ZOO'S PRINT

Communicating science for conservation

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Contents

Cover photo: Chestnut-tailed Starling. © Shyamal Saikia

40 zooreach Zoo Outreach Organisation years

THE PROTECTORS: TREE GUARDS

I still remember those days during installing tree guards on the restoration sites; we faced a series of unexpected challenges. There were no labours and mules that usually helped with transport; they were already engaged in other tasks. On top of that we had a strict deadline to complete the task on time. To make matters worse, heavy rainfall caused landslides, cutting off road connectivity. The reason was urgent, the shepherds were about to move their flocks from upper hills to the lower areas. If the saplings were left unprotected, the goats and sheep could destroy or graze the entire saplings in a single walk.

Waiting for help was not an option; the tree guards had to reach the plantation area somehow. So we took the responsibility ourselves, we carried tree guards by ourselves, walking without any load itself felt nearly impossible but with heavy tree guards on our shoulders every step became a struggle. The path was rough, the slopes unforgiving and there was no one else to share the weight.

Most mornings, we started with nothing more than a cup of tea, coffee and a few pieces of toast, biscuits, and bread. That was the only fuel. After hours of hauling the tree guards and transferring those to the plantation/ restoration sites, our body felt completely drained, legs trembled, shoulders ached and even standing still felt like work.

HRP-Anecdotes

By the time we reached the field station, exhaustion took over. Cooking a proper meal felt harder than the climb itself, yet we forced ourselves to prepare food because there was no other option. On some days, we didn't even have the strength for that, we simply lay down and fell asleep without eating, our bodies surrendering to fatigue. Those moments taught us the true meaning of endurance. It wasn't just about planting saplings or placing tree protectors: it was about pushing forward despite hunger, exhaustion and impossible terrain driven only by commitment and resilience.

Sachin Verma, Himalayan Restoration Project
Zoo Outreach Organisation

Citation: Verma, S. (2025). The protectors: Tree guards. *Zoo's Print* 40(12): 01–02.

MULES: THE SILENT HELPERS

In Himalayan Restoration Project, the most dedicated conservationists do not attend meetings, don't ask for incentives and definitely don't give speeches. They are the mules.

In the morning while we argue about routes, weather, and chai breaks, the mules quietly line up for duty. Each mule carries a precious load of 40-45 saplings carefully packed like green passengers, heading towards a new life. The exact numbers depend on the path – steep trails get fewer saplings while smoother routes get more saplings. The mules, however, never complain. No. "is this in my job description and overtime pay?" Nothing! The funniest part is, the mules have absolutely no idea how they play a significant role for saving the Himalaya.

They don't know about climate change, biodiversity loss or ecological restoration. They think they are just going for another walk with leafy luggage. Yet step by step they transport future forests from nurseries to restoration sites. They demand no salary, certificates, appreciation posts on social media, they don't even ask for credit. They just walk, chew and occasionally give us looks that say, "Why are you walking so slowly?" So while we proudly call ourselves conservationists, the real silent heroes are the mules, unknowingly helping plant future forests.

Sachin Verma, Himalayan Restoration Project
Zoo Outreach Organisation

Citation: Verma, S. (2025). Mules: The Silent Helpers. *Zoo's Print* 40(12): 03–04.

WHERE TREES GROW AND TRUST TAKES TIME

In the Himalayan Restoration Project, as community outreach member, I realised that planting trees is only one part of the work. The other part often more difficult was understanding the people who live with the land every day.

One day near Gajhnoi, our workers started digging on forest land when village women suddenly arrived, took the shovel and saplings, and asked them to leave. They told us the land was used for grazing cattle and planting trees there would affect their livelihoods. When we reached the site to talk, they stood firmly on the path and made it clear that no plantation would happen that day. I remember feeling scared, but that moment also taught me that in the hills, land comes with strong opinions and louder voices.

On another occasion, one of our stakeholders kept asking me, "You will not take my land after plantation, right?" For him, every sapling looked like the first step of a land takeover. It took many long conversations to explain that the land would always remain his and that our organisation was only there to support restoration, not claim property. That fear showed me how deeply people worry about land ownership and how slowly trust grows much slower than saplings.

Challenges like this were common. When we collected pine needles for mulching, villagers stopped us because they use them for heating their homes. Sometimes people agreed to plantation only if we planted species like walnut.

During monitoring of last year's plantation, I noticed something unexpected: some tree guards were being used as window nets in houses. It was surprising, but it also showed that in the hills, everything has at least two uses.

Yet, despite all these challenges, the community was incredibly warm. Even when they didn't know us well, people offered food, tea, and help. I was especially touched by the nursery workers' attachment to the saplings. Whenever plants were moved from the nursery to plantation sites, they felt emotional and said the nursery was becoming empty, as if their children were leaving home. In the end, I learned that trees grow better when people feel secure. Restoration does not start with planting saplings it starts with listening, explaining, and sometimes smiling through difficult conversations.

Lakshya Raj Singh Rathore
Himalayan Restoration Project

Citation: Rathore, L.R.S. (2025). Where Trees Grow and Trust Takes Time. *Zoo's Print* 40(12): 05–07.

Crushed and Forgotten

Before joining the Himalayan Restoration Project in Chamba, I carried a quiet excitement about working in the mountains. I imagined days shaped by unfamiliar plants, new people, and the richness of Himalayan biodiversity-an experience that felt deeply personal to me as a botanist. But on my very first day in the field, that picture began to fracture. During what was meant to be a routine roadkill survey, I came across dead amphibians and reptiles scattered along the roadside. Then I saw a Russet Sparrow. Its small, still body lay among them, and something inside me shifted. Since childhood, I have been fond of sparrows-watching them, leaving out food and water whenever I could-and seeing one lifeless on the road felt deeply heart-wrenching. What I had imagined as a scientific exercise suddenly became heavy, intimate, and unsettling.

As the weeks passed, Mondays no longer brought anticipation but a quiet weight. Each roadkill survey with Amrin revealed more lives lost-reptiles, birds, amphibians-silent witnesses to the way roads slice through living landscapes. Seeing wildlife this way does something to you. It dulls the beauty of the mountains and replaces it with a persistent ache, a sense of helplessness mixed with responsibility. These were not rare accidents; they were patterns, repeating themselves day after day.

Not every encounter ended in loss. Once, we rescued a Russell's Viper from the roadside, carefully guiding it back into cover. Another day, I noticed a shrew that was still alive, slowly attempting to cross the road-small, fragile, yet determined. Just then, a speeding Alto appeared out of nowhere. In a split second, the shrew was thrown into the air and landed lifeless on the asphalt, taking its final breath right in front of me. I stood frozen, painfully aware that moments earlier I might have saved it. That realization still weighs heavily on me. Experiences like these sometimes leave behind a deep numbness-a quiet grief that words struggle to carry.

Gradually, my understanding of the Himalaya began to change. Beyond their breathtaking beauty lies a quieter story of conflict, vulnerability, and resilience. These mountains are not untouched; they are negotiated every day by people, vehicles, and wildlife trying to coexist. What troubled me most was how preventable many of these deaths felt. A slower vehicle, a moment of attention, a simple reminder that these roads are shared spaces could mean the difference between life and death.

Witnessing wildlife loss demands more than documentation; it calls for change. Careless driving through ecologically sensitive areas is not merely a traffic issue-it is an ecological one. If we truly value these landscapes, we must move through them with care, awareness, and respect. The mountains are alive, and the lives that cross their roads deserve our attention.

Lakshay Tyagi
Himalayan Restoration Project

Citation: Tyagi, L. (2025). Crushed and Forgotten.
Zoo's Print 40(12): 08–09.

An August of waiting

It began with nothing unusual—just a light August rain and conversations about the next day. By morning, the rain had turned relentless. Thunder shook the hills, electricity went out, and soon even our phones went silent. The world shrank quickly when there was no power, no network, and no way to tell our families we were safe.

Somewhere beyond our darkened rooms, news channels were running nonstop reports of the Ravi River overflowing, flash floods tearing through valleys, and cloudbursts triggering landslides across the region. Our families watched all of it unfold on their screens, fearing the worst, while we remained cut off, unaware of what they were seeing or feeling.

Days blurred into each other. Phone batteries died, power banks followed, and communication became a luxury measured in minutes. Once, the network returned just long enough to hear worried voices from home asking if we were alright. Before we could explain anything, the signal disappeared again.

With nowhere to go, we invented small distractions. We drew on each other's hands, played with clay, solved puzzles, and walked outside only to be stopped by fresh landslides.

At night, thunder roared without pause. News slowly reached us that people had died in a nearby village, buried under mud and stone. Fear settled quietly among us.

Food ran low. Milk spoiled, vegetables vanished, and survival meant letting go of preferences. We ate by candlelight, grateful for the new LPG connection we had once taken for granted. One afternoon, a rainbow appeared after days of grey, and for a moment, hope felt possible. When electricity returned briefly, we learned the roads had been washed away. We rationed meals, skipped breakfasts, and waited. Once, we rescued a pigeon from a flooded drain—an unexpected reminder that life, fragile as it was, still needed care.

When we finally stepped out for supplies, we narrowly escaped two landslides. We returned with little, but enough. And when the sun finally came out days later, power restored and silence broken, survival itself felt like a quiet victory—one we would carry with us long after the rain had stopped.

Lakshay Tyagi
Himalayan Restoration Project

Citation: Tyagi, L. (2025). An August of waiting. *Zoo's Print* 40(12): 10–11.

Ecological imbalance associated with invasive species in a pond ecosystem

Jivdaya Charitable Trust (JCT), an NGO in Gujarat, India, maintains a pond measuring 40 × 25 × 2 ft for the care of abandoned water birds, and fish. The pond environment supports a dense cover of duckweed *Lemna* spp., providing a natural food source and habitat for these species. A few Red-eared Slider *Trachemys scripta elegans* were also housed in the pond.

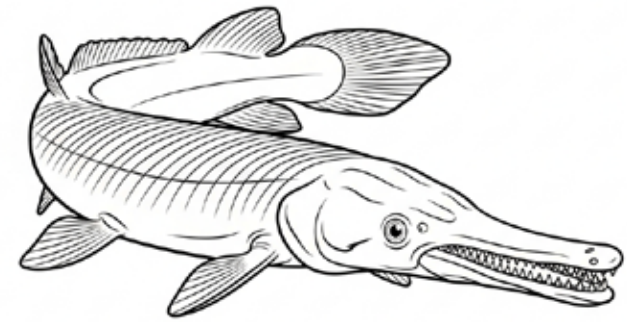
At a later stage, two Alligator Gar *Atractosteus spatula*, a predatory freshwater fish species brought by an individual unwilling to maintain them were released into the pond. This was the first time, this species was brought to Jivdaya Charitable Trust. After some time, eight abandoned Mallard *Anas platyrhynchos* chicks were brought to the trust and introduced into the same pond environment.

Regular monitoring was carried out to observe the feeding behavior and interactions between species. The number of chicks and other animals were also daily counted to detect any changes in population. The Mallard chicks quickly adapted to the pond, feeding on the abundant duckweed in the pond. On the third day of their arrival, a Mallard chick was missing. Since some time back, the area suffered the rat menace, the rat was considered culprit and accordingly preventive measures were undertaken. In spite of care and watch, the caretaker observed further disappearance of two more chicks in subsequent days. No carcass residue or evidence of relocation was noted but the Alligator Gar was frequently observed making sudden movements near the chicks, especially when the chicks entered deeper water. Based on these observations and the absence of other possible causes, it was concluded that the predatory fish were responsible for the loss of the chicks.

Initial ecosystem

The pond was inhabited by two Alligator Gars, which are predatory fish known for their aggressive hunting habits and carnivorous diet.

The Alligator Gar preys upon almost anything that will fit into its mouth, including smaller fish, turtles, birds, and even small mammals (Laird and Page, 1996). The Alligator Gar plays a crucial role in controlling the population of smaller fish and maintaining a balance within the aquatic food web. By preying on herbivorous fish, Alligator Gar can indirectly affect the vegetation in the pond, including the growth of aquatic plants. Laird and Page (1996) explained the diet of Gar and understanding of the



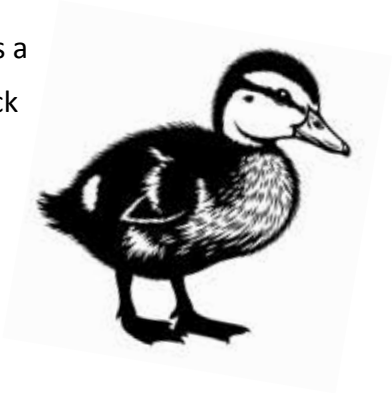
ecological impact of Gar on prey populations and on the overall fish community.

Turtles often feed on the bottom of ponds but also consume aquatic plants, small fish, and invertebrates. Their feeding and movement can help in the cycling of nutrients in the pond, aiding in the breakdown of organic material and maintaining water quality.

Duckweed is a primary producer, playing a crucial role in the pond's food web. It provides food for various herbivores, including some fish and invertebrates. Duckweed also very much perished by the Mallard chicks. Landolt & Kandeler (1987) explained role of duckweed in nutrient cycling. Sue & Dumax (2005) also highlighted the effectiveness of duckweed in absorbing excess nutrients and improving water quality.

The inclusion of multiple species of different feeding habits in a pond may disturb the ecological balance in the following ways.

Competition for resources: The introduction of the Mallard chicks created a new dynamic in the pond. That gave rise to competition for resources. The Mallard chicks along with turtles rapidly started consuming duckweed while the chicks became a new source of prey for the Alligator Gar. As a result, the Mallard chick population began to decline due to predation by the gars. Three chicks were lost due to predation.



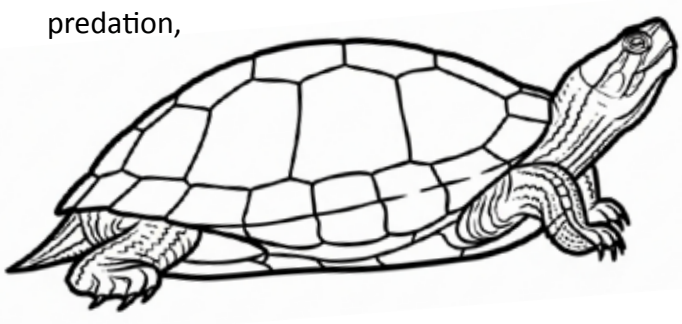
Bonvechio et al (2012) highlighted the importance of Alligator Gar in regulating fish populations and maintaining ecological balance in lake.

The presence of turtles: The presence of Red-eared Slider further complicated the ecosystem. Turtles are omnivorous and can feed on a variety of foods, including aquatic plants, insects, and small animals. This led to increased competition for food resources among the turtles, duck chicks, and gars. Ernst et al. (1994) discussed the ecological roles of turtles, including their feeding habits and impact on aquatic ecosystems.

Ecological imbalance: The primary issue of ecological imbalance arose from the introduction of Alligator gar preying on the Mallard chicks.

Impact of intervention: removal of Alligator Gar

Removal of the Alligator Gar from the pond aimed to protect the Mallard chicks from predation,



allowing them to feed on the duckweed and grow well. Continuous monitoring and adaptive management are essential to ensure long-term ecological balance in any ecosystem.

Therefore, following steps be considered.

Regular monitoring: Keep track of population dynamics of all species in the pond to detect any signs of imbalance early.

Stop introductions: Future introduction of new species should not be carried out to avoid any potential ecological impacts.

Habitat management: Implement habitat management practices to support the needs of all species and maintain a healthy ecosystem.

Conclusion

The case study showed that the introduction of an invasive predatory fish such as Alligator Gar into a confined pond can disturb the ecological balance and threaten the survival of other species, such as Mallard chicks. Even though the pond had sufficient natural food resources like duckweed, the presence of a strong predator changed the survival outcome.

This case highlights the importance of careful species management in captive or semi-natural habitats. Introducing non-native predators without ecological assessment can create serious risks for local or abandoned animals that depend on the same environment.

References

Bonvechio, K.I., M.S. Allen & D.C. Gwinn (2012). Impacts of Largemouth Bass predation on fish community structure in a small Florida lake. *Transactions of the American Fisheries Society* 141(5): 1250–1263.

Ernst, C.H., J.E. Lovich& R.W. Barbour (1994). *Turtles of the United States and Canada*. Smithsonian Institution Press, 578 pp.

Landolt, E. & R. Kandeler (1987). *The Family of Lemnaceae - A Monographic Study, Vol. 2: Phytochemistry, Physiology, Application, Bibliography*. Veroffentlichungen des Geobotanischen Institutes der ETH, Stiftung Rubel, 638 pp.

Laird, C.A. & L.M. Page (1996). The diet of Gar (Lepisosteidae) in the Central Mississippi River drainage. *American Midland Naturalist* 135(2): 331–336.

Su, T. & B. Dumax (2005). Nutrient removal from polluted water using duckweed in a constructed wetland system. *Ecological Engineering* 25(1): 128–134.

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Reptile Rapid
SARN
S. Asian Reptile Network
#269
21 December 2025

Record size and weight of the Western Ghats King Cobra *Ophiophagus kaalinga*

The recently described Western Ghats King Cobra *Ophiophagus kaalinga* Shankar, Das & Ganesh, 2024 is endemic to the Western Ghats of southwestern India (Shankar et al. 2021; Das et al. 2024). Till this taxonomic revision, the world's largest record size for the King Cobra was 5.6 m (18.4 ft) total length, based on an adult measured in Thailand (Aagaard 1924).

This now applies to *Ophiophagus hannah* (Cantor, 1836). Thus, we do not have any ready reckoner for information of *O. kaalinga*, with regards to its record size.

The largest reported in the original description is one measuring 3,202 mm total length (snout-vent 2,660 mm; tail 542 mm), equating to 3.18 m (10.5 ft) (Das et al. 2024).

Record sized live adult male *Ophiophagus kaalinga* rescued by the first author near Agumbe,

However, understandably, the values reported by Das et al. (2024) only allude to the minimal sample size of the specimens examined to define the newly described species *O. kaalinga*. But this population, under an obsolete name, has been well-known for so long and hence, there were certainly well-acclaimed length records of *O. kaalinga*. Shankar et al. (2013a) reported adult males (n = 79 snakes) from Agumbe to be 3.5 m (or 11.5 ft) long and 4.5 kg weight on an average. Wall (1924) reported the maximum sizes of *O. kaalinga* based on specimens measured and reported by Millard from Travancore (now southern Kerala, India), as reaching 4.4–4.7 m (14.5–15.5 ft) long in total length. Here, we report on a topotypical adult male *O. kaalinga* that topped the record values in length and weight.

On 31 March 2024, at 0915 h, we (GS, PP) rescued an *O. kaalinga* from a drain pipe near an areca farm from Nadpal Village (13.489° N, 75.067° E; 155 m) at the foothills, 5 airline km west of its type locality Agumbe. The snake was an adult male that was approximately 4.7 m (15.5 ft) in total length and weighed 12.5 kg.

Based on the past experiences of working with this genus for over two decades by the first author, the rescued snake was visually estimated to be 4.7 m in total length as physical restraint and measuring it with a tape to finer values would be both an intrusive and risky proposition. Using ImageJ software (Schneider et al. 2012) on the photo furnished here, the snake's length was deduced to be 4.24 m (14 ft), a misestimate due difference in the planes of the snake and the handler whose height was used as a yardstick for estimation.

The snake was weighed using Pesola 80020 weighing scale, after bagging it inside a standard catch bag and then the empty bag's weight subtracted from the reading. In all the 20 years of rescuing and relocating *O. kaalinga* in the Western Ghats, this was the largest we ever recorded. Previous reports from the authors' team data rarely exceeded 3.93 m (13 ft) (Shankar et al. 2013a,b). Tweedie (1954) reported on a *Ophiophagus bungarus* (Schlegel) from Singapore that was 4.77 m (15.6 ft) long and 12 kg in weight. We construe Tweedie's report as a ratification to our visual estimate equating these as the closest published values for our present case, as both these species are similar in body build (Das et al. 2024). Thus, the present observation is a noteworthy report of an extraordinarily large specimen of *O. kaalinga* surpassing 4.24 m (14 ft), reported after a century, since the days of Wall (1924). Also, this report from its type locality Agumbe is far (>700 km north) from Travancore or the southern Western Ghats (Wall 1924).

Acknowledgements
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References

Aagaard, C.J. (1924). Cobras and King Cobras. *Natural History Bulletin Siam Society* 6(3): 315–316.

Das, I., P.G. Shankar, P. Swamy, R. Williams, H.T. Lalremsanga, G.P. Sahoo, S.P. Vijayakumar, J. Höglund, K. Shanker, S.K. Dutta, S.R. Ganesh & W. Wüster (2024). Taxonomic revision of the king cobra *Ophiophagus hannah* (Cantor 1836) species complex (Reptilia: Serpentes: Elapidae), with the description of two new species. *European Journal of Taxonomy* 961: 1–51.

Schneider, C.A., W.S. Rasband & K.W. Eliceiri (2012). NIH Image to ImageJ: 25 years of image analysis. *Nature Methods* 9: 671–675.

Shankar, P.G., S.R. Ganesh, R, Whitaker & P. Prashanth (2013a). King Cobra *Ophiophagus hannah* encounters in human-modified rainforests of Western Ghats, India. *Hamadryad* 36(2): 62–68.

Shankar, P.G., A. Singh, S.R. Ganesh & R. Whitaker (2013b). Factors influencing human hostility to King Cobras (*Ophiophagus hannah*) in the Western Ghats of India. *Hamadryad* 36(2): 91–100.

Shankar, P.G. & R. Whitaker (2013). Cannibalism in wild and captive King Cobras *Ophiophagus hannah* (Cantor, 1836). *Hamadryad* 36(2): 87–90.

Shankar, P.G., P. Swamy, R.C. Williams, S.R. Ganesh, M. Moss, J. Höglund, I. Das, G. Sahoo, S.P. Vijayakumar, K. Shankar, W. Wüster & S.K. Dutta (2021). King or royal family? Testing for species boundaries in the King Cobra, *Ophiophagus hannah* (Cantor, 1836), using morphology and multilocus DNA analyses. *Molecular Phylogenetics and Evolution* 165: e107300.

Tweedie, M.W.F. (1954). Notes on Malayan Reptiles, No. 3. *Bulletin of the Raffles Museum* 25: 107–117.

Wall, F. (1924). The Hamadryad or King Cobra, *Naia hannah* (Cantor). *Journal of the Bombay Natural History Society* 30: 189–195.

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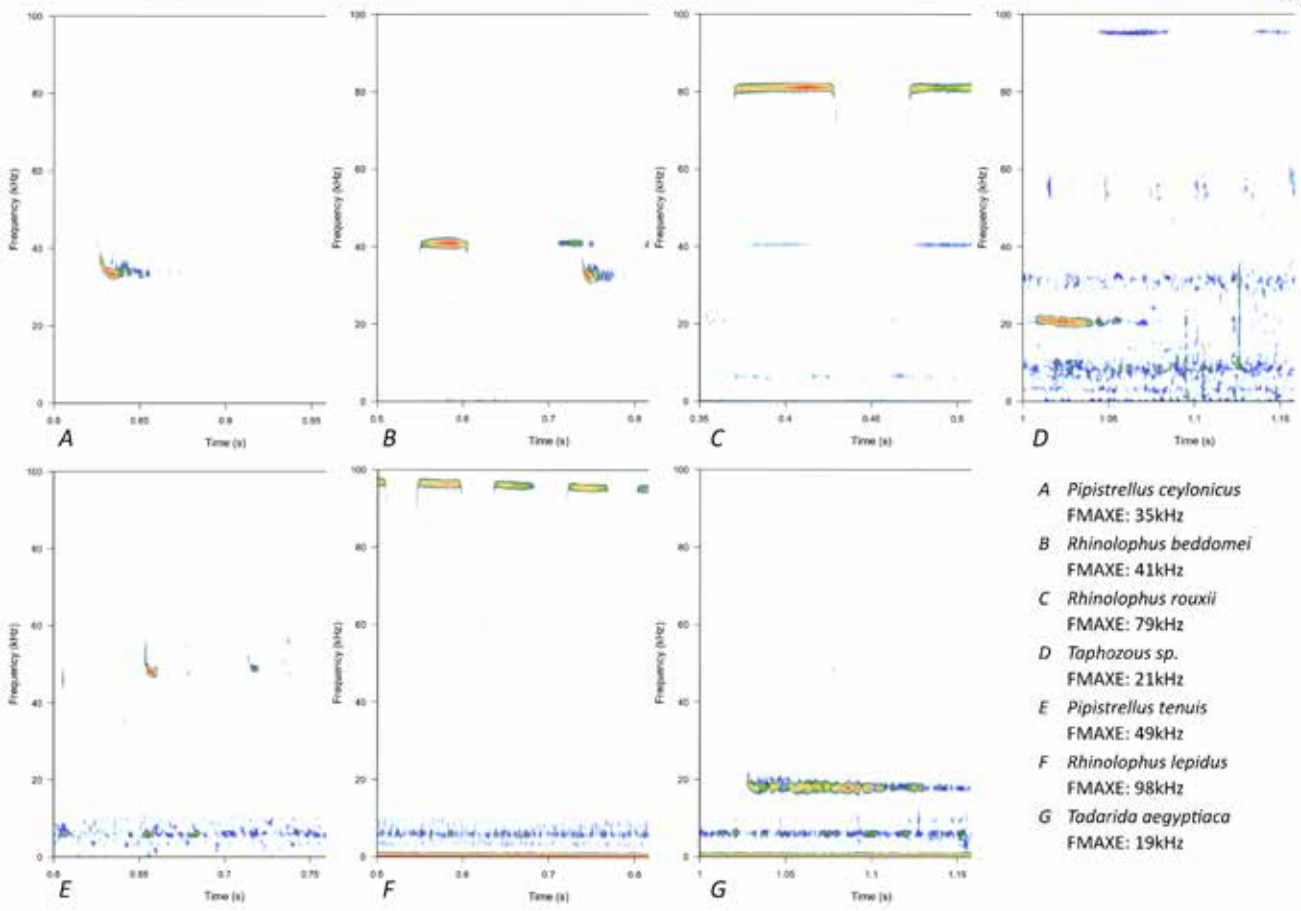
Echolocating bats at an organic coffee and spice plantation in the Western Ghats

Nestled in the heart of the Western Ghats biodiversity hotspot, Mojo Plantation in Kodagu District, Karnataka (12.47º N, 75.71º E) is a unique coffee and spice plantation that seeks to integrate sustainable agricultural practices with education, outreach, and ecotourism. Since the mid-1990s, this 25-acre site has been managed as-wild, maintaining a forest-like canopy and highly diverse undergrowth, and promoting a high diversity of pest-suppressing predator species including birds, snakes, and bats.

Despite the high diversity of bats across the Western Ghats (Srinivasulu et al. 2024), the last directed survey of bats conducted in Mojo Plantation by Molur (2009) reported only two echolocating bat species—Kelaart's Pipistrelle *Pipistrellus ceylonicus* and Least Pipistrelle *Pipistrellus tenuis*—from the plantation. However, recent passive acoustic surveys elsewhere in Kodagu District including Kushalanagara, Nisargadhama, and Makutta have indicated the presence of four additional species—Greater False Vampire Bat *Lyroderma lyra*, Lesser False Vampire Bat *Megaderma spasma*, Srini's Bent-winged Bat *Miniopterus srinii*, and Peyton's Myotis *Myotis peytoni*—hinting at a much richer bat diversity in the

Detectors used in the survey: Pettersson u384 and Wildlife Acoustics Echo Meter Touch 2 Pro (left), and Pettersson D500x in situ (right).



Spectrograms of the seven echolocating species observed on the site.

region than hitherto known (Srinivasulu & Srinivasulu 2023; Srinivasulu et al. 2025).

From 14–17 November 2025, the Zoo Outreach Organisation conducted a field visit as part of the Ram Hattikudur Advanced Training in Conservation course to the Rainforest Retreat at Mojo Plantation. As part of this visit, we assessed the diversity of echolocating bats in and around the plantation including by the Kalur River (a tributary of the Kaveri) around 4 km away using passive acoustic monitoring of echolocation calls.

Bat echolocation calls were recorded on the nights of 14th and 16th November using one stationary ultrasound detector: Pettersson D500X (500 kHz sampling frequency); and two mobile ultrasound detectors: Pettersson u384 and Wildlife Acoustics Echo Meter Touch 2 Pro (both at 384 kHz sampling frequency). The mobile detectors were used in conjunction with smartphones at various locations in and around the plantation and by the river, while the stationary detector was placed in a large clearing facing southwards into the main plantation area. Recorded bat calls were analysed using Wildlife Acoustics Kaleidoscope Pro and visualised using the Seewave package (Sueur et al. 2006), and call type and parameters were compared to Srinivasulu et al. (2025) for identification.

Apart from confirming the continued occurrence of *Pipistrellus ceylonicus* and *P. tenuis* in the area, echolocation calls from these surveys indicated the confirmed presence of at least five other species: Beddome's Horseshoe Bat *Rhinolophus beddomei*, Blyth's Horseshoe Bat *Rhinolophus lepidus*, Rufous Horseshoe Bat *Rhinolophus rouxii*, Egyptian Free-tailed Bat *Tadarida aegyptiaca*, and an unidentified tomb bat *Taphozous* sp. Three unknown frequency-modulated (FM) and two unknown frequency-modulated with quasi-constant frequency (FM-QCF) signals were also observed, but could not be reliably identified to genus- or species-level, indicating a yet higher diversity of echolocating bats in this region. We also observed the Indian Flying Fox *Pteropus medius* overhead, and found scat traces of the Greater Short-nosed Fruit Bat *Cynopterus sphinx* on the site – including these, the current confirmed bat diversity in and around Mojo Plantation is nine species of six genera, with four more species likely to exist but currently unconfirmed.

This survey demonstrates the use of passive acoustic monitoring to inventory bat species diversity in a region while also highlighting the need for strong comparative datasets like Srinivasulu et al. (2025), especially when studying these little-known and less-studied species in a biodiversity hotspot such as the Western Ghats.

References

Molur, S. (2009). *Habitat and status assessment of mammals with special reference to rodents and bats in southern Karnataka.* PhD Thesis. University of Mysore, 230 pp.

Srinivasulu, A., M. Zeale, B. Srinivasulu, C. Srinivasulu, G. Jones & M. González-Suárez (2024). Future climatically suitable areas for bats in South Asia. *Ecology and Evolution* 14(5): E11420. https://doi.org/10.1002/ece3.11420.

Srinivasulu, A., C. Srinivasulu, B. Srinivasulu, D. Senapathi & M. González-Suárez (2025). Bat echolocation in South Asia. *Journal of Threatened Taxa* 17(11): 27897–27931. https://doi.org/10.11609/jott.9550.17.11.27897-27931.

Srinivasulu, B. & A. Srinivasulu (2023). A new species of the *Miniopterus australis* species complex (Chiroptera: Miniopteridae) from the Western Ghats, India. *Zootaxa* 5296(2): 233–249. https://doi.org/10.11646/zootaxa.5296.2.5.

Sueur, J., T. Aubin & C. Simonis (2006). *Seewave*: Sound Analysis and Synthesis. [R package].

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Few colour aberrant birds seen in Majuli Island, Assam

The Majuli Island (26.75°–27.20° N, 93.65°–94.58° E, 84 m) is formed by the river Brahmaputra, Subansiri, Lohit, and Kherkatia Suti (a small anabranch) has an area of about 352 km^2. Majuli is assessed as an Important Bird and Biodiversity Area (IBA) in 2004 and as a Biodiversity Heritage Site (BHS) in 2019 (Saikia & Choudhury 2023).

Abnormalities in plumage pattern is common in birds and caused by various factors like mutation, diet, age, disease, parasites, injury, food deficiency and other environment related factors (Guay et al. 2012; Mahabal et al. 2015; van Grouw et al. 2016). Across the globe there are several reports of colour aberrant birds, as there is a long list of fascinated people (Van Grouw et al. 2016; Zbyryt et al. 2021). The major type of colour aberrations seen in birds are: albinism (complete absence of melanin caused by absence of tyrosinase enzyme), leucism (partial or total absence of melanin caused due to absence of pigment cells), progressive greying (partial or total absence of melanin caused by loss of pigment cells with age), melanism (increased melanin production and deposition), ino (decreased qualitative production of melanin), brown (incomplete production of eumelanin), and dilution (decreased production of melanin quantity), which are caused due to abnormal pigmentation (van Grouw 2013; van Grouw et al. 2016).

In Assam, there are a few recent reports of colour aberrant birds. Notable records include colour aberrant Cattle Egret from Guwahati (Abraham 2018); colour aberrant Coppersmith Barbet *Psilogon haemacephalus* from Lakhimari (Gayen et al. 2022); partial leucistic Eurasian Wigeon *Mareca penelope* from Pobitora Wildlife Sanctuary (Choudhury 2023); leucistic Fulvous Whistling-Duck *Dendrocygna bicolor* from Guwahati (Mahananda et al. 2024); brown Red-vented Bulbul *Pycnonotus cafer* from Kamrup District (Thapa et al. 2023); colour aberrant Spotted Dove *Spilopelia chinensis* from Nagaon (Bora et al. 2024); and a melanistic Indian Pond Heron *Ardeola grayii* from Guwahati (Choudhury 2024). In this article we report few colours aberrant birds seen in Majuli Island, Assam.

Jungle Myna *Acridotheres fuscus*

A colour aberrant Jungle Myna *Acridotheres fuscus* was seen on 10 November 2023 in the Jugunidhari area (26.925° N, 94.126° E) of Majuli at about 0550 h. The bright white head grabbed our attention as the bird was foraging near cattle along with other birds. Typically, Jungle Myna has glossy black head, neck and cheeks, with brownish-charcoal upperparts,

Leucistic Jungle Myna *Acridotheres fuscus*. © Shyamal Saikia.

which gets paler towards the rump with yellow iris, orange bill along with waxy orange legs (Craig 2020). The individual that we found had a white head, neck and cheeks along with white breast, belly, back and vent. The bird had regular slaty grey sides, brownish-black wings and tail, yellow-coloured eyes, orange bill and waxy orange legs (Craig 2020). So, it was identified as a 'leucistic' individual according to the classification described by Van Grouw (2013). In India, leucistic Jungle Myna was previously reported by Nandy (2019) from West Bengal.

Chestnut-tailed Starling *Sturnia malabarica*

In the Kamalabari area of Majuli Island (26.948°N, 94.157°E) a Chestnut-tailed Starling *Sturnia malabarica* is regularly seen 13 April 2020 onwards with abnormally coloured belly. The bird has patches of white in its belly which is not normally seen. Normally, Chestnut-tailed Starling has a brownish-orange belly and rump along with white and silver grey head and neck, grey upperparts and black wingtips (Craig 2023). It is often seen with its mate in the area. According to van Grouw (2013) classification, the individual is identified to have leucism. To the best of our knowledge there is no previous report of colour aberrant Chestnut-tailed Starling.

Partial leucistic Chestnut-tailed Starling *Sturnia malabarica*. © Shyamal Saikia.

Greylag Goose *Anser anser*

Rambolia Beel (wetland) (26.916° N, 94.263° E) of Dakhinpat Majuli is congregated by thousands of waterfowls during winters (Hazarika & Saikia 2023). Large flocks of Greylag Goose *Anser anser* are regularly seen foraging near wetland. On 17 January 2021 while surveying the wetland birds of the area an unusually coloured Graylag Goose was seen

Brown Greylag Goose *Anser anser* foraging with normal-coloured individuals. © Shyamal Saikia.

among the flock. Few photographs were taken and it was later identified as a Brown individual. The bird had overall whitish body with some light brown on the wings. Greylag Goose normally has grey coloured plumage with pink, orange or pinkish-orange bill and legs (Carboneras & Kirwan 2020). There are reports of leucistic Greylag Goose from India (van Grouw et al. 2016) but there is no report of any brown individual.

Lesser Whistling-Duck *Dendrocygna javanica*

Chakuli Beel (wetland) (26.935° N, 94.141° E) is another important wetland of Majuli Island, where numerous wetland birds are regularly seen. Hundreds of Lesser Whistling-Duck *Dendrocygna javanica* along with other waterfowls are seen in this wetland. On 03 December 2021 a completely white Lesser Whistling-Duck with pink legs and eyes was seen in the beel. The bird was observed with a pair of binoculars but was too far for the camera to get a good photograph. Looking at the colouration the individual was identified as an 'albino' Lesser Whistling-Duck. Normally, Lesser Whistling-Duck has overall uniform brown plumage and wings with black bill and legs (Carboneras & Kirwan 2020a). Albino and leucistic individuals of Lesser Whistling Duck are previously reported from India (van Grouw et al. 2016; Gayen et al. 2021).

Previous reports of 'brown' Geylag Goose and 'leucistic' Chestnut-tailed Starling are scarce in the literature. There are a few reports of colour aberration in Jungle Myna and Lesser Whistling-

Albino Lesser Whistling-Duck *Dendrocygna javanica*. © Shyamal Saikia.

Duck (van Grouw et al. 2016; Nandy 2019; Gayen et al. 2021). Although the abnormalities in bird plumage colouration are not rare (Guay et al. 2012; Mahabal et al. 2015; Van Grouw et al. 2016), continued documentation of these birds can help to find the underlying cause and their ecological implications.

Abraham, L.M. (2018). A colour aberrant Cattle Egret *Bubulcus ibis* in Guwahati, Assam. *Indian BIRDS* 14(2): 57–58.

Bora, N., C. Bora, S.R. Sharma & J. Das (2024). First photographic record of a colour aberrant Spotted Dove *Spilopelia chinensis* from the Brahmaputra valley of Assam, India. *Ornis Hungarica* 32(1): 238–242.

Choudhury, A. (2023). A possible partial-leucistic Eurasian Wigeon *Mareca penelope* in Assam. *Indian BIRDS* 19(3): 95–96

Choudhury, A. (2024). A melanistic Pond Heron *Ardeola grayii* in Assam. Bird-o-soar #248, In: *Zoo's Print* 39(10): 62–63.

Gayen, D., S. Roy, S. Adhurya, A. Singhamahapatra, S. Seal & A.K. Dutta (2022). "Leucism resulting in xanthochroism" - A report on colour aberration in Coppersmith Barbet *Psilopogon haemacephalus* from Asia. *Ornis Hungarica* 30(1): 69–79.

Mahabal, A., R.M. Sharma & A. Sayyed (2015). Colour aberrations in Indian birds. *Birding ASIA* 24: 119–121.

Mahananda, P., J. Purkayastha & M.K. Saikia (2024). Report of complete leucism in Fulvous Whistling-Duck from Assam, India. Bird-o-soar #230, In: *Zoo's Print* 39(3): 25–26.

Thapa, M.K., R. Kalita & H.J. Das (2023). First record of brown colour aberration in Red-Vented Bulbul from Assam. Bird-o-soar #212, In: *Zoo's Print* 38(9): 35–36.

van Grouw, H. (2013). What colour is that bird? The causes and recognition of common colour aberrations in birds. *British Birds* 106(1): 17–29.

van Grouw, H., A. Mahabal, R.M. Sharma & S. Thakur (2016). How common is albinism really? Colour aberrations in Indian birds reviewed. *Dutch Birding* 38: 301–309.

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Beak deformity in Rose-ringed Parakeet from Rajnandgaon, Chhattisgarh

Rose-ringed Parakeet with beak deformity.
© Danesh Sinha.

Beak deformities or elongation, are result of avian keratin disorder. These are physical abnormalities in the beaks of birds that may be congenital or acquired due to various factors. These deformities can refer as elongation of the mandibles, crossed beaks, abnormal curvature, brittleness, or irregular surface of the rhamphotheca (Craves 1994; Handel et al. 2010). The etiology of beak deformities remains largely unclear, but is often associated with environmental contamination, gene mutation, deficiency of essential nutrition to the foetus, viral or bacterial contamination, traumatic injuries, or external teratogens that cause genetic mutations, nutritional deficiencies, infections, incubation issues, and insufficient wear of the rhinotheca (Pomeroy 1962; Mulcahy et al. 2010). These malformations can

severely impact a bird's ability to feed, preen, and groom, often leading to malnutrition, poor feather maintenance, and increased vulnerability to parasites and predation (Olsen 2003; Gorosito et al. 2016). Detection of beak deformities are usually in a low proportion (<1%) of a given population of wild birds (Handel et al. 2010).

On 26 June 2023, during a visit near Musra Village in Rajnandgaon District, Chhattisgarh, (21.192º N, 80.872º E) an individual Rose-ringed Parakeet *Psittacula krameri* exhibiting a rare beak deformity was observed among a flock of five individuals. Upon closer inspection, we noted that the parakeet's upper mandible displayed an unusually elongated growth. The beak extended downwards to the extent that it nearly touched the bird's neck when it slightly bowed its head. The deformity was clearly visible and significantly different from the normal beak structure of the species. Beak deformities in Rose-ringed Parakeets have also been reported elsewhere, often associated with BFDV infection (Fogell et al. 2018).

Upon searching literatures from Chhattisgarh, we found two previous records of beak deformities in the Ashy-crowned Sparrow-Lark (Vishwakarma et al. 2022) and beak overgrowth in the Black-tailed Godwit (Bharos et al. 2025). Such rare deformities in wild birds are documented, making this a significant observation.

The affected parakeet was seen actively foraging and socializing, showing resilience despite its condition. However, we speculate that the overgrown beak may cause problems during feeding and impact long-term survival. Systematic studies including lab analyses and long-term monitoring of affected birds are needed to understand the causes and impacts of beak deformities. Such efforts will also help identify potential threats to wild bird populations.

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References

Bharos, A.M.K. & R. Verma (2025). Unusual growth in bill of a Black-tailed Godwit *Limosa limosa*. *Journal of the Bombay Natural History Society* 122(1): 170723.
Craves, J.A. (1994). Passerines with deformed bills. *North American Bird Bander* 19(1): 14–18.
Fogell, D.J., R.O. Martin, N. Bunbury, B. Lawson, J. Sells, A.M. McKeand, V. Tatayah, C.T. Trung & J.J. Groombridge (2018). Trade and conservation implications of new beak and feather disease virus detection in native and introduced parrots. *Conservation Biology* 32(6): 1325–1335.
Gorosito, C.A., H. Gonda & V.R. Cueto (2016). Beak deformities in north Patagonian birds. *Ornitología Neotropical* 27: 289–295.
Handel, C.M., L.M. Pajot, S.M. Matsuoka, C. Van Hemert, J. Terenzi, S.L. Talbot, D.M. Mulcahy, C.U. Meteyer & K.A. Trust (2010). Epizootic of beak deformities among wild birds in Alaska: an emerging disease in North America?. *The Auk* 127(4): 882–898.
Olsen, G.H. (2003). Oral biology and beak disorders of birds. *Veterinary Clinics of North America: Exotic Animal Practice* 6(3): 505–521.
Pomeroy, D.E. (1962). Birds with abnormal bills. *British Birds* 55(2): 49–73.
Vishwakarma, A. & R.K. Yadav (2022). Beak deformity in the Ashy-crowned Sparrow-Lark *Eremopterix griseus* Scopoli, 1786. *Journal of the Bombay Natural History Society* 119: 165116.

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Soaring beyond the coast: a record of White-bellied Sea-Eagle in the highlands of the Western Ghats

The White-bellied Sea-Eagle *Icthyophaga leucogaster* is a large, distinctive raptor widely distributed across coastal and inland water bodies from India through southeast Asia and Australia (Rasmussen & Anderton 2012). In India, it is typically seen along the east and west coasts, as well as large inland lakes.

On 29 July 2024, at 1051 h, we observed a single adult White-bellied Sea-Eagle soaring above the Mullaiperiyar reservoir (9.514633 N, 77.262344 E , 900 m) inside the core zone of Periyar Tiger Reserve, Idukki, Kerala. The sighting occurred while on a boat patrol across the reservoir's central expanse. The eagle's distinctive white head and underparts, contrasted with dark grey upper wings and inner primaries displaying a white panel and a pale buffish breast band, clearly indicated that the bird was an immature individual, made identification unmistakable.

This observation is unusual but not unprecedented. While breeding adults are largely sedentary, juvenile White-bellied Sea-Eagles are known to be dispersive, with some recorded movements exceeding 3,000 km in Australia (BirdLife International 2020). The species may also follow large rivers or move

The White-bellied Sea-Eagle soars. © Arjun Suresh.

inland when coastal or wetland habitats become unsuitable. It occupies a wide range of habitats from inshore marine environments and estuaries to terrestrial wetlands and lowland rainforest, occurring up to elevations of 1,500 m (Grimmett et al. 2011).

In Kerala, the White-bellied Sea-Eagle is commonly sighted in northern coastal areas, particularly around Kozhikode, Kannur, and Kasaragod. However, this inland record from Periyar reservoir, located over 100 km from the nearest coastline, expands our understanding of its distribution. The Periyar landscape, in the southern Western Ghats, is characterized by a mosaic of montane tropical forests, including tropical evergreen and semi-evergreen forests, interspersed with high-altitude grassland patches and extensive freshwater bodies (Gubbi & MacMillan 2008).

The eagle's presence here likely reflects occasional inland dispersal, a behaviour supported by its known ecological adaptability. This sighting highlights the ecological value of highland wetland habitats and emphasizes the need for continued monitoring of raptor movements within protected areas of the Western Ghats. Such observations contribute to a broader understanding of the species' habitat use and distribution patterns in peninsular India.

References

BirdLife International (2020). *Haliaeetus leucogaster* (errata version published in 2022). The IUCN Red List of Threatened Species 2020: e.T22695097A216253643. Accessed on 28.viii.2025.

Grimmett, R., C. Inskipp & T. Inskipp (2011). *Birds of the Indian Subcontinent.* 2nd ed. Oxford University Press, UK, 528 pp.

Gubbi, S. & D.C. MacMillan (2008). Can non-timber forest products solve livelihood problems? A case study from Periyar Tiger Reserve, India. *Oryx* 42(2): 222–228.

Rasmussen, P.C. & J.C. Anderton (2012). *Birds of South Asia: The Ripley Guide. 2nd ed.* 2. Vols. Smithsonian Institution and Lynx Edicions, Washington, D.C. and Barcelona, 378 pp & 683 pp.

Suresh, A. A.M. Sunil, A. Muhammed, K.S. Darshan & S. Shaji (2024). eBird Checklist. eBird, Ithaca, New York. https://ebird.org/ebird/view/checklist/S36954356. Accessed on 28.vii.2025.

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