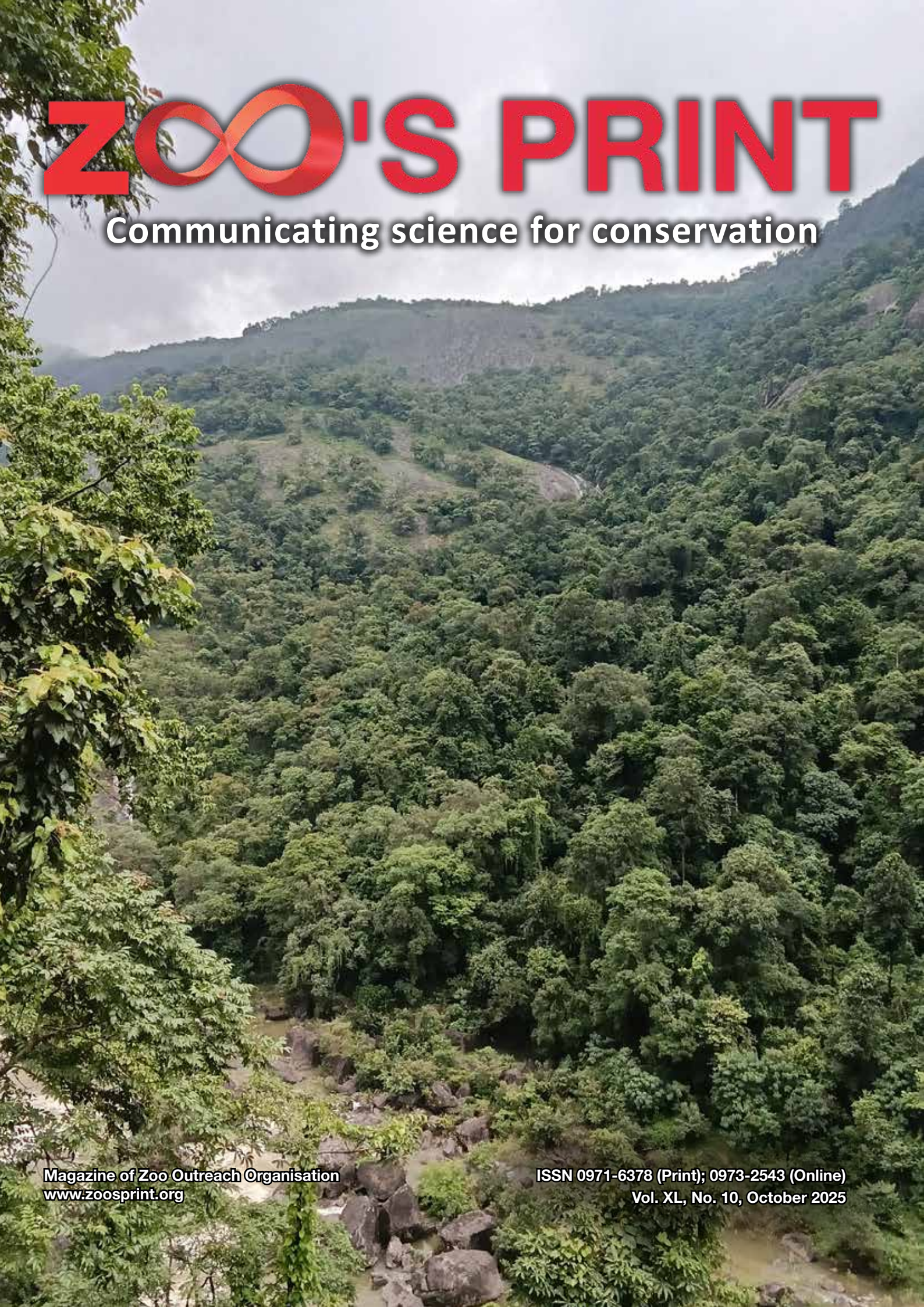
ZOO'S PRINT

Communicating science for conservation



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40 years zooreach Zoo Outreach Organisation

Cover photo: Periyar River, Aluva, Kerala. © Koshik Rao

The Himalayan Restoration Project

The Himalayan Restoration Project, a Zooreach initiative works towards building climate resilience, adaptation, fighting climate crisis to bring coexistence in the landscape, and reduce the human-wildlife negative interactions in Chamba, Himachal Pradesh, India. The project works on the intersection of restoration, livelihood generation, and wildlife conservation. The project was officially launched on 21 March 2024 in collaboration with the government school, Rathiyar Panchayat (where 28 villages, with 500+ families, partnered with 800+ ha of their lands to be restored), HP Forest Department, and Global Landscape Forum. We started a community-led nursery, with 3,000 native Himalayan saplings grown in 2024. The Project has educated 300+ students, 200+ youth, and 200+ women in nursery management who joined our team to restore 1.5 ha of degraded land with 1,500+ native saplings in 2024.

The project started with their activities this year in the Chamba landscape in June 2025. Since then, we have conducted restoration across 16 locations planting 2,500+ native saplings, three community awareness meetings, two education workshops with government school students, and one training session for the women self-help group.

Restoration

The HRP team has conducted restoration drives across 16 locations in Matwari, Langa, Randoh, Jhalein, Chinjoti, Dugli, Basidhan, Mieiyari, and Dugli from 30 June to 22 August 2025.

This year we restored with13 native species: Deodar *Cedrus deodara*, Wild Himalayan Pear *Pyrus pashia*, Ban Oak *Quercus leucotricophora*, Wild Pomegranate *Punica granatum*, Dhaman *Grewia optiva*, Wild Cherry *Prunus cerasoide*s, Walnut *Juglans regia*, Himalayan Fig *Ficus palmata*, Poplar *Populs indica*, Himalayan Neem *Melia azedarach*, Horsechestnut *Aesculus indica*, Himalayan Wild Rose *Rosa moshchata*, and Mulberry *Morus serrata*.

On 26 July, another plantation drive was held on Uttam's farm in Randoh village, where 20 NSS students from Rajkiya Varist Madhyamik Vidyalaya planted 184 saplings under the guidance of the HRP team. After completing the plantation, the students were accompanied back to their school for an education outreach discussion where we spoke to them about the different problems related to climate change their landscape is facing and how we can work together to solve the problem.

During our first plantation drive this year on 30 June 2025, we saw an enthusiastic participation of 20 NSS students and three teachers from Rajkiya Varist Madhyamik Vidyalaya, Randoh, along with five guards from the Chamba Forest Department. A total of 50 saplings were planted during the session. To make the experience more reflective and educational, the students took part in an activity where they wrote about their planting experience, observations, and what they learned from the exercise.

Education Outreach

On 26 and 27 July, using vibrant colours, the students at Randoh Higher Secondary School illustrated their understanding of restoration, nature, and conservation. The day concluded with a documentary screening, where students watched "Pride of Chamba" by Green Hub and "Himalayan Monal" by RG Sustain, giving them deeper insights into the region's wildlife and conservation efforts.

On 4 October, the HRP team was invited to the Government Senior Secondary School, Sahoo, to participate in a Wildlife Week celebration organized by another NGO, Paryavaran Chetna Evam Gramin Vikas Prasikshan Kendra.

On 25 September the HRP team addressed the students, sharing details about their ongoing conservation initiatives and the importance of habitat restoration. The session concluded with the screening of "Pride of Chamba", which inspired the students to appreciate the rich biodiversity of their region and the collective efforts needed to protect it.

Community Meetings

In July the HRP team met with the local village leadership to address the ongoing issue of tree guard maintenance. Through visual communication using illustrated posters, the team presented the challenges and potential solutions. The village representative expressed strong support for the initiative and agreed to serve as a key stakeholder, ensuring active local leadership and community participation in all future restoration activities.

Later in the same month a meeting was organized with the women's self-help group at the field station, bringing together around 70 women from neighboring villages. The discussion centered on challenges related to crop depredation and explored community-driven restoration and plantation initiatives under the HRP to promote sustainable coexistence and local stewardship.

In August, the team conducted two interactive meetings with the residents of a nearby village to introduce the HRP and explore opportunities for future collaboration. Community members actively participated in the discussion, with several expressing interest in offering their farms for upcoming plantation drives and restoration efforts.

Women self-help Group Trainings

In July the team conducted two training sessions for 70 women self-help groups from the region on para-taxonomy, nursery management, seed collection & germination, and restoration. Project objectives and activities were communicated using outreach posters to enhance understanding. The sessions received an encouraging response, with 10 women volunteering their farms for plantation and five women expressing interest in collaborating directly with the HRP team.

Strengthening Partnerships for Restoration

In October 2025, we signed Memorandums of Understanding (MoUs) with all restoration stakeholders outlining the terms and conditions for maintaining restored saplings and plant protectors.

We also highlighted the importance of tree guards in ensuring sapling survival and forest regeneration. As a gesture of gratitude, certificates of appreciation were presented to stakeholders for providing land for native species plantation. The event played a key role in strengthening mutual understanding and encouraging community participation, helping stakeholders recognize the long-term benefits of restoration and their crucial role in sustaining the project.

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Securing the Future of Western Ghats' Subterranean Fishes: An Integrated Conservation Approach

A comprehensive initiative to protect India's unique underground fish species through science, community engagement, and innovative technology

The Western Ghats region of India harbors extraordinary subterranean fish species—enigmatic and ancient taxa that have evolved in complete darkness over millions of years. These remarkable creatures, hidden in wells, underground streams, and aquifers, represent irreplaceable evolutionary lineages. However, they face increasing threats from habitat loss, groundwater depletion, and limited public awareness of their existence.

***Horaglanis* sp. collected from Chottanikkara, Ernakulam District, Kerala**

The project "Action for the unique and threatened freshwater fishes of the Western Ghats Region of India," initiated by Zoo Outreach Organisation in partnership with Kerala University of Fisheries and Ocean Studies and supported by SHOAL (a programme of Synchronicity Earth and Re:wild), was launched in January 2024. The project employs an integrated framework combining cutting-edge science, outreach, education, and communication to safeguard these unique species. This multi-pronged approach addresses conservation challenges through five interconnected components: extensive field surveys, revolutionary eDNA detection technology, citizen science networks, community-based conservation areas, and specialized rehabilitation facilities.

Building on a Decade of Conservation Success

This initiative builds upon a strong foundation of freshwater biodiversity work that began at ZOO in 2009. Over the years, various conservation activities have been implemented across the country, including educational programs, outreach initiatives, policy interventions, research projects, Alliance for Zero Extinction species identification and conservation action, urban freshwater restoration, and the innovative Lively Waters! programme. The current

project strengthens freshwater conservation specifically in the Western Ghats region, focusing on its most vulnerable and least understood inhabitants—subterranean fish species.

Comprehensive Field Surveys Across Kerala

During the period from April to September 2025, extensive field investigations were conducted across Kerala's diverse lateritic landscapes. Research teams systematically surveyed wetlands, homestead wells, borewells, garden channels and pools, and rice fields, covering villages and towns in nine districts—Thiruvananthapuram, Kollam, Pathanamthitta, Ernakulam, Kottayam, Thrissur, Kannur, Kozhikode, and Kasaragod—yielding approximately 57 fish samples. Significant discoveries included *Horaglanis* species from Chottanikkara (Ernakulam district) and household wells in Thuruthy and Changanassery (Kottayam district). The team also documented Rakthamichthys specimens from Malappuram and visited critical habitats of the subterranean eel loach in Kozhikode, Malappuram and Thrissur districts and *Kryptoglanis* species in Thrissur district.

Sample collection efforts also included documenting ecological conditions at each site. In a remarkable demonstration of community support for scientific research, nine homestead wells known to contain subterranean fish were completely drained exclusively for this project. This labor-intensive effort, including the thorough cleaning of laterite wells, provided invaluable access to these elusive species' and unprecedented opportunities for detailed study.

Pioneering eDNA Technology for Species Detection

One of the project's most innovative achievements is the development of an environmental DNA (eDNA)-based sampling and detection system specifically designed for subterranean fish species. This cutting-edge approach enables researchers to detect fish presence from water samples alone, eliminating the need for physical capture and reducing stress on already vulnerable populations.

Water samples were systematically collected from wells, paddy fields, and wetlands where subterranean fish had been previously recorded. The research team designed specialized species-specific primers for eDNA analysis and successfully standardized the extraction protocol.

The technical approach focused on the mitochondrial cytochrome oxidase subunit I (cox1) region and thirty-five sequences were carefully analyzed for primer design. Rigorous validation procedures ensured reliability. PCR reactions using the newly designed eDNA primers were tested against genomic DNA from target species to confirm effectiveness.

The primers underwent additional 'in vitro' testing against genomic DNA of co-occurring species to verify specificity and eliminate false positives. The detection protocol was completed with quantitative PCR (qPCR) analysis, providing a robust tool for environmental DNA identification.

Horaglanis **sp. collected from Chottanikkara, Ernakulam District, Kerala**

Field team undertaking sample collection at Perambra, Thrissur District

Horaglanis **sp. collected from Thuruthy, Changanassery, Kottayam District, Kerala.**

Community members cleaning a laterite well in Chottanikkara, Ernakulam District, to facilitate subterranean fish surveys.

Rakthamichthys **sp. collected from Malappuram District, Kerala.**

Field team undertaking sample collection at Kaduthuruthy, Kottayam District.

Horaglanis **sp. collected from a household well in Thuruthy, Changanassery, Kottayam District.**

This molecular detection system represents a significant advancement in monitoring methodology, offering a non-invasive, efficient approach for detecting and monitoring subterranean fish populations across wide geographic areas.

Expanding Conservation Through Citizen Science

Recognizing that effective conservation requires broad public participation, the project has established an extensive citizen science network throughout Kerala. By actively engaging local communities, the initiative has dramatically expanded geographic coverage and monitoring capacity, particularly in previously understudied areas. This approach enhances data collection while fostering conservation awareness and promoting responsible management of subterranean ecosystems.

To build awareness and facilitate participation, the team developed and distributed comprehensive outreach materials, including high-quality fish photographs, user-friendly identification keys, and informative educational brochures. These materials are disseminated through multiple channels—WhatsApp groups, social media platforms (Facebook, YouTube, and Instagram), and traditional print media—ensuring wide reach across different demographics and age groups.

Strategic outreach targets local institutions where communities naturally gather: Panchayat offices serve as information hubs, village libraries provide learning resources, and health centers offer additional platforms

Community awareness program at the Village Office, Sasthamcotta, Kollam District.

Community awareness workshop at Parammal library, Kozhikode (Calicut).

for environmental education. Training sessions and interactive workshops have been conducted at various locations, for example, the Parammal library in Calicut and the village office in Sasthamcotta, Kollam. These capacity-building activities are designed to

sustain long-term community involvement and ensure genuine bottom-up engagement in conservation efforts.

The citizen science network continues expanding throughout all districts of Kerala, deliberately targeting diverse ecological zones to achieve comprehensive statewide coverage. Through partnerships with local governance bodies and strategic social media campaigns, the project is building a robust network of informed citizens actively contributing to biodiversity monitoring. These grassroots efforts are essential for expanding scientific knowledge about subterranean fishes, particularly given the critical importance of local ecological knowledge in detecting and understanding these cryptic species.

Community-Based Conservation Areas in Development

Following 22 months of intensive surveys (concluding at the end of November 2025), the project will launch a series of targeted workshops and awareness programs at priority localities. These community gatherings will engage local villagers and government administrators in collaborative planning to develop and implement community-based conservation areas.

This participatory approach recognizes that sustainable conservation requires local ownership, stewardship and active community involvement in natural resource management. By making conservation a shared responsibility, the project aims to create lasting protection for critical habitats beyond the project timeline.

SHOAL team visit to subterranean eel loach habitat in Kerala

SHOAL team visit to *Kryptoglanis* sp. habitat in Kerala.

Establishing Specialized Rehabilitation Facilities

Significant progress has been made in establishing a dedicated fish rehabilitation facility for subterranean species. The foundational infrastructure is now nearing completion, and the team is focused on developing optimal management protocols that ensure low-stress holding conditions and minimize mortality rates in captivity.

The facility design carefully replicates natural habitat conditions appropriate for these specialized freshwater fish. Maintaining suitable environmental parameters requires constant attention to water quality, temperature, and light conditions that

match their underground origins. Concurrent research examines feeding habits and behaviour patterns, providing crucial insights for successful captive maintenance.

This rehabilitation facility will serve multiple essential functions: it provides a safety net for highly threatened populations, enables detailed biological studies otherwise impossible in wild conditions, creates opportunities for public education and awareness, and potentially supports future reintroduction programs when restored habitats become available.

A Comprehensive Strategy for Long-Term Protection

The conservation of subterranean fishes demands innovative approaches that address both their biological vulnerability and their invisibility to public consciousness. Through integrated efforts combining field surveys, molecular detection methods, citizen science engagement, community-based conservation, and rehabilitation facilities, this project is creating a comprehensive framework for protecting these enigmatic and ancient taxa. The progress achieved during this reporting period—close to 60 specimens collected across nine districts, a functional eDNA detection protocol, an expanding citizen science network, nine completely surveyed wells through exceptional community cooperation, and a developing rehabilitation facility—represents substantial advancement toward securing the future of the enigmatic and threatened subterranean fishes of the Western Ghats.

Success in conserving these species depends not only on scientific innovation, but equally on building lasting partnerships with the communities who share these landscapes. The preservation of subterranean fishes, survivors from ancient times living in perpetual darkness, requires collaborative action that bridges scientific expertise with traditional ecological knowledge and local commitment.

As field surveys continue, eDNA protocols are refined, community networks expand, and conservation areas take shape, this multi-faceted approach demonstrates that even the most cryptic and overlooked species can be effectively protected when diverse stakeholders unite around a shared conservation vision.

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Journal of Threatened Taxa: Building Bridges in Conservation Science

The **Journal of Threatened Taxa** (JoTT) continues its vital mission of democratizing scientific knowledge in conservation and taxonomy, maintaining its commitment to accessible, high-quality peer-reviewed publications that serve the global biodiversity community. JoTT is published by Wildlife Information Liaison Development Society and Hosted and supported by Zoo Outreach Organisation.

Our Mission: Open Access, High Standards, Global Impact

The Journal of Threatened Taxa (https://threatenedtaxa.org/) stands as a beacon of open-access scientific publishing—an international, peer-reviewed monthly journal dedicated to conservation and taxonomy that challenges the traditional barriers to scientific knowledge. In an era where research findings often remain locked behind expensive paywalls, JoTT provides a refreshing alternative: quality publications accessible to everyone, everywhere.

Core Principles That Define JoTT

Accessibility Without Compromise JoTT operates on a straightforward principle: scientific knowledge critical to conservation should be available to all who need it. The journal follows the 'Gold Open Access' model, charging readers nothing for subscription while maintaining minimal article processing charges for authors. There are no hidden costs, no page charges, and no membership fees—just transparent, affordable publishing that removes financial barriers to sharing vital research.

Serving the Global Conservation Community The journal's mission extends beyond simple publication. JoTT serves as a rapid-response platform for researchers and conservationists worldwide, providing quick and easy access to peer-reviewed work critical to their fields. Whether supporting immediate conservation action or advancing long-term academic

research, JoTT ensures that time-sensitive findings reach their audiences without unnecessary delay.

Evidence-Based Conservation JoTT is specifically established to build the evidence base for conservation and allied fields. The journal welcomes diverse contributions spanning taxonomy, ecology, disease studies, biodiversity surveys, conservation assessments, wildlife management, and numerous related disciplines. This broad scope ensures that the wildlife community, scientists, academics, educators, policy makers, managers, and the general public all have access to the information they need.

Scientific Excellence Through Inclusivity While maintaining rigorous scientific standards through robust peer review, JoTT actively encourages broad participation across subject areas, author backgrounds, and geographic regions. The journal publishes without bias or prejudice, focusing on scientific merit rather than institutional prestige or author fame. Unlike journals that chase high impact factors through selective publishing of "trendy" topics, JoTT values all solid science that contributes to conservation knowledge—recognizing that seemingly modest studies often contain invaluable data that would otherwise be lost to science.

Mentorship and Capacity Building JoTT goes beyond traditional publishing by actively mentoring new researchers in producing high-quality scientific articles. A dedicated network of volunteer scientists from around the world provides peer review and editorial guidance, helping develop the next generation of conservation researchers. For authors from non-English speaking countries, JoTT offers English language editing assistance, ensuring that language barriers never prevent important research from reaching global audiences.

Achievements: April to September 2025

The past six months demonstrate JoTT's continued growth and impact as a platform for conservation science:

Publication Metrics Volume and Reach

- **6 issues published** (Volume 17, Issues 4–9)
- **788 pages of scientific content** (pages 26,762–27,550)
- **90 peer-reviewed publications**, comprising:
- 54 full research articles
- 36 short communications and notes

Global Participation

- **263 contributing authors** representing diverse expertise and perspectives
- **9 countries** represented in published research, reflecting JoTT's international scope

Maintaining Quality and Pace

This six-month period exemplifies JoTT's ability to maintain consistent monthly publication schedules while upholding rigorous peer review standards. Each issue represents countless hours of work by authors, reviewers, and editors—all committed to advancing conservation science through accessible, high-quality publications.

The 90 articles published during this period cover the full spectrum of conservation and taxonomy research, from detailed species descriptions and taxonomic revisions to field surveys, ecological studies, and conservation assessments. Each publication adds to the growing body of evidence available to inform conservation decisions and actions worldwide.

Looking Forward: Sustaining the Mission

As JoTT continues its journey, the journal remains steadfast in its founding principles: making conservation science accessible to all, maintaining high scientific standards, supporting researchers at all career stages, and ensuring that valuable data reaches the people who need it most—whether they're researchers in well-funded institutions, conservation practitioners in biodiversity hotspots, policy makers shaping environmental regulations, or students preparing to enter the field. In a world facing unprecedented biodiversity loss, platforms like JoTT play an increasingly critical role. By ensuring that conservation research is published quickly, reviewed rigorously, and accessible freely, the journal helps accelerate the pace of conservation action when time is of the essence.

The 788 pages published between April and September 2025 represent more than publication statistics—they represent collective effort to document, understand, and ultimately protect Earth's threatened biodiversity. Through continued commitment to open access, scientific excellence, and inclusive participation, JoTT will continue serving the global conservation community in the challenging years ahead.

Journal Contact Information: Website: https://threatenedtaxa.org/ Focus: Conservation and Taxonomy Publication Model: Gold Open Access Frequency: Monthly, Peer-Reviewed Geographic Scope: International

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Where Humans and Elephants Cross Paths: A Perception Study for Understanding Human–Elephant Interactions in Coorg

The Zoo Outreach Organisation, in collaboration with Humane World for Animals, initiated perception studies in Coorg under the Human–Elephant Coexistence (HECx) Project in September 2025. During the pilot phase, Ponnampet and Virajpet taluks were identified as the primary study areas.

The study focuses on understanding human perceptions and experiences related to elephants and other wild animals, with an emphasis on identifying zones of high, medium, and low levels of negative interactions.

In addition, the study documents incidents of human casualties and property damage caused by elephants, as well as details of compensation provided by the Forest Department for crop and plantation losses. It also aims to understand people's perceptions of why elephants move out of forests into plantations, and to record their suggestions for reducing such negative interactions.

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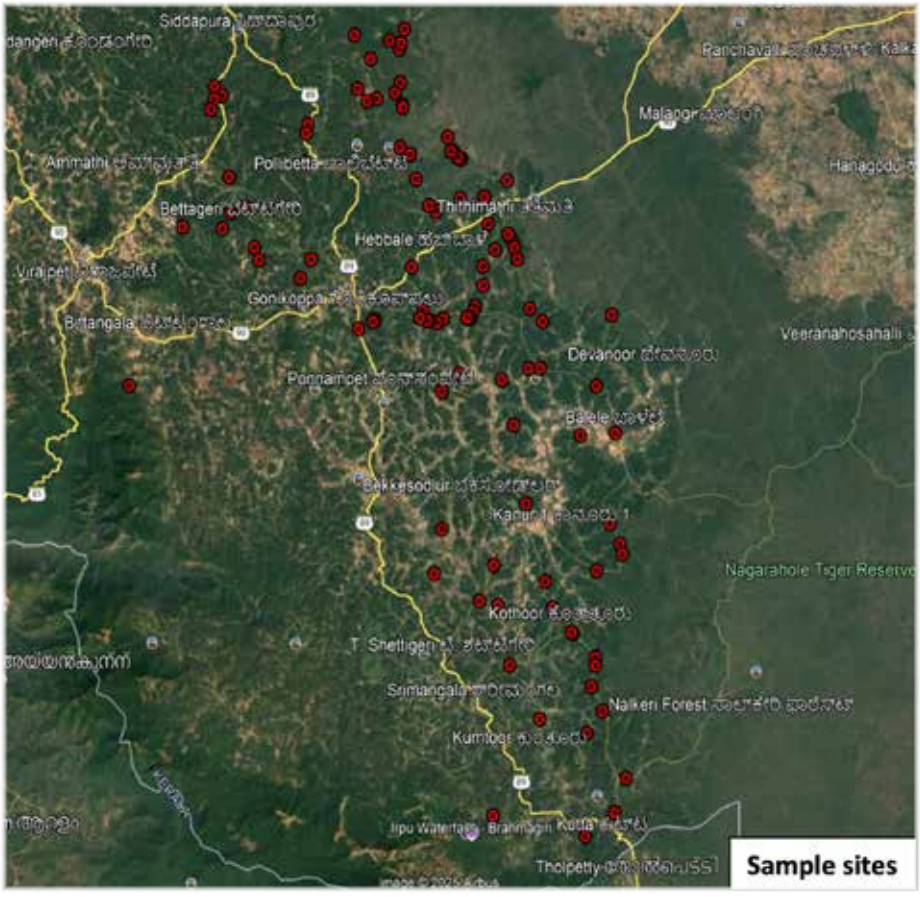


Humane World for Animals

zooreach
Zoo Outreach Organisation

Local perspectives is crucial to the HECx Project's efforts in mitigating negative interaction and promoting coexistence.

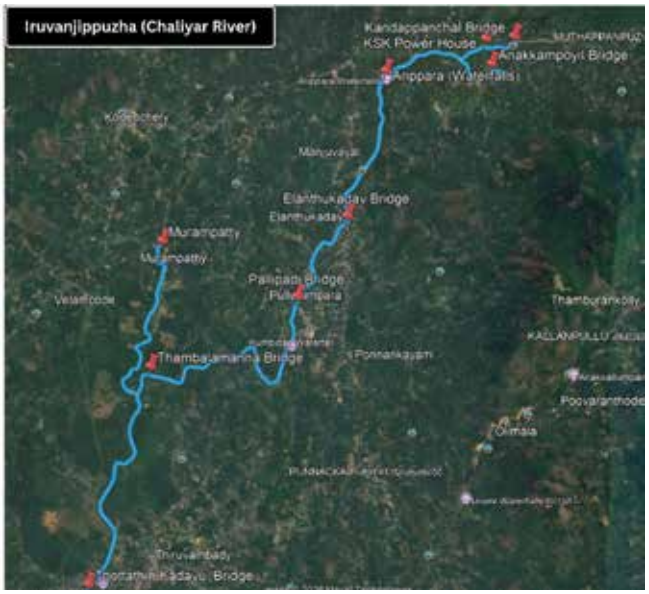
Fading fins: Understanding perceptions of communities on *Sahyadria denisonii* around streams in Kerala and Karnataka.

Zoo Outreach Organisation has been dedicated towards conserving freshwater landscapes under its 'Lively Waters' Program for more than 5 years now. The freshwater systems be it the lakes, rivers, or ponds are highly polluted and degraded across India and thus affecting the biodiversity that lives in it. Studies show that at least 41% of the freshwater fishes found in Western Ghats are threatened by either being Vulnerable, Endangered, or Critically Endangered on the IUCN Red List for Threatened Species (Dahanukar *et al*. 2013). The Lively Water's program has thus been actively conserving & restoring freshwater habitats across southern India and educating people about conserving the same.

One of the projects under this initiative is 'Save Denise and Friends', supported by Shoal, focusing on conserving the unique and threatened freshwater fishes across Western Ghats Biodiversity Hotspot. The project aims to build strong communication networks between stakeholders and thus establishing community conservation reserves for freshwater species like Miss Kerala *Sahyadria denisonii* and others putting fish conservation firmly on the map.

The project objectives include field surveys, perception studies, community engagement & awareness, understanding pet trade, and DNA sampling. *S. denisonii* is a globally famous ornamental fish found only across nine rivers in Kerala and southern Karnataka is threatened due to unsustainable harvesting, pollution, habitat degradation & fragmentation, and destructive fishing practices. In the past one year the project has located the rivers and the locations where this fish is found and has been continuing perception studies to understand the knowledge and thoughts of the locals living near the rivers about *S. denisonii*. The team has visited 27 locations till now interviewing 152 people across Kerala and southern Karnataka.

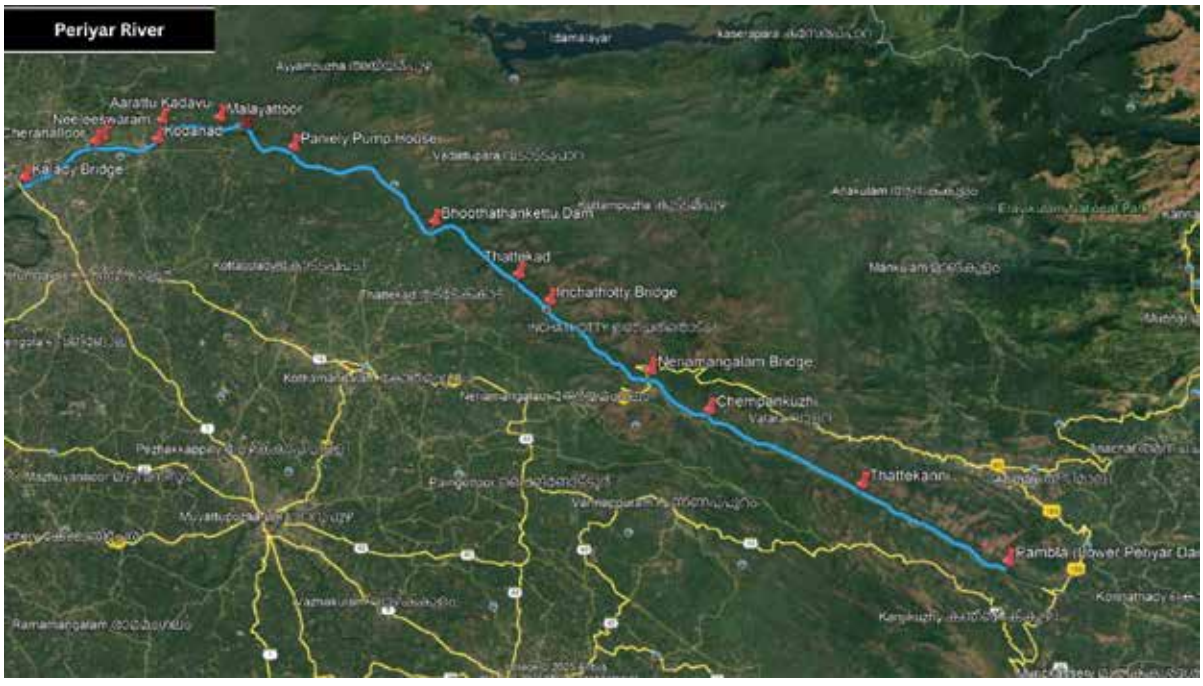
During the interactions we try to understand the knowledge of the people about the fish, its presence, use for trade, and cultural importance. Factors like people's perception on

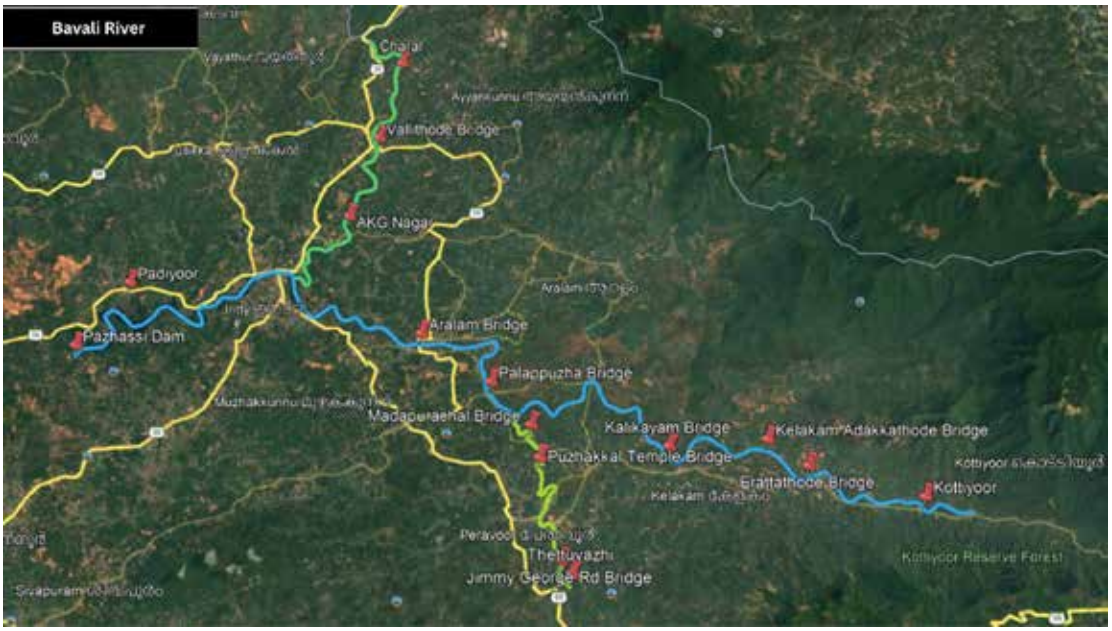


pollution, habitat degradation is understood along with knowing whether any local conservation action exist in these places to protect the rivers and the biodiversity living within them. All the discussions have been open ended and conducted in Malayalam and Kannada.

Of all the respondents 144 were males and the rest were females. The team showed the people pictures of the fish for them to identify. Of the respondents 46 could not identify Miss Kerala from the pictures. Some of them said that they have seen similar fishes but without the red line. While 106 of the respondents were able to identify the fish, but only 15 of them knew the local name, four knew the scientific name, and rest had seen the fish but did not know the name. Across these 27 locations, the common names for this fish are: Kodichi paral, Chenkamiyatti, Kaniyan paral, chenkaniyan, Nediyancheru, Kolavapparal, and Miss Kerala.

When asked about the present presence of the fish, 13 of the respondents said they consume the fish, while only one of them said that it is fished for aquarium trade. Seventy-four of the respondents had not seen/doubtful about the presence of this fish in the rivers near their homes. While 78 people had seen them either in the muddy parts of the water, during the summers, near dams, other tributaries, and some said it is found only in one of our interview locations, Iritty. Some people feel the fishes were found in past, but the construction of dams have affected their population making them rare.



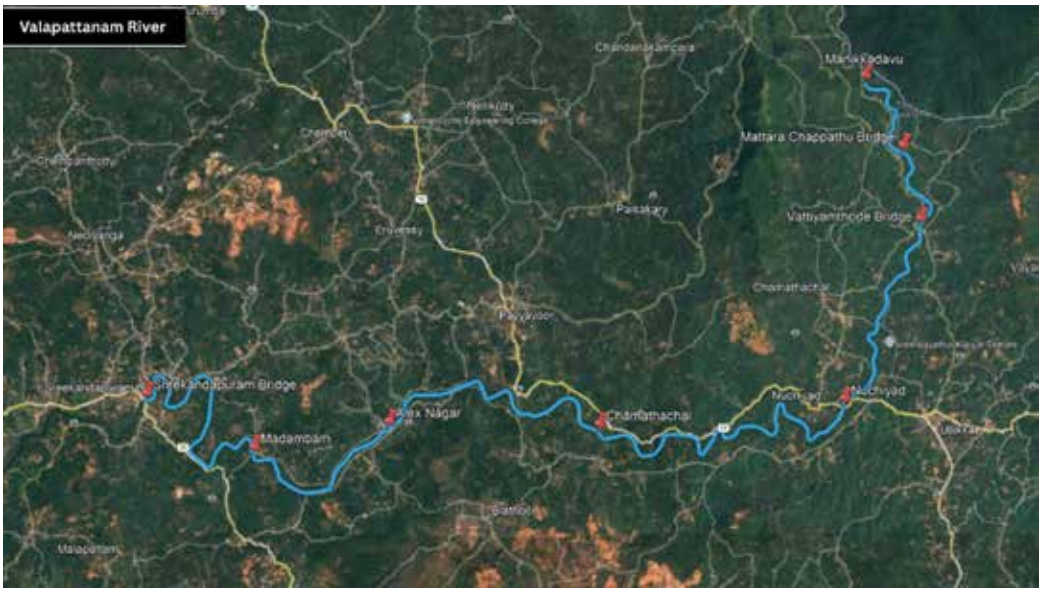


In general, most of the interviewees were disconnected with the river; 124 people did not know how they are connected to the river or depend on it, while 13 people said that they do not depend on the river at all. Five people depend on the river water for agriculture, seven for washing clothes, and four for bathing. When asked about the threats they felt the river and the fishes face the perceptions were quite diverse. Of all the respondents, 45 people had observed change in the river since their childhood. 13 felt increasing dams had affected the rivers negatively, seven felt increasing pollution was damaging the rivers, 14 felt the landslides in Madikeri, Karnataka affected the river stretches, eight people said the rivers were drying, and three said that increasing sand and silt over the years have changed the river composition. Sixty-one people feel that there has been no change in the rivers while 46 of the respondents didn't know much to respond.

When asked about the threats to the fishes, 51 of the respondents perceived a sharp decline in the fish population due to flood (13), overfishing (16), landslide (4), dynamite fishing (6), and dams (12); while 57 said that the populations did not reduce and the rest didn't know much. Only four of all the respondents said that they actively oppose others from doing malpractices like waste dumping and poisoning.

When asked about fishing, 123 people said that fishing was common across the river, of which two used to catch Miss Kerala in the past but due to lack of demand discontinued, and some said tribals do fishing in summer with naturally obtained poison. One of the respondents said that 4–5 years ago they used to catch Miss Kerala and sell it to the aquarium traders for Rs 60–100 per pair, but now the demand and the cost per pair has reduced. Sixteen people said fishing was no longer common as forest department does not allow them to fish, restrictions in net size makes it difficult, and fish population has reduced making it a past occupation. Thirteen of the respondents were not aware about fishing practices. In Aloor all the people said that they did not fish anymore.

The location seem to have tourists and people from other states or districts coming to fish, as 63 people said that tourists from Tamil Nadu and Karnataka come to these river stretches to



catch fish and export it, while 48 people said that there are no outsiders coming to fish as the locals have banned these outsiders due to unsustainable fishing practices. Rest of the people were not sure of outsiders coming to fish. Specifically related to Miss Kerala, 26 people said there was species specific fishing. Three people from Sullya, Karnataka said earlier people from Kerala would visit their and trained them how to catch the fish. Of these 26 people four said that the outsiders came 2–3 years back, five said 4–5 years back, two said 10 years back, two said they come often, while 13 couldn't remember the time of last visit by outsiders to catch *denisonii*.

Fishing though not common, is quite destructive in the area. While 29 people didn't know much about the different fishing methods at the river, 123 people said nets, hooks & bars were used, four said crackers, five said poison, and 14 said electrofishing & dynamite were used for hunting fishes. People in Iritty used Thandadi (trasitional) nets for fishing; 62 of these people knew electric/dynamite/poison was used for fishing but perceived that it has reduced in past few years. Twenty-two respondents said that no destructive fishing methods are being used across these river stretches.

As part of the project the team also collaborates with local organisations, individuals, or administrative people to make sure the action is on ground and collaborative. When asked, 147 of the respondents didn't know about the existence of any panchayat level program to monitor fishing. Two of the respondents said that the panchayat does nothing while three said that the panchayat releases fish hatchlings into the river. In Evadoor, Kerala people said a River Protection Group is present who are involved in eco-tourism to conserve the river. Of all the respondents on 35 wanted to be actively involved in conserving the river. They felt collaborations between communities, temples, and administrations is needed for conservation.

People felt that banning of harmful fishing practices and waste dumping into the rivers were the most crucial solutions. People said projects like Palappovan Amma Conservation is going on in Aloor for conservation of river and fishes. Rest of the people didn't know how they can conserve the fishes or river as it was too big a task while some felt it's too late and since

the fishes are no more conservation didn't make sense.

Thus, there is a clear lack of connect and attachment that people have with the rivers and the life living in it. There is only a very small part of the population that understand that the rivers are changing, and the biodiversity is harmed. There is also a lack of communication between the communities and the administration. But there are a few conservation efforts happening in the area and interested individuals who understand their role in conserving the rivers. This gives us a hope. The project is going to continue with its initiative in the landscape and conduct outreach programs to make the people realize the importance of the river in their backyards and the life living in it.

Acknowledgement: Thanks to the Zooreach team, Payal Molur, Priyanka Iyer, and Latha Ravikumar for their constant support with all the project actions. Also, thanks to Shoal for providing the funding to conduct the project. Dr Rajeev Raghavan, Ramya, and their team from Kerala University of Fisheries and Ocean Sciences for their support with scientific knowledge and field presence. Lastly, thanks to Jithin Vijayan for his support in conducting the field surveys and providing us insights of the same.

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Fading Fins, Flowing Hopes: A Perception Study on Denison's Barb and its Riverine System - Part 3

As part of the project 'Saving Denise and Friends' of LivelyWaters! programme of Zooreach in partnership with Shoal, we explored another important river in Kerala, the Valapattanam River, which eventually led us to the Iritty/Bavali River. The Valapattanam River is the longest river in Kannur District, originating from the Brahmagiri Hills of the Western Ghats in Karnataka. Initially, it flows eastward through the hilly Malenadu region before turning sharply west, cutting through deep valleys and finally descending into the plains of Kannur. Along its course, it passes through Manikkadavu, Vattiyamthode, Vayathur, Nuchiyad, Chamathachal, Uchatthu Kayam (where the Payyavoor River joins), Madambam, Sreekandapuram, Chengalayi, Mungam, Koyyam (where the Bavali/Iritty River joins), and several other towns, before reaching the Arabian Sea at Azhikkal, where the Kuppam River joins the Valapattanam River.

We began our journey on 6 June 2025, reaching Kannur and choosing to stay in Sreekandapuram since the river passes near the town. On the first day, we visited Manikkadavu, where the river flows from the forested areas before entering human settlements. We carried out perception studies from Manikkadavu to Vattiyamthode. While most locals knew of 'Miss Kerala' *Sahyadria denisonii* through media, only a few people had actually seen it, mainly during summers when water levels drop and fish get trapped inside water pools. One villager even suspected we were involved in exporting the species, but after explaining our conservation work, we gained his trust.

Fishing was minimal here, mostly by the tribal community. Earlier, dynamite was used, though now stopped; however, poison fishing with Thurishu (local name for copper sulphate) still occurs during summer. Locals highlighted other threats, such as excessive bridge construction, quarry effluents directly entering the river, and declining fish populations since quarrying began. We visited near this quarry and realised it was too close to the river and the forest of the Brahmagiri Wildlife Sanctuary. One individual recalled seeing the fish in forest stretches during summer while fishing. Others pointed to reduced rainfall, loss of natural springs, and seasonal fragmentation of the river as changes occurring over a course of years eventually affecting the riverine system.

On the second day, we studied the stretch from Payyavoor to Nuchiyad. Most people recognized the fish from photographs, acknowledging its earlier presence but describing it as now very rare. Many suggested that the variety and number of fish that they used to see in their childhood in the river are no longer seen in the river.

They also noted a sharp decline in deep summer pools, river fragmentation, and reduced water-holding capacity. Despite panchayats releasing hatchlings annually, naturally occurring populations seemed to have disappeared. Locals also recalled past harmful fishing practices by outsiders, though these are now restricted. Even deforestation along river sides, changing rainfall, dams, and human alterations such as rerouting and channel restructuring were repeatedly cited as causes.

Even after two days, we found no fish in this stretch, though some suggested its presence in the Iritty/Bavali River. Our earlier pilot data, however, had not recorded it there. On the third day, a fisherman confirmed the species' presence in the Iritty River near the dam and shared knowledge of its aquarium trade. Acting on his advice, we travelled from Nuchiyad-Ullikkal to Koottupuzha New Bridge near the Kerala–Karnataka border. Though access was difficult due to steep terrain, we reached Charal, where the river split into fast and slow flowing channels. Here, we finally observed the Miss Kerala fish (1–2 inches long). Excited, we continued downstream, where locals confirmed both the fish's presence and its ongoing (though reduced) capture for the aquarium trade.

Observations by the locals also included increased river width due to clay and sand deposition, vanishing deep pools, quarry effluent release directly to the river, and fishing using hooks, Thandadi nets (Local name of a special net), and occasionally poison and electrofishing.

On the fourth day, we surveyed the Bavali River from Iritty to Kottiyoor. Locals near Iritty town knew the fish but had not seen it in the reservoir of Pazhassi Dam. Further upstream at Kottiyoor, however, we observed the species directly.

Fishing here was mostly done with nets targeting larger species, but older residents recalled people once catching Miss Kerala fish in packets. At Kottiyoor temple, preparations for the annual Vysakha Mahotsavam were underway, and the riverbanks were crowded with pilgrims. Sadly, we also saw plastics and pollutants trapped along the banks. Locals confirmed that a lot of waste is dumped in the river, and now no one uses the river as compared to earlier days, along with sand mining also a major threat.

Before concluding, we visited Kanjirapuzha, a narrow Bavali tributary, and made a surprising discovery: a large shoal of *S. denisonii* (40–50 individuals, 10–11 cm long). This was the first time we encountered such a thriving population. Interestingly, locals were unaware of its presence, suggesting it was relatively undisturbed. One villager mentioned noticing them only in the past six years, raising questions: could this reflect breeding migration? Habitat shifts following the 2018 floods and landslides? Or improved suitability of these stretches due to ecological changes? However, even here, the construction of bridges, side walls, and effluent discharge posed looming threats.

On the last day, we visited Iritty and moved downstream to the confluence of the Bavali and Valapattanam rivers at Munambu Kadavu, Koyyam. Near the Pazhassi Dam reservoir, we met a few fishermen who confirmed that the species is absent in the reservoir and can only be found upstream.

In our view, along the Valapattanam River, *S. denisoni*i has become extremely rare, while in the Iritty, Bavali, and particularly Kanjirapuzha

tributary, viable populations still survive. Conservation requires urgent action-raising awareness, regulating harmful practices, and protecting habitats. In particular, the undisturbed Kanjirapuzha shoal may represent one of the few remaining wild populations, hidden from traders and therefore highly valuable for conservation. With collaborative efforts and sustainable river management, these populations can be safeguarded, eventually leading to a more ecologically sustainable riverine system. It's important to note that these insights are based on preliminary observations from various study areas in a location and have not yet been thematically analysed in depth.

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Fading Fins, Flowing Hopes: A Perception Study on Denison's Barb and its Riverine System - Part 4

After completing our perception studies along four major rivers- Iruvazhanjippuzha, Payaswini, Valapattanam, and Iritty, we decided to explore another important river in Kerala, the Periyar River. Stretching about 244 km (152 mi), the Periyar is the longest river in the state. It originates from Chokkampatti Mala, a peak on the southern boundary of the Periyar Tiger Reserve. The river is of immense importance to Kerala's economy, as it generates a major share of the state's electricity through the Idukki Dam and serves as a vital source of water for agriculture, industry, and domestic use. In fact, nearly 25% of Kerala's industries are located along its banks, which is why the river is often called the 'Lifeline of Kerala'.

We began our journey on 20 July 2025, traveling to Aluva and staying at Neeleeswaram, close to the river. An earlier pilot study had documented the presence of *Sahyadria denisonii* (Miss Kerala) from this stretch up to Pooyamkutty. However, we modified our study area from Neeleeswaram to Pambla, where the Lower Periyar Dam is located. This adjustment was necessary because Pooyamkutty lies within the Thattekad Bird Sanctuary under the Forest Department, and obtaining permission for surveys there is a lengthy process.

On the first day, we conducted perception studies along the stretch from the Lower Periyar Dam at Pambla to Inchathotty. Here, one side of the river is partially inhabited while the other remains forested. Most locals we spoke to had either never seen the fish or had only observed it 2–3 years ago, usually in small pools or streams during summer. Fishing in this area is mainly for consumption, using thandadi nets and hooks. Harmful practices such as electrofishing, poisoning, and dynamite fishing were said to be rare but still occurring secretly, despite Forest Department restrictions. Outsiders were often blamed for these illegal activities, especially at night, as locals avoid venturing out due to frequent elephant movement. Residents also mentioned significant changes in the river after the 2018 floods and landslides, which widened the river and forced many people to migrate, though they still return seasonally for farming. Locals also said the Fisheries Department regularly releases hatchlings at the dam under a government scheme, but these are often caught downstream.

On the second day, we continued our study near Inchathotty Bridge, where we met a fisherman who recognised the fish as "kaniyan paral" or "chenkaniyan" in the local language. He reported

occasional accidental catches but no targeted fishing of this species. He also noted that some fish appeared briefly after the 2018 floods and later disappeared, along with several local species. Others observed that sand deposition had altered the river's structure, reducing the number of deep pools. A group of fishermen we met confirmed that Miss Kerala was occasionally caught below the Boothathankettu Dam but never in abundance. They mentioned that a fisheries officer had instructed locals to report any catches of this fish. At Boothathankettu, locals said fishing was uncommon because of forest department restrictions near the dam. However, they also highlighted effluent discharge from nearby quarries, which has impacted fish populations. In the past, dynamite fishing was common here, but now mainly nets and hooks are used. Some also noted that the local panchayat had released Miss Kerala into the river. In this region, the fish is called "Chenkaniyatti".

On the third day, we surveyed the Kodanad area and spoke to a fisherman who had just seen the species that morning while going fishing in the river. He recalled that earlier, outsiders used to pay us well to catch this fish, but now they don't come, thinking the demand has gone down. He also reported shifts in fish communities over time, including the presence of large non-native species such as Rohu (20–30 kg), which likely escaped from farms during floods. Others mentioned damage and loss of the river's side

walls. A local stated the presence of a river protection group in the area as part of an ecotourism programme. They have a checkpost in the road which leads to the river, and they won't allow illegal activities such as dynamite fishing and sand mining in the river.

On the fourth day, we visited the Kaladi–Neeleeswaram stretch. Locals here reported that outsiders often fish during summer, setting nets overnight. Fishing among locals was said to be uncommon. Two fishermen we met stated that when they caught it for the first time, they had a discussion that it might have escaped from some aquarium, dams or fish breeding centres, as these fish were not seen earlier before the 2018 floods in this place by them. He also stated the presence of this fish now from Mekkalady to Neeleeswaram, as it is the stretch

that he goes fishing. He also stated this fish is very rarely caught and only 4–5 in numbers. They also reported declining native fish populations, increasing carp, and major changes caused by sand mining. A young boy stated that he had seen this fish in the river and caught it, and kept it in the aquarium. Later, we met a person who caught the fish recently, stating his story of curiosity about fish (Miss Kerala). He stated that he recently caught it one day in the net, and he had never seen this fish before when he was actively fishing in earlier days. So, in curiosity and excitement, he removed it from the net, and eventually a crow snatched it from him and took off. He also spoke about harmful fishing practices in the past, such as using gelatin sticks that caused blasts up to 6–7m high.

These practices have since stopped due to constant monitoring by pump house operators, who report violations to the police. Locals further observed that the riverbed has changed drastically-mud and sand now dominate, while stones, pebbles, and alluvial deposits have declined or shifted, altering the river's flow.

Overall our perception study along the Periyar River revealed that the presence of Miss Kerala is highly fragmented and localised, with only a few accidental sightings or rare bycatches reported in recent years. Many locals associated the decline of fish species with the 2018 floods and landslides, which altered the river's structure, reduced deep pools, and changed patterns of sand deposition. Widespread pressures such as sand mining, effluent discharge, illegal fishing practices, and the introduction of non-native species have further impacted the river ecosystem. Although government agencies occasionally release hatchlings into the river, these efforts appear insufficient in ensuring stable populations, as most are caught downstream or fail to establish.

The study also highlighted gaps in awareness: many locals were unfamiliar with the species. However, the fish continues to hold distinct local names across regions. Conservation measures such as stricter regulation of fishing practices, continuous monitoring, habitat restoration, and awareness programs, are crucial to safeguard this species. Given its restricted and declining presence, the Periyar population of *Sahyadria denisonii* requires urgent attention if the species is to survive in its natural habitat. It's important to note that these insights are based on preliminary observations from various study areas in a location and have not yet been thematically analysed in depth.

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Magic of the Ocean: Bringing the Ocean into Classroom

On 27 September, teachers and ocean lovers came together online for something special — the launch of Magic of the Ocean, an E-learning platform for educators that brings the sea into classrooms. The event was filled with excitement and curiosity. Our mascot, Dr. Monta Ray, made a cheerful appearance, reminding everyone that learning about the ocean can be fun, playful, and full of wonder.

The idea for Magic of the Ocean began with a simple thought. We realized that there are very few learning resources about the ocean from an Indian perspective. During our earlier workshops and surveys, many teachers shared that they would love to teach about the ocean if they had the right materials. But they also pointed out a major challenge — they often have limited time in their classroom schedules.

This became one of our key findings and the starting point for the platform: How can we make it easy for teachers to include the ocean in their lessons and help children understand and care for the ocean, even if they live far away from it? Developed under the 1Ocean initiative and supported by the National Geographic Society, the platform is designed as a space for teachers to explore ocean topics and bring them into their classrooms in new and creative ways. It offers stories, games, lesson plans, and activities that make learning about marine life, ecosystems, and climate change simple, engaging, and fun.

At the same time, the content is connected to six school subjects — Math, English, Science, Social Science, Music, and Art — linking ocean concepts with the existing curriculum. This helps teachers include ocean literacy in their regular lessons without adding extra workload. For many teachers who were part of our Seaside Classrooms workshops earlier this year, and teachers who had helped co-creating resources with us for the platform the launch felt like the next big step. What started as discussions has now turned into an interactive digital experience that can reach schools across Tamil Nadu, Kerala, and beyond. Each story, video, and activity on the platform has been created to spark curiosity and care for the blue planet we all share.

As the session ended, there was a quiet sense of joy and hope. Magic of the Ocean is more than an online learning tool. It's a bridge — connecting the classroom to the coast, and knowledge to action.

Because when children learn to love the ocean, they grow up wanting to protect it. You can explore more about the platform in 1ocean.zooreach.org/magicoftheocean. Stay tuned! More details about the project, its stories, and upcoming activities and the people involved will be shared in the next issues of Zoo's Print.

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5th Ram Hattikudur Advanced Training in Conservation

The fifth batch of Zooreach's flagship program, the Ram Hattikudur Advanced Training in Conservation, began on 14 September 2025. Since 2021, Zooreach has been conducting the four-month in-house conservation training program in Coimbatore, bringing 10 youth from different parts of the country every year and giving them an opportunity to meet the stalwarts in the field, in India and abroad, and learn from them. The course brings more than 50 mentors every year and acts as a bridge between theory and field-based conservation, shaping the youth to lead the conservation platform for tomorrow. Today we stand with a strong alumni of 40 Fellows who are working across India in different disciplines of conservation as researchers, naturalists, artists, filmmakers, restoration practitioners, communicators, and photographers.

This year we have our 10 Fellows coming from 7 Indian states with varied educational backgrounds. The course was inaugurated on 14 September in Coimbatore with all our well-wishers online and offline. The event marked an opportunity for the Fellows to meet all the supporters Zooreach has and create connections.

Like every other year, the first session was 'Welfare of Wildlifers' conducted by Bhavna Vijay and Priya Vijay, to help Fellows deal with all the different psychological stresses people in the climate space go through. The Fellows then interacted with Dr. Sanjay Molur, understanding the importance of Conservation Optimism & Realism and the crucial role it plays in making our actions successful. Dr. Molur explained to them the importance of understanding the journey of DNA, the shared thread weaving together all living beings across Earth's unfolding story. Following this, the Fellows delved into the fascinating role of nonsense codons, tracing the evolution of life on Earth with Sanjay. Later, they engaged in spirited discussions on fact versus fiction, uncovering how science provides the foundation for informed debate and discovery. Throughout the first week of the course, the Fellows engaged in thought-provoking discussions on fact versus fiction, exploring how emotions influence scientific decisions.

On 17 September, the Fellows joined the Zooreach team for their first field trip to the Nilgiri Biosphere Nature Park, a 30-year-old restoration site by Zoo Outreach Organisation. Guided by Dr. Molur, they explored restoration's foundations, challenges, and its vital role as the enduring path forward for conservation. Following the field trip, Fellows accompanied the Zooreach 1OCEAN team to Vidya Vanam


Community interactions

School, where they participated in the vibrant launch of the “Magic of the Ocean” website, celebrating marine wonders.

During the course, the Fellows got opportunities to discuss and analyse different conservation and animal welfare actions around the world; this year they got into a group dialogue on the Supreme Court’s ruling on Delhi’s dogs, analysed through a factual, evidence-based perspective. In the second week, the Fellows engaged with Trisa to explore the urgency of COP on biodiversity and climate, reflecting on their 2025 priorities. They concluded by playing the Solution Trees game, collaboratively designing an ecologically sustainable conservation model for the Himalaya.

‘Follow the Leader’ is one of RHATC’s ongoing events where leaders from different fields of conservation interact with the Fellows. As part of the session on 20 September, Fellows interacted with Selva Ganesh, a teacher from Coimbatore whose passion for birding has made him one of the city’s most active birders, leading bird atlas projects and documenting avian diversity across India. Later in the week, Fellows interacted with Byju H., one of the RHATC mentors, discussing the importance of shorebird & vulture conservation, their ecological significance, population decline threats, and ongoing recovery programs across India.

On 23 September, the second field trip was organised to Pitchandikulam Forest, Auroville Botanical Gardens, sacred groves, and active restoration sites. Through guided nature walks, expert sessions with Joss Brooks and Aurosil, and visits to Dr. Loganathan’s herbology centre and Nadukuppam School, Fellows gained firsthand experience in ecological restoration and community-based conservation approaches. The field trip concluded with visits to the Madras Crocodile Bank Trust (MCBT) and Siruseri Lake, where Fellows explored reptile conservation strategies and urban wetland ecosystems before returning with enriched field perspectives.

On 29 and 30 September, soon after the field trip, the Fellows got into 2 days of rigorous Research & Publication Ethics Workshop with the Journal of Threatened Taxa team: Dr. Sanjay Molur, Chief Editor; B. Ravichandran, Managing Editor; and Chaitrashree, Assistant Editor. Fellows understood the principles of ethical research conduct, data collection, and scientific integrity, steps to write a scientific paper, along with the insights of the editorial process of peer-reviewed international journals.

In the following week, Fellows spent 3 days with Dr. Rajeev Raghavan from KUFOS, understanding the basics of freshwater conservation, taxonomy, evolution, subterranean fishes & their habitat, and the conservation challenges to freshwater biodiversity. The Fellows then took part in mock COP to strengthen action for Himalaya, understanding the intricacies of international multi-stakeholder meetings.

From 9–12 October, Fellows took part in Conservation Education & Outreach


Introduction

Workshop with Payal Molur, a wildlife educator working across different regions in India to bring behaviour change in people towards wildlife conservation. Fellows learned different approaches to interact with communities, break down scientific knowledge for communities, simplify wildlife knowledge into games, and plan their own education plan.

Following the workshop, Fellows spent time with Obuli Chandran, Mango Education, understanding how to differentiate science from pseudoscience. Later, Usha Ravindra and Priyanka Iyer delved into marine biodiversity conservation discussions with the Fellows. They discussed the problems related to bycatch, shark fisheries, pollution, and the unprepared fishing system in the country, followed by different conservation measures Zooreach has adopted to fight the same.

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Two-Day Freshwater Alliance Convening Unites Experts to Strengthen Collaboration and Conservation Efforts

Rivers are the arteries of our planet; when they run dry or polluted, life itself begins to falter.

With this sentiment in mind, a two-day convening of the **Freshwater Alliance** brought together nearly **75 participants** from across the country, representing a wide range of expertise in water resource management, freshwater biodiversity, watershed restoration, environmental law, and community-based conservation. With over 50% of India's freshwater biodiversity categorised as threatened and the ecosystems facing mounting pressures from pollution, encroachments, and over-extraction, the convening sought to inspire collective solutions and strengthen regional partnerships.

The first half of **Day 1** set a lively tone, as participants delivered **five-minute presentations** introducing their work and the unique challenges they encounter in conserving freshwater ecosystems. This rapid exchange of ideas offered a sweeping view of ongoing initiatives—from restoring community tanks and wetlands and ecosystems to addressing the legal complexities of freshwater degradation and encroachments.

In the **second half of the day**, participants split into **two working groups**. The **solutions group** identified actionable measures, such as strengthening local governance, integrating biodiversity into water management, improving

data transparency, and fostering youth engagement. The **collectives group** discussed persistent barriers, including fragmented institutional coordination, inadequate enforcement of existing laws, and the limited visibility of freshwater ecosystems in broader conservation discourse.

Day 2 opened with presentations from both groups, which synthesized their discussions into key takeaways. The emphasis was on enhancing regional coordination, creating knowledge-sharing mechanisms, and building capacity at the grassroots level. Participants underscored that freshwater systems are not just ecological entities but also vital lifelines that sustain rural livelihoods, cultural heritage, and biodiversity.

The **second half of Day 2** delved into **thematic discussions** on freshwater biodiversity, exploring how art, creative expression, and storytelling can inspire public awareness, how policy frameworks can better integrate biodiversity and watershed management, and

how regional alliances can function more effectively as catalysts for change.

The convening concluded with a **brainstorming session** on how the **Freshwater Alliance** could continue supporting its members—through collaborative research, advocacy, and a shared platform for amplifying local voices. By the end of the two days, participants agreed that a united freshwater movement must blend science, policy, community, and creativity. A closing quote to beautifully capture the convening is *"Protecting our waters is not just an environmental act—it is an act of preserving life's continuity itself."*

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Call for donations

In the first phase of the fundraiser for the **Sally Walker Conservation Fund**, we target three objectives.

(i) **The Sally Walker Lifetime Award for Conservation**

(ii) **The Sally Walker Training Programme in Conservation Biology and Application**

(iii) **Communicating Science for Conservation through innovative education programs**

We solicit your generous contributions to the above activities of your choice. Please log onto our website www.zooreach.org and click on the **SWCF page** for information on how to donate.

You can also click here to go directly to the donation page.

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In case you wish to know more about the **Sally Walker Conservation Fund,** please contact Dr. Sanjay Molur by email <sanjay@zooreach.org> or by phone +91 9677822997.

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.

Manuscript requirements
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.

E**ditorial 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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ZOO'S PRINT magazine is informal and newsy as opposed to a scientific publication. ZOO'S PRINT magazine sometimes includes semi-scientific and technical articles which are reviewed only for factual errors, not peer-reviewed.

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