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Illegal trade of exotic wildlife along the porous borders of northeastern Indian states

Wildlife smuggling is estimated to be worth up to \$20 billion annually (Nellemann et al. 2016). Dead parts of the animals such as skin, bone, teeth, and fur are used for various traditional beliefs while live wildlife are used for meat, and as pet animals. As a result of strict enforcement of the Wildlife (Protection) Act 1972, there has been reduction in the demand for some scheduled species in India, but there has been an upsurge in the demand for exotic wildlife species as they are not included in the act. The Ministry of Environment, Forest and Climate Change, Government of India has declared a voluntary disclosure scheme in June 2020 to identify the host of exotic wildlife species as a precautionary step to check and isolate Covid infected wildlife. Surprisingly, the ministry received 32,000 applications by February 2021, which is an indication of the wildlife pet markets in India.

Wild species from southern and southeastern Asia (Myanmar, Thailand, Nepal, Bhutan, Indonesia, and Malaysia), Africa, South America, and Australia are in huge demand in the pet markets of India. The market values of wildlife species for use as pets are high since many species perish during transit, forcing the remaining ones to be sold at a higher price to offset the expense of the dead (Rosen & Smith 2010; Baker et al. 2013). The species are brought to Bangladesh and Myanmar through the surface and sea routes depending on the origin of the species and reach India illegally through porous transnational borders.

The trafficking record can be understood by the fact that a man captured by the Bangladesh Police is believed to be involved in the killing of 70 Royal Bengal Tiger from the mangrove forests of Sundarban (Aljazeera 2021). The exotic species and their articles are illegally brought to Kolkata, West Bengal through the Siliguri corridor and transported to other metropolitan cities, mainly Chennai, Mumbai, and Delhi.

Siliguri corridor has a strategic location, as it is close to neighboring Bhutan,



Transportation roads from Golden Triangle to Kolkata, India. © N.R. Talukdar.



Some of the exotic wildlife seized by Assam and Mizoram police. © Assam and Mizoram Police Department.

Nepal, and Bangladesh and it also connects northeastern parts of India with the rest of the country. After several raids in West Bengal by both central and state agencies, and strict restrictions on the Meghalaya (India)-Bangladesh border during Covid-19, the illegal traders followed a detour, where the animals were brought to India through Mizoram, a northeastern state bordering Myanmar.

Champai, a border district of Mizoram is attracted to the smuggler because of its topographical features. It is always difficult to find out the international rackets of smuggling, as people involved in the transportation of wild species are unaware of the sources and are just responsible for transporting them from one point to another. The smugglers also often changed the route to avoid checking at specific points. Although clear evidence is not available, it is believed that the infamous Golden Triangle (connecting areas among Myanmar, Thailand, and Laos) is linked to the transportation of exotic species from different continents (DRI 2020, 2021).

Around 723 exotic animals were seized in Champai district of Mizoram between January and October 2022 (Vanlalruata 2022a). It is worth mentioning that both Myanmar and Bangladesh respectively have 318 km and 510 km unfenced borders with Mizoram, although guarded by the Border Security Forces (BSF) and Assam Rifles, the Indian military wings. The reports published by the Directorate of Revenue Intelligence of India under the name

"Smuggling In India Report 2019–2020" and "Smuggling in India Report 2020–21" and many seized reports (Guha 2022; Zaman 2022) show a glimpse of seizing wild species that include Red Kangaroo Osphranter rufus, Capuchin Monkey Cebus spp., Silvery Marmoset Mico argentatus, Golden-headed Lion Tamarin Leontopithecus chrysomelas, Wallaby Notamacropus spp., Chimpanzee Pan troglodytes, Slow Loris Nycticebus spp., Moor Macaque Macaca maura, Lesser Spot-nosed Guenon *Cercopithecus petaurista*, Debrazza Monkey Cercopithecus neglectus, Turtles, Tortoises, Blue Macaw/Hyacinth Macaw Anodorhynchus hyacinthinus, and other many avian species. Between September to November 2022, on three different occasions, Orangutan, De Brazza's Monkey, and some other exotic animals were found abandoned in the Assam-Mizoram border areas of India (Assam Tribune 2022; Barak Bulletin 2022).

It is difficult to identify their source of origin as many such species are grown in breeding centers in southern Asian countries and thus deporting back to their destination is a challenging task. The Assam State Zoo-cum-Botanical Garden in Guwahati and Aizawl Zoological Park, Mizoram are the destination of the seized wildlife species. The constant effort of police has resulted in the induction of Mizoram Police into the World Book of Records, London for tackling wildlife smuggling activities (Vanlalruata 2022b).

The Government of India (2022) recently amended the National Wildlife (Protection) Act (WPA) 1972, and incorporated a new chapter, "CHAPTER VB," to regulate the export and import of species listed under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). The species listed under Appendices I and II of CITES have also been included under Schedule IV of the WPA to bring them under an umbrella act. The Act provides for the establishment of a Scientific Authority to advise the Managing Authority (designated to issue trade permits under the Amended Act) to restrict the grant of trade permits to species based on the status of their wild population and also increase the penalty in case of Act violations. With the implementation of the Act, the illegal wildlife trade in the country can be brought under control.

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Benefits of Zoos

Zoos house many different species from all around the world from small to large animals. Zookeepers attempt to provide habitat, food, and enrichment which resembles what they would experience in their natural environments however, much controversy still surrounds these organizations. Specifically, the benefits zoos provide for animal conservation have been questioned by a select portion of the population. Considering zoos serve as educational centers for conservation, participate in conservation-related projects, engage in novel research contributing to animal conservation, and can interfere to help prevent extinctions, they are critical for protecting threatened and endangered species.

Zoos serve as educational centers for the general public providing them with chances to see and learn about various species from around the world along with conservation methods. Zoo visitors can learn about an animal or ways to help its conservation through the signs provided or presentations done which highlight their unique capabilities, significance to the ecosystem or conservation actions that can be done. A study surveying 5,661 visitors from 26 zoos and aquariums across the world regarding their understanding of conservation actions, found people could better recall and identify certain conservation actions they can take following a visit than before their visit (Moss et al. 2015). Due to the vast amounts of information provided to visitors, zoos can be considered education centers promoting the conservation of threatened/endangered species to the public.

Zoos participate in numerous conservationrelated projects either directly or indirectly through partnerships with other organizations. One study states the world zoo and aquarium community spends approximately US\$350 million annually on conservation-related projects for wild animals (Gusset & Dick 2011). Zoos are involved in projects like captive breeding, reintroduction programs, and fieldwork which all serve to protect various species and their habitats. The 'Critically Endangered' Western Swamp Tortoise Pseudemydura umbrina is just one example of a species undergoing captive breeding and subsequent reintroduction led by a zoo (Durell & Keeley 2019).

In addition, the zoo takes part in various population assessments which provide critical information to the field of conservation. Che-Castaldo et al. (2018) claim there is more evidence pointing to the countless conservation projects zoos are involved in from the various partnerships they have with numerous organizations both federal and nonprofit. The sole purpose of these partnerships is to conserve certain species and habitats, indicating zoos do benefit animal conservation. Considering the numerous amount of conservation projects zoos are engaged in, threatened and endangered species are more likely to be protected indicating the importance of these facilities.

Zoos along with other educational organizations conduct research bringing forth novel information critical to animal conservation. These organizations perform research not only on the animals in their care which may be otherwise difficult to study in the wild but on wild animals as well such as the ex-situ study of Chimpanzee behavior (Herrelko et al. 2012; Zareva-Simeonova et al. 2009). This new research has the potential to yield groundbreaking information aiding in preventing the extinction of a certain wild population and providing better methods to care for individuals in captive breeding or reintroduction programs.

With the novel information zoos research about certain threatened or endangered species and their habitats, zoos are significant contributors to knowing how to approach struggling populations.

The story of the Dodo bird's (formerly Didus ineptus, and now Raphus cucullatus) extinction, due to human colonization coupled with nonnative species being introduced to their habitat on Mauritius island, is just one example of a critical opportunity missed for intervention (Bergman 2005; Gold et al 2016). Colonists abandoned the need to invest precautions for moderation and pursued these trusting birds considering they had no fear of humans. The Dodo bird is only one example of how a struggling population in the wild was quickly exterminated due to greed, carelessness, and a lack of value for the natural world. There are many endangered and threatened species alive today sharing a similar story like the Javan Rhinoceros Rhinoceros sondaicus, which may be only a few decades away from extinction without the appropriate conservation tools in place from various organizations such as zoos (Brook et al. 2014; Nardelli 2016).

Zoos serve as critical organizations for protecting threatened and endangered species across the world. Not only do they serve as educational centers for the public to learn about animals and how to protect them, but zoos participate in countless conservation projects, contribute to novel information supporting their welfare, and have the potential to prevent extinctions.

Considering the zoo's vast involvement with animal conservation, the resources dedicated to protecting endangered and threatened species would be significantly less without these efforts. The general public should thus support the zoo as a major resource for conserving threatened or endangered species.

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Foods and feeding habits of Forsten's Cat Snake, Gujarat, India

The Forsten's Cat Snake Boiga forsteni is a nocturnal, arboreal, and forest-dwelling snake, and its maximum body length is over two meters (Whitaker & Captain 2004). The snake possesses a rear fang and it is considered mildly venomous. This species is widely distributed in India, Sri Lanka, and Nepal (Mohapatra et al. 2021) and found in both dry and wet forests, open jungles, forest fringes, and cultivated areas (Schleich & Kastle 2002), where it lives in small to medium bushes, scrubby vegetation, and also on tall trees with profuse branching (Sharma 2003). The Forsten's Cat Snake widely occurs in the entire Gujarat State, except in dry arid parts of Kutch (Patel & Vyas 2019).

However, very scanty information is available on its diets, except that the snake feeds on lizards,



Forsten's Cat Snake *Boiga forsteni* devours a Red-vented Bulbul *Pycnonotus cafer* at reserved forest of Pavagadh, Panchmahal, Gujarat. © Raju Vyas.



Forsten's Cat Snake *Boiga forsteni* feeding on a Common Garden Lizard *Calotes versicolor* at Gamdi Village, Vadodara, Gujarat. © Raju Vyas.

REPTILE RAP



birds, domestic chickens, bird eggs, bats, and other small mammals (Smith 1943; Whitaker & Captain 2004). Mohapatra et al. (2009) mentioned the snake feeds on domestic fowl chicks *Gallus domesticus*, Bark Gecko *Hemidactylus leschenaultii*, and a Garden Lizard *Calotes versicolor* in captivity.

Here, present two observations on the feeding of species in the wild with photographic evidence. The observations were recorded on two different occasions at two different locations in the state.

Observation 1: On 15 December 2022, we were on a visit to Pavagadh, Panchmahal, Gujarat. The Pavagadh is a small undulating hilly area with 762 m high elevated hills and well-known religious tourist and world heritage sites. The area is surrounded by dry deciduous forest. During the visit, in the evening time, we came across predating behaviors of the species. An adult Forsten's Cat Snake was foraging on a low-height bush of Lantana Lantana camara in search of a prey. A pair of Red-vented Bulbul Pycnonotus cafer also were foraging on the same bush for the feeding of ripe fruits of the Lantana. The snake suddenly attacked a redvented bulbul and caught the bird by the neck. The cat snake disappeared into the bush with the prey after a small struggle with the bird. We were not able to see whether the snake engulfed the bird or not, but we presumed it consumed the entire bird.

<u>Observation 2:</u> On 30 March 2023, we were on a visit to an eco-farm at Gamdi Village, Vadodara, Gujarat. The eco-farm is a cultivated teak plantation and riverine mix forest with a few bamboo clusters at the bank of River Orsang (a tributary of River Narmada). During ^{*/} the visit at noon time, we received a call from a local farmer as a snake was sighted under the vegetation growth. We immediately rushed to the spot to observe which species were there. It was a large Forsten's Cat Snake with prey. The snake was devouring a lizard. It was an adult Common Garden Lizard *Calotes versicolor*. The snake engulfed the lizard within a few minutes and disappeared into nearer dense bushes.

The present opportunistic observations with photographic evidence indicate the species is also prying on Red-vented Bulbul and Common Garden Lizard in the day times.

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Photographic evidence of Amur Falcon from Sathyamangalam Tiger Reserve, Tamil Nadu, India

The Sathyamangalam Tiger Reserve is one of the largest tiger reserves in Tamil Nadu, located at the junction of the Western and Eastern Ghats (Vishnu & Ramesh 2021). The southwestern part of the Sathyamangalam Tiger Reserve (STR) is situated within the Moyar River Valley, which is a dry tropical landscape that supports a rich diversity of biota and provides a habitat for various endangered species (Thirumurugan et al. 2021). The reserve is positioned at an altitude ranging from 352–412 m and receives a mean annual rainfall of 850 mm. The mean minimum and maximum temperatures are observed between 21°C and 28°C, respectively.

The words Amur and amurensis originated from Amuria or Amurland, the drainage area of the Amur River adjoining China and Russia, from where the first specimen was described (Naoroji 2011). Amur Falcon



A female Amur falcon *Falco amurensis* photographed in the Sathyamangalam Tiger Reserve, Tamil Nadu. © Vishnu, C.S.

Falco amurensis is known to be a long-distance migrant distributed in a vast area, and the extent of occurrence is greater than 20,000 km² (Skerrett 2008; BirdLife International 2016). They are distributed from the African continent to Asia through the Middle East region (BirdLife International 2016). It is a passage migrant in east and southeast Asia. It breeds from central Siberia to the Amur land in eastern Asia. particularly from Transbaikalia to Amurland, and winters in eastern and southern Africa

(Naoroji 2007; Poonia et al. 2019). The estimated global population of this species is valued at a number greater than c. 1,000,000 individuals (Ferguson-Lees et al. 2001). The species has been listed as Least Concern in the IUCN Red List category (BirdLife International 2016).

This note reports the first photographic record of an Amur Falcon *Falco amurensis* in the STR. On 04 December 2020, at 1229 h, while going to the field survey for tracking the radio-tagged pythons in





the STR, we sighted a female *F. amurensis* (11.5764 N; 76.9161 E), perched atop a wild moringa tree *Moringa cocanesis* at the height of c. 10–12 m from the ground, the individual was identified with the help of a field guide by Grimmett et al. (2016). During the observation, the atmospheric weather was very cloudy due to the cyclonic storm Burevi with a wind speed of 80–90 kmph gusting to 100 kmph (IMD 2020); the falcon's travel was perhaps hampered by this drastic weather.

Cyclones can have a significant impact on the movement of birds, especially during migration. According to a study by La Sorte et al. (2018), cyclones can disrupt normal weather patterns with strong winds, heavy rain, and thunderstorms, which can make it difficult for birds to fly and navigate. *F. amurensis* cross the Indian Ocean to reach east Africa via the Indian subcontinent, continuing south through Kenya during winter (Ferguson-Lees & Christie 2001).

F. amurensis has been reported from many parts of southern India, including Nellore, Rajahmundry, Chennai, Puducherry, Coimbatore, Palakkad, and Madurai (Francis 2017; Jeshi 2017; Frederick 2020; Ghani 2020). Moreover, this species has been facing severe poaching threats. Reports reveal that within a span of two weeks, an estimated 100,000 Amur Falcons were poached in Nagaland (Patton & Bhaskar 2014; Sinha 2014). This note highlights the urgent need for community awareness to safeguard this species on a global and local scale. Overall, the new distribution observation of a passage migrant bird species in a protected area is significant as it contributes to our knowledge of the species and helps guide conservation efforts to ensure its survival.

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Cheer Pheasant in certain habitat patches of Nanda Devi Biosphere Reserve, Uttarakhand.

Cheer Pheasant Catreus wallichii is a mediumsized pheasant that belongs to family Phasianidae of order Galliformes. The species is distributed from northern Pakistan through Kashmir, Himachal Pradesh to Uttarakhand and in east to central Nepal (BirdLife International 2021). The species prefers rocky terrain dominated with tall grasses and bushes with scattered trees, majorly at the elevation in between 1,445–3,050 m, however, there have been instances where the species has been recorded at lower elevation as 950 m (Bisht et al. 2005) and even at 583 m (Hushangabadkar & Anwar 2019). The species is largely reported to be guite sedentary, with little or no seasonal altitudinal movements (Inskipp & Inskipp 1991) and apparently wander downwards in winter due to the extreme cold environment at higher altitude (Baker 1930).

Owing to its specific habitat preference and increasing anthropogenic pressure the population of Cheer Pheasant has decreased over time (BirdLife International 2021). The species is declining at a moderately rapid rate due to livestock grazing pressure, and critical habitat loss due to changing land-use patterns and is currently listed as 'Vulnerable' on the IUCN Red List. This species appears to be particularly vulnerable to hunting pressure as it has a strong association with human settlements, relying on low-level anthropogenic disturbance to maintain its preferred habitat and the patchy nature of such critical habitats further render the smallest isolated populations vulnerable to extinctions (Gupta & McGowan 2021)

During our regular field visits to certain areas in the Nanda Devi Biosphere Reserve (NDBR) in Chamoli District of Uttarakhand,



A male (left) Cheer Pheasant along with the female (right) recorded in the first visit. © Anand Kumar.



A male Cheer Pheasant observed calling in subsequent visit to the same area. © Anand Kumar.

we spotted Cheer Pheasants in fair number at certain pockets. In mid of the May 2021, 8–10 individuals of the species were observed at an elevation of around 2,420 m at three separate locations (Site 1: 30.5695 N & 79.5548 E; Site 2: 30.5723 N & 79.5509 E and Site 3: 30.5850 N & 79.5503 E) in the landscape. The later year has yielded even better results with more attempts around the same landscape. During the month of May, June, and July 2022, eight visits have resulted in the detection of 2–8 individuals of this species in almost all attempts.

Cheer Pheasant, Himalayan Monal Lophophorus impejanus, and Koklass Pheasant Pucrasia macrolopha are some important pheasants reported from this area. However, *C. wallichii* is uncommon and among the most elusive ones. The existing literature mentions the occurrence of this species, largely through indirect evidences near Lata village in Dhauli Ganga Valley, Painya, near Joshimath, Dhauli valley, at the junction with Rishi Ganga, in Chamoli District, and through calls in Chenab valley, and only one photographic record by a local guide recently near Lata village (Table 1).

The current record provides credible information of species' presence in certain localised pockets of NDBR. The site is rich in avifaunal diversity, harbouring several endemic species and lies in the western Himalaya endemic bird area (Stattersfield et al. 1998). Owing to its remoteness and the tough terrain, the area is not easily accessible and is well protected, thus providing a relatively undisturbed natural habitat for the species among other birds and local fauna. Unlike the mentioned preferred habitat for Cheer Pheasants in the existing literature (Ali & Ripley 1983) such as Chir Pine and mixed pine forests dominated with grasses interspersed with rocky zones, the present stretch where the species was recorded has small boulders, grasses as dominating component, shrubs as Berberis spp. and a few trees mainly of Deodar spp., Quercus spp., and dwarf *Rhododendron* spp., which may collectively provide a good habitable condition to fulfil all necessary requirements of the species.

At the first instance a pair of male and female was spotted, while another male was found



The NDBR landscape where the Cheer Pheasant was recorded. © Anand Kumar.

Year	Place	Author	Description
1974	Lata, Dhauli Ganga Valley	Shah 1980	Confirmed the presence of species but not the number of individuals sighted.
1985	Painya, Near Joshimath	Garson et al. 1992	Confirmed the presence of species but not the number of individuals sighted.
_	Near the junction point between Dhauli and Rishi Ganga	Osmaston 1921	Confirmed the presence of species but not the number of individuals sighted.
2005	Chamoli District, Uttarakhand	Bisht et al. 2005	Confirmed the presence of species but not the number of individuals sighted.
Aug 2007	Chenab Valley, Chamoli	Bhattacharya & Sathyaku- mar 2007	Confirm the presence of species by calls in dawn and dusk and secondary information.
Oct 2011	Around Joshimath, NDBR	Jan et al. 2011	Evidence claimed but numbers not re- ported.
Mar 2019	Recorded near winter village Lata	Unknown local guide	Photographic record of a pair near Lata village, NDBR.

Table 1. Previous instance of Cheer pheasant in Chamoli District of Uttarakhand.

calling in the vicinity in the same area. In the following visit to the same area, five individuals were observed gliding from the upper area to the downhill while calling. The same could not be photographed as the individuals disappeared down in between the bushes, though the call of three to four individuals were heard prominently for a few minutes. Though the species has been reported previously from NDBR, this record is notably the most persuasive direct evidence as per our knowledge, till date. Recording Cheer Pheasant on consecutive days in three trails walked in the same area hints towards a stronghold of this rare species along the NDBR landscape. A fair number of individuals observed during the month of May in each attempt probably reflect that habitat components and quality in terms of dense ground cover, rocky crags, and rough terrain along with tall grasses as a refuge from predator, may be supporting a healthy population of the species in certain mosaics. Further with very low human interference, the landscape may also favour good reproductive output and better chances for their survival. However, these may be premature assumptions for the current data set; these certainly provide compelling evidence to build further studies in the distribution pattern, population size, microhabitat preferences and breeding habitats for Cheer Pheasant in NDBR.

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A study on Black-headed Ibis at Naxalbari, foothills of Darjeeling, West Bengal



Black-headed Ibis flock of adults & sub-adults. © Antara Paul.

In the year 1990, a group of bird watchers from Siliguri (district Darjeeling, West Bengal) identified a breeding colony of the Blackheaded Ibis *Threskiornis melanocephalus* (BHI) at river bed of Mechi situated in the Indo-Nepal border and other two places of Naxalbari block of Darjeeling District (Animesh Bose pers. comm.). In September 2019, a birder team of Himalayan Nature & Adventure Foundation (HNAF), Siliguri, initiated a preliminary study at Naxalbari and its adjacent areas.

The population study started in April 2020 at the beginning of nesting season. This area is the only known breeding site for the species at northern Bengal (comprising 6 districts of northern parts of West Bengal) till date. BHI is a wading bird. It is protected under Schedule IV of the Wildlife (Protection) Act, 1972 of India, and has now been categorized as 'Near Threatened' by the IUCN Red List (Bird Life International 2016).

They are easily identified by their white plumage throughout their body, dark black head, neck & legs, and dark black downward curved beak. The black colour of the neck is quite dull in the juveniles and sub-adults. The adults are about 65–73 cm in length.

Morphologically, males and females are similar. During breeding time, a red patch is observed under the wings of both sexes, even a red patch is also observed on the hind neck of some birds

#200 21 June 2023



Colonial nesting. © Antara Paul.



Foraging. © Debojyoti Dey.



Black-headed Ibis with Red patch on the neck. @ Antara Paul.

(Kannan et al. 2010). Moreover, the adult male shows darker grey colour tertials. The juvenile and sub-adults do not show any variation despite the immature plumage (Ali & Ripley 1983).

The study was conducted round the year at Naxalbari. The area comprises large agricultural fields, marshy lands, perennial water bodies, rivers- Mechi, Changa, & Manjha, and degraded forest areas.

During the study, the nesting trees were recorded and the foraging areas in and around the village area (within a 20 km radius) were covered. The nesting habitats were observed by the point count method. The foraging was observed in the territorial count method. All observations, with the help of binoculars and DSLR with telephoto lenses, were made from sufficient distance without disturbing the birds. Parameters recorded werenesting tree species, nest heights, nesting materials, distance to human habitation, distance to foraging area(s) and communal nesting with other birds.

It was observed that each year, in early March, they arrive in the area and build nests only on 4-5 trees with large canopies despite the presence of other trees with large canopy. The trees were White Fig (Beng. Pakur, *Ficus* sp.), Banyan (Beng. Bot, *Ficus benghalensis*), Mango (*Mangifera indica*) and one was a mixed canopy formed by White Fig and Banyan. All the trees were located in populated areas of the village. Their nests were often associated with herons and egret species. They used twigs, sticks, grass, straws and threads as nesting materials (Senma & Acharya 2010). It was observed (120 nest observations) that both male and female of a pair of BHI were engaged to build a nest.

Egg-laying started from the last week of March which was extended even in the last week of May by some pairs. The average clutch size (observed nest 120) was 2–3 per nest. Eggs were oval in shape and chalky white with light blue-green shades.

The incubation time was 26 days on an average (n = 120). Both males and females were engaged in incubation.

Both the male and female were engaged in carrying food and feeding the juveniles. From July onwards, fledgling has been started in some flocks. The flocks stayed here till the juvenile fledge and start foraging with the adults. By the first week of October, the Ibis flocks with new juveniles moved away from the place. But, exact place of their next destination is still unknown.

Our observations suggest that the Naxalbari block is a suitable area for breeding and foraging of BHIs. In the year 2020, the total number including adults, sub-adults and juveniles was about 465. In the year 2021, the total number counted was around 350. Whereas, in 2022, the number was about 400 in total.

The observations continue the year 2023. At present, the habitat of BHIs is threatened due to the drastic loss of nearby agricultural lands and water bodies, pollution caused by chemical pesticides and fertilizers used in the agricultural fields, polluted water bodies and biotic pressure.

The urgent and positive steps to conserve that 'Near Threatened' species should be initiated that could sustain the harmony in human beings and nature.

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Eastern Grass Owl in Tinsukia District, Assam and its records in northeastern India



Eastern Grass Owl Tyto longimembris sighted in the Laina Village, Talap of Tinsukia District. © Imon Abedin.

On 2 January,2022, I went to the Talap area (27.7053 N & 95.5036 E, 120 m) of Tinsukia District, Assam, in search of the Eastern Grass Owl *Tyto longimembris*. At 1600 h, I arrived and began hiking over the grassland environment, crossing a stream on my approach to the location where the bird had been previously sighted. I waited for an hour till nightfall. Four birds suddenly took flight from the dense short grass and hovered over me for approximately two minutes before vanishing back into the impenetrable grasslands. With searchlights, I began looking for it in the vast grassland. I eventually located one bird resting on the floor and photographed it after a brief search. I saw the individual for around three minutes using an 8x40 binocular and documented using a 400 mm lens without disturbing the bird.

I identified it as the Eastern Grass Owl *Tyto longimembris* also known as Australasian Grass Owl (Grimmett et al. 2011). It was similar in size and structure to a Barn Owl *Tyto alba*, with dark eyes and a whitish face and underparts. It had dark upperparts and contrasted more with the underparts than the Barn Owl *Tyto alba*, being more heavily marked with dark brown (especially on the crown and scapulars)

Sighting No.	Area	Year	Sighted by	Source
1	Near Nameri National Park, Assam	2016	Barooah, C. & L. Sarma	India Biodiversity Portal
2	Tsudowong, Nagaland	2019	Members of Pungro Area College Students' Union (Rescued)	East Mojo (Report by M. Ambrocia on 6.ii.2019)
3	Moirang, Manipur	30.i.2020	Munsi, E.	eBird
4	Loktak Lake, Bishnupur, Manipur	15.ii.2020	Thangaraj, H.	eBird
5	Loktak Lake, Bishnupur, Manipur	25.ii.2020	Sawant, S.	eBird
6	Laina Gaon, Talap, Tinsukia, Assam	2.x.2021 24.x.2021 28.xi.2021	Sonowal, A., A. Saha, A. Kothiala.	eBird
7	Saikhowa Ghat, Tinsukia, Assam	29.xi.2021	D'Souza, F.	eBird
8	Laina Gaon, Talap, Assam	2.i.2022	Abedin, I.	Author's Observation
9	Sadia, Assam	4.i.2022	Changmai, K. (Rescued)	Wildlife Trust of India & Forest Department, Assam
10	Baghjan, Assam	22.xii.2021	Changmai, K.	Wildlife Trust of India & Forest Department, Assam

Table 1. List of sightings in northeastern India based on eBird and other sources



Map showing all the sighting locations of Eastern Grass Owl *Tyto longimembris* in northeastern India.

and golden-buff (particularly on the nape). Further, it has dark barring on flight feathers, with a prominent golden-buff patch at the base of primaries

contrasting with the dark carpel patch and primary tips, and a dark-barred white or buff tail, which usually contrasts with the dark upper tail-coverts. The legs were longer and only feathered halfway down the tarsus. The upperparts are mottled rather than streaked, while the bill is pale (Ali 1996).

The primary diet of the owl is found to be rodents, and it helps in the control of these pests significantly. This owl prefers tall grasslands and swamps. Roost areas consist of flattened vegetation within systems of "tunnels" through the swamp vegetation. Nesting is in a similar situation. It is considered the "Least Concern" globally, primarily because of its wide

distribution. Within Australia, it is considered Vulnerable under the New South Wales Threatened Species Conservation Act—1995 (Fitzgerald & Thorstensen 1992).

The Eastern Grass Owl *Tyto longimembris* is very rarely sighted in the country. In northeastern India, it is only known to have been sighted in the Bishnupur area of Manipur. But in recent years, there have been quite a number of sightings in Assam (especially in the Tinsukia District) and some other northeastern Indian states.

I also found two nests from prior years, as well as a fresh nest that will almost certainly be utilised for breeding this year. The existence of young suggests that the species has been able to reproduce effectively. This will also help to maintain the ecological balance of the local rodent population.

This was one of the most spectacular sightings of the year, and the bird is now frequently sighted. The growing number of birdwatchers and the rise of avian tourism have greatly assisted in the discovery of these previously unknown species in the country's remote areas.

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Report

The launch of 100CEAN, the marine programme, by Zooreach



I, Dr. Monta Ray, the official mascot of IOCEAN, inspired from the elegant, sleek, powerful and versatile manta ray, have just returned from the first conference-cum-workshop on ocean literacy for teachers in India hosted by Zoo Outreach Organisation. I must say, it was quite an eventful and successful day!

Dr. Monta Ray.

the Zooreach team from preparing a mini activity book and booklet related to the ocean, collecting workshop supplies, setting up presentation materials, and inviting marine experts to designing the venue. And, after many days of anticipation the day finally arrived on 26 May 2023.

Six schools from Coimbatore participated with 20 teachers all geared up to attend the conference-cum-workshop. They trickled in one by one, eager to learn and



10CEAN (Ocean Conservation **Education Action** Network), the marine program launched by Zooreach works on sustainable fishing, reducing bycatch, understanding shark and ray hunting, marine conservation, and ocean education. I witnessed firsthand the hard work put up by

Report

education



Experts sharing their knowledge and expertise with the audience.





engage with the educators and experts. The teachers were a diverse group, teaching multidisciplinary subjects and represented from international to state boards who brought their unique experiences and perspectives to the table.

To kickstart the event, Dr. Sanjay Molur, Executive Director, Zooreach introduced the program and said, "Each one of us is being influenced by the ocean be it weather, agriculture or drinking water. This knowledge is best communicated by teachers to their students as not a co-curricular activity but as a core curricular activity". This was followed by an ice breaker session. A fun game called 'Swim like a fish and find



education

Report

your friend to talk to' was played for the ice breaker session by wildlife educators Payal Molur and Tandrali Baruah. This got everyone mingling and excited for what was to come.

The Zooreach team along with the marine experts invited for the talk took turns leading each session, sharing their knowledge and expertise on the subject matter. We covered various topics ranging from a talk by Dr. A. Biju Kumar, head, Department of Aquatic Biology, University of Kerala, who gave an introduction to the mesmerizing world of ocean. The crowd was astonished by the number of species inhabiting the marine ecosystem.

Dr. S.R. Ganesh, director of research, Kalinga Centre for Rainforest Ecology, took the teachers into the world of marine reptiles and their conservation. One of the key learnings from his presentation that amazed the crowd was that true sea snakes don't lay eggs at all. They give birth to live young ones, and cannot travel on land except for sea kraits. Mr Parveen Rozario, a young researcher from a traditional fishing community spoke about fishing in his family, his ongoing study on sharks and his inspiration to work in the marine field to save them.

One of the highlights of the conferencecum-workshop was that the teachers were about to meet not only me but also touch and see my friends like crabs, starfishes, molluscs & their egg cases, shrimps, shark scales, shark tooth, and sea urchins. The teachers were skeptical about what they would see because of the smell. However, the skepticism turned into intrigue and finally to surprise as they looked at the diverse array of my marine friends before them.





Rakhi tying ceremony with the participants.



Marine specimens seen under the microscope.



One ocean, one passion, one incredible group of people.

The last session was conducted by our team's very own marine researchers Priyanka Iyer and Usha Ravindra whose marine work profile varies from working with sharks and rays, sea cucumbers to working with fishing communities. They spoke in length about bycatch. Each presentation was informative, interactive, and well-executed and the discussions that followed each presentation were insightful and thought-provoking, spurring even more ideas and solutions

networking among the attendees and at the same time provided knowledge about the ocean. The games and activities showcased how the information could be multi-disciplinary and used across different curricula in schools. One such activity was the marine species hunt assessment, where each teacher was given a marine species card and was asked to place the cards in different depths of the ocean that was displayed on the wall.

LOCEAN -TEAM : ABIGTQ

These were my thoughts from day I realised -" why

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will bell the cat ...

I WHO WILL BEAL THE

these people don't understand.

"Now I know - how know

Peppered between the presentations and workshops, the teachers were taken through some fun activities and games by wildlife educators Tandrali and Payal. This helped to create a relaxed and welcoming atmosphere that fostered collaboration and

Thoughts and feedback shared by the teachers.

Zoo's Print

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At the end of the session the game was redone so as to assess whether there had been any change in their knowledge base of where animals lived in the ocean. The last game of the day was to drive home the threats that our ocean is facing and more importantly how human actions can change the negative implications. Actions that every child can easily incorporate into their lives. The teachers brainstormed ideas and gave some extremely valuable suggestions to improve the health of my home, the ocean.

The event ended with the 'create your own June 8th program' where everyone got the chance to design their own program on World Ocean Day. Lastly, glow bottles were given out and everyone had the chance to have a look at the bottles and write down their thoughts about the whole event. The educators wrote down their feelings in the sticky notes.

Overall, the conference-cum-workshop was a great success. It was truly a team effort that yielded great results and we hope to continue this collaboration in the coming months through various activities, programs, and events related to the ocean. This event also opened the discussion to co-create an ocean literacy manual with the educators that is multidisciplinary and easily adapted to the school curriculum. So, if you want to learn more about our conference-cumworkshop experience or about 10CEAN, be sure to contact us on http://locean. zooreach.org/. Stay tuned! A big thank you to the conference audience, Rucha Vinod Pendke Avachat, Ravi V, Sriuma V, Aswathi A, Nachiketh Ashok from CS Academy, M. Leelarani, Lidwin Esther P, Sruthi M. from Global Pathways Matriculation School, Gomathy from KSIRS, Sridevi E, Sushmitha Kumar from The NGP School, Nivetha, Brintha. M, Shilpa. S, Priya Kartik, Jayasheela G from Vivekalaya Matriculation Higher Secondary School, and Soundharya R, Swarnalatha R, Manju R. from Vivekalaya's Prakriya International School for enthusiastically participating in the event.

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Tandrali Baruah

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Report

World Ocean Day Awareness Programme



Every wave and every tide holds the power to recharge our lives. World Oceans Day is observed on June 8th every year to spread awareness among people regarding the significance of Oceans and the importance of preserving and conserving Oceanic resources.

Grade 8 students of CS Academy celebrated the day by inaugurating an awareness programme on "Ocean Education and Conservation".

Adithya Midhun, Antony Hansel, Rishabh and Samritha of grade 9 were instrumental in sharing the resources with their juniors who actively participated with reasonable questions.

The session focused on the theme of the year "Planet ocean: tides are changing" and exchanged ideas on conserving marine species to mitigate climate change. Anticipating a lot of participation from the students in the ongoing activities for this year.

Submitted by CS Academy, 262 VLB Engineering College Road, Kovaipudur, Tamil Nadu 641042, India.







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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.

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.

Editorial details

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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