



Annual Review 2024



Acknowledgements

Authors

Mike Baltzer
Georgie Bull
Michael Edmondstone
Nathaniel Ng
Chouly Ou

Design

Lead design: Michael Edmondstone
Co-designer: Georgie Bull

Special thanks

SHOAL would like to extend a warm thank you to all partners – individuals and organisations who make up the wider ‘shoal’. For this report, a particular thank you is owed to everybody who contributed their updates: Abdullah Abdul, Chavalit Vidthayanon, Michael Köck, Michi Tobler, Muhammad Iqram, Muh. Herjayanto, Ormbun Thipsun, Reynante Ramilo, Veryl Hasan, and Winda Eka Putri.

Images

front: *fisherman on the Periyar River, India.* © SHOAL/Georgie Bull
right: *bathers on the Periyar River, India.* © SHOAL / Georgie Bull
back: *Kryptoglanis shajii type locality, Perambra, Kerala, India.* © SHOAL



FOREWORD 4

KEY ACHIEVEMENT: 1,000 FISHES 6

HIGHLIGHTS:

Partnerships with Amazonas and Practical Fishkeeping Magazines	10
Michael Köck's European Tour	10
The SHOAL Alliance of Zoos and Aquaria	12
Springs Conservation	14
Team Expansion	16

NEW PARTNERS:
STRATEGIC PARTNERS

Dr. Zeb Hogan/University of Nevada	20
Dr. Michael Tobler/University of Missouri Saint Louis & Saint Louis Zoo	22

LOCAL ACTION PARTNERS

Celebica	24
Comnet Mekong	26
Sueb Nakhasathien Foundation	28
Airlangga University	29
PKGB	30
Hasanuddin University	31
TCS	32
C3	33
Conservation Fisheries	34

1,000 FISHES:

Madagascar	38
Conservation Action For Southeast Asia's Critically Endangered Freshwater Fishes	40
Communities Taking Action	52
Impact	58

LOOKING AHEAD 56

THE SHOAL: PARTNERS & COLLABORATORS 68

FOREWORD

2025 started soberly with the announcement that one quarter of the world's freshwater fauna are threatened with extinction, according to a publication in the journal *Nature*¹ led by IUCN. The paper is the conclusion of twenty years of incredible work across the globe, presenting the largest ever global assessment of freshwater animals on the IUCN Red List of Threatened Species™. It paints a stark picture for what the future may hold for freshwaters without urgent, concerted action. The drivers of freshwater fishes' decline are anthropogenic: pollution, habitat fragmentation, water abstraction, climate change and invasive species have combined to make them among the most threatened taxonomic group, causing cascading effects on entire ecosystems.

This landmark paper, representing the work of hundreds of dedicated conservation biologists, stands as the clear and undeniable *raison d'être* for everything that SHOAL was created to help change.

Looking back at 2024, we are therefore very pleased that we launched, together

with IUCN, the IUCN Species Survival Commission, and all the SHOAL partners, our 1,000 Fishes Initiative aimed to bend the curve for freshwater species, habitats and communities as fast as possible away from loss, towards recovery. In April, at an event kindly hosted by The Fishmongers' Company in London, we released our landmark 1,000 Fishes Blueprint, outlining a framework for immediate escalated action for at least 1,000 of the world's most threatened fishes by 2035. The Blueprint is a strategy to make up for the decades of neglect suffered by freshwaters worldwide, and has the potential to be the single most ambitious conservation plan in terms of species numbers ever published.

The Blueprint is not just a plan for threatened fishes. It is a plan to identify and conserve the freshwater habitats these fishes live in, together with hundreds of communities of people, often the poorest and most dependent on healthy freshwater habitats in the world. We all depend on freshwater, and millions depend on freshwater fishes for food security, employment, and cultural practices. Species declines are a stark reminder that we are losing so much more. The Blueprint is our plan to help end this trend to decline – over the past year, we've been turning The Blueprint's messaging into live action. 2024 was again a very busy year for SHOAL. With the additions of Georgie

Bull, Nathaniel Ng and Chouly Ou, the core team increased to five full-time staff members, expanding our capacity to support partners, raise more funds, monitor progress and communicate the action carried out by partners all across the globe.

Our 'shoal' of Strategic Partners, Local Action Partners and other associates is growing. This year we took the first steps to helping to mobilise further conservation by zoos and aquaria by forming an Alliance of Zoos and Aquaria for Freshwater Fish conservation (see p.6). Some of the greatest freshwater fish conservation success stories stem from action from these partners, and this is the start of greater collaboration between these institutions to catalyse much more effective conservation efforts in the most impactful direction.

In this review, we are delighted to highlight the work we have done together with the IUCN SSC Asian Species Action Partnership and Mandai Nature. In 2023, we together published 'A Strategic Framework to accelerate urgent conservation action for ASAP Freshwater Fishes in Southeast Asia'. This was a call to action for 90 Critically Endangered fishes. We report here that of those 90 species, 25 are now receiving conservation attention. Our partnership has

to date funded seven Local Action Partners and ASAP partners throughout Southeast Asia, which is a wonderful start but there is more work still to do.

The work of SHOAL and our partners continues to support the aims of The UN Decade on Ecosystem Restoration, the four long-term goals for 2050 related to the 2050 Vision for biodiversity from the UN Convention on Biological Diversity's Kunming-Montreal Global Biodiversity Framework, and at least four of the UN's 17 Sustainable Development Goals, with action for each projected to increase considerably over the coming year.

The 2024 Annual Review concludes with some of the highlights of the work we plan for 2025. In June 2025, we will have the first Annual SHOAL Partners meeting, held online, which will give us the first opportunity to celebrate our successes as a partnership and to see how we can improve and grow the impact of the SHOAL initiative.

Safe to say, it is an exciting time in SHOAL's journey.

¹ Sayer, C.A., Fernando, E., Jimenez, R.R. et al. One-quarter of freshwater fauna threatened with extinction. *Nature* 638, 138–145 (2025). <https://doi.org/10.1038/s41586-024-08375-z>



Trang Trinh on Unsplash

KEY ACHIEVEMENT: 1,000 FISHES

On 16 April 2024 at Fishmongers' Hall London, SHOAL launched, together with the IUCN Species Survival Commission Freshwater Fishes Specialist Group and the IUCN Centre for Science and Knowledge, SHOAL's flagship programme, the 1,000 Fishes Initiative. The initiative's purpose is to provide a vehicle for escalating and accelerating conservation action the world's most threatened freshwater fishes, and is framed by the ambitious target of catalysing conservation for 1,000 fishes by 2035.

The key objective is to use the platform of the SHOAL Strategic Partners to build and strengthen hundreds of Local Action Partners to protect and conserve the species, habitats and communities that most need our help.

The 1,000 Fishes Initiative is founded on an analysis and plan presented in the 1,000 Fishes Blueprint. The Blueprint presents seven strategies to initiate action for at least 1,000 fishes from more than 2,300 fishes listed as the most threatened globally.

Following the launch, the SHOAL core team and partners immediately begun implementation, including building a database of the 2,300+ species and collecting information on the species, partners and any conservation action they have received. The team has also begun developing more detailed plans and strategies under the seven Blueprint strategies.



Top: Pallid Sturgeon (*Scaphirhynchus albus*) © Sam Stukel
Middle: Mekong Giant Catfish (*Pangasianodon gigas*) © David Tan/Mandai Wildlife Group
Bottom: Leopard Spot Barbel (*Luciobarbus subquincunciatus*) © Cüneyt Kaya



1,000 Fishes

A Blueprint for Accelerated Conservation Action for 1,000 Freshwater Fishes by 2035

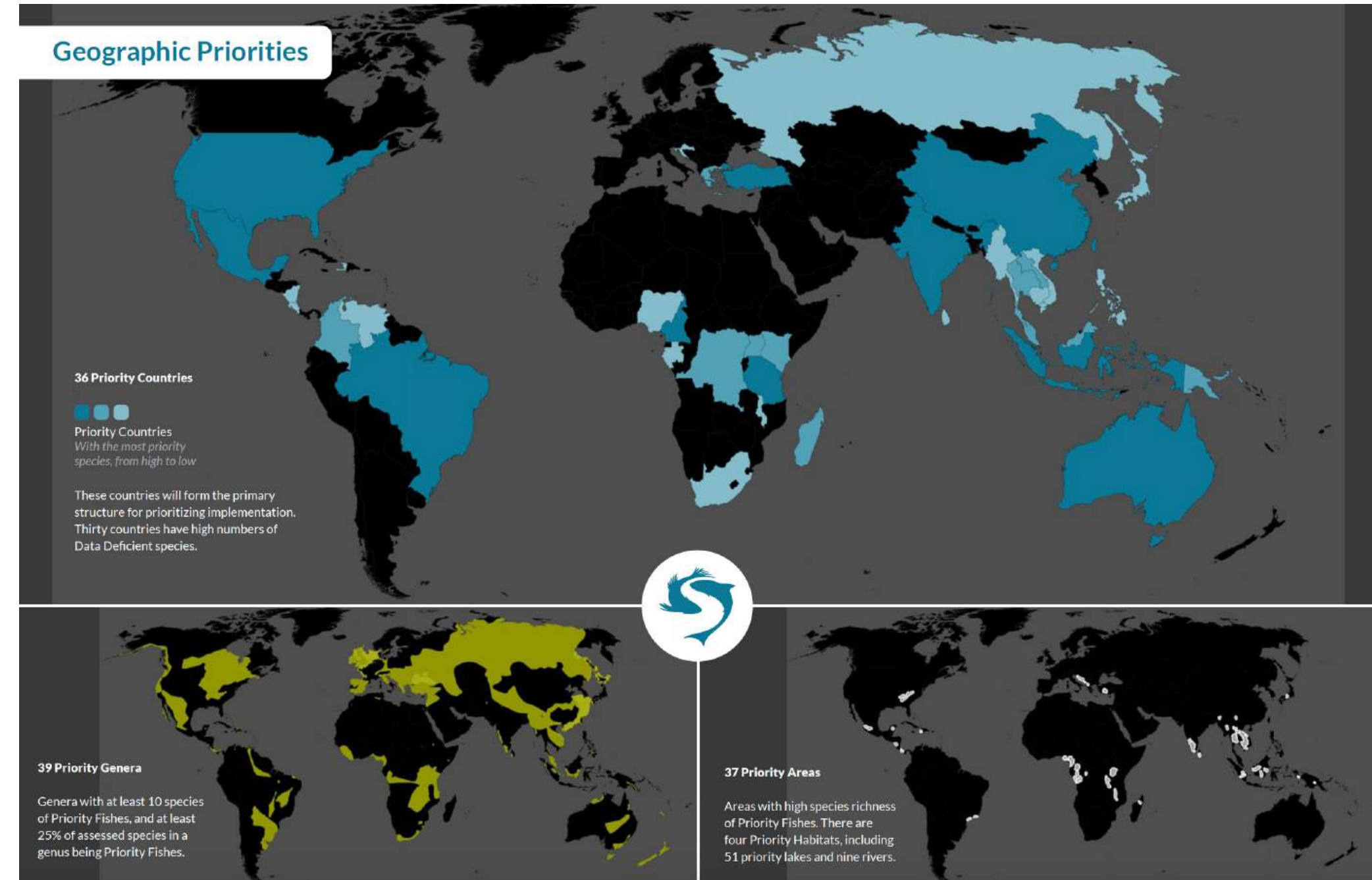


These include:

- Developing regional or national strategies for priority countries and regions.
- Identifying partners that can be coupled with action for each of the 2,300+ species.
- Raising funds to provide grants to Local Action Partners or working with Strategic Partners with small grant programmes to target these priority fishes and habitats.
- Bringing in more partners to strengthen the SHOAL.
- Spreading the word about the incredible freshwater fishes that are so threatened.
- Connecting with other related initiatives.



8. SHOAL Annual Review 2024



Far left: Mike Baltzer, SHOAL's Executive Director, presenting at the 1,000 Fishes Blueprint launch at Fishmongers' Hall, London © SHOAL

Left: Opulent decoration at Fishmongers' Hall © SHOAL

Bottom: Maps showing the Priority Countries, Priority Genera and Priority Areas outlined in the 1,000 Fishes Blueprint.

HIGHLIGHTS

Partnerships with Amazonas and Practical Fishkeeping magazines:

During 2024 we firmed up content partnerships with leading aquarium hobbyist magazines Amazonas (USA) and Practical Fishkeeping (UK), enabling SHOAL to better communicate its messaging about the natural synergies between the aquarium hobby and conservation. Fundamental to the conception of SHOAL is the belief that the aquarium hobby has the potential to be – and really should be – integral to freshwater fish conservation. Hobbyists are the most passionate, and often most knowledgeable, when it comes to freshwater fish and they have a natural vested interest in the sustainability of their hobby. Working with Amazonas and Practical Fishkeeping offers SHOAL reliable, effective channels to engage the hobbyist community with subjects that interest them.



Michael Köck's European tour:

Michael Köck, Chair, Plan G, leads the project to conserve Mexico's highly threatened Goodeid fishes. Through September and October 2024 we provided funding for Michael to tour European zoos, museums and public aquaria to fundraise for this fantastic project. During the five-week tour, he visited 38 institutions as part of a whirlwind fundraising mission. The unique Goodeinae family of Splitfins in Mexico is one of the most endangered in the world, with 90% of the described species threatened with extinction according to the IUCN. As a result of Michael's hard work, vital funding has been provided and promised by a selection of leading zoos, museums and aquaria throughout Europe.



Left and above: Michael Köck at Karlsruhe Zoo, Germany © Michael Köck/Plan G

The SHOAL Alliance of Zoos and Aquaria:

Recognising the vital role that zoos and aquaria play in protecting freshwater biodiversity, SHOAL established the SHOAL Alliance of Zoos and Aquaria to improve synergies among zoos and aquaria and build on their great work for boosting freshwater conservation efforts. A major achievement was the successful hosting of the Alliance's inception workshop in January 2025, which brought together key freshwater and conservation leaders from participating institutions of zoos and aquaria across Asia, Europe, and America.

The workshop served as a critical opportunity for refining the Alliance's membership framework, identifying synergies, and charting the path forward. Participants reaffirmed the value of SHOAL's role as a global convenor, fostering collaboration, facilitating knowledge exchange, and uniting efforts toward freshwater species conservation. The Alliance is anchored around four core strategic objectives:

1. Raising awareness of the beauty, richness, and fragility of freshwater species and habitats to inspire global action.
2. Establishing and collaborating on conservation breeding programmes.
3. Providing technical support and building capacity among field partners.
4. Contributing funding and fundraising support toward shared

The Alliance is a collaboration of public zoos and aquaria, uniting their collective strengths to help achieve SHOAL's ambitious mission. By working together strategically, these institutions can provide unmatched resources, expertise, and capacity to drive and scale impactful freshwater fish conservation.

Alliance members contribute through at least one of the four strategic pillars and are empowered and encouraged to lead efforts toward these objectives.

For example, ABQ BioPark is spearheading the conservation breeding efforts by leading the planning and organisation of a workshop to scale up global ex situ conservation for the world's most threatened freshwater fish. By applying the IUCN Conservation Planning Specialist Group's Integrated Collection Assessment and Planning process to SHOAL's 1,000 Species Blueprint, this effort aims to establish a globally collaborative framework for freshwater fish ex situ conservation by identifying species with the highest potential for ex situ conservation success, developing standardised evidence-based best management practices, promoting engagement with hobbyist communities, aligning partner priorities, and improving data sharing to address knowledge gaps.



© Tim Lyons

“Zoos and aquariums have the potential to fill critical gaps in the ex situ conservation of freshwater fishes, but to date there are limited networks and frameworks to support systematic and strategic conservation intervention. This is one major strength of the SHOAL Alliance that represents a departure from the way that conservation has historically been done.”

As a SHOAL Alliance member, ABQ BioPark is working to build the scaffolding that will support a globally comprehensive ex situ programme for freshwater fishes. We're starting by prioritising the species in most need of, and best suited for ex situ conservation through a process called Integrated Collection and Assessment Planning. This rapid, multi-species conservation planning process will inform where our Alliance's efforts are best spent and provide a transparent receipt for how we got there.

We're confident that shared objectives across all SHOAL partners will serve to galvanise our resolve to halt freshwater fish extinction, while allowing us to use limited resources with the highest level of efficacy.”

–Tim Lyons, Director of Conservation, New Mexico BioPark Society

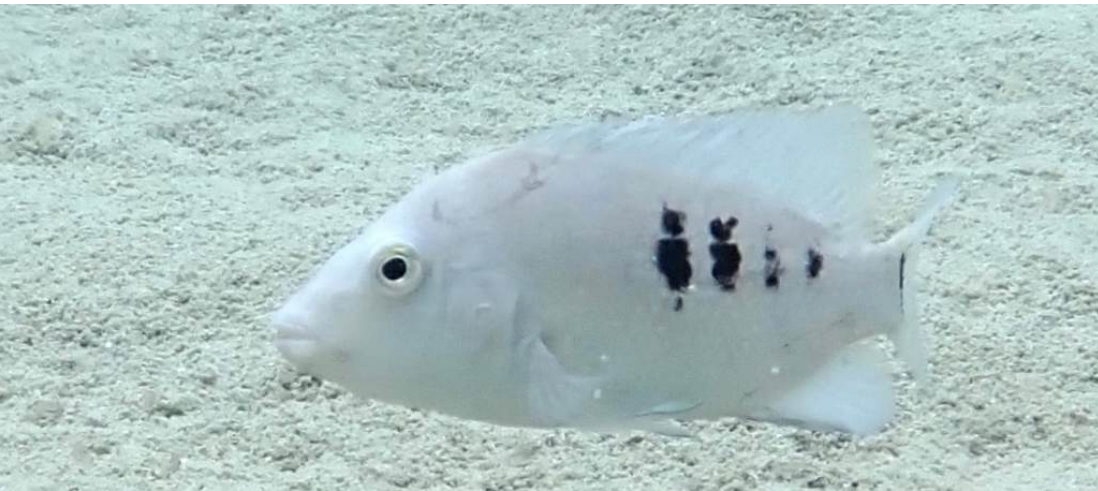


Springs Conservation:

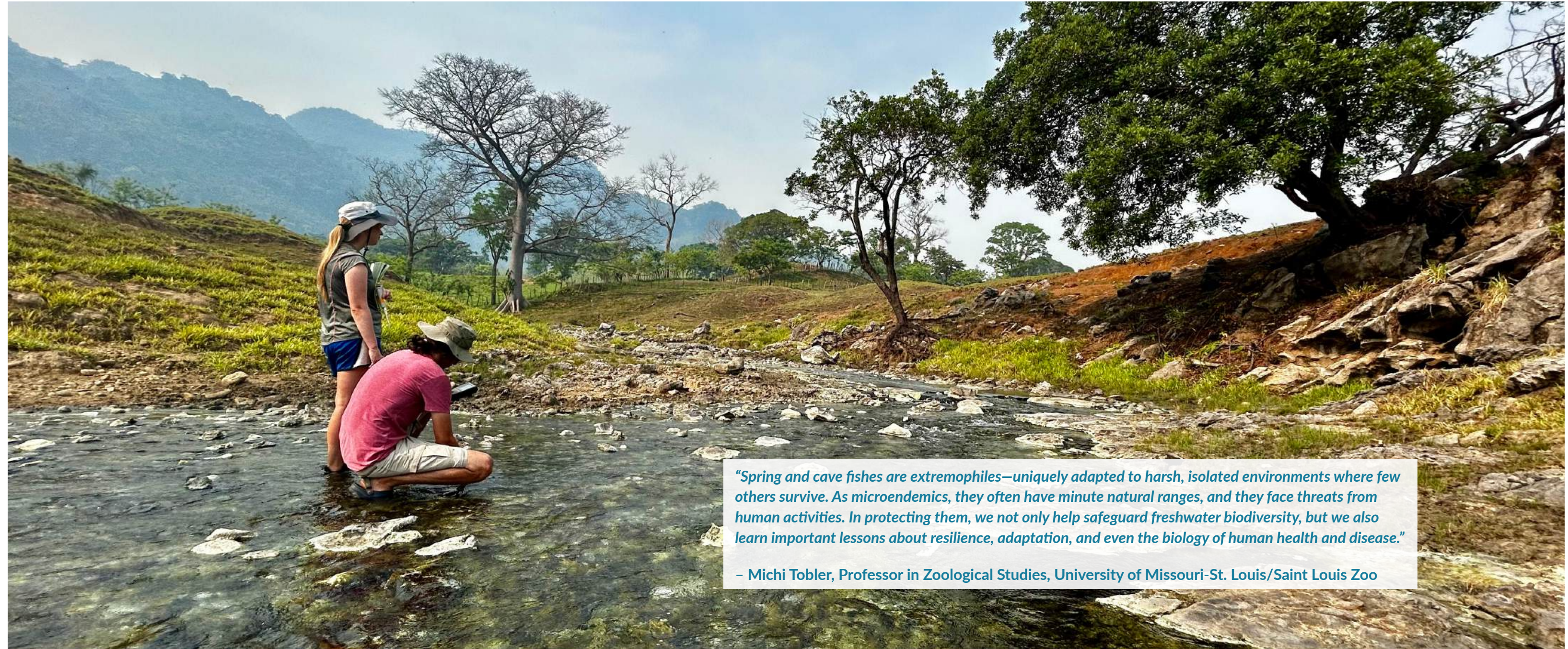
SHOAL made significant efforts to spotlight springs, which are rare, fragile ecosystems that are critical biodiversity hotspots and evolutionary refuges for rare, endemic, and endangered species. Despite their economic, ecological, cultural and spiritual importance, springs face mounting threats and remain largely neglected in policy, research and implementation. In response to this crisis, SHOAL (through Re:wild) collaborated with the IUCN SSC Freshwater Conservation Committee and successfully led an IUCN motion calling for urgent global action to protect springs and their unique and important biodiversity – an important step toward elevating springs on the international conservation agenda.

In parallel, SHOAL also prioritised resource mobilisation efforts, applying for competitive grants such as those from the National Science Foundation and the Science for Nature and People Partnership, with a particular focus on spring-dependent fish.

Through these efforts, SHOAL is aiming to shift the narrative and attention, from neglect to action, toward protecting some of the most imperilled and least understood species and habitats on the planet.



Cuatro Ciénegas Cichlid (*Herichthys minckleyi*), an imperiled cichlid endemic to desert wetlands in the Bolsón of Cuatro Ciénegas, Coahuila, México, a spring-fed wetlands © Michi Tobler



“Spring and cave fishes are extremophiles—uniquely adapted to harsh, isolated environments where few others survive. As microendemics, they often have minute natural ranges, and they face threats from human activities. In protecting them, we not only help safeguard freshwater biodiversity, but we also learn important lessons about resilience, adaptation, and even the biology of human health and disease.”

– Michi Tobler, Professor in Zoological Studies, University of Missouri-St. Louis/Saint Louis Zoo

La Esperanza spring in southern Mexico is toxic due to high levels of naturally occurring hydrogen sulfide. It also harbors a unique endemic fish species, *Poecilia thermalis*, which is restricted to the immediate spring run that spans about 150 meters. © Michi Tobler

Team expansion:

GEORGIE BULL

I joined the SHOAL team in April 2024 and was immediately struck by the scale of the challenge ahead – and the unwavering dedication of the small, passionate team I had joined. It's no surprise to anyone who knows me that I am completely captivated by fish. From childhood days spent catch-and-release angling for pike with my dad, collecting fossilised fish on the beaches of Dorset, to being mesmerised by tropical fish in the local garden centre at age seven, nearly every decision I've made in my career has brought me closer to fish. With a background in marine biology and coastal ecology, my research has focused on marine fisheries and historical ecology. Yet my drive to share this passion with others led me into underwater photography and wildlife filmmaking, including work on fish-related stories for Sir David Attenborough's Asia series.

Ultimately though, I wanted to return to my greatest passion: conservation. Since joining SHOAL, I've had the privilege of working alongside others who share this deep connection to fish. I've even photographed species I once marvelled at as a child in the garden centre, like the Denison's Barb from India's Western Ghats. Meeting the incredible team at Zoo Outreach and The Kerala University of Fisheries and Ocean Studies has certainly been a career highlight for me, and I'm only one year in!

I'm incredibly proud of what SHOAL has accomplished over the past year, and even more excited about what lies ahead. There's so much to look forward to, and I am very grateful to be able to play a small part in it.



NATHANIEL NG

Like many fish-oriented people the world over, my love for the underwater world started in my early childhood; staring goggle-eyed mouth-agape through glass or acrylic or the rippling surface of pond or lake or ocean, questing for the quicksilver flash of scale and fin.

A population genomicist and evolutionary biologist by training, I harbour a deep interest in the mechanisms that drive the generation of species, which has in turn nurtured an intense and abiding passion for biodiversity and its preservation. While my research has historically been focused on birds (the other of my two largest taxonomic obsessions), the sheer level of conservation neglect freshwater fish face has led me down the path to my present role at SHOAL, where I coordinate conservation action on Southeast Asia's most highly threatened freshwater species and habitats. Being right in the thick of the action has been a dream come true for me – a realisation that, when it sometimes strikes in the middle of a regular workday – still takes my breath away.

Perhaps predictably, I spend a lot of my time outside of work SCUBA diving and birdwatching. There is nothing like immersion in the majesty of the natural world when it comes to keeping the passion for conservation aflame!



CHOU LY OU

My journey into freshwater fish conservation didn't begin like many of my colleagues. I didn't grow up dreaming of saving fish or exploring tropical lakes or rivers for new species. I grew up in Cambodia, a small country in Southeast Asia, where fish were abundant. Like most Cambodians, my earliest connection to fish

was through a piece of salted fish eaten with rice. I never thought of fish as something that needed protecting – no one around me did. Fish were caught, sold, and eaten. That was their story.

Everything changed after university when I joined a research project on the Tonle Sap – Southeast Asia's largest lake and one of the most extraordinary freshwater ecosystems on Earth. There, learning from local fishers and scientists, I began to see fish differently: not just as food but as remarkable animals, each with its own shapes, characteristics, adaptation, and wonder. I was struck not only by how fascinating they were but by how little we know about them and how often they were overlooked in conservation. The more I learned, the more I wanted to protect them. That passion eventually led me to pursue postgraduate studies and build a career in freshwater fish conservation.

Looking back, this path wasn't something I planned to do. It unfolded through curiosity, learning, lived experience, and often frustration at how overlooked freshwater fish can be. Over the years, I have worn many hats: researcher, conservationist, and educator. And now, at SHOAL, I feel like I'm wearing the perfect hat, one that allows me to bring together and connect with the many different people working to protect freshwater fish around the world.



NEW PARTNERS



STRATEGIC PARTNERS

Dr. Zeb Hogan/University of Nevada Wonders of the Mekong:

The Mekong River is the lifeblood of Southeast Asia, supporting over 70 million people with its unparalleled biodiversity and inland fisheries. The Wonders of the Mekong, an initiative of the University of Nevada, aims to drive strategic, science-driven conservation and education that delivers lasting impact on the communities, economies, and ecosystems of the Mekong region. The SHOAL team is working with Dr. Hogan on developing a Species Conservation Action Plan for nine species of imperilled migratory fishes of the Mekong River Basin.



The Wonders of the Mekong programme focuses on research and capacity development in Southeast Asia. Through collaboration between U.S. and Mekong region experts, we have fostered international partnerships, trained the next generation of scientists, and made groundbreaking discoveries that contribute to sustainable development and environmental stewardship.

Our work advances scientific knowledge and strengthens international cooperation, supports local economies, and enhances the resilience of one of the world's most ecologically and economically vital river systems.

- Dr. Zeb Hogan



© Zeb Hogan



© Zeb Hogan

A selection of Wonders of the Mekong's accomplishments:

- Reached over 1 billion people annually through media and outreach.
- Trained over 5,000 students and young professionals in the Mekong region.
- Discovered new species, presumed extinct species, and the world's largest freshwater fish.
- Conducted pioneering research influencing regional conservation policy.
- Launched the Mekong Heroes Program, honouring local conservation champions.
- Supported the recovery of endangered species like the Mekong Giant Catfish.
- Facilitated Fulbright and NextGen exchanges, strengthening international ties.
- Helped establish a Center of Excellence for Aquatic Science and Sustainability at the Royal University of Agriculture in Phnom Penh, Cambodia.

Dr. Michael Tobler/University of Missouri Saint Louis & Saint Louis Zoo:

Tobler's lab investigates the mechanisms underlying the biological diversification of extremophile fishes. Tolber lab has a strong emphasis on making science accessible to the general public, in particular through his connection with the Saint Louis Zoo. The SHOAL team has been collaborating with Dr. Tobler in efforts to promote the science and conservation of spring fishes, including collaborating on multiple competitive grant applications as part of our fundraising efforts for the conservation and research of fish species dependent on springs.



La Esperanza spring, southern Mexico © Michi Tobler



Cuatro Ciénegas, spring-fed wetlands of the Bolsón de Cuatro Ciénegas in Coahuila, México © Michi Tobler

LOCAL ACTION PARTNERS

Yayasan Aksi Konservasi Celebica/Celebica Conservation Action (Celebica):

Celebica, headquartered in Palopo in South Sulawesi, Indonesia, is an Indonesian NGO that focuses on threatened species conservation, biodiversity research, and community campaigns in the Wallacea bioregion encompassing Sulawesi, the Maluku, and the Lesser Sundas. We partnered with Celebica on a project on the Sarasins buntingi (*Xenopoeilius sarasinorum*) from Lake Lindu, led by chairman of the Fauna Division Dr. Muh. Herjayanto.



The threat to *X. sarasinorum* is the historical and ongoing introduction of invasive fish in Lake Lindu; there is no conservation management of the species, and many people do not know this species. Introducing invasive fish because the community and the government (Seed Service Fisheries of Sigi Regency) do not yet know the importance of protecting this species. Therefore, it is necessary to carry out conservation activities based on education and species pride in the community.



- Dr. Muh. Herjayanto

X. sarasinorum. © Celebica



© Celebica



Mekong River. Matthew Yong on Unsplash



© ComNetMekong



© ComNetMekong



Jullien's Golden Carp. © David Tan

Association of Northeast Thailand Community Network in 7 Provinces along the Mekong Basin (ComNetMekong):

ComNetMekong, headed by association president Ormbun Thipsuna, is an NGO focused on the conservation and protection of the natural environment and resources along the Mekong River. This huge network, consisting of more than 1,400 community groups, works together with a wide range of different governmental, academic, conservation, and private sector organisations to study and mitigate the wide-scale impacts anthropological activities have wreaked on the Mekong and the myriad negative effects they have had on the many communities that rely on the mighty river. They are headquartered in Mueang District, Nong Khai Province, Thailand.



Changes in the Mekong, including rapid water level fluctuations and dam construction on the river, have been affecting Jullien's Golden Carp habitats and causing loss of its food sources. This has resulted in a decrease in their population, which has then become one of the reasons fishermen choose to use illegal fishing methods to target the species as it and other aquatic animals have become rare and hard to find.

- Ormbun Thipsun



© ComNetMekong

Sueb Nakhasathien Foundation (SNF):

Founded in memory of Thai conservationist and environmental activist Seub Nakasathien, SNF has as its main goal the protection of forests and natural areas and the threatened wildlife they harbour. While SNF in the early years of its inception worked mainly in the Huai Kha Khaeng and Thung Yai Naresuan forests, since the late 90s to early 00s it has expanded its activities all over Thailand. Among the landscapes SNF works in is the Bangpakon Basin, where renowned Thai ichthyologist Dr. Chavalit Vidthayanon works with government agencies and local communities to protect the last known habitat of the Critically Endangered Somphong's Rasbora (*Trigonostigma somphongsi*).



Somphong's Rasbora, a Critically Endangered, CEPF priority species, was rediscovered in the last decade in Nakhon Nayok Province in Thailand, which has led to the beginnings of long-term conservation efforts. While local government and other stakeholders are aware of the importance of managing and conserving the ecosystem/habitat the species relies on, they have limited resources to take action. This project will strengthen and empower local stakeholders and mainstream best practice guidelines for floodplain habitat utilizations to provincial and national levels.



- Dr. Chavalit Vidthayanon



© Sueb Nakhasathien Foundation
28. SHOAL Annual Review 2024



Somphong's Rasbora habitat. © Sueb Nakhasathien Foundation

Airlangga University:

Dr. Veryl Hasan from Airlangga University, one of SHOAL's new partners, leads a project on island endemic Betta burdigala based in Bangka-Belitung Province, east of Sumatra. Together with collaborators from Bangka-Belitung University, Lee Kong Chian Natural History Museum/National University of Singapore, and the University of Leeds, Veryl works to better understand and protect this Critically Endangered species, while raising awareness and pushing for the preservation of Bangka's irreplaceable peat swamp habitats.



Betta burdigala is the heart of the peat swamp forest. Saving it means protecting all components of the ecosystem

- Dr. Veryl Hasan



Veryl Hasan with B.burdigala individuals. © Veryl Hasan



B. burdigala. © Veryl Hasan
SHOAL Annual Review 2024 29.

Pusat Riset Konservasi Gajah dan Biodiversitas Hutan/Research Center for Elephant Conservation and Forest Biodiversity (PKGB):



PKGB, an institution of Universitas Syiah Kuala, was established in 2018 to work on elephant conservation and biodiversity rescue in the state of Banda Aceh, Sumatra. Their intimate understanding of local customs and beliefs allow them to have open and often effective discussions with local stakeholders on the ground, garner buy-in and improve conservation outcomes. These capabilities, together with their proficiency in research, are harnessed in their project on *Poropuntius tawarensis*, a Critically Endangered endemic fish from Lake Tawar in the highlands of Aceh Province.



Tawar Lake, located in the tropical highlands of Aceh province, Indonesia, is the sole habitat of two Critically Endangered freshwater fish species: Rasbora tawarensis and our project target Poropuntius tawarensis, known locally as Depik and Kawan. Both play vital roles in the lake's ecology and local economy, and these fish have cultural value for the local community. There is limited data that can be used to guide their protection. Besides direct collection for subsistence, human activities like illegal logging, illegal fishing, tourism, and global warming in the past decade have drastically altered Tawar Lake's ecology, further elevating threat for the species.



- Dr. Abdullah, M.Si.

Hasanuddin University:

Muhammad Iqram is the founder of the newly launched Tapak Diversitas Hayati Nusantara (TARSIUS), a youth community organisation with keen interest in conserving Sulawesi's unique natural heritage. His project on Lake Lontoa was started in 2023 under the aegis of Hasanuddin University. Presently a PhD candidate at the Museum für Naturkunde Berlin, Iqram also contributes to Sulawesi freshwater conservation as a member of Sulawesi Keepers.



Lake Lontoa, one of the ancient lakes in Sulawesi's Malili Lake System, is the only natural habitat of Paratherina labiosa. Paratherina labiosa was last found in the early 1990s, with surveys in 2006 failing to locate the fish. As such, population surveys to ascertain if the species still persists, together with assessments of the threats that any surviving fish face, are crucial for the conservation of this endemic species given ongoing threats such as invasive species, lowered water levels, algal blooms and sedimentation.



- Muhammad Iqram



Lake Tawar. © PKGB
30. SHOAL Annual Review 2024



Lake Tawar. © PKGB



© Muhammad Iqram



© Muhammad Iqram

Perkumpulan Kawan Konservasi Tropis/Tropical Conservation Society (TCS):

TCS is a young, homegrown NGO based in Pontianak, West Kalimantan, Indonesia. Started in 2022 by founding director Winda Eka Putri, TCS works to drive positive conservation outcomes for Kalimantan's priceless biological heritage, including *Parosphromenus ornaticauda*, a highly threatened and endemic blackwater species of the Kapuas drainage.



One of the main challenges related to producing conservation action for this charismatic species is the lack of up-to-date data or information on populations in the wild, which is due to limited scientific exploration and survey work. Lack of knowledge on the extent of local hunting and trade in the species is another set of unknowns. Coupled with the loss of peat forest due to the expansion of the oil palm industry and settlements, yet another complex and intractable problem, the persistence of this Critically Endangered species is under grave threat.



- Winda Eka Putri



P. ornaticauda female (top) and male. © TCS
32. SHOAL Annual Review 2024



TCS at the field site. © TCS

Community Centred Conservation (C3) Philippines:

C3 Philippines, under executive director Reynante Ramilo, prides itself on being a grassroots-led organisation focused on the development of environmental stewardship models with the capability to develop real conservation impact. C3 Philippines works mainly in the province of Palawan, Philippines, with their three offices situated in the Calamianes islands, Taytay, and Puerto Princesa. We worked with Reynante and his team on the highly threatened endemic fish species *Barbodes manguaoensis* and *Bostrychus expatria* of Lake Manguao, situated in northern Palawan.



The lake is home to three lake-endemic freshwater fishes including *Barbodes manguaoensis* and *Bostrychus expatria* and also harbours an additional four fish species that are endemic to northern Palawan and its satellite islands. The associated habitat within Lake Manguao is also an important stronghold for seven species of globally threatened birds. As such, it was identified as one of the Key Biodiversity Areas for its global significance on biodiversity conservation. As the largest lake in mainland Palawan, Lake Manguao is a natural heritage not only for the people of Taytay but for the entire province in general.



- Reynante Ramilo



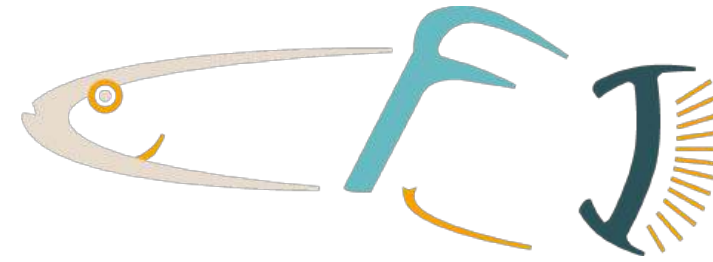
C3 at Lake Manguao. © C3



B. manguaoensis (top) and *B. expatria*. © C3
SHOAL Annual Review 2024 33.

Conservation Fisheries:

Conservation Fisheries, based in the United States, stands as a global exemplar of freshwater fish conservation, and our interactions with the team leave us inspired. Conservation Fisheries' work offers a powerful model for what can be achieved through dedicated species recovery efforts: for over three decades, they have pioneered the captive breeding and reintroduction of some of North America's most imperilled freshwater fishes. Today, they are actively working with 11 Priority Fishes.



Their facility in Tennessee is one of the few in the world entirely focused on propagating rare and endangered freshwater fish for conservation purposes. By combining rigorous science with practical fieldwork and long-standing partnerships with government agencies and other stakeholders, Conservation Fisheries has successfully reintroduced multiple species into their native habitats, contributing to measurable population recoveries. Their approach is meticulous, collaborative, and relentlessly optimistic, which embodies the very spirit of freshwater conservation that SHOAL seeks to support and amplify around the world.

While their work is firmly rooted in the context of North America, the impact of their methods and the hope they inspire transcend borders. As we confront a global crisis in freshwater biodiversity, the story of Conservation Fisheries reminds us of what's possible when expertise, commitment, and vision align. It offers both a benchmark and an inspiration for SHOAL's own mission to catalyse similar efforts globally, and reinforces the value of sustained, species-specific action in safeguarding the world's most endangered freshwater species.



Conservation Fisheries biologists and partners snorkeling, surveying for the Yellowfin Madtom (*Noturus flavipinnis*). © Conservation Fisheries



Barrens topminnow (*Fundulus julisia*): one of the first species Conservation Fisheries worked on. © Conservation Fisheries



Little Tennessee River. Timothy Kasss on Unsplash

1,000 FISHES



In this review for 2024, we showcase the work of a team of partners developing an action plan for Malagasy freshwater fishes that SHOAL has been invited to join and support, and highlight how the 1,000 Fishes Initiative is as much about communities and communities' action for freshwater habitats as it is species conservation

We also present the work in Southeast Asia with the IUCN SSC ASAP programme, which builds on the Strategic Framework for the Conservation of ASAP Freshwater Fishes in Southeast Asia that SHOAL published in 2023 with IUCN SSC ASAP and Mandai Nature. This framework was a call to action for 90 Critically Endangered freshwater fishes in Southeast Asia, and we are delighted to report that in just two years, 25 of those 90 species are now receiving conservation attention, with many more planned for 2025 and beyond.

MADAGASCAR

Madagascar is one of the priority countries identified in the 1,000 Fishes Blueprint. Fortunately for SHOAL, there is an ongoing partnership focusing on the conservation of Malagasy freshwater fishes, coordinated by Charles-Edouard Fusari, Director of the Aquarium Tropical de la Porte Doree, Paris.



In June 2024, Mike Baltzer and Georgie Bull from the SHOAL core team attended the Malagasy Freshwater Fish Conservation Workshop in Paris – the first of its kind since 2010 – and have since joined a new working group to accelerate action for Madagascar’s highly threatened freshwater fishes. Tsilavina Ravelomanana opened the workshop with findings from the 2018 IUCN report, highlighting that over 80% of endemic freshwater fish species are threatened. Charles Edouard Fusari of FishNet Madagascar presented work on maintaining insurance populations of *Paretroplusincolitus* in the Aquarium Tropical de la Porte Dorée, Paris.

Thirty species on SHOAL’s priority fish list are from Madagascar, 14 of which are Critically Endangered. Alarmingly, nearly half of endemic species lack sufficient data to fully describe occurrence and distribution. The partnership is now preparing a strategy for the Malagasy Freshwater Fishes which will guide immediate action, including any support from SHOAL.

Some of the main barriers to conservation action discussed in the workshop included taxonomic uncertainty and a dramatic decline in sampling efforts, from 326 sites 20 years ago to just 31 today. But there is hope: Jelot of Madagasikara Voakajy (MV) shared community-led recovery efforts for the Critically Endangered Pinstripe Damba (*Paretroplus menarambo*) at Lake Tseny, where fishing supports local livelihoods. MV has helped establish a fisheries cooperative to balance conservation and food security.

SHOAL’s involvement in this initiative reflects a commitment to grow its support to the conservation of Madagascar’s freshwater biodiversity, and we are excited to work with partners around the world to support Local Action Partners on the ground in the coming years.



Madagascar habitat. © Tsilavina Ravelomanana



The Malagasy Freshwater Fish Conservation working group. © Charles Fusari



Bedotia madagascariensis. © Loïselle P. V., Rodriguez D.

MALAGASY FRESHWATER FISH CONSERVATION WORKING GROUP PARTNERS

Agence Française de Développement
Aquarium Tropical
Association des producteurs Privé D’Alevins
Association pour la Conservation des Cichlidés Malgaches
Braunschweig University
Bristol Zoological Society
Chester Zoo
Citadelle de Besançon
Citizen conservation
Cologne Zoo

Conservation International
Floribis, Crocfarm
Fossa sarl
Madagasikara Voakajy
Rotterdam Zoo
Toronto Zoo
Wildfowl & Wetlands Trust
Wildlife Protection Solutions
Yves Fermon- Ichthio SAS
Zoological Society of London

CONSERVATION ACTION FOR SOUTHEAST ASIA'S CRITICALLY ENDANGERED FRESHWATER FISHES



Among all the Southeast Asian vertebrate species listed as Critically Endangered in the IUCN Red List, freshwater fish form the largest species group. In spite of this, they are a highly neglected taxon which have historically not been the targets of much conservation action.

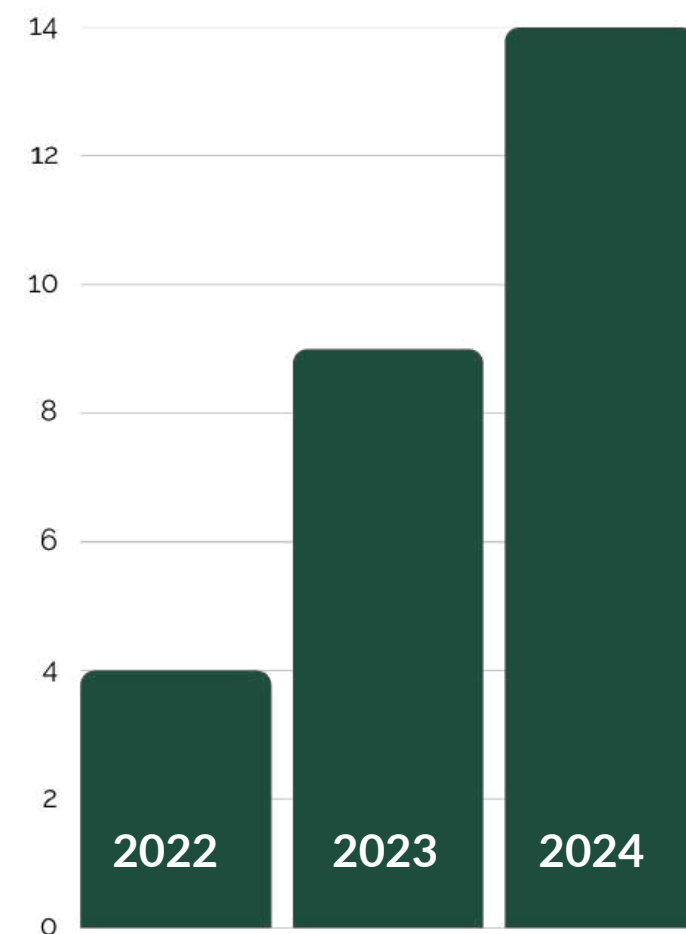
In response to this very pressing need, since its 2019 inception SHOAL has worked very closely with the IUCN SSC Asian Species Action Partnership (ASAP) to advance freshwater fish conservation in Southeast Asia. In 2023, SHOAL, ASAP, and Mandai Nature jointly published the Strategic Framework to accelerate conservation action for ASAP Freshwater Fishes and also launched the SHOAL ASAP Freshwater Fish Conservation Grant, actions which have helped kickstart growing conservation action for freshwater fishes in the region.

Freshwater fish conservation is a highly complex endeavour. For efforts to have positive impact, conservation interventions need to be tailored individually to each species, taking into consideration country, habitat, life history, and specific threats and challenges. In 2024, SHOAL action partners positively impacted 14 different ASAP freshwater fishes in situ, working out of locations in Indonesia, Thailand, Malaysia, and the Philippines. This represents the largest extent of in situ action on ASAP fishes since SHOAL's inception.

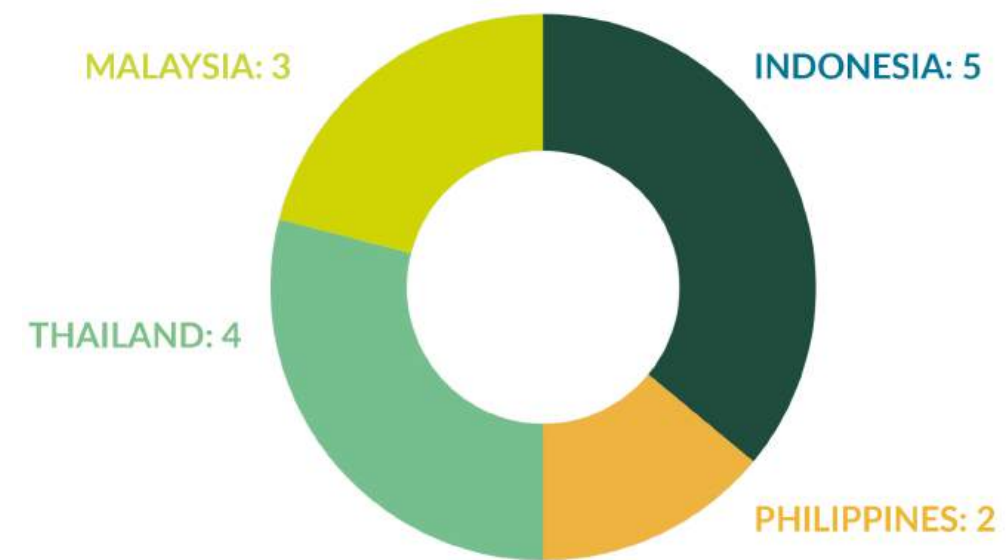


ASAP FISHES IN SUMMARY

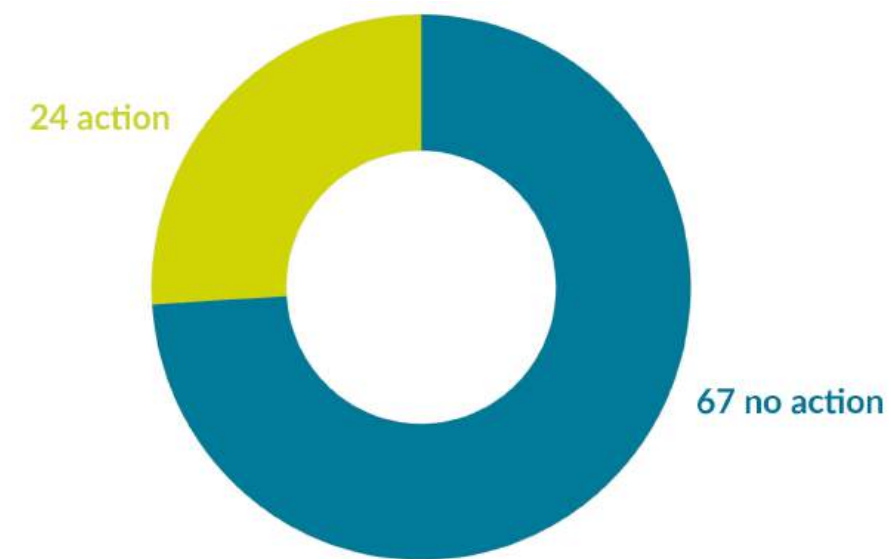
In SHOAL, we split conservation action on fishes into four general categories, which are then further split into various subcategories. Depending on individual species' situations, action from each of these categories can have the potential to enhance probability of species survival; however, for many species, efforts in multiple categories are required to build the synergy necessary for positive conservation outcomes.



Number of ASAP freshwater fishes with conservation action per year.



Country distribution of the 14 ASAP freshwater fishes with conservation action during 2024.



Number of ASAP freshwater fishes that have any conservation action.

ASAP FISHES IN SUMMARY

CATEGORY 1: RESEARCH, INFORMATION GATHERING AND PLANNING

Many of Southeast Asia's fishes are very poorly understood, with many unknowns when it comes to native distributions, ecologies and life histories, habitat needs, and even taxonomic identity. Layered on top of these unknowns are more human-driven uncertainties pertaining to present population statuses, habitat quality and extent, historical and ongoing threats, and potential threat mitigation.

As a result, Category 1 actions targeted at research, information gathering, and planning, overwhelmingly constitute the first necessary steps towards meaningful conservation outcomes. All of our active in situ action partners in 2024 have one or more Category 1 actions in their projects, information from which can help identify needs and allow for better designed future action.

Conservation Action	Description
1A	In situ. Population status and distribution surveys/monitoring.
1B	In situ. Invasive species population, distribution, and/or impact surveys/monitoring.
1C	In situ. Habitat quality surveys/assessments/monitoring, e.g. water quality testing, measurement of environmental parameters.
1D	In situ or ex situ. Assessment/monitoring of collection pressures.
1E	Threat identification work and/or the drafting of conservation action plan(s).
1F	Stakeholder engagement in preparation for, but stopping short of, actual downstream conservation action.

Hasanuddin: *Paratherina labiosa*

SHOAL/ASAP grant

C3's project at Lake Manguao in Palawan aims to promote conservation of endemic species *Barbodes manguaoensis* and *Bostrychus expatria* by engaging and involving local communities in the development of appropriate conservation management strategies. Their project includes a range of different Category 3 actions, including education and outreach programs for youth, indigenous peoples and woman, survey activities to understand perspectives and viewpoints on the ground, and engagement with local policymakers.

Left: Iqram and team in the field. © Muhammad Iqram



Tropical Conservation Society: *Parosphromenus ornaticauda*

SHOAL/ASAP grant

TCS works on the small, striking blackwater osphronemid *Parosphromenus ornaticauda* in West Kalimantan, seeking to address information gaps that make it difficult to design conservation interventions for this charismatic species. Category 1 actions are an important starting component of their project, aimed at collecting data on the species' population and distribution as well as characterising and assessing habitats. This information will then be used to guide further downstream conservation planning and action.

Bottom left: Water parameter assessments on site to characterise species' needs and gauge habitat quality. © TCS
Bottom Right: TCS at the field site for *Parosphromenus ornaticauda* © TCS



ASAP FISHES IN SUMMARY

CATEGORY 2: DIRECT IN SITU ACTION AIMED AT IMPROVING WILD HABITAT

For threatened freshwater fishes to persist in the wild, quality habitat is an absolute requirement. Given heavy human reliance globally on freshwater habitats for everything from water security to transport to food security, freshwater habitat loss and degradation is a highly complex and often intractable problem.

Conservation Action	Description
2A	In situ. Direct area-based habitat/site protection (including OECMs).
2B	In situ. Habitat quality improvement/control (e.g. management of pollution/effluent).
2C	In situ. Engineering modifications (structural, mechanical, or ecological) to improve survival/breeding rates (e.g. modifications to allow passage through dams, planting up of riverbanks to provide vegetative cover).
2D	In situ. Active invasive species control (e.g. fishing down).

ComNetMekong: *Probarbus jullieni*

SHOAL/ASAP grant

While the conservation of heavily utilised freshwater species and habitats is already a highly complex affair, cross border interventions add whole new levels of convolution and delicacy. ComNetMekong operates on the border regions between Thailand and Laos, working to build cooperation between communities and agencies on both sides to protect the highly threatened Jullien's Golden Carp, one of the Mekong's largest cyprinids, critically important for the region's ecosystems, livelihoods, and culture. Category 2 action, in the form of establishing conservation zones and no-take rules during the spawning season, is one of the major objectives of this project.

Bottom left: Community and government agency engagement activities on both Thai and Lao sides of the Mekong. © ComNetMekong
ComNetMekong is also working on the creation and promotion of alternative earning streams for impacted communities. © ComNetMekong



Sueb Nakhasathien Foundation: *Trigonostigma somphongsi*

IUCN/CEPF grant

Somphong's Rasbora, a shining cyprinid with the dubious distinction of being the most likely of Thailand's species to go extinct, is the tiny subject of a project by SNF and led by Dr. Chavalit Vidthayanon to secure its survival. The world's last surviving wild population persists at a single site in the middle Bangpakong Basin, where it relies on a natural yearly flood regime under constant threat of alteration. During the dry season, as floodwaters recede, the fish seek refuge in small ponds and waterbodies especially susceptible to threats such as pollution, water overextraction, and collection for the aquarium trade. A whole suite of conservation actions from across the 4 categories will be necessary to confidently protect this fish, among them crucial Category 2 actions, in the form of identification and protection of specific dry season refugia for this fish.

Left: Engagement session with the Prachinburi Rice Research Center. Cross promotion of traditional "floating rice" techniques are another important component of the project - these techniques allow for the preservation of important wet season spawning grounds and nurseries for the rasbora. © Nathaniel Ng Shengrong.



ASAP FISHES IN SUMMARY

CATEGORY 3: LEGISLATIVE AND COMMUNITY-FOCUSED ACTIONS

Community-focused action is absolutely imperative for species conservation – especially for freshwater fishes, given heavy human reliance on freshwater habitats and resources. Category 3 conservation actions include interventions focused on the people that are the most well-placed to turn the tides for threatened species: raising community awareness, fostering ownership and investment, building collaborative management, and empowering local action.

Conservation Action	Description
3A	In situ. Legislative restrictions on collection (e.g., fishing/ collection limits and quotas, closed collection seasons).
3B	In situ. Community surveys, outreach and/or stewardship building in local communities.
3C	In situ. Community -based conservation interventions (e.g. alternative livelihoods).



Community Centred Conservation:
Barbodes manguaoensis, Bostrychus expatria



SHOAL/ASAP grant

C3's project at Lake Manguao in Palawan aims to promote conservation of endemic species *Barbodes manguaoensis* and *Bostrychus expatria* by engaging and involving local communities in the development of appropriate conservation management strategies. Their project includes a range of different Category 3 actions, including education and outreach programmes for youth, Indigenous peoples and woman, survey activities to understand perspectives and viewpoints on the ground, and engagement with local policymakers.

Left: C3 at Lake Manguao. © C3



Bird Conservation Society of Thailand: *Betta simplex*

IUCN/CEPF

The Krabi Mouthbrooding Betta (*Betta simplex*), a unique osphronemid that inhabits the freshwater streams that course through and along Krabi's limestone coasts, is the subject of a project led by Dr. Nonn Panitvong of the Bird Conservation Society of Thailand. Given the highly complex land-use patterns and history of Krabi's iconic karst landscapes, Category 3 actions to grow local awareness, build stewardship, and secure community buy-in are critical components of the project.

Left: Habitat of *B.simplex* - karstic streams with neutral or slightly alkaline pH.



Pusat Riset Konservasi Gajah dan Biodiversitas Hutan: *Poropuntius tawarensis*



SHOAL/ASAP grant

Headed by Dr. Abdullah M. Si., PKGB's project focuses on the Critically Endangered cyprinid *Poropuntius tawarensis* (locally known as Kawan) from Lake Tawar, in the highlands of Aceh Province, Sumatra. Besides important Category 1 actions aimed at filling critical information gaps, the project also includes crucial Category 3 actions aimed at building strong relationships with various local communities and stakeholders: understanding their unique local customs and beliefs, and engaging with local authorities to identify mutually positive pathways.

Meeting with local village head (Towereen Village). © PKGB



ASAP FISHES IN SUMMARY

CATEGORY 4: BREEDING UNDER HUMAN CARE

For some ASAP species, reliable protection of wild populations may not be a feasible or reliable solution. In these cases and where relevant, Category 4 actions, targeted at building self-sustaining populations under human care, can become critical in safeguarding a species' continued survival. Such interventions help buy time for threats in the wild to be alleviated or for habitats to be restored; they are particularly relevant for fishes with highly limited distributions and narrow environmental requirements, and which can be reliably maintained and bred under human care. Category 4 actions can take place both in situ and ex situ, and can also serve as a powerful way of engaging stakeholders on a larger scale.

Conservation Action	Description
4A	In situ or ex situ. Conservation breeding programmes with the specific aim of returning individuals to the wild as part of reintroduction and/or population augmentation.
4B	In situ or ex situ. Ark-type conservation breeding programmes with the specific aim of ensuring genetically-healthy insurance populations of threatened species under human care.
4C	In situ or ex situ. Breeding programme aimed at lowering collection pressure on wild populations.
4D	In situ. Conservation translocation, reintroduction into former range.

Dr. Chavalit Vidthayanon: *Epalzeorhynchos bicolor*

SHOAL/ASAP grant

The Redtail Sharkminnow (*Epalzeorhynchos bicolor*) is a popular aquarium fish the world over – yet unknown to many, the wild population is barely hanging on to existence, with the species suspected to have been extinct in the wild for many years. This project, headed by Dr. Chavalit Vidthayanon, focuses on gathering the information and laying the groundwork for potential future rewilding. This involves actions from across all four categories. Given the precipitously low numbers of wild individuals and their elusiveness, Category 4 actions are of paramount importance if fish are to be successfully reintroduced into the wild in the future.

Top right: Survey diver *E.bicolor* habitat. © Chavalit Vidthayanon

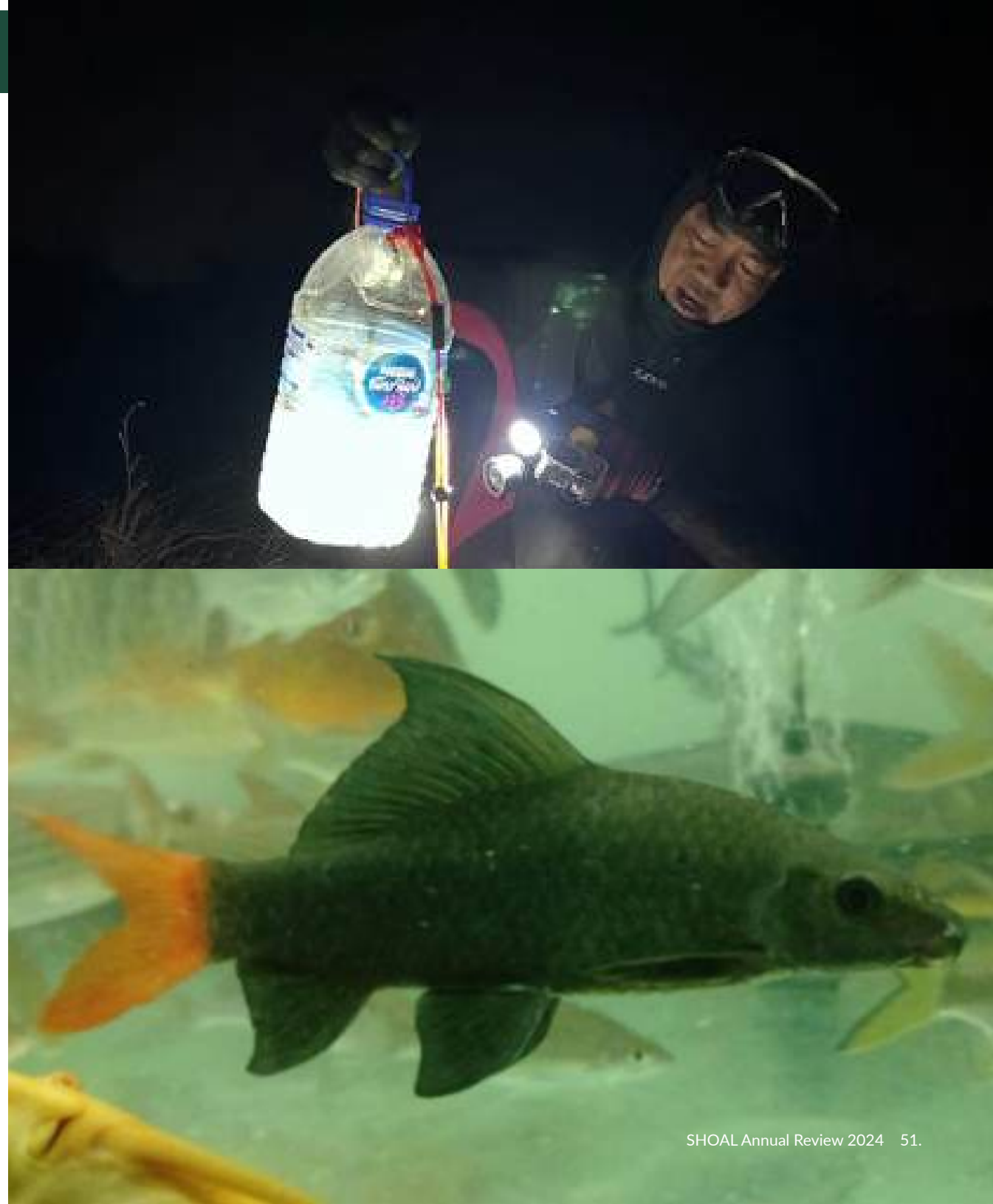
Bottom right: *E.bicolor*. © Chavalit Vidthayanon

Airlangga University: *Betta burdigala*

SHOAL/ASAP grant

Category 4 actions come to fore especially for species which are highly range-restricted to sensitive habitats that face dire, persistent, and ongoing threat. One such species is *Betta burdigala*, a blackwater jewel from the peat swamps of Bangka, off eastern Sumatra. Here, headstarting activities form an important part of a project led by Dr. Veryl Hasan from Airlangga University, who works with international collaborators and local community stakeholders to turn the tides for this glittering island endemic.

Left: Veryl Hasan in *B.burdigala* habitat. © Veryl Hasan



COMMUNITIES TAKING ACTION





Remya L. Sundar (left) with Mr and Mrs Abraham, who discovered the Pathala Eel Loach on their property in 2023. © SHOAL

Subterranean fishes of the Western Ghats:

The ongoing project, led by Dr. Rajeev Raghavan and the Kerala University of Fisheries and Ocean Science (KUFOS) to discover and conserve the incredible subterranean fishes of the Western Ghats in Kerala, southwest India, has been since its inception totally reliant on the actions of engaged community members.

Through Dr. Raghavan's extensive community engagement work throughout the lateritic regions of the Western Ghats, community-members know about the fascinating biodiversity surfacing from underground aquifers there, understand its international interest, and are keen to help the project by getting in touch with the KUFOS team when fishes wash up in their wells and fields.

Local communities have been so integral to the subterranean fishes of the Western Ghats that *Horaglanis populi*, a species described by Raghavan and his team in 2023, was named after them: 'populi' meaning 'of the people', a nod to the local communities that have been integral to subterranean species discoveries. Without their help, these species would simply slip through the net and possibly vanish forever.



Plan G: the plan to conserve Mexico's Goodeids:

"Towards the end of 2024, the Junta Intermunicipal del Medio Ambiente Lagunas (JIMAL), an organisation founded by eight municipalities working together for the environment, has been working to help conserve the highly threatened Goodeid species in Mexico, supporting the work of SHOAL partners the Goodeid Working Group, Universidad Michoacana de San Nicolás de Hidalgo's AquaLab, Chester Zoo, and the IUCN Freshwater Conservation Committee by breeding Critically Endangered or Extinct in the Wild Goodeids on their property and supporting reintroductions of Extinct in the Wild fishes in their drainage of four large lagoons west of Chapala Lake, south of Guadalajara.

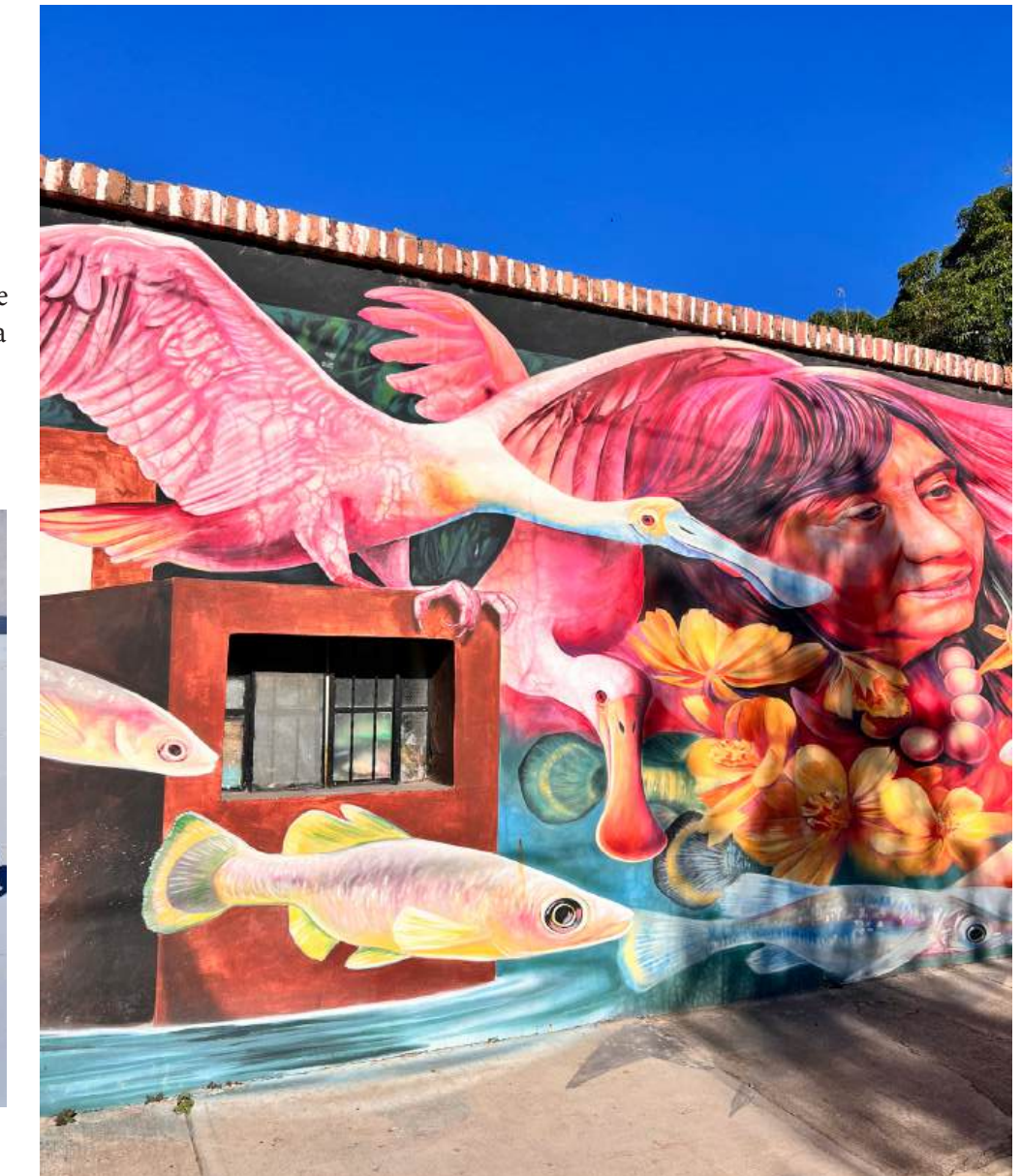
JIMAL have built up two geocisterns for the Golden Skiffia (*Skiffia francesae*) and the Butterfly Splitfin (*Amecca splendens*), participated in a week-long survey of the Laguna de Sayula drainage, and have been helpful in finding and choosing reintroduction sites for the fishes.



Above and right: Murals on walls around Teuchitlán, Mexico. The above text reads, 'And if you had to drink this water that you pollute?' © SHOAL

Along with the Guardianes del Río – the volunteer group who safeguard the wild habitat of the Golden Skiffia and Tequila Splitfin in Teuchitlán – JIMAL have taken the lead on community-driven action to help save threatened fishes in Mexico."

– Michael Köck, Chair, Plan G



SUSTAIN Lake Tanganyika:

“Through 2024, SUSTAIN Lake Tanganyika engaged with local communities and the environment in impactful ways. Collaborating with the government, we reinforced regular, data-captured fishing patrols via a dedicated app. These patrols serve as educational opportunities, allowing us to engage with fishers, clarify fishing regulations, and promote compliance. This initiative highlighted a critical insight: “You cannot negotiate with a hungry man,” which has become our guiding principle.

Recognising the need for alternative protein sources before restricting fishing activities, we accelerated a chicken farming programme. We provided each of the 44 fishers from our local village with a chicken farm, including 50 egg-layers and a six-month supply of feed until egg-laying commenced. In return, they committed to constructing secure chicken runs, which they all successfully completed. Following training and the delivery of chicks in September 2024, the programme has already garnered commendation and inspired a new beekeeping and honey production project. This builds upon our March 2024 initiative, where SUSTAIN provided all 495 households in Kipili with gas stoves, significantly reducing deforestation.

Moving forward, SUSTAIN will continue to operate on the principle that communities need suitable, attainable, and affordable alternatives before being restricted from traditional practices necessary for their livelihoods. Alongside protecting fish reserves and preserving our surrounding forests, this approach will remain central to SUSTAIN’s work and focus in the years to come.”

– Chris Horsfall, Director, SUSTAIN Lake Tanganyika

Further to the community aspect of the project, SUSTAIN Lake Tanganyika has successfully established a fish habitat protection site, with a 1km radius no-take zone around Nkondwe Island, providing essential protection for endemic cichlid populations and their habitats. This is the first offshore protected area for Lake Tanganyika in Tanzania.

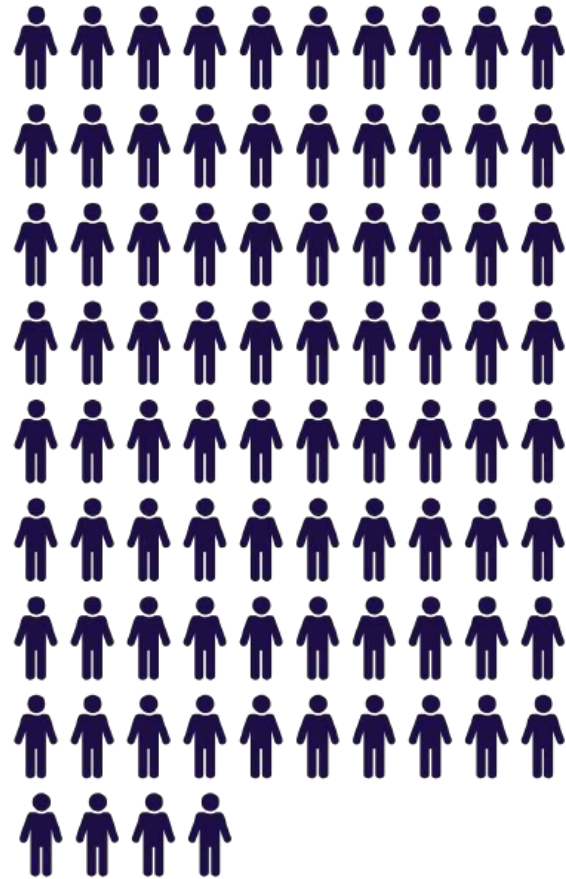


Fishing patrol in Lake Tanganyika. © SUSTAIN Lake Tanganyika



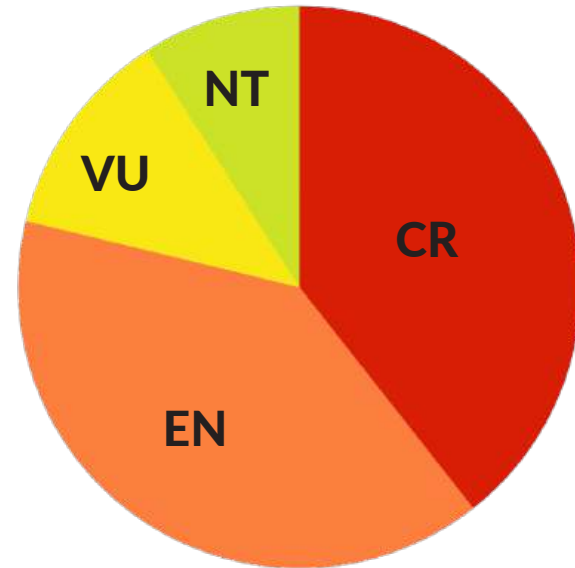
Fishers with chicken drinkers provided by SUSTAIN Lake Tanganyika. © SUSTAIN Lake Tanganyika

IMPACT



More than 80 organisations partnered with or supported SHOAL throughout 2024. See the full list on p.52.

PROJECTS

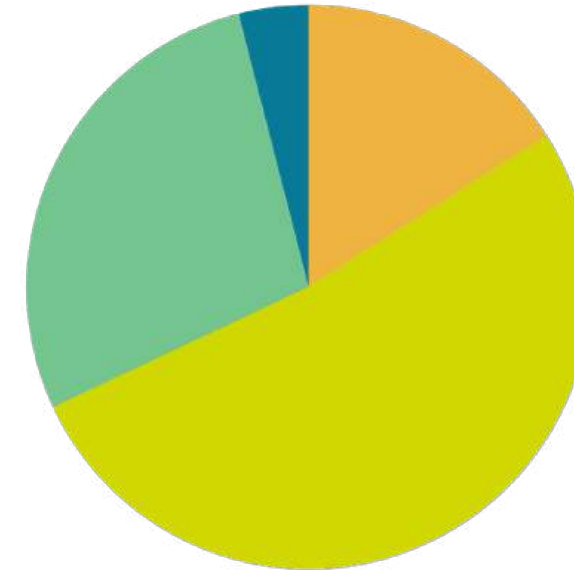


SHOAL projects mobilised conservation action for a total of **53 freshwater fish species** throughout 2024:



+ **a further 20** Least Concern, which benefitted from conservation of species in their habitat.

IUCN RED LIST STATUS



SHOAL was involved with **25 projects** throughout 2024:

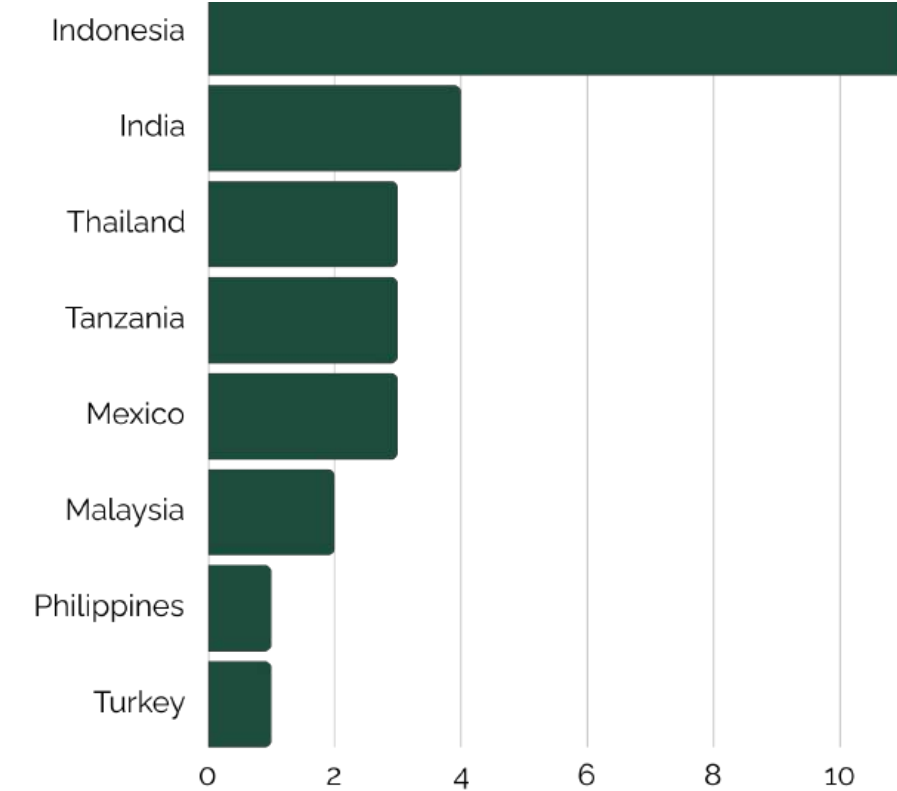
- **4** designed and implemented through SHOAL and fundraised through SHOAL.

- **13** heavily invested by SHOAL, with external funding that SHOAL fundraised for.

- **7** heavily invested by SHOAL, with external funding from that SHOAL did not fundraise for.

- **1** with SHOAL as partner in a project led by other Partners

PARTNERS



SHOAL partners are based all around the world, including non-priority regions for conservation. This is the 2024 split of partners based in Priority Regions as outlined by The Blueprint for Conservation Action for 1,000 Freshwater Fishes.

ACTION PARTNERS BY PRIORITY COUNTRY

LOOKING AHEAD



SHOAL is now in the second year of Phase Two of its strategy to accelerate and escalate conservation action for freshwater species, continuing with the focus of three programmatic strands. Our flagship programme, 1,000 Fishes, will expand to new priority countries and regions. It will also begin to explore targeting species associated with one priority habitat – springs & oases – and we will launch a global effort to coordinate ex situ conservation efforts.

SHOAL will also reexamine its objective to INSPIRE more engagement and support for freshwater conservation and create more action together with members of the Freshwater Inspire Network (FIN).

Most importantly to accelerate towards our fundamental objective to Strengthen the SHOAL, there will be a much greater effort to bring more partners into the SHOAL, particularly Local Action Partners in priority countries where there is still a lack of capacity to take action for freshwater species, habitats and communities.

Operationally, SHOAL will take steps to secure the longer-term sustainability of the Initiative by seeking funding partners and income sources that will allow SHOAL to shoulder the burden that its hosts, Synchronicity Earth and Re:wild have kindly taken on since the Initiative was first conceived.

© SHOAL

LOOKING AHEAD 1,000 FISHES



Gastromyzon lepidogaster © Kenneth Chin
62. SHOAL Annual Review 2024

MADAGASCAR:

With leadership from Charles-Edouard Fusari, Director of the Tropical Aquarium at the Palais de la Porte Dorée, Paris, a coalition of organisations, zoos, aquaria and Madagascan experts are piecing together an action plan for threatened fish conservation in this global hotspot for endemic freshwater species. SHOAL will aim to use this action plan to leverage resources for Local Action Partners in Madagascar.

LATIN AMERICA (OUTSIDE OF MEXICO):

While there is already considerable amount of action ongoing for freshwater fish conservation in this region, there are still enormous concerning gaps. SHOAL is undertaking a situational analysis of the region to identify the best partners and projects to seek investment and support for. The strategic priorities for the region will then become a major priority for SHOAL's attention and focus. Mexico is not included in this process as it is already a high priority for SHOAL, with activities ongoing.

THE MEKONG:

The Mekong is the world's second most biodiverse river system after the Amazon, with a multitude of unique freshwater species that support the globe's largest inland fishery. Despite this, widespread and unmitigated anthropogenic effects have resulted in many of the Mekong's most iconic species teetering on the edge of extinction. This collaborative initiative with Dr. Zeb Hogan and the University of Nevada aims to develop rapid conservation action plans for nine of the Mekong's most threatened and iconic species including the Mekong Giant Catfish, Giant Freshwater Stingray, and Siamese Giant Carp.

SHOAL ALLIANCE OF ZOOS AND AQUARIA:

Strategy 4 of the 1,000 Fishes Blueprint is targeted at increasing the capacity and improving the effectiveness of ex situ facilities to support activities to facilitate the recovery of 1,000 Fishes Priority Species in their habitats. With leadership from Tim Lyons and the Albuquerque BioPark, and in collaboration with the IUCN Conservation Planning Specialist Group, the IUCN Freshwater Fish Specialist Group, and Alliance members, a workshop will be held in 2026 with representatives from zoos and aquaria around the world, aiming to develop a coordinated global plan for the ex situ conservation of the world's most threatened freshwater fishes.

1,000 FISHES MONITORING PLATFORM:

The goal of establishing conservation action for 1,000 species from a total of 2,338 species will require extraordinary levels of monitoring work. Over the next year, SHOAL will assign dedicated capacity to this task in full partnership with the IUCN SSC Freshwater Fish Specialist Group. The platform will be open to all to use and contribute to.

CHINA STRATEGY PLANNING:

SHOAL does not currently have any partners in China or a strategy for how to engage and support action there. There are many potential partners and already a platform of excellent conservation work underway in the country that SHOAL will hope to build on and learn from.

SPRING & OASES SPECIES:

In 2024, a global initiative to coordinate and grow efforts to conserve spring habitats and species emerged from IUCN SSC. This was fortunate timing as spring fishes were identified as a high priority in the 1,000 Fishes Blueprint, and plans were made to start strategising for this work. A motion on springs will be raised at the IUCN World Conservation Congress in October 2025, and SHOAL will subsequently participate in the spring working group and explore opportunities to further the work on spring fishes.

KILLIFISH IN TANZANIA:

This year, work towards our Killifish programme will start in Tanzania, working closely with Re:wild and other partners to secure the most threatened populations of these species. The Killifish programme will begin in Tanzania with the aim of expanding it to other species requiring action as capacity and partners increase.



Dawkinsia filamentosa © SHOAL / Georgie Bull

LOOKING AHEAD INSPIRE



Remya L Sundar holding subterranean fish sample © SHOAL / Georgie Bull
64. SHOAL Annual Review 2024

CULTURAL FISHES:

Fishes have very strong cultural associations and as many fish become rarer and disconnected from our culture, we become poorer, and the fish become less valuable to us all. This year we will celebrate, through a report and associated media, species that have strong cultural connections with people and communities around the world. The aim of the report is to highlight how essential freshwater fish are.

IUCN WORLD CONSERVATION CONGRESS 2025:

This year, IUCN will hold its World Conservation Congress with the theme 'Scaling Up Resilient Conservation Action,' which aligns seamlessly with SHOAL's mission. We will therefore be using this unique opportunity to profile the need for more freshwater species conservation action and to find more partners for the SHOAL.

HOBBYIST ENGAGEMENT / HOBBYIST AMBASSADOR PROGRAMME:

One of the main strategies for SHOAL is to engage the aquaria hobby further as a force for conservation. This year we will be searching for the best ambassadors for conservation within the hobby.



Denison Barb © SHOAL / Georgie Bull

LOOKING AHEAD

STRENGTHENING THE SHOAL



© Josie South

NEW GUINEA:

New Guinea (Indonesian Papua and Papua New Guinea) is a hotspot for threatened fish but there is very little formal engagement in conservation action on the island. This year we will begin to find partners and begin the long-term process of establishing a network of partners with the capacity to contribute to 1,000 Fishes in the short-term and to conserving the incredible freshwater biodiversity of the region in the longer-term.

RURAL COMMUNITIES IN WESTERN GHATS:

Our project focused on the conservation of the Denison's Barb (*Sahyadria denisonii*) has now been running for more than a year. Through 2025 we will partner with Zoo Outreach as they work closely with target communities in the Western Ghats to create protection and restoration activities for this species and the many other threatened fishes in this region.

SULAWESI LAKES WORKSHOP:

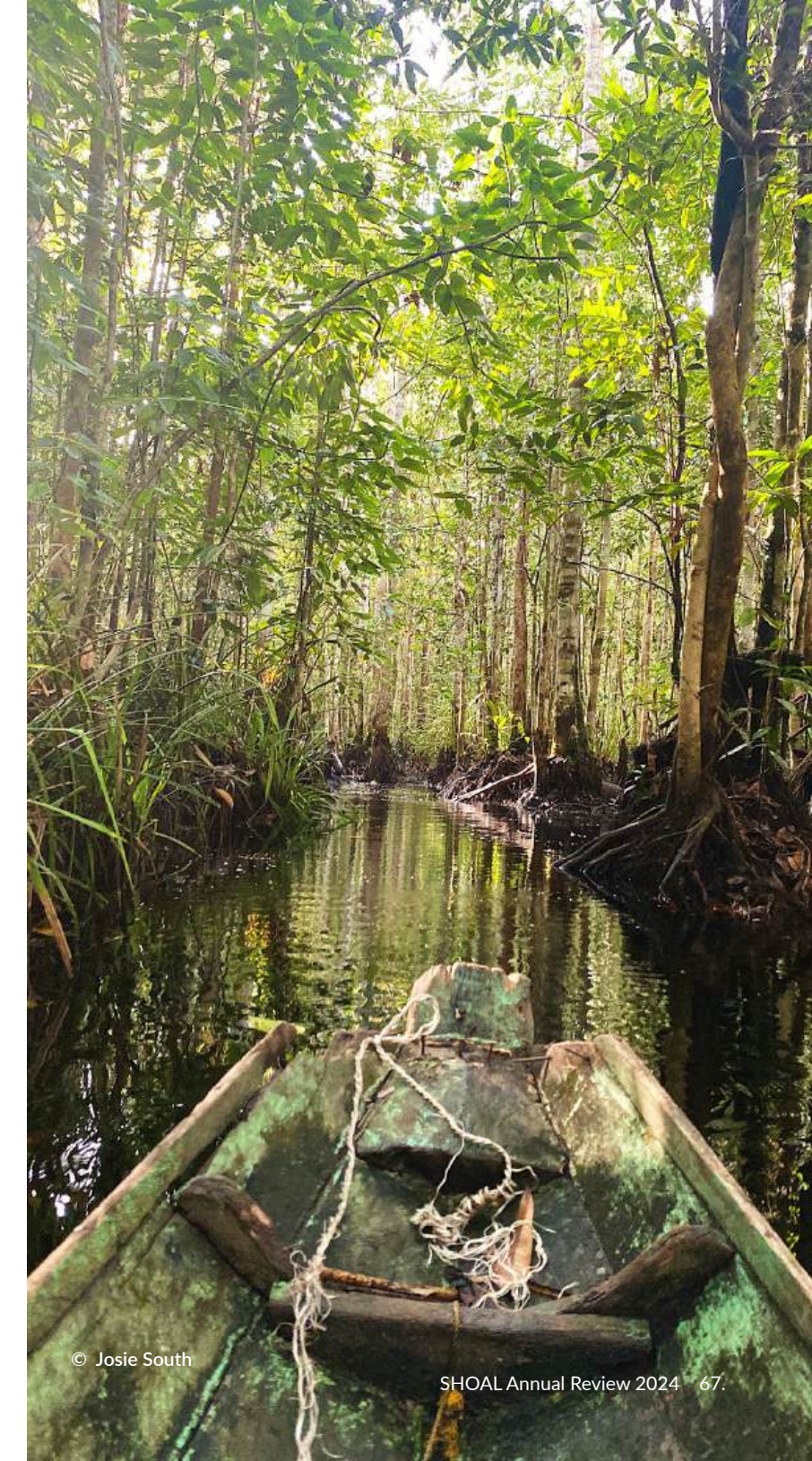
Sulawesi's ancient lakes are an important focal area for SHOAL: simultaneously celebrated and ignored, magnificent yet highly embattled. Populated by endemic species flocks of freshwater fish, snails, and atyid shrimp, they host freshwater ecosystems found nowhere else on Earth. These ecosystems are existentially challenged by pollution, eutrophication, and invasive species, with fast-moving, devastating habitat-wide effects reported from many lakes all over Sulawesi. Over the next year, we aim to hold the first symposium on the conservation of the freshwater biodiversity of Sulawesi to bring together regional and international experts and partners for the first time to nurture collaboration and plan action to mitigate the ongoing destruction of these ancient biological systems.

EXPANDING SHOAL TO EXISTING ACTION PARTNERS:

There are many wonderful efforts for fish conservation ongoing or planned across the globe that fall outside the principal focus of SHOAL's support and attention, but that are making a significant difference for fish and other freshwater biodiversity. This year we will step up our efforts to bring them further into the SHOAL to promote their great work and to learn from their experiences. A wonderful example of this is Conservation Fisheries based in the Southeastern US (see page 40).

MEDITERRANEAN:

The Mediterranean basin was identified in the 1,000 Fishes Blueprint as one of the highest priorities for conservation. There are already several partners working across the region but currently no strategic, coordinated approach to working together to ensure gaps in the effort are being addressed. Through 2025 we plan to create this network and raise resources for partners requiring urgent support.



© Josie South

THE SHOAL: PARTNERS & COLLABORATORS

© Kenneth Chin

ABQ BioPark / New Mexico Biopark Society
Adam Welz
Airlangga University
Alliance for Freshwater Life
Amazonas
Amazon Research Center for Oranamental Fishes
Andy Patel
Aquarium Tropical Palais de la Porte Dorée
Biodiversity Center, University of Texas
Bird Society Thailand
C3 Community Conservation Centre
California Academy of Sciences
Celebica (Yayasan Aksi Konservasi Celebica)
Chavalit Vidthayanon
Chester Zoo
ComNetMekong
Conservation Fisheries
Conservation International
Conservation Optimism
EDGE / ZSL
Ernest Kleinwort Charitable Trust
Daniel Lumbantobing
Fabian Herder

Fisheries Conservation Foundation
Flora and Fauna International
Fondation Segré
Fundación Humedales
Freshwater Life
Fundación Isla de Agua & Universidad de Los Andes
Global Environment Centre
Goodeid Working Group
Hasanuddin University
Indianapolis Zoo
InFish
Instituto Humbolt Columbia
Interzoo
IUCN - International Union for the Conservation of Nature
IUCN SSC Asian Species Action Partnership
IUCN SSC Freshwater Conservation Committee
IUCN SSC Freshwater Fish Specialist Group
Jeremy Shelton
Jörg Freyhof
Kerala University of Fisheries and Ocean Studies
Key Biodiversity Areas
Lee Kong Chian Natural History Museum
Living Rivers Association / Mekong Community Institute Association (MCI)

Mandai Nature
NatureMetrics
Ornamental Aquatic Trade Association
Ornamental Fish International
Parosphromenus Project
PKGB Research Centre for Elephant Conservation and Forest Biodiversity
organisation
Plusfish Philanthropy
Practical Fishkeeping
Prigen Conservation Breeding Ark
Progres
Re:wild
Royal University of Cambodia
Saint Louis Zoo
San Antonio Zoo
Segrest Farms
Seub Nakasathian Foundation
Shedd Aquarium
Springs Stewardship Insitiute
Stiftung Artenschutz
Sulawesi Keepers
SUSTAIN Lake Tanganyika
Sustainable Eel Group

Synchronicity Earth
TARSIOUS
Thomas von Rintelen
Tropical Conservation Society
The Fishmongers' Company's Charitable Trust
The Nature Conservancy
UMSNH - Universidad Michoacana de San Nicolás de Hidalgo
UMT - Universiti Malaysia Terengganu
Universidad Autónoma del Estado del Morelos
University of Antwerp
University of Leeds
University of Missouri–St. Louis
University of Nevada
VdZ - Verband der Zoologischen Gärten
WAZA - World Association of Zoos and Aquariums
World Fish Migration Day/Foundation
WWF
YBS - Yayasan Bumi Sawerigading (Earth Foundation)
Zoo Outreach
ZSL - Zoological Society of London



SHOAL is a programme of Synchronicity Earth and Re:wild. Synchronicity Earth is a charity registered in the UK and Wales No: 1132786 and a company limited by guarantee No: 06952204. Re:wild is a registered U.S. 501(c)(3) public charity (Tax ID 26-2887967).

