P. tentoria* is primarily found in large and small rivers within its described range. It has a diverse diet habit mainly herbivorous, in few cases this species prefer to eat carnivorous diet (Das 1991; Choudhury et al. 2021). The major threat to this species includes habitat degradation,

illegal hunting, and pollution of water bodies, though the impacts of these threats on the population have not been thoroughly studied (Choudhury et al. 2021). The population of *P. tentoria* have reported in the Ghaghara River, India by (Mital 2016). However, there is no documented report on predation of *P. tentoria* by Large-billed crow *C. macrorhynchos* from the Ghaghara River, India. The Large-billed crow is known to be an omnivorous species; it has wide distribution range in Asia (Madge et al. 2024). A few reports have been documented that this bird species fed on small turtle hatchlings of Olive Ridley Turtle *Lepidochelys olivacea* and observed hunting and predating on an Indian Roofed Turtle carcass in the bank of river Kuakhai, Bhubaneswar, India (Arjun et al. 2022). Hitherto, we report for the first time predation behaviour of Large-billed Crow feeding on Indian Tent Turtle *P. tentoria* from the India.

On 2 May 2024, during a biodiversity assessment of the Ghaghara River, India, we observed a Large-billed Crow *Corvus macrorhynchos* feeding near an exposed loamy riverbank at Sanaha Manjha (26.78632 N, 81.98009 E), Ayodhya, Uttar Pradesh, India. Closer inspection revealed that the crow was consuming a turtle, identified as Indian Tent Turtle *Pangshura tentoria* based on the diagnosis characters with the help of standard field guide (Das & Das 2017). In general the freshwater turtles typically emerge from the water to bask, and it is presumed that the turtle was predated upon by the crow while basking. However, we could not confirm whether the crow killed the turtle or was scavenging on an already dead individual. This report documents

a potential case of predation on *P. tentoria* by *C. macrorhynchos* in the Ghaghara River, India contributing to the understanding of the feeding ecology of *C. macrorhynchos* and the predation pressures on *P. tentoria*. It also highlights evolutionary implications regarding feeding and predation dynamics for both species.

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Predation of a Gecko by Yellow Bittern from Pakhibitan, Ecopark, West Bengal, India

The Yellow Bitterns *Ixobrychus sinensis* are commonly categorized as water birds due to their preference for wetland habitats and their dependence on aquatic environments for feeding, nesting, and other activities (Engbring et al. 1986). They are small bitterns, measuring about 38 cm in length. They belong to the family Ardeidae. This species is distributed in the Indian Subcontinent, central and eastern Asia, southeastern Asia, Philippines, and Indonesia (Ali 2002; Grimmett et al. 2011; Martínez-Vilalta et al. 2020). The wingspan is 45–55 cm. They have short necks, long legs and pointed bills suited for wading in shallow water and capturing prey. The Male has a pinkish-brown mantle and face and side of the neck are vinaceous. Females are similar to males but have rufous streaking on the fore neck and breast and buff streaking to rufous-brown mantle and scapulars (Grimmett et al. 2011; Hancock & Kushlan 2010). Their habitats are reed beds, and scrubby



Yellow Bittern catching and swallowing the Gecko *Hemidactylus* sp. © Tarak Samanta.



Location of the observation site.

growth in inland swamps as well as coastal mangroves and backwaters, inundated standing paddy crops, flooded fields, etc (Gerlach & Skerrett 2002; Martínez-Vilalta et al. 2020).

They are known for their diverse diet, which includes a variety of fish, frogs, molluscs, and insects in the Indian Subcontinent (Ali 2002). Kim & Yoo (2012) also documented the feeding behaviour during

the breeding season in South Korea. They have been observed to eat different types of insects (mosquitoes, dragonflies and damselfly larvae, water bugs, spiders, crustaceans like shrimp, amphibians (bullfrogs), and other small animals. Wells (1999), Hancock & Kushlan (2010) and Barthel & Hering (2013), noticed consumption of aquatic insects and their larvae, such as Diptera, Libellulidae, Coenagrionidae, and *Diplonychus japonica* along with small fishes like loaches, *Carassius auratus*, *Trichogaster* sp., *Misgurnus anguillicaudatus*, and *Pseudorasbora parva*; also include crustaceans such as crayfish and freshwater prawns, frogs like *Hyla arborea*, molluscs, crickets, and even lizards (Craig 1996) under poor food conditions (Ueda 1992). Yellow bitterns sometimes catch flies in flight. They typically forage alone and prefer to remain hidden and active during crepuscular and nocturnal periods and may also be seen foraging on overcast days (Hancock & Kushlan 2010).

Craig (1996) and Vice & Pitzler (1999) observed that bitterns feed on insects and lizards. There was also a record of eating a Common Sun Skink *Mabuya multifasciata* around Singapore (Wee 2008). But no such clear information on feeding a gecko *Hemidactylus* sp.

During an opportunistic survey on 28 June 2023, the authors photographed an adult *Ixobrychus sinensis* preying on a gecko of *Hemidactylus* sp. at around 1625 h from the Pakhibitan Ecopark area (22.6089 N, 88.4639 E; 18 m), situated at North 24 Parganas District, West Bengal, India. The photo was taken using a Nikon Coolpix P900 camera. A small video (15 seconds) was also taken during feeding.

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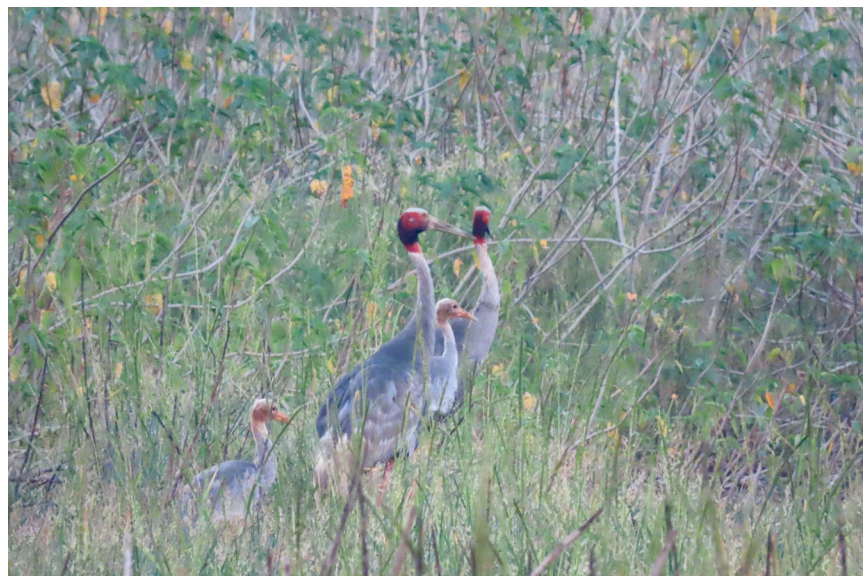
Recent breeding record of Sarus Crane and sighting of Eastern Marsh Harrier from Surguja division, Chhattisgarh, India

The Surguja division of Chhattisgarh lies within the Chhota Nagpur (6B) province of the Deccan Peninsular Biogeographical Zone of India (Rogers et al. 2002). Spanning Korea, Surguja, Jashpur, Raigarh, Surajpur, and Balrampur districts, the region is primarily drained by the Hasdeo and Rihand rivers. The rich biodiversity of Surguja has led to the designation of several protected areas, including the Guru Ghasidas Tiger Reserve (1,471 km²) and four wildlife sanctuaries: Badalkhol (104.55 km²), Gomarda (277.91 km²), Semarsot (430.00 km²), and Tamor-Pingla (608.52 km²). The forest types range from mixed deciduous (3B/C, 5A/C) in Surguja to dry deciduous in Gomarda, and tropical moist deciduous and Sal forests in Guru Ghasi Das National Park (Champion & Seth 1968; Chandra & Boaz 2018).

The region's diverse ecosystems attract bird



Sarus Crane *Antigone antigone* at Jamgala water tank. © Pratik Thakur.



Sarus Crane family (2 adults with 2 chicks). © Pratik Thakur.

species from the Eastern Ghats, Western Ghats, and the Himalayas. Bharos et al. (2023) documented 361 bird species in Surguja, while Chandra &

Boaz (2018) earlier recorded 199 species in Surguja District and 230 species in Guru Ghasidas National Park. Recent observations have reported



Dead Sarus Crane chick was obtained from villagers. © Dainik Bhaskar.



Sarus Crane family near Kunwarpur Village. © Pratik Thakur.

255 species in Surguja District alone (Thakur & Gupta pers. comm.). Among the notable species is the Sarus Crane *Grus antigone*, India's tallest flying bird, characterized by its long neck, long legs, and distinctive red head. Found primarily in Uttar Pradesh, Rajasthan, Gujarat, Madhya Pradesh, Chhattisgarh, and Jharkhand, smaller populations have also been recorded in Haryana, Punjab, and Uttarakhand

(Rahmani et al. 2012). Rahmani et al. (2018) reported sightings of eight pairs along the Rihand River and in Jamgala Village, Surajpur District, in January 2016, with nesting also noted in 2014 (Bharos et al. 2023). The Eastern Marsh Harrier *Circus spilonotus*, a winter visitor, is another important species. Males are distinguished by their mixed black, white, and buff wing coverts and grey secondaries,

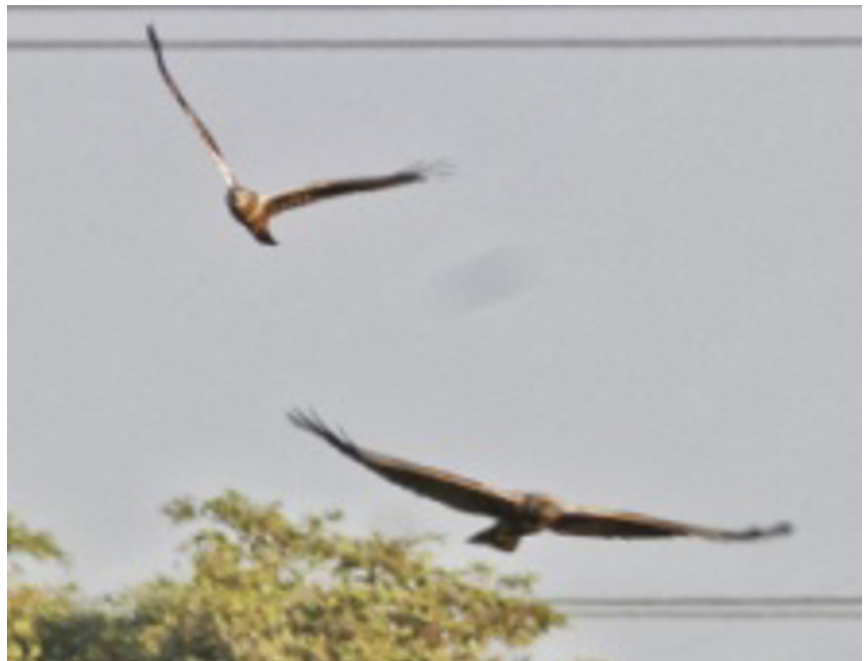
while juveniles are darker with a pale breast band. Female harriers resemble the Pied Harrier but have duller rufous bellies. Observations were confirmed using photographs and reference guides (Rasmussen & Anderton 2012; Grimmett et al. 2011). Though reported from Chennai and Kerala (Kesavabharathi & Sundaram 2016; Pradhan et al. 2017), previous studies did not mention this species in Chhattisgarh. The study sites were visited at random for data collection mostly during the morning and evening hours. Observations were conducted through visual observations or with the aid of binoculars and photographs obtained. The methodology used for locating birds involved techniques such as traveling, walking, listening for calls, and other related approaches. The bird identifications were made with the help of Grimmett et al. (2014). Confirmation of the identification of various species was ensured through the expertise of "Ask ID of Indian birds" group or other knowledgeable expert ornithologists. The highlight of the observations were Sarus Crane

breeding *Antigone antigone* and sighting of Eastern Marsh Harrier *Circus spilonotus*.

Though direct encounter with the nest was not made, from our observations and interaction with local villagers, it was clear that the Sarus pair is nesting in the reeds. It was difficult to study the nest as it was located in the middle of the reeds, with no access between the nesting site and the nearby reeds. The distance between the nesting site and human abodes is only 230 m, which demonstrates the tolerance of humans towards Sarus Crane at the site. Visits to nearby sites and other hotspots in Surguja, no Sarus Crane was found at any other location. Sarus Crane migrate seasonally in the region. During the rainy season, they remain at the nesting tank (23.0061 N, 82.9575 E) due to the abundant food available in tank and the adjacent cultivation. As the weather becomes drier, they move a little farther to nearby areas and the Rihand River. From March to May, it becomes difficult to spot the birds, as they migrate long distances of 7–8 km. On 28 April, near Kunwarpur Village,



Male Eastern Marsh Harrier at Seepat Dam, Bilaspur. © Himanshu Gupta.



Female Eastern Marsh Harrier at Seepat Dam, Bilaspur. © Himanshu Gupta.

one chick foraging with parents indicated successful rearing.

Eastern Marsh Harrier *Circus spilonotus*

On 3 February 2022, at around 1600 h, a male Eastern Marsh Harrier was sighted flying over the NTPC ash disposal Dam,

Bilaspur and photographed.

On 9 February 2023, a female Eastern Marsh Harrier was photographed at the same site.

On 29 October 2023, while monitoring Sarus Crane chicks at Taraju Village-Surajpur District, a male Eastern Marsh



Male Eastern Marsh Harrier at Taraju Village-Surguja. © Pratik Thakur.



Wood cut by villagers for fuel at the nesting site. © Pratik Thakur.

Harrier was encountered and photographed in flight from the beds of the *Ipomea indica*, then moving far away through the adjacent paddy field. In both these cases, the identification of the species was confirmed with aid of photographs comparing with standard literature (Rasmussen & Anderton 2012; Grimm et al. 2014).

The possible occurrence of Himalayan and subHimalayan species in northern region of

Madhya Pradesh (including Chhattisgarh) has been speculated by Tyabji (1994) in his study. Already few species have been reported by Bharos et al. (2023). This sighting record adds to it.

Above sightings at two locations namely Seepat Dam, Bilaspur District (22.0997 N, 82.2823 E) in 2022, and Taraju Village, Surguja District (23.0053 N, 82.9567 E) in 2023, are the first distribution and photographic records of

Eastern Marsh Harrier from Chhattisgarh.

Conservation and threat issues

Regular sand mining activities have been observed along the banks of the Rihand River. Additionally, the cutting of *Ipomea indica* plants at the roosting tank provides a hiding place for the Sarus Crane. Fishing activities have also been observed in the tank where Sarus habitat exists. On 22 June 2023, a feral dog was observed approaching a pair of Sarus Cranes, but the cranes noticed the dog and flew away. The use of toxic chemicals harmful to birds has also been observed in the tank and adjacent farms. The Sarus Cranes are also vulnerable to threats like feeding on recently sown wheat treated with a pesticide Monocrotophos (Pain et al. 2004), loss or degradation of habitat or nesting sites by farmers and other agencies (Meine & Archibald 1996; Sundar 2009; Gulati et al. 2021). On 18 November, our team initiated awareness programmes to spread awareness about the species, in Taraju and Jamgala villages, e.g., 1,500 posters were pasted and distributed,

Table: Observation of Sarus Crane in varies events.

	Year/ Date	Site	Observations
1	2017–18	Jamgala water tank (23.0061 N, 82.9575 E)	Recorded five Sarus Cranes at the site during Chhattisgarh bird count event.
2	2021 onwards	Jamgala water tank (23.0061 N, 82.9575 E) and nearby areas.	Visited every 3-4 months, observing a pair of Sarus cranes; no cranes found at other nearby sites.
3	January 2022	Jamgala water tank (23.0061 N, 82.9575 E)	Villager's photograph with Sarus Crane chick obtained.
4	1.ii.2022	Taraju village (23.0011 N, 82.9658 E)	Pair foraging on agriculture land observed.
5	2022	Jamgala water tank (23.0061 N, 82.9575 E) and nearby areas.	Followed pair but found no Nesting record.
6	22.vi.2023	Jamgala water tank (23.0061 N, 82.9575 E)	An observed pair performed a prenuptial display and later took flight when they felt threatened by a street dog.
7	4.vii.2023	Rihand river (22.9967 N, 82.9555 E)	Pair foraging on riverbank observed.
8	24.ix.2023	Jamgala water tank (23.0061 N, 82.9575 E)	Single Sarus Crane seen emerging from reeds. Sighting of solitary Sarus Crane was unusual because they were always seen in pairs earlier.
9	30.ix.2023	Jamgala water tank (23.0061 N, 82.9575 E)	Crane observed disturbing buffalo, possibly protecting chicks or nest.
10	28.x.2023	Jamgala water tank (23.0061 N, 82.9575 E)	Encountered two chicks with breeding pair; weekly site visits started.
11	5.xii.2023	Jamgala water tank (23.0061 N, 82.9575 E)	News from the forest department indicates that a Sarus Crane was probably killed by an unknown species of Civet Cat.
12	19.xii.2023	Taraju village (23.0011 N, 82.9658 E)	Witnessed juvenile's first flight.
13	5.iv.2024 & 28.iv.2024	Near Kunwarpur village (22.9864 N, 83.0241 E)	Family seen in irrigated agricultural land 7 km from nesting site. The pair was also observed roosting near a pond.

interaction with community. The conservation of Jamgala tank and raising awareness about the Sarus Crane are crucial for preserving what may probably be the last remaining population of Sarus Crane in Surguja, Chhattisgarh.

Conclusion

This is the most recent report on Sarus Crane breeding in Chhattisgarh, alongside a report detailing with seasonal habitat changes and other significant observations. Additionally, the

Eastern Marsh Harrier has been documented for the first time in the Surguja and Bilaspur divisions. This study will contribute to the conservation and further research of the species from the Surguja region, as the nesting site is located outside the protected area.

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ZOO'S PRINT

Communicating science for conservation

ZOO'S PRINT Publication Guidelines

We welcome articles from the conservation community of all SAARC countries, including Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, Sri Lanka and other tropical countries if relevant to SAARC countries' problems and potential.

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.

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Articles will be edited without consultation unless previously requested by the authors in writing. Authors should inform editors if the article has been published or submitted elsewhere for publication.

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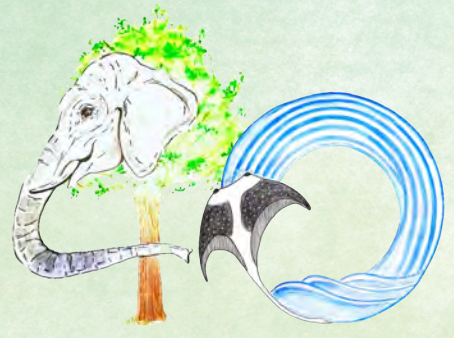
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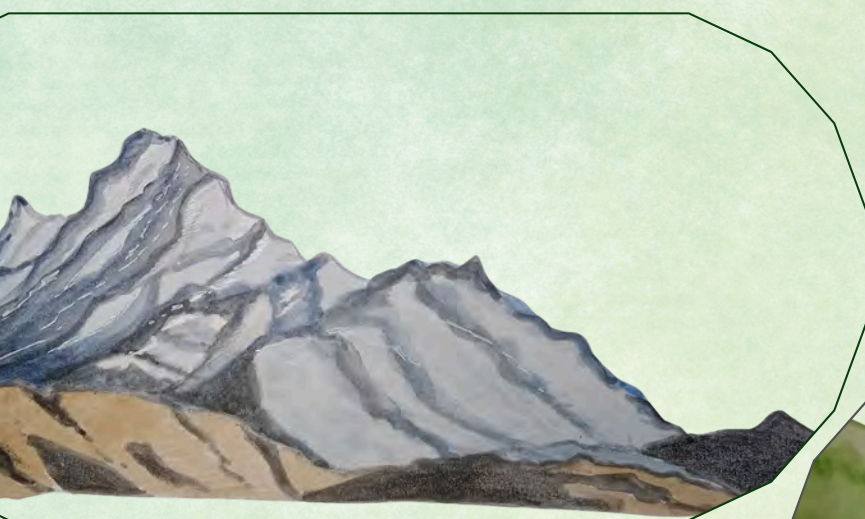
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