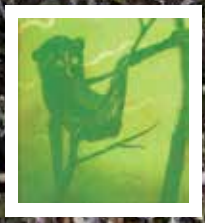
JOURNAL OF THE WILDLIFE AND NATURE PROTECTION SOCIETY OF SRI LANKA

LORIS

VOLUME 30. ISSUE 6



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VOLUME 30. ISSUE 6 – DECEMBER 2025 EDITION

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The Loris is the flagship journal of the Wildlife and Nature Protection Society (WNPS). It was first published in 1936 and since then, been in publication continuously. A biannual journal, it is published in June and December.

The Editor invites members of the WNPS and the public to write articles to the Loris on matters related to biodiversity, natural history and nature conservation. All articles will be fact- checked by the Loris editorial team. The writing style and aesthetics of the magazine will be the prerogative of the Editor, who will make the final decision on the publication of an article.

The articles and views in the Loris are those of the authors and not of the WNPS.
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Design & Layout: Optima Designs (Pvt.) Ltd / www.optimadesigns.com

Published December 2025.

Front cover: Blooming only once every six to twelve years, the Nelu flowers (*Strobilanthes*) were a sight to behold in Horton Plains this year. These shrubs are monocarpic - they bloom only once in their life, set seed, and die soon after. Of the 35 species found on the island, 30 are endemic.
Photo credits: Nadiya Azmy, Sashini Paranagama, Spencer Manuelpillai, W.G. Madhushanka Bandara

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ISSN: 0024-6514

Editorial

THEFT COMES IN MANY FORMS

The daring heist that took place at the Louvre museum in Paris recently captured the attention of everyone around the world. In under 10 minutes, a team of thieves robbed the museum of eight pieces from the French Crown Jewel collection, in broad daylight, zooming away on scooters with over a hundred million dollars. While we in Sri Lanka gasp and wonder at how this could happen, we don't realise that daylight robbery is happening under our noses, in our own country – and what we are being robbed of is priceless.

Our island is rich in natural capital – from endemic flora and fauna to lush waterfalls and misty mountains. You could spend hours trying to calculate an estimated price for all this – but how do you quantify the beauty of Horton Plains as the mist seeps through? The feel of fresh mountain air in the Knuckles range? The calm that surrounds you in the mornings in Wilpattu, when all you hear is the rustling of leaves and the peacocks? The feel of the salty sea air against your skin as you watch the sun set over the Indian ocean? How much value do we place on all this?

Theft comes in many forms – theft of peace of mind, theft of natural resources, theft of time, theft of good health, theft of the land, to name but a few. The recent cyclone and accompanying floods and landslides showed us just how quickly we can be robbed of all we hold dear. Amidst these devastating losses, we are slowly starting to realise that it's not just about money. The recent advisory opinion by the International Court of Justice recognised that the actions of a few nations impact the whole world when it comes to greenhouse gas emissions and climate change, and these countries could be held legally accountable by affected nations. Not many of us think of climate change as theft, but we are in fact being robbed. We have a right to live in a world in which our future, and the future of many generations to come, is stable. As global temperatures and sea levels rise, so does the worry around what will happen to ecosystems and species that are already tethering on the brink of collapse, and to communities that depend on resources that soon may not be accessible. Is this not theft? Does theft need to be assigned a monetary value?

Continuing along the same vein, closer to home, the Colombo High Court issued a hefty fine of Rupees 20.6 million to a well-known elephant trafficker for illegal possession of an elephant caught in the wild. In the scientific community, a recent incident of sample collection by international scientists without permits and a resulting publication on freshwater fish caused a stir and incited discussions around illegal specimen collection, biopiracy, and ethics. Illegal clearing of several acres of mangroves in a forest reserve showed that not even protected areas are safe from threat. In fact, we lose much through legal means as well, when protected areas are degazetted to be handed over to businesses or private owners for development. Corruption and greed are the driving forces behind many challenges we face as a country, while inaction and incompetence follow closely after. The annual death toll of elephants and leopards is a good example of this – if state action was truly making a difference, we would see these numbers reduce greatly. Sadly, this is not the case. We are being robbed, in some way or form, every single day.

What course of action can we take to deal with this situation? IS there anything we can do? I'd like to believe there is - I like to live in hope. We lost a conservation icon this year – Dame Jane Goodall blazed a trail for primate ethology and dedicated her life towards protecting our planet. She faced countless setbacks and challenges, yet through it all she preached one message above all else: the message of hope. She said 'hope is what enables us to keep going in the face of adversity. It is what we desire to happen, but we must be prepared to work hard to make it so'. She believed that we can all have a positive impact on the world, stating that 'every single one of us makes an impact on this planet every single day and we get to choose what kind of difference we make'. For those of us who love this island and want to protect its flora and fauna but feel as though we are fighting a never-ending battle, these are words to hold onto.

Hope alone however, is not nearly enough. Hope should inspire action, and vice versa. Hope should drive us to strive for the future we would like to see in Sri Lanka.

At the risk of preaching to the choir, I will still say that we all could, and should, be doing more. Time is a precious thing – use it well and you can leave an impact far greater than you could ever imagine. Direct your energy towards protecting the most valuable things we have in our country. Get involved in local conservation efforts, educate your communities on the importance of wildlife. An action as simple as convincing a neighbour to stop cutting down their trees is a win that leads on to bigger things. Fight the legal battles – against the state, against local and foreign entities, and against private companies who care more about profit than the destruction of the planet. Hold people and countries accountable for their actions. Teach your children to appreciate the natural world – the more they see of it, the more they will want to protect it. Actions result in hope for the future.

In this Issue of the Loris, we continue to delve into the wonders that lie within our waters and on our shores. A revised updated list of the sharks of Sri Lanka, as well as an article focusing on threats our sharks and rays face is extremely timely, as Sri Lanka will be hosting the Sharks International Conference next year from the 4-8th May 2026. A deep dive into the advisory opinion by the ICJ, and introspection on the carbon footprint draw attention to urgent considerations around climate change. Involving local communities and encouraging female entrepreneurship, safeguarding critically endangered species and trialling new methods of tracking injured animals are all projects the WNPS is currently working on. We are fostering interest in young conservationists, with programmes done by the Wild Kids and the content of the Little Loris. This is hope for the future of conservation in Sri Lanka. We continue to strive as an organisation to protect what we have, in whatever way we can.

While we still have people willing to write to us, willing to put time, energy and effort into protecting our island, we have hope. We all make an impact, in our unique ways, and we should never let ourselves be robbed of hope.

Elusive blues in the morning - The Blue-Faced Malkoha.
Photo credit: Lakshman Nissanka

Message from our sponsor

A NEW ERA OF INSURANCE AND A NEW COMMITMENT TO SRI LANKA'S BIODIVERSITY

Sri Lanka's ecological heritage, its rainforests, endemic wildlife and irreplaceable natural landscapes have always been a source of national pride. Today, however, with rising climate pressures and the continued loss of natural habitats, the call for meaningful and science-led conservation has become more urgent than ever. In response to this national need, Allianz Insurance Lanka has undertaken a long-term commitment to support the protection and renewal of Sri Lanka's environment, marking a transformative moment for both the insurance industry and the country's conservation landscape.

As part of this commitment, Allianz has entered into a landmark partnership with the Wildlife and Nature Protection Society of Sri Lanka (WNPS) to support the Preserving Land and Nature (PLANT) initiative. PLANT is a rigorous, science-based conservation programme focused on rebuilding forest corridors, restoring degraded ecosystems and safeguarding endangered and critically endangered species.

With ongoing work across 33 sites, PLANT is already creating more than 25 kilometers of forest corridors, revitalizing habitats such as Budunwela, and supporting more than 1,250 species including some of Sri Lanka's most vulnerable wildlife.

Beginning November 2025, for every Motor and Travel Insurance policy purchased, Allianz will make a contribution on behalf of its customers to support reforestation, habitat restoration, biodiversity conservation and environmental education across Sri Lanka. This means that every customer, simply by choosing Allianz, automatically becomes part of a nationwide conservation effort at no additional cost. In an era where modern consumers increasingly value brands that demonstrate responsibility, accountability and environmental action, this initiative allows customers to align their everyday insurance choices with their personal commitment to the planet.

This initiative also marks a first for the Sri Lankan insurance industry. Allianz's decision to contribute to nationwide conservation efforts stands among the earliest and most progressive industry-led environmental commitments of its kind in the country. By integrating biodiversity protection directly into its core insurance offerings, Allianz is redefining the role of an insurer, moving beyond traditional financial protection to champion environmental responsibility at scale.

This partnership is also an extension of the global ESG vision of Allianz SE, which emphasizes achieving net zero emissions by 2050, significant reductions in internal emissions and continued investment in climate resilient and socially responsible development. Allianz Insurance Lanka continues to strengthen this global commitment through local initiatives that go beyond PLANT. The company has supported programs dedicated to protecting and empowering children, placing their safety, well-being and future at the heart of its CSR efforts, while also investing in strengthened, sustainability-driven operational practices. These ongoing efforts reflect a holistic approach to environmental and social responsibility, with PLANT now serving as the newest addition to this portfolio.

This collaboration reflects the belief that protecting what matters most extends well beyond the boundaries of insurance. It reaches into the environment that communities depend on and the future being shaped for generations to come. Because we only have 1 Earth, safeguarding natural resources remains essential to safeguarding people and communities.

Through this initiative, Allianz strengthens its dedication to sustainable development and environmental responsibility, while empowering customers to play an active role in protecting the planet we share. Operating in Sri Lanka as a fully owned subsidiary of a globally recognized insurance and asset management group headquartered in Munich and acknowledged as the world's number one insurance brand according to Interbrand's Best Global Brands, Allianz remains committed to driving purposeful, measurable and lasting impact across Sri Lanka.

Prashant Grover
CEO and Country Manager of Allianz Lanka

The Fairies in Our Midst: Exploring the Elusive Lives of Fireflies

By: Ahmed Zaydhameed Fajurdeen

Tales of miniature magical winged beings who fly among the forest trees have been told by humans across cultures since ancient times. Our forests may not be filled with magical flying homunculi, but stepping into a forest, field, or wetland after the cover of darkness will make it clear why humans of old were so inclined to tell these tales.

Across the world, from the Americas to Asia to parts of Australia, wilderness areas at night come alive with the lights of fireflies. These unique and charismatic insects are beetles (Order: Coleoptera), belonging to the family Lampyridae. At present, over 2200 species have been described across the world. These species display a fantastic diversity in morphology, behavior, habitat and genetics, making them an extremely intriguing insect family.

Figure 1: Larvae of the genus Lamprigera. Picture taken in Kuala Lumpur, Malaysia. This genus has the largest fireflies in the world. Photo credits: Author

All the light we can (or cannot) see: Bioluminescence in fireflies.

Fireflies, as their name suggests, are most well known for their ability to produce light from within their bodies, a process known as "bioluminescence". However, it is interesting to know that contrary to popular belief, not all firefly species produce light or are active at night. Certain species, such as those in the genus *Stenocladius*, are nocturnal and produce light as larvae, but transition to a diurnal lifestyle as adults.

Fireflies possess a special organ towards the end of their abdomen known as the "light organ" from which light is produced and emitted. For the species that do use bioluminescence, this light is the product of a complex series of chemical reactions occurring within the insect's body. These reactions involve a compound known as luciferin and an enzyme known as luciferase. Luciferase facilitates the oxidation of luciferin into oxyluciferin, an unstable compound that produces light as it returns to a lower energy state[1]. Almost all the energy in this reaction becomes light, leading to no heat being produced, therefore the light produced by fireflies is known as "cold-light" [1]. The wavelength of the light produced can vary greatly between species, from bright green to yellow-green to orange-yellow, depending on the structure of luciferase in that species [2].

What's all that light for? The purpose of bioluminescence.

Why do fireflies possess this complicated system of bioluminescence? Genetic studies indicate that light most likely evolved in the ancestors of modern fireflies as a means for larvae to warn predators that they were unpalatable. Later on, most species retained the ability to produce light into adulthood as a means of courtship signaling [3].

Flashing patterns are extremely diverse across firefly species and are used predominantly as a means of finding mates. Some species emit a continuous glow, while others have elaborate flashing patterns. In certain species such as the mangrove firefly, *Pteroptyx malaccae* in Southeast Asia, males will congregate in trees and perform synchronous flashing displays to attract females, an awe-inspiring and mesmerizing spectacle that often also attracts tourists.

All the world's a stage: The Firefly life cycle.

Fireflies, like all beetles, go through distinct life stages. Females lay eggs which hatch into larvae. As larvae, fireflies are predators mainly feeding on soft bodied prey such as snails, slugs and worms[4]. Some species have unique predatory adaptations; for example, larvae of the genus *Lamprigera* inject their prey with venom to paralyse them before dissolving the tissue with digestive enzymes and consuming it.

Fireflies spend most of their lives as larvae, with some species remaining in this stage for nearly 2 years [4]. The larvae go through many stages of moulting, where they continue to grow bigger until they ultimately pupate.

During their pupation, the larvae undergo complete metamorphosis, coming out as fully formed adult fireflies ready to reproduce. As adults, fireflies are short-lived and aren't known to eat. However, females of one North American genus, *Photuris* have a unique adaptation where they use their light to mimic females of other firefly species to lure the males, which they then eat.

Adult females of certain firefly species such as those in the genus *Lamprigera* are flightless and display an adaptation known as "neoteny", where they retain some or most of their larval characteristics as adults. Research suggests that this adaptation exists to support more complex reproductive strategies which require more energy, therefore leaving less energy for developing adult characteristics [5].

Call me by your (binomial) name: Firefly taxonomy.

Taxonomy is the science of sorting organisms into species. This is important because taxonomy is often the starting point of understanding ecology, behaviour and conservation. Several methods are used to sort organisms into species. Traditional morphology-based identification — for example, using the wings, pronotum (the head segment), light organ, or genitalia — is complex and often error-prone. Therefore, taxonomists incorporate DNA barcoding, a more recent advancement in genomics. This process amplifies, sequences, and analyses a specific variable region of an organism's genome to determine how it differs from that of another. These genetic differences can then be mapped on a phylogenetic tree — a diagram showing the evolutionary relationships between species based on genetic similarity.

The incorporation of molecular data is known as "Molecular Phylogeny" and has led to the discovery of numerous firefly species. Most notably, it has led to the discovery of "cryptic" species, which are species that look morphologically similar but show significant genetic divergence, indicating that they are in the early stages of speciation.

Figure 2: Photograph of a firefly taken in the Beddagana Wetland Park, Kotte. Photo credits: Author

Most modern taxonomic studies use both morphology and phylogeny to come to conclusions regarding the sorting of species. This approach is known as "integrative taxonomy" and allows taxonomists to confirm their conclusions using one method with the other. Scientists are still learning about the true diversity that exists within fireflies, with taxonomy being a very significant area of research in this insect family.

Lights will guide you home: Sri Lankan Fireflies.

Sri Lanka is currently home to 19 known firefly species. In Sinhala these insects are known by the name "*Kanamadiriya*" while in Tamil they are known as "*Minminipoochi*". Species found on the island include those that are commonly seen, such as *Abscondita perplexa*, *Asymmetricata humeralis*, and *Lamprigera tenebrosa*. Moreover, recent studies into Sri Lanka's

fireflies have led to the rediscovery of the species *Luciola nicolleri* and the discovery of entirely new species, including *Pygoluciola ruhuna, Pygoluciola Rammale,* and most recently *Medeopteryx taprobana*- the first instance of the genus *Medeopteryx* in Sri Lanka [9,10]. Research indicates that the Uva Province is the most species rich, with 11 species found here, including the novel species *Diaphenes uvaparanagama*[8,11].

One does not have to stray too far to find these insects. They can be found illuminating fields, vegetated areas and backyards, even those close to urban centers such as Colombo- once again indicating the ability of urban green spaces to support biodiversity when proper steps are taken.

However, much more research is needed to understand our own fireflies-their distribution, ecology, taxonomy and the threats that they may face due to human activity. Anecdotal evidence indicates that these insects were once widespread across the island and that their sightings have since decreased drastically. Therefore, increased awareness of these insects, their presence, and their importance, is urgently needed to mobilize more individuals to become involved in the research and conservation of fireflies.

Keeping the lights on: Firefly conservation and extinction risk.

Despite a recently popular headline claiming that we are the "last generation" to see fireflies, the reality is slightly more complicated than that.

Fireflies face several threats to their existence. The most persistent of these threats is that of light pollution brought about by increased urbanization [6,7]. Artificial light from urban areas interferes with the ability of fireflies to communicate using their light signals, which interferes with their reproduction and threatens these populations[6].

Moreover, habitat loss caused by human activity is another significant threat faced by these insects, particularly for species which are habitat specialists and those with flightless females, with limited dispersal ability [7]. With the increased impacts of climate change, extreme weather events such as droughts also threaten certain firefly species, as the larvae require moist conditions and are prone to desiccation in dry conditions [7].

Out of the 2200 species currently known to science, only 149 species of fireflies have been assessed using the IUCN Red List. 47 of these species are of Least Concern, with stable populations and no pertinent threats [7]. However, 3 species have been classified as being "Near Threatened" while a further 29 have been assessed to be threatened, 3 of these species being Critically Endangered[7]. With 70 of the assessed species being classified as "Data Deficient", one of the most pressing issues in firefly conservation is the lack of knowledge surrounding the behavior, ecology and threats faced by many species. This makes research in these areas extremely important and is greatly needed to facilitate a clear understanding of the level of threat currently being faced by a majority of species.

Therefore, while we may not be the last generation to see fireflies, it is also clear that immediate intervention is necessary to ensure their longevity.

Many stakeholders around the world, such as firefly researchers, citizen scientists, public advocacy groups, and businesses, now recognise the need to protect these insects and are collaborating to support research, conserve forested areas, and reduce light pollution around firefly habitats. Ordinary citizens can also play their part, by turning off garden lights, minimising pesticide usage in home gardens and using citizen science platforms such as iNaturalist to report sightings of fireflies which can be used by conservationists to map their occurrence and estimate species richness and abundance. These steps can ensure that no generation will have to be the last to see these majestic insects and their wondrous bioluminescence.

The intersection between the wild and the magical: The allure of fireflies.

Fireflies are important bioindicators, with their presence being a welcome sign that the environment is healthy enough to support them. Moreover, they play an important role in regulating the ecosystem as larvae, by controlling the populations of snails and slugs.

As someone who has worked with fireflies for over a year now, and has had the opportunity to observe them on countless occasions, to me, these awe-inspiring creatures represent the intersection between the wild and what we perceive to be magical. It is this sense of awe, fascination, and curiosity that drives me towards knowing more and protecting the fairies in our midst, so that green spaces will continue to glow with their light.

The author holds a Bachelor of Science (Tropical Environmental Biology) Degree from Monash University, Malaysia, and is currently pursuing their honor's research at the same university, investigating the population genomics of urban fireflies in the Klang Valley region of Malaysia.

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Carbon footprint: genuine concern or deceptive distraction?

BY: VIHANSITH KULATUNGA

The idea of a personal carbon footprint has become central to how we talk about climate change. We are told that if each of us drives less, eats local, and recycles more, we can make a difference. Yet, according to the Climate Accountability Institute, just twenty companies are responsible for nearly one-third of all global emissions. The biggest polluters have driven this message, shifting attention from their own actions to individual behaviour. As a result, the burden of reducing emissions often falls on those who contribute the least — poorer nations and communities — who, tragically, will also bear the worst consequences even if they succeed in cutting their emissions. This article explores how a concept rooted in environmental awareness has been used to disguise inequality and deflect systemic responsibility.

When the first industrialists devised the means to mechanise the immense chemical energy in coal, they were enamoured. Humanity had unlocked an underground treasure trove of energy. This changed everything for our species, with coal becoming the mechanism behind every machine in the Western world and its global empire. Once the first crude oil was drilled, a new world order was ushered in; power and/or wealth belonged to those with oil. The result was the opening of new frontiers for humanity, and a once-unprecedented increase in living standards. Yet silently, it unleashed upon the world an atmospheric assault with devastating consequences, now called climate change.

As the crisis worsens, people are rightfully concerned, and there is much discussion about slowing down and undoing the damage. One concept gaining traction among the climate-concerned individuals is the Carbon Footprint. Interestingly, everyone has an impact on the carbon footprint, and has a duty to reduce it. We are told that the power to fix climate change rests in our hands. But this shifts responsibility from major players onto consumers and smaller global players.

Decades of study have confirmed that yes, climate change is caused by human action. Oil and coal are full of hydrocarbons, compounds containing only carbon and hydrogen. Burning them in oxygen converts the hydrogen into water, and the carbon into carbon dioxide (CO_2). The problem is that this carbon, stored millions of years ago by ancient organisms, is not part of today's natural carbon cycle. Burning oil and coal releases it as additional CO_2, raising atmospheric levels beyond what occurs naturally. This excess CO_2 traps heat through the greenhouse effect, causing global warming.

Monitoring CO_2 emissions is precisely why the Carbon Footprint exists. Defined by the Oxford English Dictionary as 'a measure of the amount of carbon dioxide released into the atmosphere as a result of the activities of a particular individual, organization, or community,' it is undeniably useful for assessing the environmental impact of large entities. For the purposes of this article, however, I distinguish between the Personal Carbon Footprint—the CO_2 emitted directly through an individual's actions and investments—and the National Carbon Footprint, produced by a country's activities.

On paper, the Carbon Footprint seems beneficial: it encourages people and governments to make greener choices and reduce their climate impact. It shows how individual actions —walking or cycling, choosing vegan meals, buying local produce, or using public transport—can contribute to slowing the climate crisis. It has become a staple of environmental discussion and a cornerstone of personal responsibility, handing the power for change to individuals, who enjoy the sense of making a daily difference.

However, the history of the term suggests the reality is more complex. The Carbon Footprint was first publicised not by scientists or governments, but by a large global petroleum company as part of an advertising campaign. This company reported USD 282 billion in total assets and USD 189 billion in revenue in 2024. They hired a New York–based British advertising agency to popularise the concept between 2004 and 2006, focusing attention on consumers monitoring their own emissions.

But does this align with the data? According to Our World in Data, electricity and heat generation was the single largest source of emissions in 2021, releasing 16 billion tonnes of CO_2—nearly double the 8 billion tonnes from transport, the second-largest source.

People do have some control over these factors: buying responsibly, solar panels at home, and clean or public transport can cut down emissions considerably. The public can influence the market, and if sustainability is a market success, then the products can be profitable while more damaging ones begin to fall behind. However, this power is a luxury. There are barriers that make this very difficult. Most notable is affordability.

Products with a smaller footprint often come with a hefty price tag, and in a world where cost of living is constantly rising, not everyone will be able or willing to bear the cost. Put simply, it's cheaper to emit than to not. For example, the upfront cost is higher for electric vehicles than for petrol cars, even if money is saved long term, and "green" products are often more expensive than their generic alternatives.

The same also applies for governments of poorer economic status. These countries, for example, have little to no infrastructure to accommodate electronic vehicles (EVs), rendering them unusable; nor the funds to build them; and a population who will not be able to afford the cars anyways. The will to decarbonise is inadequate when a country is saddled with debt, trying to survive hefty tariffs and poor trade positioning, and handling exploitative Western businesses on their territory. Even worse, richer countries often whitewash their roles by using lower income countries for land on which to carry out emitting processes; factories, mines, and mills are often on third-world land, marking those emissions as belonging to the holder country's footprint, and not the company and the footprint of its headquarter nations.

According to the Climate Accountability Institute in 2019, one third of all emissions globally comes from 20 companies, all of which are petroleum and gas drillers.[4] The company that propelled the concept of a carbon footprint itself is the fifth on the list. Even worse, as of 2019, this company spends around 52 million USD a year lobbying against climate policies, overturning major carbon taxes and regulations that would punish companies for their emissions.[5] They encourage the consumer to reduce their carbon footprint[1], all while their own is one of the largest footprints of any company in the world, and they actively invest in the prevention of policies that could hold them accountable. Even if individuals bear some responsibility, the concept itself was promoted in a way that shifted attention away from corporate accountability.

Sadly, this is not an isolated case. A leading soft-drink company has

often touted its recycling goals, yet the Break Free From Plastic 2023 brand audit reveals that it is the largest polluter in the world.[6] A British multinational oil and gas company claims to invest in carbon neutral fossil fuels, by offsetting it with reforesting initiatives, yet research initiatives like Global Witness reveal that their investment into clean solutions is minimal, in addition to aforementioned lobbying against carbon regulative policies.[5][7] The adverse weather caused by the crisis, furthermore, causes most harm to equatorial nations, which are usually not where these companies are based.

Taking an example in detail, Sri Lanka's role in causing this crisis is quite minor. It is one of the smallest emitters, both in terms of consumption-based emissions per capita (1.7 tonnes per person per year), overall emissions per capita (0.88 tonnes per person per year), and total annual emissions (20.32 million tons per year) in 2023.[8][9][10] Despite this, its tropical location places the country at high risk of adverse effects. Extreme rain leads to deadly floods and causes landslides in the hilly regions, burying communities and trapping civilians. In other places, droughts and heatwaves cause water insecurity, illness, and dieoffs of crops, leading to food shortage and low yield. Sea levels rise, causing coastal erosion and damaging infrastructure. Extreme storms make fishing a danger for local communities, resulting in reduced catches and income insecurity.[11][12]

These effects also cause significant damage to natural systems in a multitude of cascading ways. Low crop yields can cause an intensification of animal-human conflict, resulting in casualties and ecological destruction as farmers try to protect their limited yield. Fragile forest ecosystems can be decimated as floods erode the soil and dislodge the roots of important plant life, and ground animals struggle to find food. Droughts and heatwaves will result in animal deaths from dehydration and cause the significant destruction of plant life.[11][12] Sri Lankan ecosystems and conservation efforts can only go so far; the global scale of the crisis means that even if Sri Lanka's meager emissions were reduced, it would still suffer the brunt of climate change's effects.

The local government, despite still relying on fossil fuel plants for a large portion of its energy (more than half)[13], has made pledges to reduce emissions dependency, and has seen a decrease in oil use and an increase in renewables since the 2010s, although coal dependency is still an issue.[14] Highly vulnerable to climate change effects, the Sri Lankan government has had a strong incentive to reduce its emissions, and is mostly held back from more radical action by its notably fragile economic state, where one misplaced investment could send the country into disarray.

This is a common pattern worldwide; the burden often falls on countries that contribute the least, and have the least resources to reduce their emissions and protect themselves from the effects of the catastrophe. The results are already visible. Wildfires, sea level rises, heatwaves and storms are already taking lives. And the most innocent countries are often the ones most at risk. Just as much as companies deceive their consumers, larger countries and global organisations deceive the weaker countries, ignoring or dismissing their rightful concerns in favour of their own profit.

One need only look at Tuvalu's speech at COP26 to see this. The country may not exist on land in the near future due to rising sea levels, and even 4 years later the country's existential direness has prompted near zero thought from larger governments; emissions continue to rise. Bhutan, with barely any emissions, is the only carbon-negative country in the world; it takes in more carbon than it releases due to its vast forestry, in stark contrast to the deforestation of most other nations.[17] Sri Lanka is also one such country, often being a more vocal proponent of reform. Sri Lanka is active in the Climate Vulnerable Forum and Vulnerable 20, and has largely stuck to its Paris Agreement projections, even though this solidarity has proven ineffective in a world with such a strict power hierarchy.[15][16]

Worldwide, the crisis continues to be underprioritized and questioned. The current President of the United States is proudly prepared to undo a huge portion of their climate policies, and completely defund and censor research into it. The right-wing German party Alternative für Deutschland has fought against every climate bill passed by parliament. The Middle East runs entire economies purely on oil, and are willing to invest immense amounts of money to keep their products in demand. They will speak to billions to convince them that caring for the planet is holding them back from some sort of patriotic greatness.

All the while, smaller countries like Sri Lanka are battered, flooded, dried up and drowned, and the consumers are asked to blame themselves. The effects of this neglect are billions in damage and millions in deaths. The idea of systemic reform is not unfounded; we are capable of worldwide systemic change. For example, the ban on whaling prevented an entire extinction event, and the global CFC ban (the Montreal Protocol) has made the ozone layer crisis a thing of the past, and it will likely regenerate fully within our lifetimes.[18][19] Yet on climate change, progress has stagnated. Extremely fast, urgent action is required to slow the incoming disaster and save lives.

The carbon footprint is real, but when used hypocritically, it is less a measure of climate action than a smoke screen to hide the actions

of the powerful. Only when they put aside profit and commit to humanity, can the safety of millions be guaranteed.

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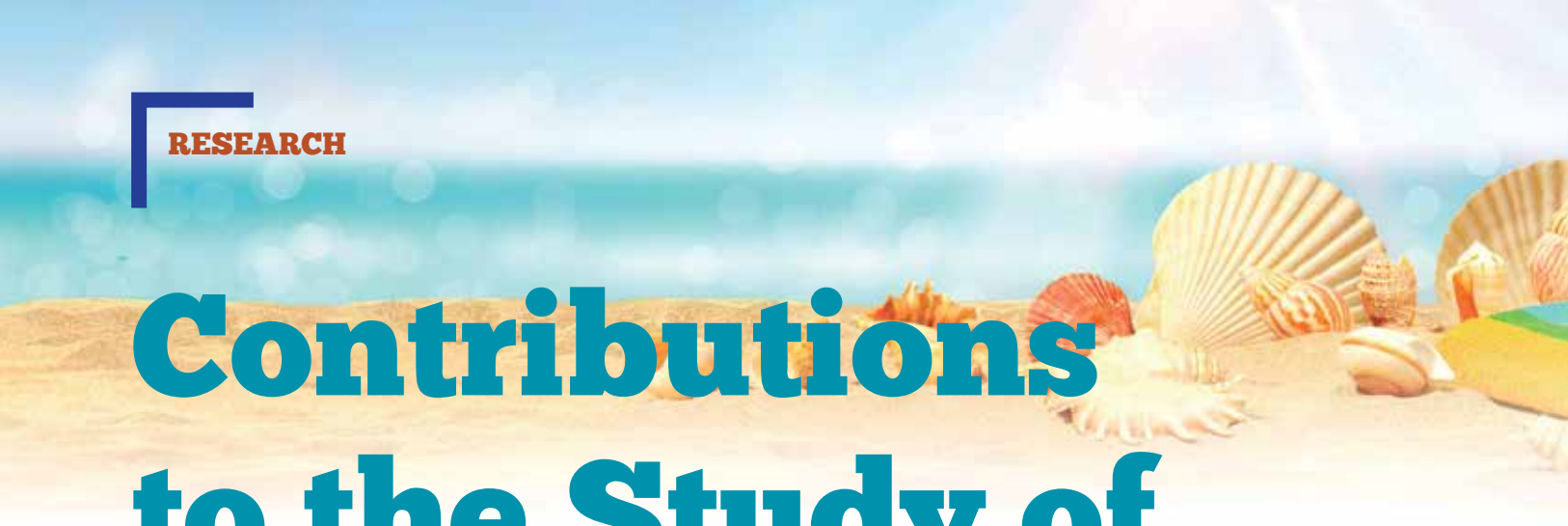


Contributions to the Study of Barnacle Diversity in Sri Lanka

By: Gihan Chalithya Kumarasiri

Barnacles are a diverse and unique group of sessile crustaceans in the subclass Cirripedia that inhabit a wide variety of marine ecosystems. The species are very different in lifestyle, shape, and habitat, ranging from burrowing (Acrothoracica) and parasitic types (Rhizocephala) to stalked (Pedunculata) and sessile (Acorn) ones. Barnacles possess a highly developed life cycle which begins with a planktonic free-swimming larva and culminates in fixed attachment to a substrate. They are usually found attached to rocks, shipwrecks, mangrove roots, floating debris, and in a few instances, as epibionts on turtles, crustacea and whales, or within sponges and live corals. Though numerous along the rocky shores of Sri Lanka, barnacles often go unnoticed and underappreciated despite their ecological roles in the ocean.

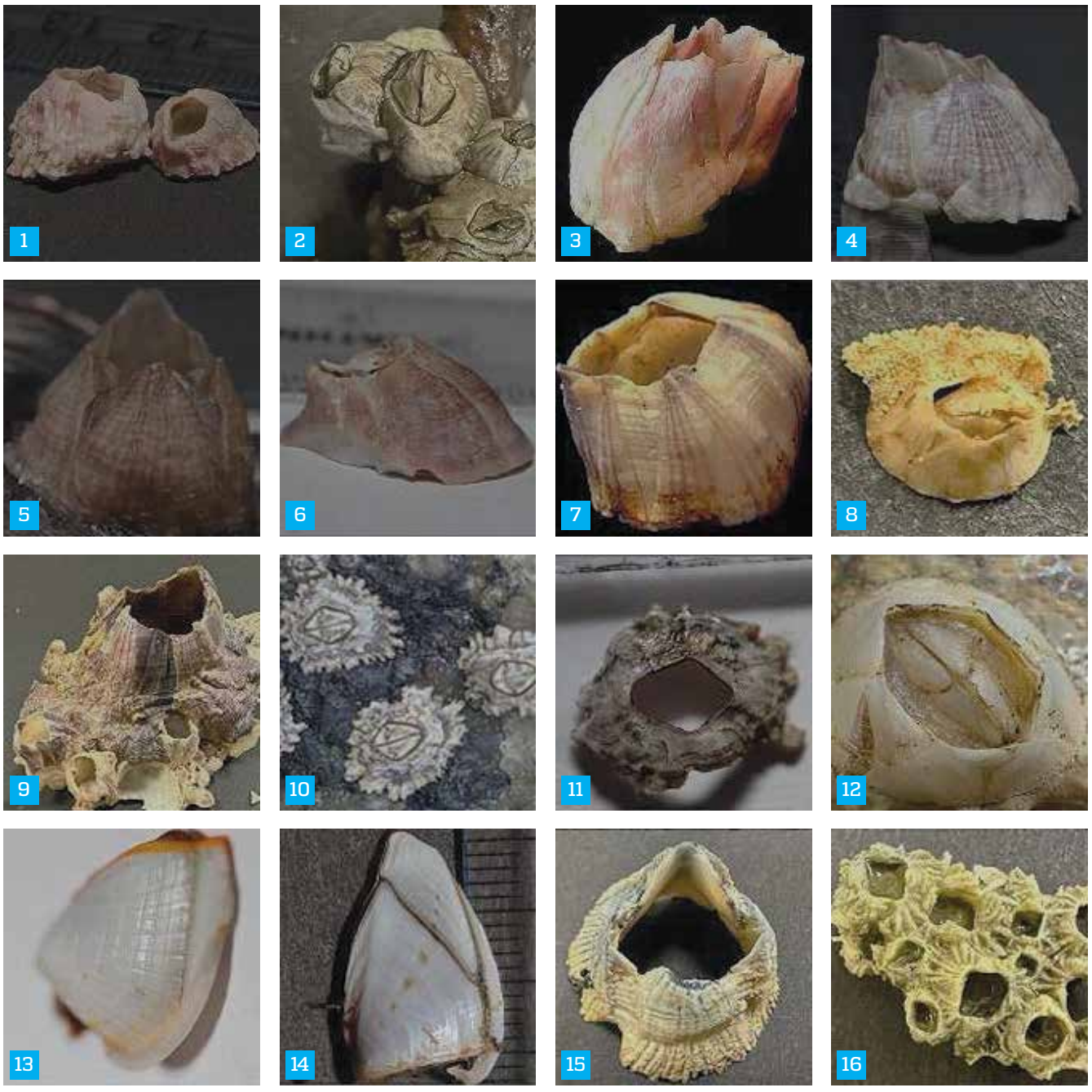
Barnacles are ecologically important as they are key suspension feeders in coastal environments, influencing the structure and dynamics of intertidal communities. By filtering plankton and organic matter from the water, they contribute to nutrient cycling and water quality. They are also an important component of coastal diversity. Their settling and establishment in any location is an indication of good environmental conditions and therefore barnacles are important animals in biomonitoring and biofouling research, acting as biological indicators or bio indicators. These are living organisms (microbes, animals and plants) that are used as a potential tool to monitor the changes (either positive or negative) in environmental health (Parmar, Rawtani and Agrawal, 2016).

The earliest records of barnacle diversity in Sri Lanka date back to the early 20th century with Thomas Nelson Annandale's pioneering efforts. Annandale was a British zoologist attached to the Indian Museum in Calcutta. He documented and described barnacle specimens collected by W.A. Herdman, which were gathered during extensive marine biological surveys around the shores of Sri Lanka in relation to the Pearl Oyster Fishery. Annandale described 26 species of barnacles from the sea around Sri Lanka (Annandale, 1906). These records form a vital foundation for subsequent investigations into the cirripede fauna of the area. However, systematic investigations of the island's barnacle fauna paused after this study.

There are approximately 1,705 living and fossil species of barnacles described in the world at present. Wider research programmes have since enhanced the knowledge of barnacle diversity in the Indian subcontinent (Thiyagarajan, 2010). A total of 144 species have been reported in 75 genera and 19 families

Figure 1

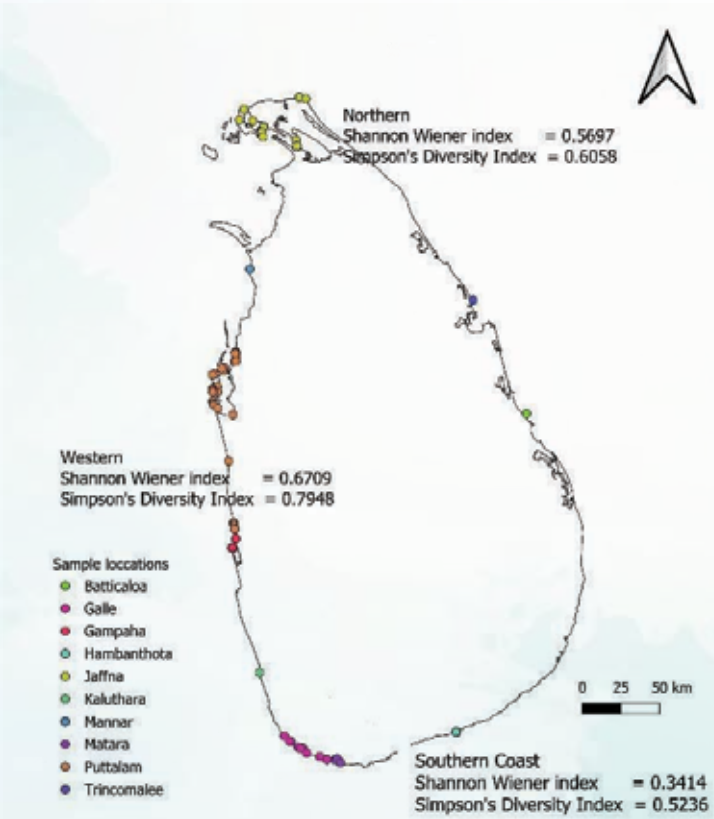
1. Balanus trigonus
2. Semibalanus balanoides
3. Striatobalanus amaryllis
4. Amphibalanus reticulatus
5. Amphibalanus variegatus
6. Amphibalanus venustus
7. Amphibalanus amphitrite
8. Amphibalanus eburneus
9. Megabalanus tintinnabulum
10. Chthamalus malayensis,
11. Chthamalus stellatus
12. Chelonibia testudinaria
13. Lepas anserifera
14. Lepas indica
15. Yamaguchiella coerulescens
16. Tetraclitella sp



in India (Trivedi et al., 2021). Of these, 40 species have been reported from the South India–Sri Lanka ecoregion, and the data highlights the significant contribution made by the region to global barnacle diversity and the need for continued taxonomic and ecological research in Sri Lanka's coastal and marine environments.

Sri Lankan barnacle studies in recent years have been uncoordinated, typically carried out by naturalists based on casual observations rather than in systematic scientific research. Dr. Malik Fernando is a naturalist and diver who has authored accounts of various barnacle species around the shores of Sri Lanka. His findings record the occurrence of both stalked goose barnacles and sessile acorn barnacles that are common on hard surfaces as well as floating objects like driftwood, plastic bottles, and other marine debris, especially after storms. His records also feature species such as *Amphibalanus amphitrite*, *Lepas* spp., and *Megabalanus tintinnabulum*, which are helpful in understanding their morphology and habitat requirements (Fernando, 2023). Though anecdotal, these have played a significant role in highlighting the diversity of barnacles in Sri Lanka and emphasize the need for stricter, scientific efforts at confirming their taxonomy, recording their distribution, and determining their ecological roles. In 2012, Prasanna Weerakkody provided a checklist of marine crustaceans for the National Red List of Sri Lanka. In this work he compiled information on barnacles from across the Indian Ocean (Weerakkody, 2012).

Figure 2
Sampling locations



The most recent formal research on Sri Lankan barnacles was conducted as part of a terminal degree program in Food production and Technology Management from Wayamba University of Sri Lanka and represents an important step towards filling a one-hundred-year gap in taxonomy and ecological knowledge. An important aspect of this study was that it recorded spatial data for the collected samples. This study aimed to confirm and extend existing knowledge by documenting barnacle species richness and habitat utilization across a wide range of coastal habitats, from rocky, sandy, and muddy shores to lagoons, estuaries, mangroves, and harbours. Field surveys were carried out at 81 sites along Sri Lanka's southern, western, north western, northern, and eastern coastlines. Specimens were collected by scuba diving and beachcombing, and detailed habitat, substrate type, and GPS locations were recorded. Quadrat sampling in triplicate was carried out where colonies of barnacles were found. Identification was based on published taxonomic keys, the names subsequently verified according to the World Register of Marine Species (WoRMS).

Sixteen species of barnacles in 10 genera and 5 families were recorded. Eight species were new records for Sri Lanka: *Balanus trigonus, Chthamalus malayensis, Amphibalanus eburneus, Amphibalanus reticulatus, Amphibalanus venustus, Amphibalanus variegatus, Lepas indica, and Semibalanus balanoides*. These were collected from a diverse range of habitats like rocky shores, coral reefs, mangroves, estuaries, lagoons, underwater harbour

structures, floating debris, and crustacean and molluscan exoskeletons. Beached barnacles were often discovered attached to coral rubble, mollusc shells, and marine debris.

Species-specific patterns revealed that they had distinct habitat affinities: *Chthamalus malayensis* usually occupied rocks and rubble, *Amphibalanus amphitrite* occurred mainly on cement, gastropod shells, and coral or algal substrate, while *Semibalanus balanoides* occurred mainly on mangroves and gastropod shells.

This study is a contribution to barnacle diversity and taxonomy in Sri Lanka. It is the first study that collected data on barnacle distribution and habitat occupancy. However, it raises questions regarding the identity of two of the species recorded. *Semibalanus balanoides* and *Chthamalus stellatus* are regarded as cold and temperate water species and doubts have been raised regarding the true identity of the specimens found in Sri Lanka and classified under these two names. More detailed taxonomic studies, including genetic studies, are needed to resolve the question.

It is proposed to continue these studies including surveys along other coastal areas as well as special studies on the association of barnacles with corals, sponges, sea turtles, and marine mammals.

ACKNOWLEGEMENTS

I wish to express my sincere gratitude to my supervisors Prof. Sevvandi Jayakody (Wayamba University of Sri Lanka), Dr. Malik Fernando (Wildlife and Nature Protection Society Marine Subcommittee), and Dr. Kelum Wijenaike (Wayamba University of Sri Lanka). Rishani Dasanayaka, Gavindya Kawshani, and Isuru Siriwardena are acknowledged for their assistance in the field. The financial support for this study was provided by a grant from the United States Forest Service, administered by WNPS.

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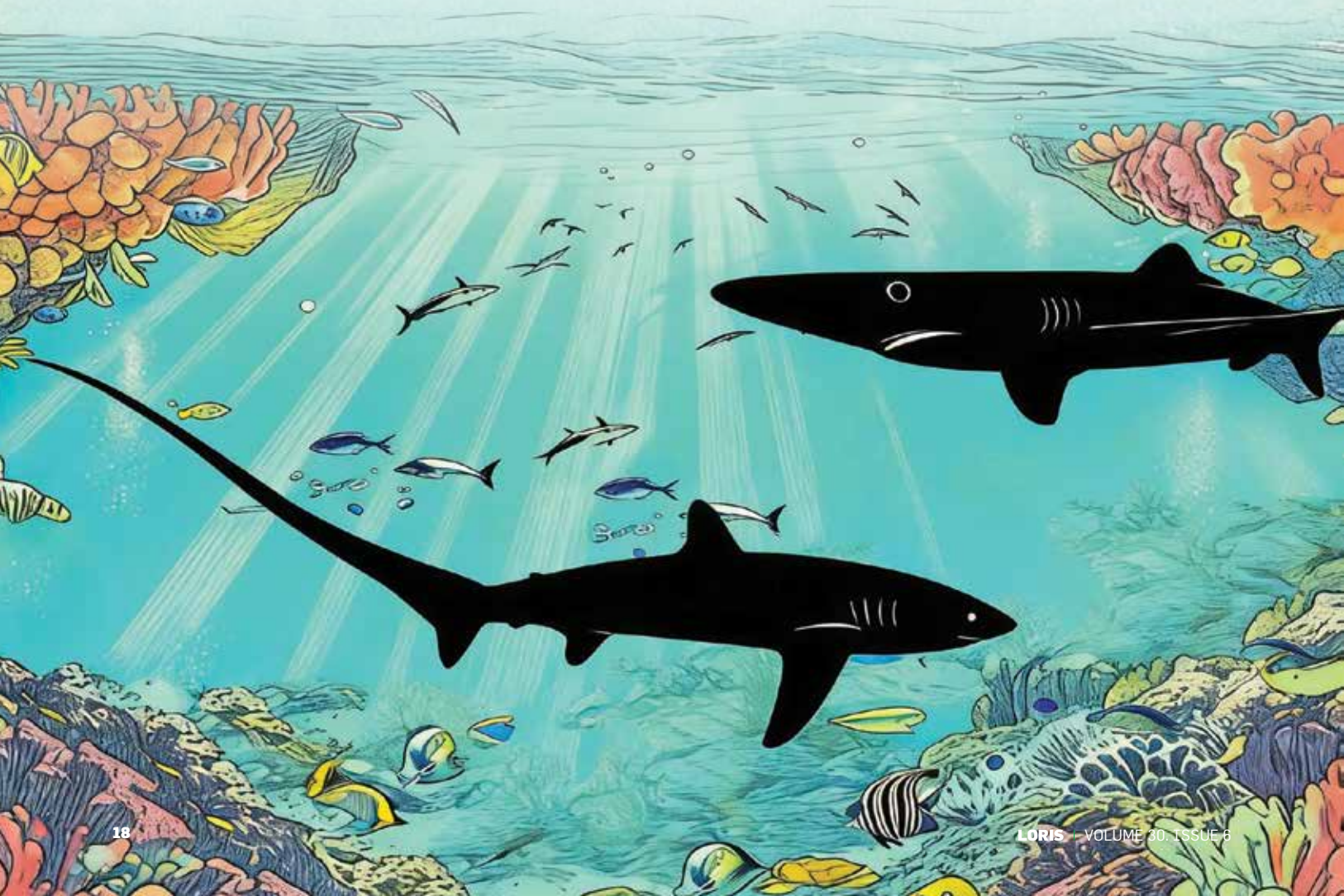
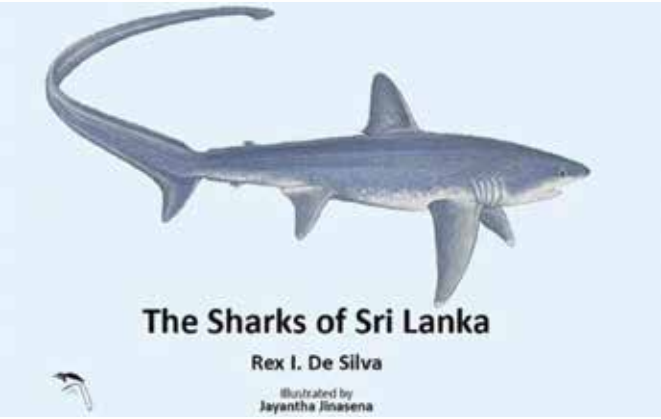
A REVISED SPECIES LIST OF THE SHARKS OF SRI LANKA (2025)

By: Rex I. De Silva



Introduction

A decade has passed since "The Sharks of Sri Lanka" (De Silva & Jinasena 2015) was published and new evidence has since emerged, which I hope will lead to a better understanding of Sri Lanka's sharks. I address some of these issues (below).



Additions to the Sri Lankan list:

(1) Gulper shark (*Centrophorus grnulosus*). This species which was included as "unconfirmed" in our 2015 publication has since been confirmed by the image of a specimen caught in Trincomalee. (Ebert *et. al.* 2016). See **Plate 1.**

Plate 1. A Gulper shark (*Centrophorus granulosus*) caught in Trincomalee. Image courtesy Menaka Goonewardena.

(2) Roughskin Dogfish (*Centroscymnus owstonii*) was identified in Sri Lanka by a Blue Resources Trust study (Ramajeyam Gobiraj *et. al.* 2019).

(3) Eastern Dwarf False Catshark (*Planonasus indicus*). A specimen was identified by David Ebert as *Planonasus parini* from a photograph (Ebert *et al.* 2016). However, more specimens were subsequently collected from Sri Lanka and, on detailed examination, were found to differ from P. *parini* in several respects. Hence, all Sri Lanka specimens are now described as a new species *Planonasus indicus*. (Ebert *et. al.* 2019). **(Plate 2).**

(4) Sharptooth Lemon shark Negaprion acutidens (Ruppell, 1837). I add this species on the basis of a specimen which was photographed by Menaka Goonewardena in the Pigeon Islands Sanctuary a few years ago.

Plate 2. Eastern Dwarf False Catsharks (*Planonasus indicus*). Image courtesy Menaka Goonewardena.

Species transferred from the list of confirmed species to the "Unconfirmed" species list.

(1) Thresher Shark (*Alopias vulpinus*) has been recorded from the Indian Ocean and Sri Lanka by several authors since the early twentieth century. Nevertheless, these records have been questioned by Ebert *et al.* (2021), who suggest that such records may represent misidentifications of the Pelagic Thresher (*A. pelagicus*) or the Bigeye Thresher (*A. superciliosus*). The lack of validated specimens or diagnostic photographic evidence supports a cautious approach to accepting its presence in the region. After discussions with David Ebert, I relegate the Thresher Shark to the list of unconfirmed species.

(2) Pondicherry Shark (*Carcharhinus hemiodon*). I accepted the Pondicherry shark as a Sri Lankan species based on published information available at the time (De Silva, 2014). Following this I also included it as a "confirmed" species in our book (De Silva & Jinasena 2015). However, in view of the IUCN conservation status of "critically endangered and possibly extinct", I re-assessed the data and now consider that the absence of a study specimen from Sri Lanka is a major obstacle in accepting that the species occurs in the island. A few years ago, three shark specimens were handed over to the Colombo Museum as possible Pondicherry sharks. Daniel Fernando and I visited the museum and noted that all three specimens lacked labels. (Acceptable labels would include collector identity, date, locality data etc.). Hence, these specimens do not meet the requirements of the International Code of Zoological Nomenclature (ICZN) for valid type material or verifiable regional records. Following our visual examination, we concluded that these specimens most closely resemble the Spottail shark (*C. sorrah*). Hence, we consider that the evidence for the occurrence of the Pondicherry shark in Sri Lankan waters is untenable. I therefore relegate the Pondicherry Shark to the list of unconfirmed species.

The Revised Species List of Sri Lankan sharks (2025).

Order Hexanchiformes

Family Hexanchidae (Cow sharks)

1) **BLUNTNOSE SIXGILL SHARK** *Hexanchus griseus* (Bonnaterre, 1788).

Order Echinorhiniformes

Family Echinorhinidae (Bramble sharks)

2) **BRAMBLE SHARK** *Echinorhinus brucus* (Bonnaterre, 1788)

3) **PRICKLY SHARK** *Echinorhinus cookie* Pietschmann, 1928

Order Squaliformes

Family Dalatiidae (Kitefin sharks)

4) **KITEFIN SHARK** Dalatias licha (Bonnaterre, 1788).

Family Etmopteridae (Lantern sharks)

5) **ORNATE DOGFISH** *Centroscyllium ornatum* (Alcock, 1889).

Family Centrophoridae (Gulper sharks)

6) **GULPER SHARK** *Centrophorus granulosus* (Bloch and Schneider, 1801). No. 3a in (De Silva & Jinasena, 2015).

7) **SMALLFIN GULPER SHARK** *Centrophorus moluccensis* Bleeker, 1860.

8) **LEAFSCALE GULPER SHARK** *Centrophorus squamosus* (Bonnaterre, 1788).

Family Somniosidae (Sleeper sharks)

9) **Roughskin Dogfish** *Centroscymnus owstonii* Garman, 1906.

Order Lamniformes

Family Alopiidae (Thresher sharks)

10) **PELAGIC THRESHER** *Alopias pelagicus* Nakamura, 1935.

11) **BIGEYE THRESHER** *Alopias superciliosus* (Lowe, 1839).

Family Lamnidae (Mackerel sharks)

12) **SHORTFIN MAKO** *Isurus oxyrinchus Rafinisque*, 1809.

13) **LONGFIN MAKO** *Isurus paucus Guitart Manday*, 1966.

Family Pseudocarchariidae (Crocodile shark).

14) **CROCODILE SHARK** *Pseudocarcharias kamoharai* (Matsubara, 1936).

Family Megachasmidae (Megamouth shark)

15) **MEGAMOUTH SHARK** *Megachasma pelagios* Taylor, Compagno and Struhsaker, 1983.

Family Odontaspididae (Sandtiger sharks)

16) **SANDTIGER SHARK** *Carcharias taurus* Rafinesque, 1810.

17) **SMALLTOOTH SANDTIGER** *Odontaspis ferox* (Risso, 1810).

18) **BIGEYE SANDTIGER** *Odontaspis noronhai* (Maul, 1955).

Order Orectolobiformes

Family Hemiscyllidae (Bamboo sharks)

19) **GREY BAMBOO SHARK** *Chiloscyllium griseum* Muller & Henle, 1838.

20) **SLENDER BAMBOO SHARK** *Chiloscyllium indicum* (Gmelin, 1789).

21) **WHITESPOTTED BAMBOO SHARK** *Chiloscyllium plagiosum* (Bennet, 1830).

Family Stegostomatidae (Zebra shark)

22) **ZEBRA SHARK** *Stegostoma fasciatum* (Hermann, 1783).

Family Ginglymostomatidae (Nurse sharks)

23) **TAWNY NURSE SHARK** *Nebrius ferrugineus* (Lesson, 1830).

Family Rhincodontidae (Whale sharks)

24) **WHALE SHARK** *Rhincodon typus* Smith, 1828.

Order Carcharhiniformes

Family Scyliorhinidae (Catsharks)

25) **CORAL CATSHARK** *Atelomycterus marmoratus* (Bennet, 1830).

26) **BRISTLY CATSHARK** *Bythaelurus hispidus* (Alcock, 1891).

Family Proscylliidae (Finback Catsharks)

27) **PYGMY RIBBONTAIL CATSHARK** *Eridacnis radcliffei* Smith, 1913.

Family Pseudotriakidae (False Catsharks)

28) **EASTERN DWARF FALSE CATSHARK** *Planonasus indicus* Ebert, Akilesh and Weigmann. 2019.

Family Triakidae (Houndsharks)

29) **ARABIAN SMOOTHOUND** *Mustelus mosis Hemprich* & Ehrenberg, 1899.

30) **STARSPOTTED SMOOTHHOUND** *Mustelus manazo* Bleeker, 1854.

Family Hemigaleidae (Weasel sharks)

31) **HOOKTOOTH SHARK** *Chaenogaleus macrostoma* (Bleeker, 1852).

32) **SICKLEFIN WEASEL SHARK** *Hemigaleus microstoma* Bleeker, 1852.

33) **SNAGGLETOOTH SHARK** *Hemipristis elongatus* (Klunzinger, 1871).

Family Carcharhinidae (Requiem or Grey Sharks)

34) **SILVERTIP SHARK** *Carcharhinus albimarginatus* (Ruppel, 1837).

35) **BIGNOSE SHARK** *Carcharhinus altimus* (Springer, 1950).

36) **GREY REEF SHARK** *Carcharhinus amblyrhynchos* (Bleeker, 1856).

37) **GRACEFUL SHARK** *Carcharhinus amblyrhynchoides* (Whitley, 1934).

38) **PIGEYE SHARK** *Carcharhinus amboinensis* (Muller & Henle, 1839).

39) **SPINNER SHARK** *Carcharhinus brevipinna* (Muller & Henle, 1839).

40) **WHITECHEEK SHARK** *Carcharhinus dussumieri* (Valenciennes, 1839).

41) **SILKY SHARK** *Carcharhinus falciformis* (Bibron, 1839).

42) **BULL SHARK** *Carcharhinus leucas* (Valenciennes, 1839).

43) **BLACKTIP SHARK** *Carcharhinus limbatus* (Valencinnes, 1839).

44) **OCEANIC WHITETIP SHARK** *Carcharhinus longimanus* (Poey, 1861).

45) **HARDNOSE SHARK** *Carcharhinus macloti* (Muller & Henle, 1839).

46) **BLACKTIP REEF SHARK** *Carcharhinus melanopterus* (Quoy & Gaimard, 1824).

47) **SANDBAR SHARK** *Carcharhinus plumbeus* (Nardo, 1827).

48) **BLACKSPOT SHARK** *Carcharhinus sealei* (Pietschmann, 1916).

49) **SPOTTAIL SHARK** *Carcharhinus sorrah* (Valenciennes, 1839).

50) **TIGER SHARK** *Galeocerdo cuvier* (Peron & LeSueur, 1822).

51) **BROADFIN SHARK** *Lamiopsis temmincki* (Muller & Henle, 1839).

52) **SLITEYE SHARK** *Loxodon macrorhinus* Muller & Henle, 1839.

53) **SHARPTOOTH LEMON SHARK** *Negaprion acutidens (Ruppell, 1837).*

54) **BLUE SHARK** *Prionace glauca* (Linnaeus, 1758).

55) **MILK SHARK** *Rhizoprionodon acutus* (Ruppel, 1837).

56) **GREY SHARPNOSE SHARK** *Rhizoprionodon oligolinx* Springer, 1964.

57) **SPADENOSE SHARK** *Scoliodon laticaudus* Muller & Henle. 1838.

58) **WHITETIP REEF SHARK** *Triaenodon obesus* (Ruppel, 1837).

Family Sphyrnidae (Hammerhead Sharks)

59) **WINGHEAD SHARK** *Eusphyra blochii* (Cuvier, 1817).

60) **SCALLOPED HAMMERHEAD** *Sphyrna lewini* (Griffith & Smith, 1834).

61) **GREAT HAMMERHEAD** *Sphyrna mokarran* (Ruppell, 1837).

62) **SMOOTH HAMMERHEAD** *Sphyrna zygaena* (Linneaus, 1758).

UNCONFIRMED SPECIES

Order Hexanchiformes

Family Hexanchidae (Cow sharks)

(1a) **BROADNOSE SEVENGILL SHARK** *Notorynchus cepedianus* (Peron, 1807).

Order Squaliformes

Family Dalatiidae

(2a) **COOKIECUTTER SHARK** *Isistius brasiliensis* (Quoy & Gaimard, 1824).

Order Lamniformes

Family Alopiidae (Thresher sharks)

(3a) **Thresher shark** *Alopias vulpinus* (Bonnaterre, 1788). (No. 10 in De Silva & Jinasena, 2015).

Family Lamnidae (Mackerel sharks)

(4a) **WHITE SHARK** *Carcharodon carcharias* (Linneaus,1758).

Order Carcharhiniformes

Family Carcharhinidae (Requiem or grey sharks)

(5a) **PONDICHERRY SHARK** *Carcharhinus hemiodon* (Valencinnes, 1839). (No. 40 in De Silva & Jinasena, 2015).

(6a) **GANGES SHARK** *Glyphis gangeticus* (Muller & Henle,1839).

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Acknowledgements

I thank David Ebert for discussing the Thresher Shark's status in Sri Lanka with me. Daniel Fernando joined me to examine the shark specimens in the Colombo Museum and made useful comments on the specimens. Ramajeyam Gobiraj sent me useful information on shark research conducted by Blue Resources Trust. I thank Menaka Goonewardena for his images of the Gulper shark and Eastern Dwarf False Catshark. I am grateful to Rohan Wijesinha for reading the manuscript and offering useful comments and suggestions.

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CONSERVATION

Tracing the Wild: Mapping Big Cat Journeys for Conservation

By: Parami Peiris

We wait with our breaths held, speaking quietly even though we were a good mile away from the bait site. The project biologist eyes her phone every minute, her home page opened to the wildlife camera that is on the bait site. It's 9 pm on a land reserve in the Santa Ana mountains in Southern California, USA. There are no sounds other than the cicadas, and the sky is bright with thousands of stars. “She’s in!” the biologist says. The mountain lion has entered the bait trap. The traps, which had been set up earlier that day, are enclosures designed to safely contain the animal for collaring. The efficiency at which the team gets into position and starts the drive up the trail is impressive. The team consists of veterinarians, biologists, a handful of volunteers like myself, and land management representatives from the reserve that we were on. We are a diverse group of people from different backgrounds who have come together for one purpose.

We drive up the trail, our breaths held. Reaching the site, we wait as the head veterinarian and current director of the project, Dr. Fernando Najera, quickly anesthetises the mountain lion in the bait trap. I am awestruck— it is my first time seeing a mountain lion. A recent mother of three cubs, F420 is gorgeous. She is more slender than I expected, with huge paws and a body worn down from weaning. I watch in awe as the team of veterinarians and biologists collect vital data from the animal. This includes measurements like the size of its head and paws, a vial of blood for DNA records, and even a tick that they found on the animal, a key to finding important information about diseases that may be prevalent within the species community. All of this work happens within 40 minutes.

Around this time, the anesthesia starts to wear off and it's time for the re-release. We have just collected a vast reserve of data that will be critical to inform conservation action for this species. It also gives us valuable genetic information. One of the biggest threats to these cats, similar to that faced by leopards in Sri Lanka, is genetic fragmentation: shrinking gene pools that reduce long term stability.[5,7] Obtaining genetic information allows us not only to monitor the gene pool within the populations of mountain lions in the area, but also helps keep track of lineage. For instance, F420’s current cubs are eventually going to venture off on their own, claiming new home ranges and hopefully creating genetic lines of their own. Knowing their genetic and geographical origin will help monitor populations as well as study different genetic pools within the species.

While data like blood samples provide insights into genetic health, it is long-term movement data from collars that may be the most transformative in shaping how we protect these animals. F420, as the name suggests, is the 420th puma collared by the California Carnivores Project. Since 2001, the California Carnivores Project at University of California, Davis uses GPS collars to collect fine-scale data on mountain lion habitat use, movement patterns, prey selection, health, and genetic connectivity. This data is vital for understanding how urban expansion fragments populations and alters their ecology.

Figure 1:

Collared Mountain Lion

Source: The Nature Conservancy and UC Davis Wildlife Health Center

The cost of fragmentation

Mountain lions in California, like most big cats around the world, are facing the threat of increasingly fragmented habitat. Although males typically roam about 125 square miles, they now face shrinking habitats and must travel longer, riskier routes to find suitable areas and mates. In Southern California, this means crossing major highways and roads, a perilous feat that leads to the death of many animals. Maps created by the UC Davis Road Ecology reveal that one to two mountain lions were killed every week on roads and highways in California between 2015 and 2022.[3,4] With human population and urbanization growing rapidly, especially in areas like Southern California, these big cats face the threats of being subject to roadkill, and also retaliatory killing due to depredation of livestock and domestic pets. Highways and roads are major barriers to animal movement and contribute significantly to genetic restriction. While roadkill accounts for only 2.2% of leopard mortality in Sri Lanka, the same issue of habitat fragmentation and genetic restriction remains a major underlying factor, driving the 77% of mortalities that occur from snare traps set near forest edges and human settlements[2], highlighting the urgent need to safeguard and reconnect critical habitats for big cats.

Figure 2:

Map depicting events of Mountain Lion Road Mortality (2015-2022) and Correlation with Major Highways in California

Data Source: Road Ecology Center, UC Davis4

Conservation technology and the language of movement

Conservation research projects aim to gain a better understanding of current mountain lion connectivity, a research question that individuals like F420 will feed valuable data towards. Each GPS data point reveals to us a little more of the hidden map of an animal's life. By knowing animal movement patterns, it is possible to identify the routes that will become a conservation priority. Furthermore, GPS collar data and GIS modeling, complemented by camera traps, can pinpoint focal locations for initiatives like setting barriers, adding road signs and better engineered wildlife crossings. Such crossings, paired with fencing can significantly reduce incidents of animals killed by vehicles. For instance, a large section of the 241 highway in California was fenced, as it was identified as a key area where pumas crossed and was a region of high mountain lion mortality due to collisions with cars. This fencing was paired with animal undercrossings that were constructed with the roads. Furthermore, the fencing also had "jump-off" points every few miles, in case animals did end up getting stuck on the side of the highway and needed safe passages to exit out.[1] As a result, the number of mountain lion deaths on this highway were greatly reduced

GPS Collar data also serve as key data points in modeling animal resource selection. Resource selection models use animal movement data to identify habitats that are crucial for species survival, by mapping resources like land cover, water and food at various spatial scales. Scientists use models such as Resource Selection Functions (RSFs) to compare where animals actually go with the habitats available, and Step Selection Functions (SSFs) to track the fine-scale choices along their movement paths. Together, these models reveal which resources are most important for survival. This allows the identification of critical habitats for species management, informing management by providing land managers with spatial maps showing areas of high importance, and detecting new habitats for species reintroduction.

For Sri Lanka, conservation applications of such models could be pivotal. GPS data from collared leopards could reveal critical movement corridors linking fragmented forests-information essential for future land-use planning and conservation prioritization. Mapping these pathways could aid in the prevention of physical and genetic isolation of leopard sub-populations in the country.

Lessons along the way

While technology and data can guide conservation everywhere, it's important to recognize that strategies effective in one landscape may not directly translate to another. In

California, for instance, well-engineered wildlife crossings and fencing have drastically reduced roadkill incidents by giving mountain lions safe passage across major highways. These solutions are feasible because of the structured urban planning systems and funding available for large-scale infrastructure projects. In Sri Lanka, however, conservation landscapes are far more intertwined with human settlements. Leopards often roam through tea estates, home gardens, and forest edges, making hard infrastructure less practical. Furthermore, leopard-livestock conflict is far more common in these regions, where many communities depend on livestock for their livelihoods, adding another layer of complexity to coexistence. As a result, community-based conservation focused on awareness, rapid compensation for livestock losses, and habitat connectivity through private land stewardship may be more effective.

This is the core of the work led by organizations like The Wilderness and Wildlife Conservation Trust (WWCT) and the Wildlife and Nature Protection Society (WNPS)'s Wild Cat Subcommittee, which aim to reduce habitat fragmentation and better understand movement patterns of the Sri Lankan leopard. WWCT's ongoing research such as their Corridors for Conservation initiative uses networks of camera traps to provide valuable insights into leopard population dynamics and movement ecology. Protecting livelihoods is just as important as protecting habitats, and effective insurance schemes like the one recently introduced by WNPS to protect leopards and livelihoods, offer a powerful tool for human- wildlife coexistence.[6] This scheme provides monetary compensation to farmers that lose their livestock due to leopard predation, aiming to reduce retaliatory killings - the current leading cause of mortality of this keystone species.

In a rapidly developing world with human and animal spaces increasingly overlapping, it is important that we identify conservation recommendations that are minimally invasive both for animals as well as the human communities living in these areas. F420's movements, and those of her cubs when they grow, will feed into a larger story- one of how technology and people together can keep big cats safe. Whether it's a mountain lion in Southern California or a leopard in the highlands of Sri Lanka, by combining technology with local wisdom, we can give these big cats the space they need to thrive—and ensure their stories continue long into the future.

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Jewels of the Mist: The Untold Story of Sri Lanka's Wild *Impatiens*

BY: KOSALA ABEYKOON AND PROF. HASHENDRA KATHRIARACHCHI

A Quiet Burst of Colour

Sri Lanka's rainforests are famous for their towering trees, their flocks of colourful birds, and their elusive lorises. But for the patient observer, there is another world waiting closer to the ground. In the damp shade beside a stream, or high on a dripping rock face, a sudden splash of yellow, pink, or white may appear. These are the flowers of *Impatiens* - delicate, dazzling, and uniquely adapted to life in shadow. To many people they are simply "touch-me-nots," yet these fragile plants hold within them one of the most extraordinary stories of our island's biodiversity. They are not just flowers, but testaments to evolution, ecology, and endurance.

Impatiens elongata

A Global Genus with a Sri Lankan Heart

The genus Impatiens, belonging to the balsam family Balsaminaceae, is one of the most diverse plant groups in the tropics. With more than a thousand species across Asia, Africa, Madagascar, and Europe, they have conquered nearly every moist, shaded habitat in the Old World. Yet among all these regions, Sri Lanka is a hotspot of diversity. The island is home to twenty-three native species, of which sixteen (with two additional subspecies) are found nowhere else. This concentration of endemism is remarkable, especially for a country so small in size. It places Sri Lanka alongside Madagascar, East Africa, and the Himalayas as a center of *Impatiens* diversity.

These species are clustered in two main habitats: the rain-drenched lowland forests of the wet zone and the mist-laden montane cloud forests of the Central Highlands. The monsoons feed streams and waterfalls that carve niches of perpetual moisture perfect for these shade-loving plants. Over time, populations became isolated in valleys and ridges, evolving into new species that are adapted to very specific microhabitats. This is why, in Sri Lanka, one ridge may host a species found nowhere else in the world.

Impatiens appendiculata

Ingenious Flowers: Beauty with a Purpose

At first sight, an *Impatiens* flower is a jewel: its bright petals glow even on the darkest days. But beneath the beauty lies a masterpiece of biological engineering. These flowers are bilaterally symmetrical, guiding pollinators to enter from one direction only. A hollow spur extends from the back, filled with nectar, its length precisely matched to the tongue of a bee, butterfly, or hawkmoth. When the pollinator probes for nectar, it brushes against the stamens and stigma, transferring pollen with mechanical precision.

The drama continues with their seed pods. When ripe, they are coiled like springs under tension. A light touch triggers them to burst open violently, flinging seeds several meters away. This ingenious strategy allows *Impatiens* to colonize new crevices and stream edges. It also earned them their name: *Impatiens*, meaning "impatient" in Latin, and their common moniker, "touch-me-not."

A Gallery of Endemics

Each Sri Lankan species has its own story. *Impatiens repens*, with its trailing stems and golden-yellow flowers, spreads like a living carpet across wet rocks in Sinharaja. *Impatiens leucantha*, critically endangered, bears delicate white blossoms that glow like tendrils of mist on montane cliffs. *Impatiens acaulis*, with no obvious stem, crouches close to the soil of Horton Plains, its blossoms splashing pink against the green. *Impatiens taprobanica*, named after the island's ancient name Taprobane, thrives on cool, shaded slopes, its fiery blossoms a celebration of endemism.

To see them in the wild is to witness botanical gems in their rightful setting: shimmering in the forest gloom, nourished by perpetual water, and pollinated by an unseen army of insects and birds.

Impatiens taprobanica

Ecological Roles in the Rainforest Web

It is easy to mistake Impatiens for ornamental luxuries of the forest, but they are integral to ecological processes. Their nectar feeds bees, butterflies, and hawkmoths, which in turn pollinate other plants. In certain forests, sunbirds visit the flowers, extending the web of interaction from flora to avifauna. Along slopes and streams, Impatiens help stabilize fragile soils, preventing erosion during monsoon rains. Their sensitivity to changes in shade and humidity makes them excellent indicators of forest health. A decline in *Impatiens* often signals a deeper ecological imbalance.

A History of Discovery

The story of Sri Lanka's *Impatiens* is intertwined with the history of botany itself. During the 19th century, colonial explorers and botanists began cataloguing the island's flora. George Gardner, tramping through the hill country, collected specimens that were entirely new to science. Joseph Dalton Hooker, one of the greatest botanists of his age, described several *Sri Lankan Impatiens* in his monumental *Flora of British India*. Henry Trimen, with his comprehensive Flora of Ceylon, carefully described, illustrated, and classified many of the species still recognized today.

Cultural Ties

Though they are fragile forest herbs, Impatiens have long been linked to human life. Across Asia, they are valued in traditional medicine: poultices of crushed leaves soothe skin irritations and insect bites, while extracts have been studied for antimicrobial and anti-inflammatory

Impatients truncata

properties. Globally, ornamental relatives like *Impatiens walleriana* and *Impatiens balsamina* fill gardens with colour, their cultivation representing a multi-million-dollar horticultural industry. Sri Lanka's wild species are the genetic ancestors of these cultivated plants, carrying within their DNA traits that may hold future horticultural or medicinal potential.

Threats on All Fronts

For all their beauty, *Impatiens* are among the most threatened plants on the island. According to the National Red List, more than three-quarters of native species are threatened, ranging from 'Vulnerable' to 'Critically Endangered'. Habitat loss is the most immediate danger, as forests are cleared for agriculture, plantations, or infrastructure. Fragmentation isolates populations, reducing genetic exchange. Invasive plants like *Clidemia hirta or Lantana camara* overwhelm native flora, altering the balance of shade and light.

Climate change looms as the most insidious threat. Highland endemics, already confined to narrow temperature ranges, have nowhere to go as the climate warms. Ecological models forecast drastic declines in Central Highlands species richness by 2070 under severe scenarios, with some species facing extinction. *Impatiens walkeri* may already be lost, known only from historical records. Every disappearance represents not only the loss of a flower, but the silencing of a unique evolutionary voice.

Conserving the Jewels of the Mist

Conservation of *Impatiens* is ultimately conservation of forests. Protecting places like Sinharaja, Knuckles, Horton Plains, and Peak Wilderness is essential, for without intact habitats these flowers cannot survive. Restoring degraded areas and maintaining forest corridors will allow pollinators to travel and populations to interbreed. *Ex-situ* conservation offers a safeguard: threatened species can be cultivated in botanical gardens like Peradeniya and Hakgala, their seeds banked for future generations. Tissue culture techniques offer another tool for propagation.

Perhaps most important is raising awareness. Very few Sri Lankans know these plants exist, and fewer still realize how threatened they are. By celebrating them in magazines, in nature clubs, and in eco-tourism trails, we bring them into the public eye. Awareness leads to stewardship, and stewardship leads to protection.

Much remains to be discovered. Modern molecular tools may reveal cryptic species hidden within what is now considered a single taxon. Population genetics can help us understand how isolated populations survive or fail in fragmented landscapes. Climate models can identify refugia, areas where Impatiens might endure even as the world warms. Each new insight strengthens the case for urgent conservation action.

A Final Reflection

In the end, *Impatiens* are more than forest flowers. They are living stories of ancient evolution, shaped by monsoon rains, mountain mists, and island isolation. They remind us that biodiversity is composed not only of grand spectacles like elephants or whales, but also of the small, delicate lives glowing quietly in the shade. Each species saved is a note preserved in the rainforest symphony; each species lost is a silence that can never be filled.

As long as golden *Impatiens repens* creeps across Sinharaja's mossy rocks, as long as the ghostly white blossoms of *Impatiens leucantha* cling to dripping cliffs, there is hope. These jewels of the mist are fragile, but with care, they can continue to shine gifts to our forests, our culture, and our future generations.

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OF MONITORS AND MOSASAURS

By: Mark Hager

Title Homage: 'Of mice and men' (Robert Burns, John Steinbeck)

Savage 'Squamate' Stalks Sri Lanka's Suburbs

I came around a corner on the paddyfield exercise track and there she was, at a 30 meter distance facing my way. Six feet long, she (as I fancy) stood shaking an equally lengthy rat snake with its head already in her mouth. The snake likewise twisted and shook itself in a desperate and doomed struggle to get free. As it did so, the water monitor seemed to slurp it in like a grey-black strand of writhing vermicelli. It went down the hungry gullet, thrashing all the way. The assailant was not actually slurping. Her rearward-curving teeth help her lift the front part of her mouth forward on her prey without losing her grip.

In my rambles round the Colombo suburbs with frequent water monitor sightings, I have observed predation only four times. Around the time of the rat snake incident, I filmed a large monitor splashing through the flooded paddy with a still-struggling cormorant in its jaws.

Lanka's Asian Water Monitor (a.k.a. 'Kabaragoya' or *Varanus salvator*) ranges throughout South and Southeast Asia. It consumes any animal matter it can get its jaws on, including insects, spiders, centipedes, millipedes, mollusks, frogs, fish, crabs, turtles, lizards, even crocodile eggs and babies. It eats venomous snakes. It can climb well enough to pilfer bird nests. It will scavenge carrion, including human corpses. With this scavenging, it cleanses the environment of rotting meat (thank you!), usually not human corpses fortunately. Rapid swimmer and runner, it excels in chasing prey down on land or in water.

It benefits from superb daytime eyesight and an awesome sense of smell. Excellent distance vision helps it spot prey and predators hundreds of meters away. It sees ultraviolet colors invisible to us humans. Under the hide on top of its head sits a poorly developed 'third' (or 'pineal') eye, allowing it to detect directional brightness. It may function in telling the time of day and steering through unfamiliar territory by feeding the sun's position into mental computations. Its nighttime eyesight, on the other hand, is poor, because it lacks eye rods for dim-light, black-and-white vision. Its eyes sport four color-sensing cones, giving it those ultraviolet hues along with the blue, green and red that our mere three-color cones furnish us in daylight.

Our friendly neighborhood water monitor tucks herself into her comfy mudbank at dark and wakes at daybreak to warm up and start hunting. Her flicking forked tongue detects the direction of scent sources from the tiny differences in the time at which molecules strike its left and right sides. This allows her to follow a scent trail toward prey or potential mates and away from predators.

I have observed a water monitor flicking that tongue underwater as

Photo credit: Malaka Fonseka

it swam along. That sense of taste/smell works in water too, which is why I surmise that the struggling cormorant in the monitor mouth mentioned earlier was probably captured while the bird was preoccupied by its own underwater hunting for fish and whatnot, momentarily forgetting about water monitors!

That flicking forked tongue clues us into its family situation. Monitors find their closest living relatives in snakes, whose tongues look and function similarly. Today, snakes and lizards together form the biological order 'squamates.' Some scientists posit that snakes diverged from pre-existing monitors maybe 100-150 million years ago, evolving either from earth-burrowing species or ones that spent lots of time in water. Either way, they gradually lost their limbs to a slithery form of locomotion. Intermediate forms with vestigial hind limbs appear in the fossil record.

T. rex of the Sea

Beside snakes and lizards in the squamate order sat a now-extinct lineage of predatory marine reptiles

called 'mosasaurs,' flourishing for 30 million years before dying out in the dinosaur extinction event 66 million years ago: the same time frame when various species of *Tyrannosaurus rex* operated as top predators on land. Mosasaurs came in all sizes, with the largest exceeding 50 feet in length. With streamlined bodies and highly propulsive tails, they excelled in subduing prey of all kinds. High sea levels on a super-warm planet opened niches for them as they took the stage. While pre-existing marine reptiles disappeared, declined or stagnated, mosasaurs proliferated and diversified, operating as dominant marine life forms for thousands of millennia. Many types thrived as apex predators, prevailing in nearly all marine habitats, and few fell prey to anything except other mosasaurs (and maybe the occasional large shark.)

Their croc-like elongated jaws sported rear-curving teeth like their water monitor cousins, ensuring that snatched prey could move in only one direction: down the throat. Their speed could reach 50 kilometers per hour, comparable with today's great white shark. Even more remarkable was their acceleration. Scientists distinguish 'cruise' from 'burst' specialists among swimming animals: prolonged foraging versus speedy pouncing. Mosasaurs seemingly attained the rare feat of mastering both. Tails sometimes longer than the rest of the body supported rangy cruising, while super-muscled flippers launched astonishing bursts: top speed reached in as little as a single second. The flippers swung in a down-and-back 'adduction' motion akin to a breaststroke pull. Mosasaurs could earn top marks in both chase and ambush. Used in other ways, those flippers also provided superb maneuverability.

Mosasaurs gave birth to live youngsters at sea and may have engaged in nurture and teaching. Many types maintained warm blood, supporting high metabolisms that helped them pursue prey. The evolutionary relationship with snakes and monitors remains controversial, but one plausible theory posits that mosasaurs descended from monitors already grown comfortable in seas with land nearby, like today's Komodo Dragons. In open seas, they continued to breathe oxygen-rich air like today's sea-going mammals, rather than re-evolving gills for breathing oxygen-poor water. They used their squamate forked tongues in hunts, along with super-sharp hearing and a delicate sense of touch. Their auditory mechanism amplified sound coming through water. Pressure wave sensors in their snouts detected changes of speed and direction among their fleeing prey. Their sharp eyesight indicates a life of hunting near the surface. They reached their top morphological and ecological diversity just when mass extinction swept them away.

Goannas Down Unda

Monitors exist today as some 95 distinct species, all within a single genus. Various species range from southern Japan, through China, across southern Asia and into Africa. Twenty-five species appear in Australia, monitor capital of the world. That surprising continent once harbored the largest land monitor ever inventoried, Megalania (*V. priscus*), clocking-some say- as much as seven meters in length and proliferating as top predator for more than a million years. Its scrumptious smorgasbord featured giant kangaroos and other mega-marsupials until it became extinct 50,000 years ago upon the arrival of humans, who may have hunted it into oblivion or out-competed it for prey.

Commonly called 'goannas'-confusing them very charmingly with a different lizard group, iguanas -Australia's monitors appear today in widely varied habitats, including deserts, mountains, lagoons and swamps. In forests, some are strikingly arboreal. All hunt and scavenge. Most swim well but spend little time in water. Some sprint short distances on hind legs. The largest, Perentie (*V. giganteus*) measures 2.5 meters, while the Short-tailed Monitor (*V. brevicauda*), reaches only 20 centimeters, making it the smallest known monitor. With legal permission, some indigenous people hunt and dine on goannas, which are otherwise protected. Monitors figure richly in Aboriginal mythology, including totemic representation, and in European-Australian lore, as in a popular folk-rock band calling itself 'Goanna.'

There Be Dragons

Today's largest monitor, Indonesia's Komodo Dragon (*V. komodoensis*), originated in Australia, where it once resided, before migrating through the islands to its current dry and isolated homes. Lacking eye rods, it shares poor night vision with its water monitor cousin. It swims comfortably from place to place and famously takes down large prey on land like deer and buffalo, aided by venomous saliva delivered in its bites, but not the kind of venom inflicted through fangs, which they lack.

Toxic anti-coagulants produce non-stop bleeding and shock from sudden pressure drop. Victims who don't die quickly often flee their tormenters into feces-laden ponds and die from resulting infections, to be devoured as carrion by gangs of patient Dragons. Ravenous Komodos consume prey in their entirety. Hides, hooves, even bones go down the hatch. Rust-hued teeth tipped with iron help them shred and crush their unlucky victims. Those teeth – as you may have already guessed - curve rearward. Baby Komodos spend a lot of their time up in trees, avoiding adults who will eat them if they can.

Komodo males rear up on hind legs against one another in epic fights over territory and mating privileges. When males grow scarce, female Komodos can produce offspring without mating, a phenomenon called 'parthenogenesis.' Those invariably male offspring grow to maturity in nine years or so, providing partners for renewed rounds of sexual reproduction. Despite this reproductive magic, Komodos now rank as 'Endangered' (facing high risk of extinction). As few as one thousand adult individuals may be alive today. Their restricted five-island range is one problem. They also face burgeoning human populations, shrinking forests and expanding agricultural encroachment on their habitat.

A feast - Crocodile eggs for breakfast!

Monitoring Lankan Monitors (On Your Monitor!)

Asian monitors happen to be the second largest monitors inhabiting our planet these days and they probably maintain the most extensive range of any, though our local subspecies lives only in Sri Lanka. The largest water monitor ever measured, at 3.2 meters, lived in Kandy Lake. Their worldwide conservation status stands as 'least concern.' With their highly flexible diets, they thrive even amidst heavy human habitation. Their excellent protection from predation stems from sharp teeth and claws, along with long whippy tails and bone-flecked hides. Youngsters perch on trees to avoid crocs, jackals and leopards.

They look scary but water monitors rarely attack humans unprovoked. They prefer avoidance. Anyone unlucky enough to get bitten by one through some mishap can expect some irritation at the wound site as their saliva is mildly venomous. Severe harm is unlikely because the venom is weak compared with Komodos.

Like their Komodo cousins, water monitor males fight one another, for mating privileges among other things, as in the video just below shot in Sri Lanka.

https://www.youtube.com/watch?v=D0tOdjvZXSM

I once witnessed two of our more smallish land monitors (Bengal Monitors, a.k.a. 'thalagoya' or *V. bengalensis*) fighting just like Komodos, up on hind legs, grappling, tossing and tumbling on a brutally hot, sunny paddyfield. This is not my video of that event but for example see:

https://www.youtube.com/watch?v=KLqHbUo7iB4

After several minutes as I watched, one of them backed into a stream and swam away. Yes, land monitors can swim quite ably. Like their larger island cousins, they too are fearsome hunters. A while ago, at Sigiriya, some of us watched a land monitor snatch and carry a hefty bullfrog, which we could hear squealing, its eyes wide in terror.

On another walk not long ago, I overtook a land monitor on the exercise track. That in itself was noteworthy. When they see me coming, they normally scamper away in their awkward hasty sprint before diving off the track to hide in some vegetation. Coming alongside, I noticed that two thirds of its long monitor tail wasn't there.

What could have bitten it off? Saltwater crocs prowling our local bayous definitely prey on monitors. If it happened when it was small, we can't rule out a fishing cat or Eurasian otter, though they are mainly nocturnal, unlike our monitor. Nor can we dismiss the water monitor as a possible suspect, as she notoriously preys on her land going cousin.

Poor Stumpy walks a hard path. Those long tails play key roles in monitor locomotion on land. As a counterweight to main body mass they assist propulsion, especially in sprints, the usual reaction to my approach. They foster stability on quick turns, uneven surfaces, and bipedal running. Capacity to subdue prey and avoid predation must suffer from taillessness. If he is male, Stumpy will falter in stand-up fights for territory and mates. And could females find such an amputee attractive?

As it happens, I have witnessed water monitors fighting, not on land but in water. One day at the lake separating Pelawatte from Thaluwatugoda, I watched one swim out from the island toward another swimming the opposite way. They tossed each other around for several minutes, each trying to hold its adversary under water. One finally swam away quickly.

But here's the thing: unlike mosasaurs, today's monitors, even water monitors, don't mate in water (except possibly in rare situations when they can touch bottom and cool themselves at the same time) and they certainly don't mate face to face. Those lizards in the video were making war, not love. One was pinned under the other, losing power, possibly on the verge of running out of breath. Female water monitors will actually take to water when they wish to avoid a mate-seeking male.

Water monitors confront human exploitation in some parts of their range. Forest people harvest their meat, fat and eggs. In commercial trade, their skins prove useful for crafting fine shoes, belts and handbags. Sri Lanka bans any such usages under its Fauna and Flora Protection Ordinance. But a roadside attraction between Minneriya and Polonnaruwa raises questions. A local guy who loves water monitors accepts contributions from visitors who watch him feed them and sometimes get them to do little tricks. They cruise a bayou near his home and visit his compound regularly. The Ordinance bans taking or controlling reptiles without a license to do so. A sign on the road indicates that the operation is government approved. The place was closed due to drought the day I tried to visit with family and friends. My intended visit would seem to make me an accomplice. I'm not sure how I feel about such a small operation, one that is apparently duly licensed. Visitors may learn to appreciate monitors. But would it not be troubling to see this replicated elsewhere, perhaps at larger scale?

No matter where in the world we find them, Monitors are endlessly fascinating ancient beasts. We would do well to remember this the next time we see a friendly neighbourhood Kabaragoya in our garden!

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Photo credits: Sriyan de Silva Wijeyeratne

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Sri Lankan Leopard

By: Dilantha Gunawardana

The tawny skin filled with
patchwork rosettes,
The prowl of a stealthy one, and its
prized assets,
Legs that hurl forward, like an arrow
from a longbow,
A gluttonous reward, a sambar deer,
a fleshy doe.

The onus of hunger to be nourished
with venison meat,
As they feast on a right royal
carnivorous treat,
They run like the spirited monsoon
inside layered thickets,
A doe's neck to crush, to salivate the
tooth pickets.

They see men in the outskirts of a
rundown village,
The type that use a buffalo plough
to break the soil in tillage,
While they watch the hunters
armed with handguns,
And after the catch, they inflate
their lungs.

Nocturnal beast, in rosettes
patterned and tiled,
Pelt of a beauty, on catwalks of the
wild.

Photo credit:
Rev. Fr. Vimal Tirimanna

Dilantha Gunawardana, a molecular biologist and biochemist trained at the University of Melbourne, lives in a chimerical universe of science and poems. Dilantha's poems have been published in The Writing Disorder, Heart Wood Literary Magazine, Quadrant Online, Canary Literary Magazine, Cordite Poetry Review, Kitaab, Creatrix, Ravens Perch, Cephalo Press and Zingara Poetry Review among others, while also contributing to three poetry anthologies. Dilantha has three collections of poetry, Cell Cycle, Donuts and Poppadums (2024), Kite Dreams (2016) and Driftwood (2017), published by Sarasavi Publishers. Dilantha was awarded the prize for "The emerging writer of the year – 2016" in the Godage National Literary Awards, Sri Lanka, while being shortlisted for the poetry prize, in the same awards ceremony.

Poetry Website: https://poemsfromceylon.com/

World Court on Climate Change: Implications of the Landmark Decision

- By: Chamindri Liyanage -

Introduction

In March 2023, Vanuatu- a Small Island Developing State - successfully led a coalition of 132 nations in the adoption by consensus of a United Nations General Assembly resolution calling for an Advisory Opinion from the world's highest court, the International Court of Justice, which is the principal judicial organ of the United Nations empowered to adjudicate inter-state disputes.[1] The resolution sought to gain clarity on the obligations of States under international law to ensure the protection of the climate system and the legal consequences of breaching these obligations. A record number of 96 States and 11 international organisations submitted pleadings before the Court, and the historic Advisory Opinion was issued on the 23rd of July 2025. The following sections discuss and analyse selected key findings of the Court and their implications.

Broadening State Responsibility in Climate Action

In its Advisory Opinion, the Court identified that state obligations regarding climate change are not limited to a single treaty but are grounded in a comprehensive framework of international law. This includes the Charter of the United Nations[2], the UN Framework Convention on Climate Change (UNFCCC)[3] , the Kyoto Protocol [4], the Paris Agreement [5], and the United Nations Convention on the Law of the Sea (UNCLOS). [6] It also encompasses other multilateral environmental agreements such as the Ozone Layer Convention, the Montreal Protocol, the Convention on Biological Diversity, and the Convention to Combat Desertification.[7] Importantly, the Court also linked these obligations to core instruments of international human rights law, namely the International Covenant on Economic, Social and Cultural Rights (ICESCR) and the International Covenant on Civil and Political Rights (ICCPR), as well as customary international law and general principles of international law.[8]

This recognition is significant because it broadens and deepens the scope of state responsibility. It affirms that climate change is not just an environmental issue, but a cross-disciplinary challenge that engages multiple branches of international law. States are bound not only by specific climate treaties but also by general international legal obligations, including those relating to human rights and environmental protection, even if they are not parties to certain specific treaties. This enhances accountability, particularly for states that have historically contributed to greenhouse gas (GHG) emissions and continue fossil fuel production. By incorporating climate obligations within this broader legal framework, the Court underlines that climate inaction may constitute an internationally wrongful act,

1. United Nations General Assembly, A/RES/77/276 dated 04.04.2023 <https://docs.un.org/en/A/RES/77/276>.
2. International Court of Justice, Advisory Opinion on Obligations of States in respect of Climate Change, 23 July 2025<https://climatecasechart.com/wp-content/uploads/non-us-case-documents/2025/20250723_18913_decision.pdf>(ICJ AO), para 115.
3. ICJ AO, para 116.
4. ibid para 120.
5. ibid para 116.
6. ibid paras 122-124.
7. ibid paras 125-130.
8. ibid paras 131-160.

and that states have heightened duties to act decisively and cooperatively to address the global climate crisis.

State Obligations under Climate Change Treaties

The Court in its Advisory Opinion established that obligations under Climate Change treaties such as the UNFCCC, the Kyoto Protocol and the Paris Agreement are binding, and the breach of such obligations constitutes a wrongful act that is attributable to the state.[9] According to the Court, these treaties obligate States to protect the climate system by exercising due diligence and employing best efforts, reflecting their common but differentiated responsibilities and respective capabilities in light of different national circumstances.

The Court recognised that States are obligated to urgently limit the global average temperature increase to below 1.5°C, which is considered scientifically safe.[10] To that effect, States must limit GHG emissions and preserve and enhance carbon sinks and reservoirs.[11] States are obliged to prepare, communicate and maintain Nationally Determined Contributions (NDCs), which are the national climate action plan of each country outlining how it plans to reduce GHG emissions to meet the global temperature goal and adapt to the impacts of climate change. The Court noted that States have a limited discretion in the preparation of their NDCs and they must;

- Reflect a State's "highest possible ambition" and be capable of limiting global warming below 1.5°C [12] ;
- Be "more demanding over time" [13];
- Be prepared with due diligence to ensure the fulfilment of State obligations under the Paris Agreement [14] ;
- Be prepared according to the State's historic responsibility and common but differentiated responsibilities, as well as its respective capabilities [15] ;
- Consider the Global Stocktake, which evaluates global progress on achieving the temperature goals of the Paris Agreement [16];

9. ICJ AO, paras 207, 221 and 270.
10. ibid para 224.
11. ibid para 232.

12. ibid para 240.
13. ibid para 241.
14. ibid para 245.
15. ibid para 247.
16. ibid para 243.

The Court emphasised that merely having NDCs is not enough to comply with the Paris Agreement, but States must also demonstrate a genuine commitment to their implementation. [1] The failure to fulfil these obligations would constitute a breach under international law which is attributable to the particular State.[2] Furthermore, States are obligated to undertake best efforts to achieve the content of their NDCs, reinforcing that climate commitments must be backed by concrete, sustained action.[3]

The Court also highlighted the critical role of fossil fuel phase-out in limiting the global average temperature increase to below 1.5°C. The Court obligated States to take action to protect the climate system from GHG emissions arising from fossil fuel production, consumption, and the granting of exploration licenses or subsidies.[4] These activities must be restricted as part of a broader strategy to meet NDC targets and limit global warming. The failure to take such measures would constitute a breach of international law attributable to the respective State, further reinforcing the legal duty to align national policies with global climate objectives.[5] Although the Court did not clarify how a State could be held internationally responsible for fossil fuel production, consumption and granting exploration licenses or subsidies, the Advisory Opinion strengthens demands for a fossil fuel phase-out.

The Court's recognition of strict obligations regarding NDCs and fossil fuel phase-out has significant implications for global climate action. By requiring States to prepare ambitious NDCs and phase out fossil fuels, the Court compels States to take concrete and sustained measures to reduce GHG emissions. This obligation, grounded in the Paris Agreement, ensures that States cannot merely make symbolic climate commitments but must actively work toward achieving them through due diligence and best efforts. As a result, stricter compliance with NDC obligations and fossil fuel phase-out can play a critical role in limiting global temperature rise to below 1.5°C, thereby advancing climate goals while also safeguarding human rights from the increasingly severe impacts of climate change.

1. ibid para 245.
2. ibid para 236.
3. ibid para 245.
4. ICJ AO, para 427.
5. ibid para 427.

Safeguarding Human Rights through Climate Action

In its Advisory Opinion, the Court affirmed the interdependence between the environment and human rights. The Court emphasised that the environment is the foundation for human life, upon which the health and well-being of both present and future generations depend, and that the "protection of the environment is a precondition for the enjoyment of human rights".[6] The Court observed that the adverse effects of climate change, including, inter alia, the impact on the health and livelihoods of individuals due to sea level rise, drought, desertification and natural disasters, may significantly impair the enjoyment of human rights such as the right to life, the right to health, the right to an adequate standard of living (including access to water, food and housing) and right to privacy, family and home.[7]

On this basis, the Court underlined that to guarantee the effective enjoyment of human rights, States must protect the climate system and the environment by adopting and implementing a range of measures, including mitigation and adaptation strategies, enacting robust environmental standards and legislation, and regulating activities by private actors that contribute to environmental degradation and climate-related human rights violations.[8]

Building on this reasoning, the Court clarified that States can be held liable under international human rights law if they fail to take adequate measures to prevent climate-related human rights impacts. Moreover, the Advisory Opinion clarifies that these obligations extend not only to State actions but also to the regulation of private actors whose activities contribute to climate change.[9] This expands the scope of State responsibility to include oversight of corporate conduct. Furthermore, these obligations under international human rights law are applicable beyond the national borders of a particular State when such State exercises its jurisdiction outside its national territory.[10] Such broadening of State obligations can give rise to international accountability and strengthen the legal claims for loss and damage caused by climate change.

State Responsibility for Loss and Damage

While observing that climate change is caused by cumulative GHG emissions, the Court noted that it is scientifically possible to determine each State's total contribution to global emissions, considering historical and current emissions.[11] Therefore, the Court considered that each injured State may separately invoke the responsibility of every State which has committed an internationally wrongful act resulting in damage to the climate system and the environment.[12] This reasoning strengthens the ability of vulnerable States to hold high-

6. International Court of Justice, Advisory Opinion on Obligations of States in respect of Climate Change, 23 July 2025<https://climatecasechart.com/wp-content/uploads/non-us-case-documents/2025/20250723_18913_decision.pdf>(ICJ AO), 373.
7. ICJ AO, paras 376, 377, 379, 380 and 381.
8. ibid para 403.
9. ICJ AO, para 403.
10. ICJ AO, para 398. See also Legal Consequences of the Construction of a Wall in the Occupied Palestinian Territory, Advisory Opinion, I.C.J. Reports (I), p. 180, para. 111) 2004, Armed Activities on the Territory of the Congo (Democratic Republic of the Congo v. Uganda) (I.C.J. Reports 2005, p. 243, para. 216) and in its Advisory Opinion of 19 July 2024 on the Legal Consequences arising from the Policies and Practices of Israel in the Occupied Palestinian Territory, including East Jerusalem (para. 99).
11. ICJ AO, para 429.
12. ibid para 431.

emitting States accountable under international law. By recognising that responsibility can be individually attributed, injured States may seek remedies such as compensation for climate-related losses (including damage to infrastructure, livelihoods, and ecosystems) as well as restitution through the restoration of biodiversity.[13]

Advancing Climate Justice

Building on the above-discussed implications, the Advisory Opinion also provides a forward-looking framework that guides States, courts, and communities in shaping future climate actions. The Court's interpretation of State responsibility on climate change under international law clarifies and broadens state responsibility and strengthens the pursuit of climate justice. Significantly, the Advisory Opinion offers a legal and normative framework that reinforces the State's obligations to prevent, mitigate, and remedy climate-related harms, including environmental degradation and human rights violations. It provides critical guidance for courts to assess whether these obligations are being fulfilled, and for policymakers and legislators to enact and enforce laws that effectively regulate harmful conduct by both state and private actors.

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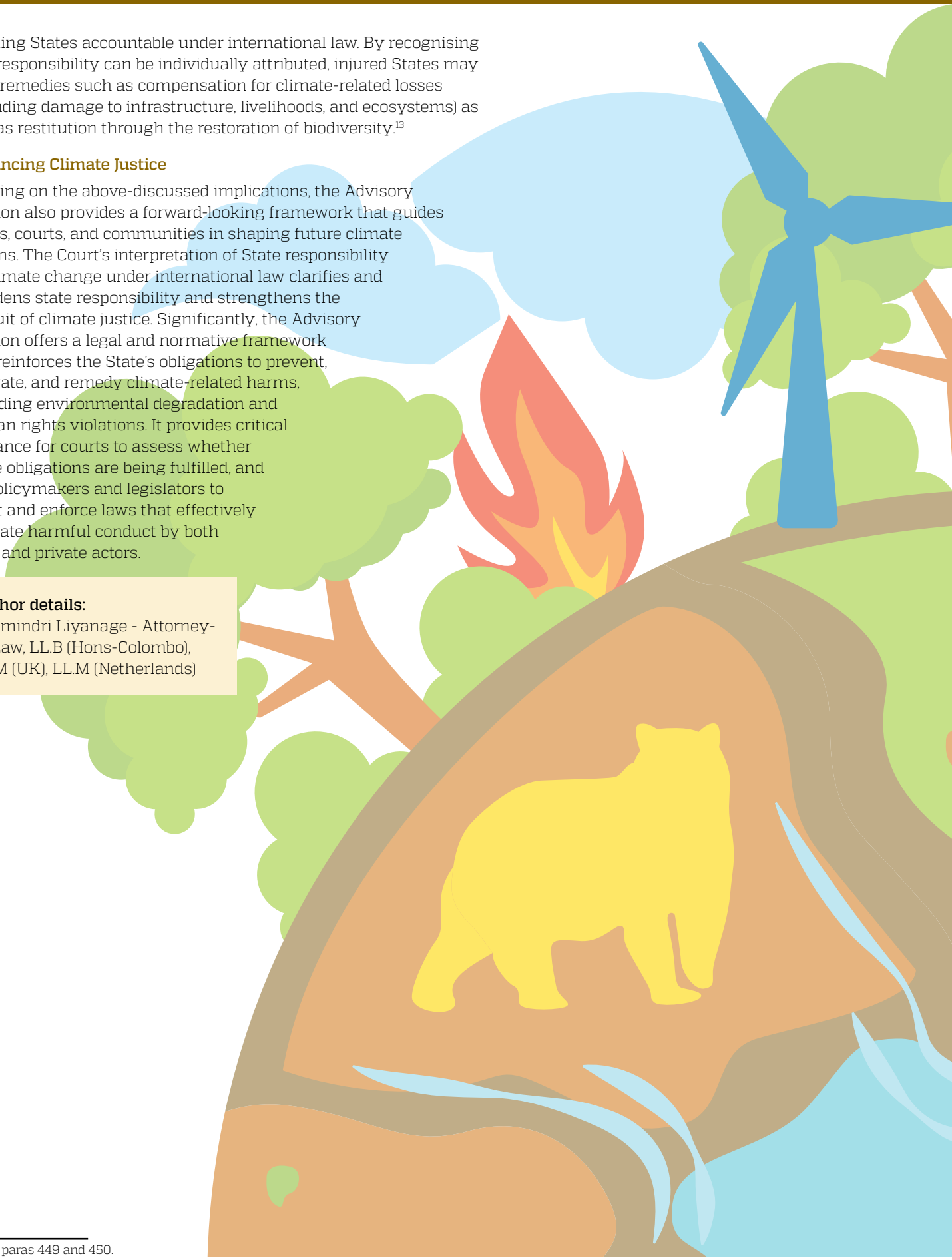
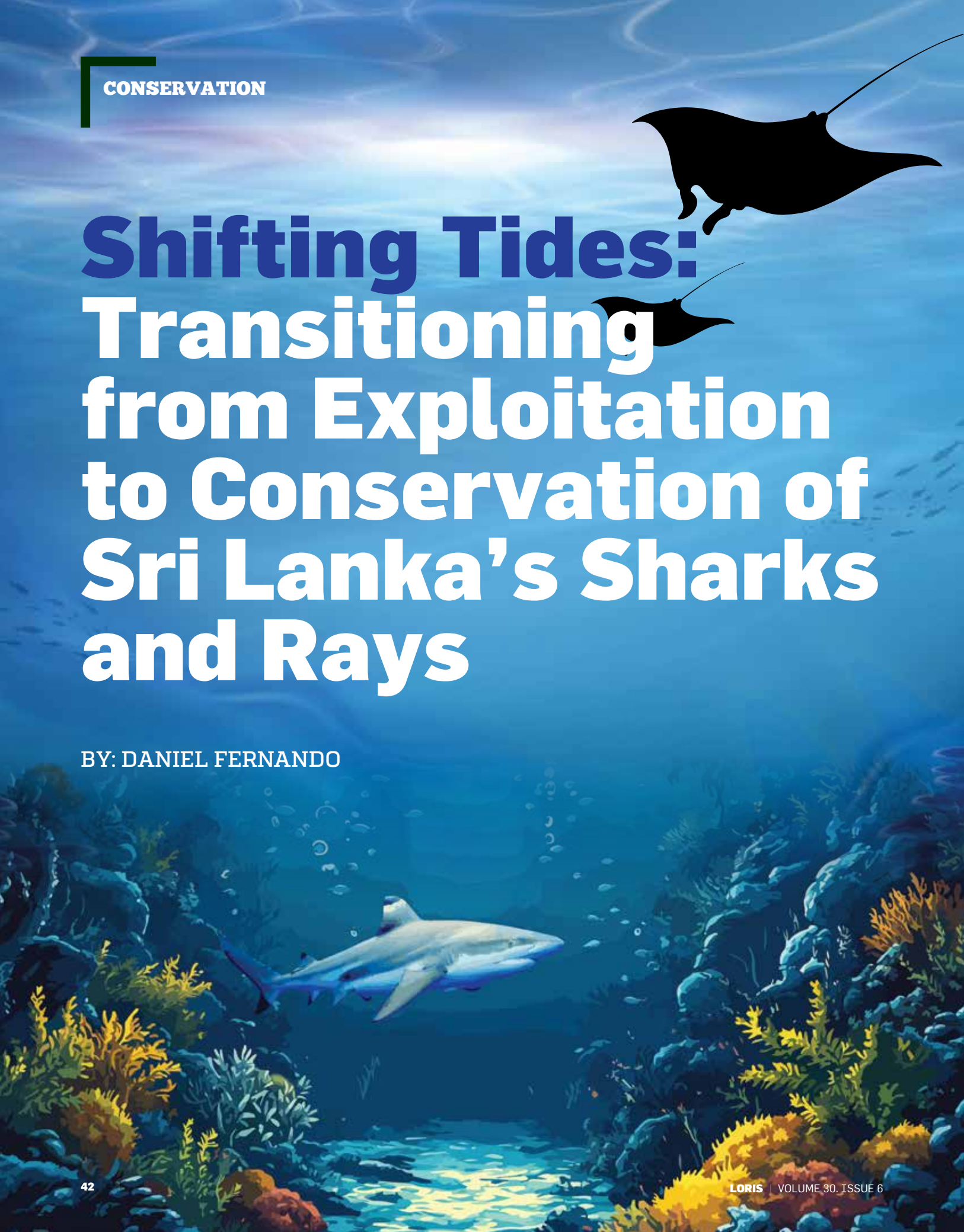


13. ibid paras 449 and 450.

Shifting Tides: Transitioning from Exploitation to Conservation of Sri Lanka's Sharks and Rays

BY: DANIEL FERNANDO



Sharks and rays — collectively known as elasmobranchs — play an essential role in the marine food web. As apex and high-level predators, they maintain the delicate balance of ocean ecosystems. Yet, their very existence is now uncertain: an estimated 37.5% of all shark and ray species worldwide (comprising nearly 1,200 species) are threatened with extinction, with overfishing identified as the primary issue. Alarmingly, three species are already categorised as 'Possibly Extinct', signalling what could be the first global marine fish extinction driven solely by overexploitation.

The "Blue Economy"

As an island nation in the northern Indian Ocean, Sri Lanka's surrounding waters once teemed with life, including sharks, rays, and a wide variety of fish. However, our rich marine biodiversity is now under severe threat due to unregulated overfishing, which is intensified by other anthropogenic activities that destroy critical ecosystems, such as coral reefs, seagrass meadows, and mangroves.

Similar to terrestrial ecosystems, the Indian Ocean is integral for maintaining biodiversity, supporting our well-being, and contributing to the national economy by providing food security, employment, livelihoods, and even foreign exchange through international trade. Seafood remains a staple, accounting for nearly 50% of the animal protein consumed nationwide. With a significant proportion of our 21.4 million inhabitants residing along the coast, the ocean is an essential resource.

Sri Lanka's Exclusive Economic Zone (EEZ) spans a massive 532,619 km²—about eight times our landmass. Yet, less than 0.5% of this vast area is officially protected! The sheer number of vessels compounds the challenge. Statistics from 2023 confirm that over 50,000 registered vessels are in operation. Only about 20 are large "commercial" boats (over 24m), with the rest categorised as "artisanal" or "small-scale," comprising nearly 42,000 boats that are under six metres. These small boats operate intensively closer to shore, while 1,179 (officially approved) also fish in the High Seas and adjacent to (and at times illegally within) the EEZs of countries across the Indian Ocean, including Seychelles, Mauritius, and the Chagos Protected Area. Despite our vessels' small size, their density and broad reach exert devastating consequences on Indian Ocean marine biodiversity.

Monitoring the Declines of Sharks and Rays

Since 2017, the Blue Resources Trust (BRT) Fisheries and Policy Programme (FiPo), *with support from the Tokyo Cement Group, the Marine Conservation and Action Fund (MCAF) of the New England Aquarium, the Hong Kong Ocean Park Conservation Foundation (OPCFHK), the Prince Bernhard Nature Fund, the Save Our Seas Foundation, the Shark Conservation Fund, Cefas, Oceans 5, and others,* has spearheaded Sri Lanka's most extensive shark and ray research initiative. This effort includes nationwide surveys at landing sites to collect data on species diversity, population size and structure, life history parameters (e.g., age and growth), feeding ecology, and identifying critical habitats and species range. This is complemented by genetic identification at the BRT shark and ray genetic laboratory, to validate species-specific catch composition and trends.

Data collected from almost 100 landing sites confirms the presence of at least 105 species of shark and ray, including ten species not previously documented in Sri Lanka. Most concerning, however, is that over two-thirds of our national species are facing extinction

Sharks International 2026 artwork by Ruwangi Amarasinghe

(Critically Endangered, Endangered, or Vulnerable according to the IUCN Red List).

Some coastal, shallow-water species, like sawfishes, are now functionally extinct in our waters, with no confirmed sightings since 2017. Similarly, the manta and mobula rays have experienced significant declines over the last decade, with population collapse imminent in the absence of effective management.

Slow and Long Lives, Threatened by Fisheries and Trade

These rapid declines are rooted in the fundamental biology of elasmobranchs. Unlike fast-reproducing fish like tuna (which mature in two years and spawn millions of eggs annually), most sharks and rays have extremely conservative reproductive cycles: they live long, grow slowly, mature late, and have low fecundity. Their life histories mirror those of our fully protected terrestrial counterparts, like elephants and leopards, or our marine cetaceans. Despite this vulnerability, only 5 of the 105 species of sharks and rays in Sri Lanka are currently protected.

The iconic oceanic manta ray, for example, takes about 15 years to mature, gives birth to a single pup only every 3–6 years, and can live for 60–80 years. This slow pace makes them exceptionally vulnerable to fishing pressure.

Fishing techniques employed by Sri Lankan vessels, predominantly gillnets and longlines, are very indiscriminate, resulting in significant unintended capture (i.e., bycatch). Sharks and rays form a substantial component of this, and due to their high market value, fishers are incentivised to retain and land this bycatch. Their value lies not only in the meat for national consumption but also in their fins (from sharks and rhinorays), gill plates (from manta and devil rays), and other derivatives like shark liver oil, cartilage, and teeth.

Targeted fisheries also exist, such as bottom-set nets for rays, whose skins are exported to make leather products (wallets, belts, shoes, and even luxury yacht wall-linings). The fact that Sri Lankan vessels apprehended for illegal fishing in the Seychelles and Chagos almost always had their holds full of sharks and rays highlights the immense value and risk they are willing to take to capture these species.

While some of these fisheries may be traditional, they have become too large and commercialised for species with such slow growth rates, driving them toward extinction. Urgent conservation efforts are no longer optional and must be implemented to prevent the permanent loss of these animals from Sri Lankan waters.

How Can We Save Our Sharks and Rays?

To effectively conserve these species, the national perception must undergo a fundamental change. We must acknowledge that commercial fisheries for most sharks and rays are, for the most part, not viable. These wild resources are finite and cannot be restocked once depleted. Their slow reproductive cycles mean that even if all fishing pressure were removed, recovery is often estimated to take at least half a century, and even longer for particular species. Continuing on the current path will inevitably lead to the collapse of both

A typical fishery harbour | © BRT

the species and the associated fisher livelihoods.

BRT-FiPo will continue to collect data and provide technical recommendations to national decision-makers. The team are also nearing completion of a national identification guidebook. This, together with identified shark and ray hotspots, is crucial for implementing effective fisheries management and designating Marine Protected Areas (MPAs). To avoid other species following the pathway of sawfishes, we recommend action to:

1. Strictly protect the most threatened species (which includes incorporating bycatch mitigation procedures and best handling practices to reduce mortality at the point of incidental capture),

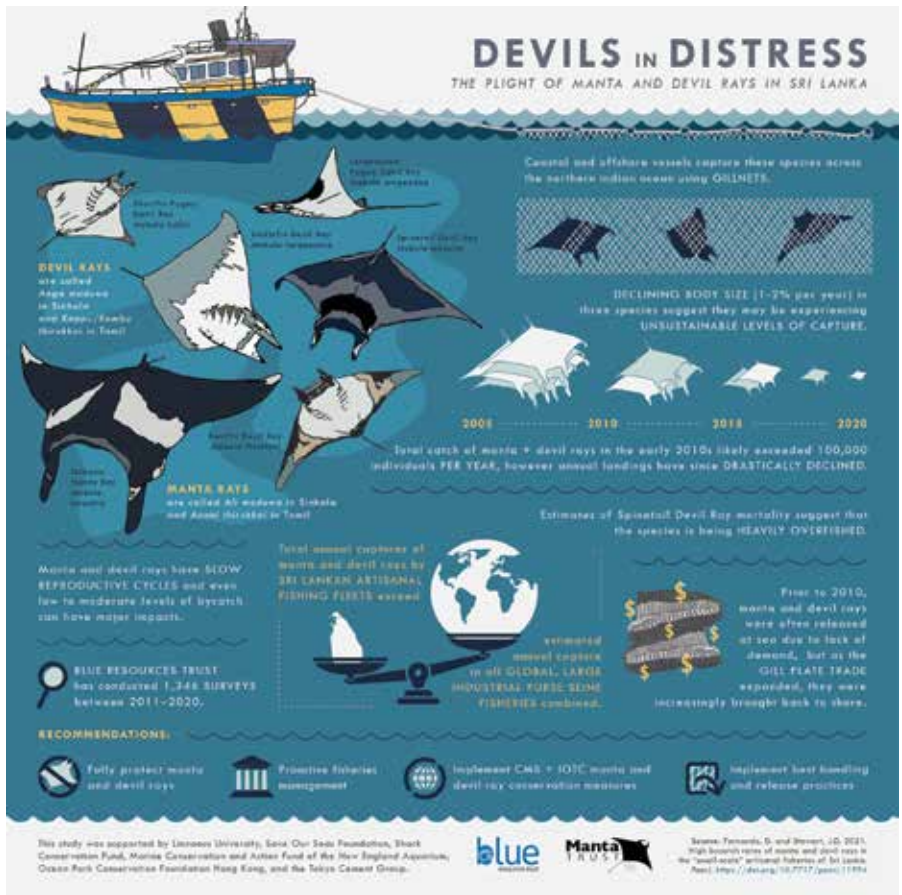
2. Require annual scientific assessments (stock assessments) to determine if fishing can continue or whether short-medium term closures are necessary for the more productive species (and in the absence of sufficient data for stock assessments, adopt the precautionary principle and close the fishery),

3. Expand protected areas, encompassing critical shark and ray habitats, and

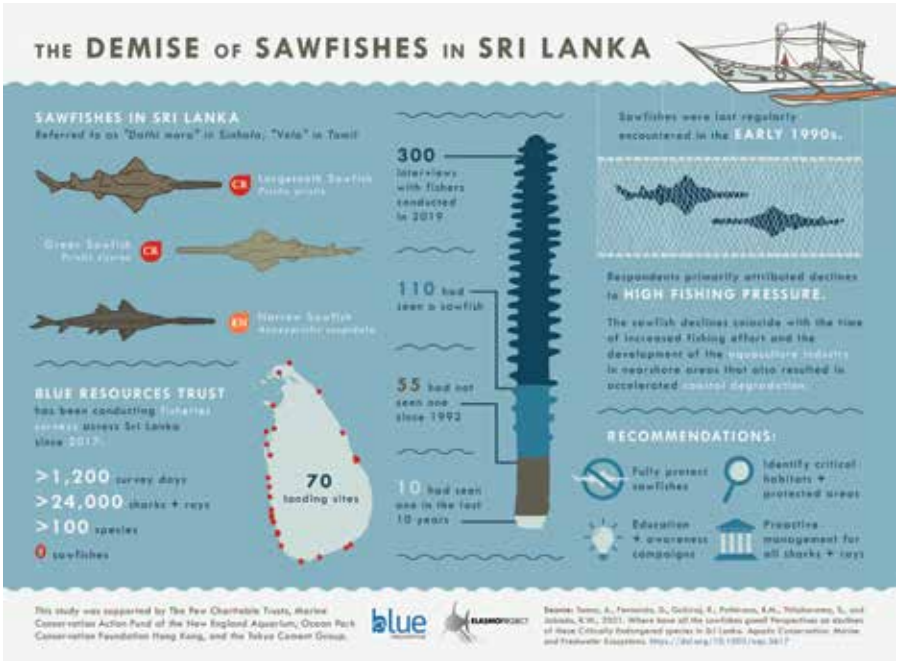
4. Regulate the fishing industry by encouraging sustainable fishing practices and premium value chains to support small-scale fisher livelihoods.

The primary impediment to conservation action is often the fear of impacting fisher livelihoods. While alternative livelihoods are challenging, and eco-tourism is not a complete solution, we must collectively accept that wild-caught fish is not an infinite, cheap commodity. We need to regulate the exploitation of this resource,

Ray skin being extracted for export | © BRT



Infographic by Shanika Perera



Infographic by Shanika Perera

Ray meat being dried | © BRT

A fresh manta gill plate, which is dried and then exported to be marketed as a pseudo-remedy | © BRT

recognise the necessity to pay a premium for it, and encourage more sustainable fishing methods that prioritise value and quality over volume.

We are at a challenging junction. Either we maintain the status quo and accept the inevitable extinction of species like sharks and rays, or we champion significant change to protect this irreplaceable biodiversity, offering a future for longer-term, sustainable livelihoods.

As for each of you reading this article, if you are still consuming seafood, take the first step: ask where your seafood comes from! This simple act marks the beginning of establishing traceability, which helps document the origin, method of catch, and sustainability of the seafood we consume. Where possible, reduce or omit your seafood consumption and purchase from small-scale fishers who use sustainable techniques, such as hand-line fishing.

Learn More:

BRT-FiPo are proud to host the Sharks International conference in Colombo in May 2026. This is the world's largest conference on shark, ray, and chimaera science and policy, held every four years. The upcoming edition, its first in Asia, will welcome 600-800 students, scientists, policy advocates, funders, and enthusiasts to share cutting-edge research and conservation insights. For more information on the conference, please visit si2026.org, and to learn more about BRT-FiPo, please visit: https://www.blueresources.org/fisheries-and-policy.

www.blueresources.org | www.si2026.org | info@blueresources.org

Daniel Fernando | Co-Founder | Director of the Fisheries and Policy Programme

Daniel is a co-founder of BRT, where he leads the Fisheries and Policy Programme (FiPo). He has spent over

a decade advising on elasmobranch policy at global conventions, including CITES and CMS, working to bridge the gap between science and policy. Daniel also serves as Vice Chair of the CMS Scientific Council's Sessional Committee, Co-Vice Chair of the IUCN Shark Specialist Group for the Indian Ocean, and is a Marine Conservation Action Fund (MCAF) Fellow.

The work undertaken by the Blue Resources Trust (BRT) Fisheries and Policy Programme (FiPo) is only possible thanks to the dedicated team of researchers working tirelessly to survey landing sites, collect and process data, conduct capacity building, and provide technical assistance to national decision-makers. These include (in no particular order): *Akshay Tanna, Gobiraj Ramajeyam, Thilini Dilrukshi, Anusha Neranjan, Chethana Lakshani, Shownath Sitsabeshan, Maura Muraleetharan, Apsara Rupasinghe, Mikaela Stanborough, Rahal Rambukpota, Pubudini Silva, Malsha Gunasinghe, Henry Mitchell, Fahim Ismail, Nimna Wickramasingha, in addition to all our previous staff and our current and past interns.*

Oceanic Manta Ray (Mobula birostris) landed at a local fishery harbour. The gill plates are being cut out from the head, after which they are dried and exported | © BRT

Devil Rays landed from multiday fishing vessels | © BRT

Fresh mobula meat is sold at a local fish market. This only occurs at a handful of markets in Sri Lanka, while at others, the meat is dried before sale | © BRT

Assessing the Feasibility of Using Camera Traps to Detect Injured Asian Elephants (*Elephas maximus*) in Sri Lanka

By: Supun Lahiru Prakash, Sameera Weerathunga, Upuli Madushanka Madarasinghe, & Jehan CanagaRetna

Camera traps—remotely activated, motion-sensitive cameras—have transformed modern wildlife research by enabling non-invasive, continuous monitoring of animals in their natural habitats (O'Connell et al., 2010). These devices are widely employed to estimate population sizes, monitor species diversity, and study behavioural patterns without direct human interference (Burton et al., 2015). However, the method also has practical limitations, including cost, availability, and coverage, which can restrict its effectiveness in urgent or wide-ranging search operations. Here, we report an attempt to use camera traps to locate a wounded tusker following a motor vehicle accident in Sri Lanka, and, to our knowledge, this is the first documented use of such an approach in the treatment of wild animals. Although the effort was ultimately unsuccessful due to unavoidable infrastructural limitations, we believe that this method warrants further investigation under similar circumstances to enhance wildlife welfare.

On the 7th of March 2025, a well-known tusker, Sumedha, was struck by a lorry along the Maradankadawala–Habarana–Thirukkondaiadimadu (A-11) Road at Ganewalpola, Anuradhapura District, North Central Province, Sri Lanka. The accident took place early in the morning when the tusker was returning to the forest after crop raiding. He was with another individual from an associated pair of bull elephants. The collision broke one of his tusks. The fractured portion was recovered at the accident site. Subsequently, the Department of Wildlife Conservation initiated search operations to locate the injured elephant; however, as of the 12th March 2025, these efforts proved futile. Then, the Human-Elephant Coexistence Sub-committee of the Wildlife and Nature Protection Society of Sri Lanka was invited to support the search operation.

On the 13th March 2025, we rushed to the location and immediately began assisting the search operation. As part of the monitoring strategy to trace the animal's movements, five Browning Strike Force Pro X 1080 (BTX-5PX-1080 model) camera traps were deployed. While ground searches by the Department of Wildlife Conservation and the Police Special Task Force were continuing, the cameras were strategically placed at locations based on signs of recent elephant activity.

Although camera traps are conventionally used for long-term monitoring—with footage typically collected at intervals of a week, two weeks, or even a month—in this case, the footage was collected and reviewed on a daily basis. The traps were repositioned, as necessary, to obtain regular updates and maximize coverage with the limited number of devices available. In addition, we conducted vehicular surveys of the surrounding areas and consulted local residents for potential leads. The operation continued for three consecutive days. Each morning, we visited the camera traps, replaced the memory cards, reviewed the footage, and shared any relevant information with the search teams. For the remainder of each day, vehicular surveys were carried out in search of further clues.

However, we were unable to achieve the expected outcome due to the limited availability of camera trap devices and financial constraints that restricted the duration of the operation. The search efforts conducted by government agencies were also hampered and did not yield any positive results. In early June 2025—approximately three months after the accident—the tusker was unexpectedly sighted roaming near the Padupola area in Minneriya National Park, within his usual home range, without any active tracking effort.

Nevertheless, our attempt has opened a new avenue for exploring the use of camera traps in conservation initiatives beyond their traditional applications. Since the 1990s, decades after the first studies using camera traps for large mammal conservation (Griffiths, 1993; Karanth, 1995), we were unable to find any publications reporting the use of camera traps for purposes similar to ours. Therefore, we suggest that further research be conducted to investigate the potential of using camera traps to detect and locate injured or distressed animals in the wild—an application that holds significant promise for conservation and wildlife welfare. Detecting injuries in free-ranging wildlife, particularly in dense forests or conflict-prone areas, presents both logistical and ethical challenges. Direct observation and drone cameras are often impractical due to terrain, animal behavior, and limited visibility. In contrast, camera traps provide a reliable alternative, capturing visual evidence such as limping, abnormal gait, wounds, or unusual posture—key indicators of physical trauma.

In Sri Lanka, where Human-Elephant Conflict (HEC) remains a major conservation issue, elephants are frequently injured by gunshots, *Hakka-patas* (Jaw bombs, an improvised explosive device hidden in food — or masked with the smell of food — that detonates when bitten), and snares (Fernando et al., 2011; Prakash et al., 2020). Most injured elephants go unreported and ultimately succumb to their injuries while only a small number receive medical treatment, due to limited infrastructure. Even those treated often disappear back into the wild, making follow-up inspections and repeat treatments challenging because of their extensive movements and the limitations of their natural habitats. By strategically placing camera traps in locations such as elephant corridors, watering holes, or the edges of crop fields, authorities can detect these animals and alert veterinary teams for rapid intervention. In this context, camera traps serve not only as research tools but also as early-warning systems that facilitate timely and humane interventions.

Thus, camera traps can potentially bridge the gap between passive monitoring and active conservation management. Their possible role in locating injured animals exemplifies how technology can serve both scientific inquiry and wildlife protection, particularly in regions where human-wildlife conflict and limited field access hinder traditional methods.

Acknowledgments

The authors gratefully acknowledge Mr. D. M. K. S. Chandrarathne, Assistant Director of the Anuradhapura Wildlife Region, for his leadership in initiating and coordinating this operation. Appreciation is extended to the Field staff of the Department of Wildlife Conservation, Mr. D. Ramasingha, Mr. D. M. C. P. Dharmadhasa, Mr. D. T. J. K. T. Dassanayaka, and Mr. R. G. Ananda for their dedicated ground support, and to Mr. B. M. Bellanthudawa *(Manju Aiya)* for transportation support. The valuable contribution of the Police Special Task Force officers during the search operations is also acknowledged with gratitude.

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Photo credits for the tusker Sumedha, photographed before and after the accident: Saranga Deva de Alwis

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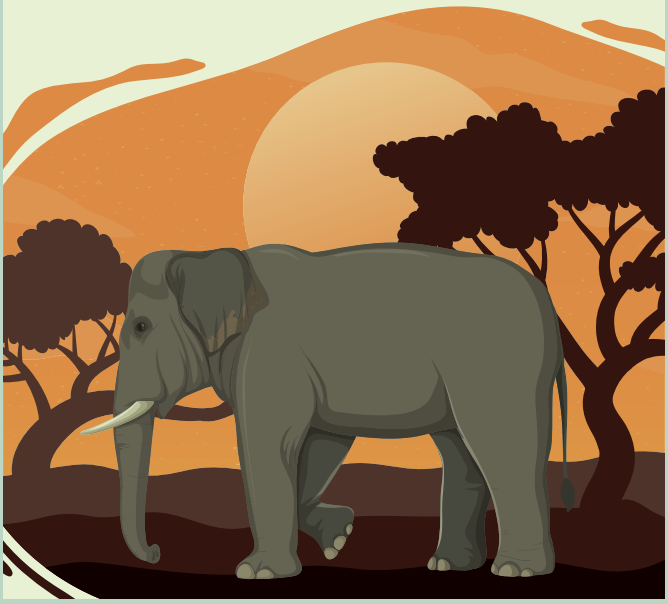

A Critically Endangered endemic orchid, Vanilla mooni is one of only three naturally occurring species of the genus Vanilla in Sri Lanka. Saving this species is part of the focus of the Critically Endangered Endemic Species Subcommittee of the WNPS.

Photo credit: Sashini Paranagama

Birds and Sounds: How bioacoustics helps us understand our environment

BY: THARINDU KALUKAPUGE

What are soundscape and bioacoustics?

Many animals in our environment produce sounds. These range from the songs of birds and the underwater vocalisations of whales, to the stridulation of crickets, the ultrasonic signals of bats, and many more. In addition, there are also sounds made by humans and other natural sounds like wind and rain. Together, these create what we call the 'soundscape', the collective of all sounds across space and time. In recent years, many emerging fields such as bioacoustics, soundscape ecology and conservation bioacoustics have been evolving to study different aspects of biological and non-biological sounds in the environment, using them to answer questions about how and what causes the changes happening in our environment.

Bioacoustics is the science of studying the production, transmission, and reception of sounds produced by animals. One of the major branches of this field involves monitoring and using animal vocalizations to understand how natural and anthropogenic pressures influence species and their habitats. Among many animal groups, birds are the most widely studied in bioacoustic research because they have one of the most diverse collections of vocalisations. These include long, complex and often charismatic songs, as well as shorter, simpler calls and even non-vocal sounds such as the drumming of woodpeckers.

Bird vocalizations are also relatively easy to detect by both human ears and recording equipment. Bird sounds vary not only between species but also between individuals of the same species. In many birds, different stages of their life cycle are closely tied to vocal behaviour, such as mating songs during the breeding season, begging calls of nestlings, or territorial songs used to defend their territories. Additionally, since sound is a form of energy, its properties, such as amplitude (how loud the sound is) and frequency (the pitch of the sound), can give us cues about where the vocalizing bird is and how many individuals may be vocalizing. All these components carry a tremendous amount of information, not only about the biology and ecology of the species itself but also about how birds respond to changes in their environments.

Image 01 shows a spectrogram, which is a visual representation of sound, where the x-axis shows time and the y-axis represents the frequency of sounds. It shows a snapshot of bird vocalizations during the dawn chorus on a random day in the breeding season, recorded in

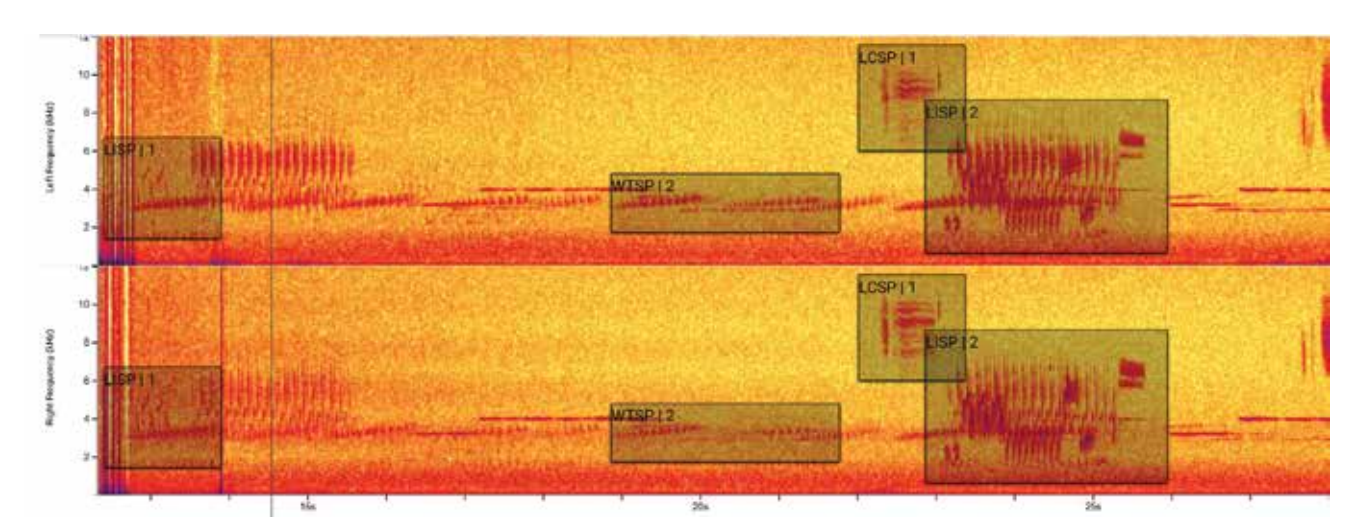

Image 01 – A Spectrogram

an energy-sector footprint (a forest clearing), which is one of the study systems in my PhD research. This spectrogram tells us which species are present (WTSP = White-throated Sparrow, LISP = Lincoln's Sparrow and LCSP = LeConte's Sparrow) and even detects two different individuals of Lincoln's Sparrow based on amplitude (loudness) differences, seen as variations in intensity that indicate the two individuals were at different distances from the recording unit. By applying specific data processing and statistical approaches, we can even estimate the precise location of each bird. However, even at the basic level, this single one-minute sound clip provides information that goes far beyond just identifying species. It includes behavioural data (songs of breeding or territorial individuals), habitat-use data (presence–absence), and numerical data (species richness and abundances), all of which are immensely valuable for understanding how birds respond to changes in the environment.

How passive acoustic monitoring (PAM) is transforming wildlife research

Point counts have long been the most widely used and classic method for counting birds, where a human observer follows a standard protocol to record birds, primarily those heard within a specific location and time period. Human point counts have been used in long-term monitoring programs such as the North American Breeding Bird Survey (BBS), which has been conducted annually since 1966. Point counts are also the most commonly used survey method in Sri Lanka. In passive acoustic monitoring (PAM), the human observer is replaced by acoustic sensors such as recorders, microphones or ultrasonic detectors. This approach is not entirely new but has seen rapid expansion in recent years in wildlife monitoring and research worldwide.

Using PAM technology, such as autonomous recording units (ARUs), is one of the least invasive ways to monitor birds and other wildlife. It requires minimal human involvement - usually only setting up the equipment - and leaving it to passively conduct the surveys. This minimizes human presence, which can influence animal behaviour, and improves the quality and accuracy of data that might otherwise be affected by observer bias. Most importantly, PAM is far less labour-intensive. Imagine a scenario where a biodiversity or impact assessment survey needs to be conducted near a remote protected area for a month. A team of two human observers working for thirty days would require a large number of person-hours. In contrast, the same survey can be completed using PAM devices with only minimal effort for deployment and retrieval. They also provide continuous monitoring data for the desired number of hours or days, which is critical for long-term ecological monitoring.

Are bioacoustics and PAM the best approaches?

The use of PAM technology in bioacoustics does have some limitations. The initial cost of equipment can be high, and it still requires people to visit sites to deploy and retrieve the devices. In addition, bioacoustic monitoring generates large amounts of data because it can continuously monitor over long periods. These data must be processed by trained experts and stored in repositories or systems capable of handling and curating large datasets.

However, recent advances in technology have helped minimize some of these challenges. PAM devices have become significantly smaller and more efficient, some

Image 02: Boreal Forest in Alberta, Canada. Photo credit: Xue Yan Chan, University of Calgary

now weigh as little as 300 grams and can record continuously for up to 280 hours using just four AA batteries. Most importantly, the rapid growth of artificial intelligence (AI) is transforming the field of bioacoustics. AI tools such as automated recognizers allow researchers to process large volumes of bioacoustic data efficiently. One such example is BirdNET, developed by the Cornell Lab of Ornithology, which is a widely used artificial neural network that automatically analyses acoustic recordings and is also available as a simple mobile app to identify birds in the field.

In Image 02, the image on the left shows the study area where my PhD research is conducted in the boreal forest of Alberta, Canada, a region with extensive energy-sector footprints and activity. The image on the right shows me deploying a PAM device called an ARU (Autonomous Recording Unit), a programmable device that automatically collects bioacoustic recordings on a pre-set schedule. In my research, I study multiple aspects of energy-sector footprints, including land-use changes and the success of reclamation from wildlife community perspectives, using bird vocalizations.

What can avian bioacoustics tell us about changes in the environment?

There are many ways in which avian bioacoustics can be used to monitor changes in the environment. Birds are highly mobile and often select habitats with good quality and adequate resources. In response to processes such as habitat loss and fragmentation caused by natural disturbances like wildfires or by human activities such as agriculture, timber harvesting, energy exploration, and other forms of development, they tend to move away in search of better conditions. By carefully designing monitoring programs that collect bird vocalizations across space and time, we can track changes at individual, population, and community levels, and identify where birds are present or absent and whether their numbers are declining. The opposite can also happen. For example, when disturbed habitats recover through restoration, birds may recolonize those areas. These dynamics can be effectively studied using bioacoustic monitoring. Another important application is studying how bird vocalizations are affected by human activities, which can influence avian mating success and consequently, reproductive success. There is evidence that birds living in human-modified environments with anthropogenic noise such as traffic or industrial noise often modify their vocalizations by increasing amplitude, changing frequency or singing rate, and sometimes altering song structure to ensure that their songs are still heard by potential mates. Such instances can also be studied effectively using bioacoustic monitoring.

Bioacoustics in Sri Lanka and future opportunities

Bioacoustics and the use of passive acoustic monitoring (PAM) are well established in many parts of the world and continue to evolve rapidly with new technologies. In Sri Lanka, however, bioacoustics has not yet been explicitly used to understand human impacts on wildlife. Thus, there is great potential to adopt these approaches for wildlife monitoring and conservation in the country. Given the rapid expansion of development activities, PAM offers an effective way to conduct long-term environmental monitoring, not only for birds but also for a wide range of taxa including insects, amphibians, bats, and other large and small mammals. Many remote wilderness areas in Sri Lanka are under-surveyed, and biodiversity in some of these areas is still not well understood. The lack of consistent surveys and reliable data act as a major barrier to effective conservation. Additionally, some species considered rare may simply be difficult to detect through traditional human surveys.

Bioacoustics and PAM provide an opportunity to overcome these limitations by enabling large-scale and long-term monitoring while generating high-quality data to understand species distributions and ecological responses. Looking ahead, these technologies have cross-disciplinary applications across multiple aspects in wildlife ecology, including wildlife monitoring, protected area management, urban wildlife ecology, mitigation of human-wildlife conflicts, assessing impacts of development activities and supporting effective habitat conservation and restoration practices. Employing such useful technologies would greatly further conservation efforts in Sri Lanka.

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Photo credit for bird image: Sriyan de Silva Wijeyeratne

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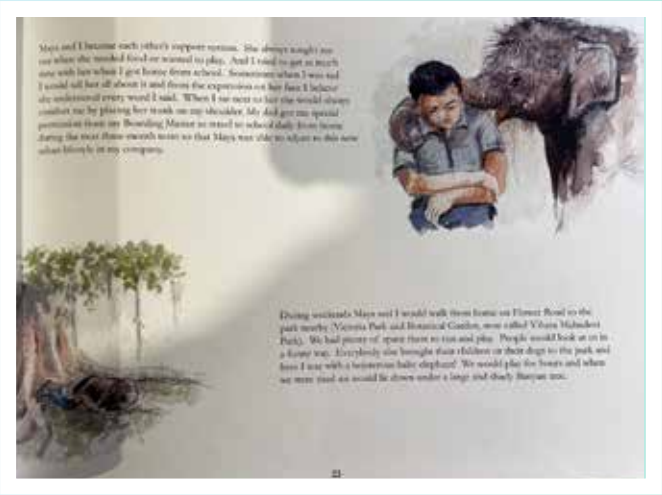
The Mind's Eye – Inside the Artistic World of Gamini Ratnavira

A life bird list of over 4000, 38 stamps designed, work exhibited at famous museums, wildlife art expo's and leading auction houses like Christie's and Sotheby's, designer of the DWC logo, sculpture featured at the National Geographic Society's Sculpture Garden in Washington D.C, art featured within the collections of the San Diego Natural History Museum and the Rare Bird Club in the UK – the list goes on for one of Sri Lanka's finest artistic talents to embrace the conservation sphere. Gamini Ratnavira's work has spanned decades and touched all aspects of Sri Lankan wildlife and conservation, not to mention influencing and mesmerizing countless people locally and globally. Naturally, upon hearing of his "Brushes with Nature" exhibition at the Lionel Wendt Gallery, I had no hesitation in requesting to have one of my Conservation Chats (Con Chats), to which he readily agreed. The following are some of the comments from our conversation in November 2025.

It's been over 40 years since you exhibited in Sri Lanka and I am curious as to why you had a hiatus or what took you so long, even though you stayed connected with Sri Lanka.

For starters, I have been doing a lot of work there (in the USA), so it was a busy time. I noticed there was great enthusiasm when I came down to Sri Lanka at the start of this year and so I agreed. I always wanted to do a show but was not sure when I would be ready to do it. It is also a long distance to be shipping the material etc. But I got a lot of support from my cousin Ravi Weerapura, his girlfriend, and many others, and things fell into place. I was also doing several books -Mammals, Freshwater fish etc. over the years, which kept me in the loop. We also had four children and as long as they were around, we stayed close to home. Now that they are spread a bit more and independent, it was our time to once again start doing the things we wanted to do.

Describe that era and your early background a bit when you were growing up with a leopard at home or raising Eve, the baby White Bellied Sea Eagle (whom you later introduced to a male and the couple had chicks), raising Maya a baby elephant (who once slept on your bed and broke it, and with whom you would go on walks and sleep under trees at Vihara Mahadevi Park), Baba the Sloth Bear (who would get Piggyback rides on your shoulders), and numerous other species etc.



My dad loved animals, and he would bring them home to Flower Road or Battaramulla, whereas I was very young and more interested in the realistic view of not just having them, but learning about their behaviour etc. and so it was I who interacted most with them during my younger days and it became a part of my life. My love towards nature really grew through that time. Later, I was a loner in my boarding house in Kandana, and that took me into the forest, and I would observe things and kept on developing from there, as I had an inquisitive mind. I actually moulded my life around nature, and that happens even now, as I found that nature is the best teacher in the world. Of course, I wanted to share what I had seen and began sketching, although I never thought of being an artist. I was so intrigued and still am. My dad was also a good artist and later I did the jewellery design for his business for a while.

Some people describe you as having a 'photographic memory' – can you explain that a bit more.

At that time, I did not have a camera to capture images, nor was there TV or anything to disturb or distract me, so the sights were very vivid in my mind. Even still to a high extent the image and sights I observed long ago can come back to me and I am privileged to re-live my childhood and be spending time with nature through that process. At that time there were not as many restrictions, animals were not abused that much, human population was lower, the wilds were still wild, and I used it to my advantage. Thus I am able to now review and recreate those scenes to share with the world. Some of the paintings I have done, such as those bear painting with so many bears together, are impossible to see today. I vividly remember this community of bears in Yala drinking from a rocky water puddle. Fortunately, I am able to bring those back through paintings. Around 80% of my paintings are of things I have actually seen.

Let's talk about your incredible face-to-face encounter on foot with a black leopard.

This was a very very special moment which also altered my life. I was walking past World's End in Horton Plains one evening close to dusk, watching birds and never expecting to see a mammal other than sambar and monkeys. I heard this rustling noise, and of course I was walking on an animal path, and then this magnificent female black leopard came out of the forest onto the path, and I was maybe six meters away from her. She was very calm. I involuntarily got to my knees and sat on the ground, but I too remained calm. She then lay down on the ground, and I locked eyes with her for a few minutes. Nothing intimidated her, nor me, and it was a serene moment. It was dusk and almost like a scene from a fantasy movie. I spent between five to ten minutes but at that moment, it was like a lifetime. Of course, there were no cameras, and I was not doing many sketches either at that time, fifty years ago. Then she got up and went back into the bushes, and I was a hundred percent sure she had cubs, judging from her physical structure. I was an amateur in everything and not a scientist, so I did not make a big deal and the only person I related this to as I was so excited and needed to tell someone - was my best friend Cedric Martenstyn. He said "That's OK and who cares- you saw it"! Long years ago, my dad also mentioned that he had seen a dark cat in Kosgama on one of our estates. Later, once I moved to the States, I re-created that image with a life-sized painting of it. There are a number of things that people don't even know. I have caught some Ahaetullas (Vine snakes) with purple underbellies, in Kithulgala and Kanneliya, while working for Ranil Senanayake. It is probably a colour form. Later while collecting specimens with Dr. P.B Karunaratne for the Smithsonian, in the Peak Wilderness, he showed me what looked like an Ahaetulla, high on a dead branch, which seemed to have a pink colouration. Karu did not

allow me to climb the frail tree, but I later wrote about all this in my autobiography "Brushes with Nature".

What were your reasons for leaving Sri Lanka and why pick California?

I was offered the opportunity to move to either Australia or America by the Ambassadors at that time, who would go birding with me. Because of the civil war, I was unable to go into the forests anymore. The US Ambassador knew that things would not look up and settle fast. I had just begun painting wildlife as well and he said that they would love to have me in the States and said that I would have more opportunities and also competition but learn better strategies and so on. I wanted to go and learn more, knowing that I could still contribute to Sri Lanka. President Jayawardena said "Son, I don't want you to do go" and asked, "what can I do to support you?". But he also said he would not hold me back if it was for my betterment, and I pledged to keep contributing to my homeland. I decided on the States since father studied there, and I had also led many naturalist groups from there, so I had a certain affinity. California had the best weather for me, hence the choice of which state to move to.

How hard was it to be a full-time artist?

I was working 50:50 in Sri Lanka, doing guiding and travel in the forest and six months of painting. I went full-time into wildlife painting there, and it is always hard to break in. There were many artists, the standards were high and competition was heavy. I had to work really hard, but I concentrated on tropical wildlife, which was my forte, and by then I had mastered quite a bit of the techniques, although one really never masters anything and I am still learning. To get on top there, one really must work hard, and I never stopped doing that. I broke into the market and was accepted. Not having too many tropical artists there also helped me go forward.

What has been your history and link with the WNPS?

Back in the day, Thilo Hoffman and many of the people there recognized my work, and in fact he was the Chief Guest for my first exhibition. Then I did a poster for them (Dr. Kotagama seems to recall that), and I think I did a small article on flying snakes for the Loris and illustrated it. If you wanted to learn about nature, that was THE place and the organization, and a lot of the photographers like Nihal Fernando, T.S.U De Silva and others really supported me. I got to know a lot of the real authentic nature photographers and the pioneers in the field, so it was, and still is, a great organization. I was asked to join the Board once, but I felt there were better people and I also did not have enough time. WNPS really gave me a lot and helped me take more steps in the right direction. Not many people were doing much with conservation, and this was the only organization doing that in any meaningful way. Those are my connections with WNPS.

Conservation and art seem to be almost going in parallel tracks in Sri Lanka. People display their photographs and art, but the conservation link seems to be almost forgotten. Many do art for the sake of art or photography for the sake of photography. Any thoughts on this aspect?

That is really the reason I started painting and recreating my experiences. With books most of the time, people want to go through it if there are nice images – it draws you into it. I found that one of the ways I could do this is not just painting a bird or the animal but bringing the environment into it. I wanted to show why it is necessary to have that environment for the species to live in. That was my approach right from the beginning. I loved nature, birds and animals long before I began to paint. But the frustration of being unable to explain to people in words moved me into doing it through painting.

During my first exhibition Mr. Hoffman pointed that out and said this is how it ideally should be. At that time the best-known artists were G.M. Henry and the likes who had the facilities, background and the push from other countries etc. and they were known. But the Sri Lankans were somewhat suppressed, and I wanted to break that barrier. I was the first to come forward and take the risk by saying "let's preserve animals through art". If you look at my work, I don't concentrate only on the animal but on how the light hits it, why the light is necessary, how the plant life exists around it, and the most important thing is to bring it all together. Those efforts have opened up all the doors for the younger generation who were previously suppressed, and they have the footsteps to move forward.

If you only think about selling art, that is not what I am all about. It is about your message and what you give. It is easy to say at this stage, but it was initially a struggle. I lacked funds to buy canvass and paints, but I did not give up since

Birds of a feather – Gamini with fellow wildlife artists Shantha Jayaweera and Lester Perera

my ultimate goal was to give that message about conservation. Even in the States, still to a very high extent, my work has remained all about art and conservation. I want to open a window to nature, and I want people to look out of that window and see the wealth of nature that we have even if it is a bug or an insect or a snail. I look at scenes and when I am at the canvass, I see what I have seen, and I am trying to show others what I have seen. That is the journey I have taken, and these roads were not meant for just one person to travel. It has been rewarding here the past few days to have people come up to me and share how they benefitted from my work over time.

Give us some added words of advice for the younger artists.

One of the most important things in painting nature is to first figure out what you want. Pick the subject and then study about the subject -which type within that species, which environment it lives in, and why it lives in that environment etc. The more you study about the subject and the environment, you start understanding what you are doing. Don't look at it as a commercial venture- look at it as a message you are giving to the next person and the next person. Bring in everything! Before you start the painting, study the light, the subject, the fauna and flora and the overall picture before you get to your canvas. Don't be in a rush.

Gamini and his wife, Tina, lost their daughter Natalie Ann, at the young age of 22, to a sudden brain aneurysm. I empathized, and with their prior permission, requested them to share some thoughts on that part of their journey with us and how it impacted and influenced the path they walked.

(G)- It is obviously something that we had no control over and the next thing is that we will never get over it. She was a nature enthusiast, did Wildlife Ecology for her degree, and we wanted to keep her memory going… (T) and her passion for educating through wildlife. She also worked with a company which took educational animals to the classroom to teach children and to birthday parties and they met at the library etc. and she was working to go in that direction one day. Six months after losing her, a lay priest we met at a Buddhist temple shared a pamphlet with us, which was about Lord Buddha and about facing death with a smile. Through his experience of keeping his lost son's memory and smile present and remaining connected spiritually, we learnt to keep our daughter's presence with us at our gathering and meals and would joke about what she would say or be mad at and so on. We met with the Wildlife Conservation Society – Galle, with whom we had done one or two projects, and proposed the Natalie Education Centre, where artists, photographers, authors and scientists would have a place to refresh amidst nature. We purchased a land, but a perfect opportunity came along just near the Sinharaja entrance, so we sold that previous land, raised more funds, and set up the Sinharaja Base Camp seven years later, which is walking distance to the entrance.

As you walk into the camp, there lies a beautiful plaque which talks about one life bringing light to the world and guiding the path for others. We

Gamini with his wife Tina

feel we are allowed to talk about our daughter in the present tense even through it has been many years, and we say "we stayed at Natalie Centre" or we did this etc. Since 2012, Gamini has a little dragonfly inserted with his signature in every painting in her memory. You have a choice- you can be angry and bitter at losing your only daughter, which is not something anyone wants to face, or you can be grateful for the 22 years of her life because she did a lot more within those years than most people do in their lifetime. She travelled the world, wrote a children's book, she loved deeply, she loved animals deeply, and had deep passion for the elderly and the special needs children as well. One of her passions was to do something around snakes in Sri Lanka as she did not fear them. She even wanted to move here. Now there is a little fish *Devario annnataliae* named after her and that would have made her very happy. She would also love to read to little children, and they now continue to write their own books. There are many wonderful ways to say thank you for the beautiful life lived, instead of being angry, and that is what we are doing.

LITTLE LORIS

A subsection of the Loris, aimed at our younger readers aged eight to thirteen. We hope to foster and encourage scientific curiosity, exploration, education, and advocacy, to ensure the future of conservation in Sri Lanka is in good hands.

Message from the Editor

To all young readers,

Hello! What a pleasure it is to know that you are interested in animals, plants, and nature conservation! Our Editorial Team at the Loris hopes that this section – Little Loris – will have some exciting and interesting information for you to enjoy and perhaps share with your friends and family! There will be fun facts, activities, and a variety of conservation topics. We have a lot to protect on our beautiful island, and we hope that you will help us in our efforts!

Read on to learn about glowing fireflies, amazing underwater life, real 'dragons', and tiny ants! If you have any questions, thoughts, or ideas, we would love to hear from you! Do write to us at conservation@wnpssl.org.

WALKING WITH DRAGONS IN KOMODO

By: Zaineb Akbarally | Photo credits: Author

This August, I visited Komodo National Park in Indonesia — a place where the land is dry and rugged, the seas rush with strong currents, and dragons still roam the earth. Real dragons. The Komodo dragon is the largest lizard in the world, found on the islands of Komodo, Rinca, Gili Motang, Nusa Kode and parts of Flores, in eastern Indonesia, between the bigger islands of Sumbawa and Flores.

You cannot walk alone on these islands. Rangers guide every group, carrying only a forked wooden stick for protection. It looks simple, but it works. If a dragon comes too close, the fork is pressed against its neck to push it back. Out here, the dragons are the top hunters, and we are only visitors in their home.

Within just twenty minutes of walking, we saw our first Komodo dragon. A massive male appeared on the trail, easily over 2.5 metres long. One of his arms was badly hurt. August is mating season, when males rear up on their back legs and wrestle for dominance, and this dragon clearly carried the marks of such fights. His thick body moved with calm power, his tongue flicking in and out as he tested the air. This forked tongue doesn't just taste the air — it helps the dragon find dead animals from kilometres away, sometimes up to 10 km if the wind is right. Drawn by the smell, they will travel long distances across their islands to reach a meal. We followed quietly until he slipped into the bushes to rest from the heat of the day.

Further along, another dragon waited in a clearing, ready to surprise deer or wild boar. While we watched, the first dragon returned. His stomach still bulged from a recent meal as he walked slowly to a pond to drink. Lowering his head, he began to gulp, using his throat muscles to pull in the water. Butterflies fluttered above him as he drank — a scene that felt straight out of a Planet Earth episode.

Did You Know?

Komodo dragons are the world's **largest lizards**: adults can grow over **3 metres long** and weigh more than **100 kilograms**.

Their bite includes **venom** that stops blood from clotting, which makes prey lose blood quickly and become **weak**.

They can run in short bursts at about **20 km/h** and are **strong swimmers**, able to swim between islands.

Young dragons spend their first years **living in trees** to stay safe from adults who prey on them.

In Sri Lanka, their close cousin is the **water monitor (*kabaragoya*)** — from the same lizard family (*Varanidae*).

Komodo dragons are built for survival and have evolved and existed in Indonesia over a few million years. They can run in quick bursts, swim between islands, and use their heavy tails to swim or fight. Their bite carries venom that stops blood from clotting, making even a small wound deadly to their prey. Yet life is not easy for the young. Small dragons are often eaten by bigger ones, so many spend their first years living in trees until they are big enough to protect themselves.

Interestingly, our very own water monitor lizard — the kabaragoya we often see in Sri Lanka's paddy fields and marshes — belongs to the same family (Varanidae) as the Komodo dragon. A kabaragoya can grow to about 2 metres and weigh around 25 kilos, already a strong reptile. But its Indonesian cousin can reach over 3 metres and weigh more than 100 kilos, nearly four times as heavy. They may be cousins, but the Komodo dragon is the king of lizards.

The world of Komodo doesn't end on land. Under the water, the seas are just as wild and full of life. Here, a strong ocean current — the Indonesian Throughflow — pushes warm water from the Pacific into the Indian Ocean through narrow straits. This flow brings nutrients that feed the reefs, turning them into a home for sharks, giant trevally, and tuna.

Diving here is an adventure. At places like Castle Rock and Crystal Rock, you drift past coral gardens full of colour, while reef sharks swim around you. But nothing prepares you for the Cauldron, also called Shotgun — a narrow channel that blasts you through like a human torpedo. It's as thrilling as it sounds. The same currents that sweep divers along also feed this underwater paradise, making Komodo amazing not just on land, but under the sea too.

Padar Island, with its high viewpoint, offers one of the most beautiful sights in Komodo National Park. From the top, three crescent-shaped bays curve into the sea, each with a different beach — one white, one black, and one pink. At sunrise, the hills glow gold and the waters change from deep blue to turquoise. Looking out across this view, knowing dragons live in the valleys below, felt like standing inside a painting made by nature itself.

But this beauty is fragile. Today, only about 3,000–3,500 Komodo dragons remain in the wild, which is why Komodo National Park is protected as a UNESCO World Heritage Site. The rangers here guard both the dragons and their islands, making sure this ancient predator can survive.

When I watched a dragon walk to a pond to drink with butterflies circling above, it felt like stepping into another age. Komodo is where land and sea collide — dragons on the trails, big fish in the waters, and islands rising like teeth from the ocean.

So yes, dragons are real. And on these beautiful islands, they still walk among us.

The Hidden World of Fireflies

By: Ahmed Zaydhameed Fajurdeen

Have you ever been in a garden or field at night and seen tiny lights fly past you? If so, then you've come across a true marvel of nature- the firefly.

These insects form their own family of beetles, known as "Lampyridae". At present they consist of 2200 species spread all across the world from the Americas, to Asia and Australia. They are most well known for their ability to produce light from their own bodies.

Different species of fireflies can produce light in a range of colours, from bright green to orange and yellow. Additionally, some species emit their light as a constant glow, while others have lights that blink in different patterns.

Some fireflies will even gather in trees and flash their lights all at the same time, in what is known as a "synchronous display", making these trees look like they have been decorated with living Christmas lights!

So how do they do it?

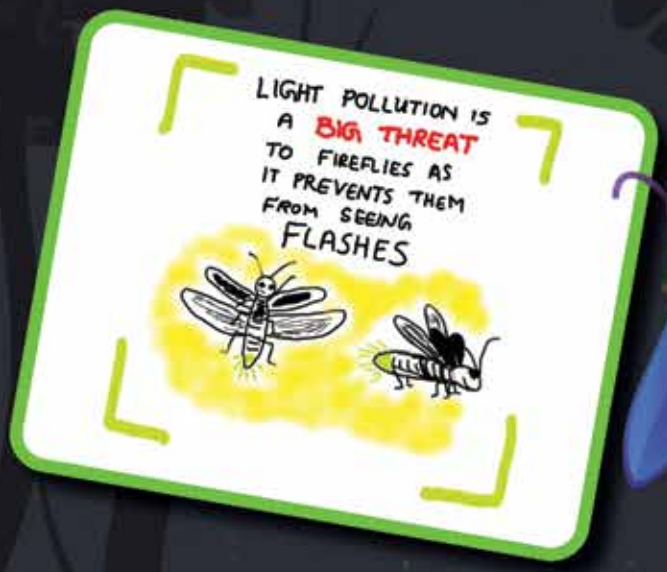
"Bioluminescence" is the natural process in which some animals can make their own light within their bodies. Fireflies have a special "light organ" from which they produce and emit light.

The light is a result of a chemical reaction in which a compound known as "luciferin" reacts with oxygen to give out light.

If you are wondering why fireflies produce all this light, there are a number of reasons! When they are newly hatched larvae, fireflies cannot fly and are therefore vulnerable to predators. Bright colours in nature are a way to avoid predators and firefly larvae use their light as a warning to say "Do not eat me, I taste bad!". As adults, their light is a way for males and females to communicate with each other at night so that they can mate. However, there are some fireflies who don't use light. These fireflies are active during the day, and unlike their nocturnal counterparts, use chemical signals to communicate instead of light.

The life cycle of these bugs begins when the female lays her eggs. These eggs go on to hatch into larvae. Firefly larvae are hungry predators and are mostly active at night, spending a large portion of their time hunting for their preferred prey; soft bodied creatures like as snails, slugs and worms. Despite their harmlessness to humans and relatively small size, firefly larvae are born assassins. They inject their prey with a neurotoxic venom to paralyse them, before feasting on them by secreting chemicals that can digest them!

The larvae will continue to feed like this for many months, growing larger and larger and going through several cycles of "moulting", where they shed their exoskeleton (the hard outer covering which protects them) when it becomes too small for them. Once they get big enough, they enter the next stage; the pupa. Inside their pupa, the larva undergoes 'metamorphosis' (meh-tah-mor-pha-sys), which is where its body goes through many changes, eventually emerging as an adult firefly. However, in some species, the female does not fully transform into an adult firefly. Instead she keeps the same features she had as a larva. Without the ability to fly, she uses her light to signal to males from the ground.



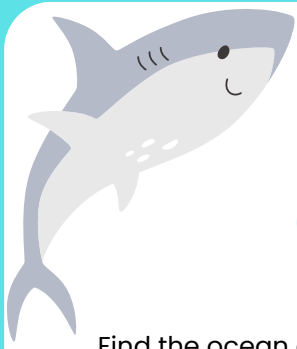
As humans expand their settlements, fireflies are also threatened by habitat loss, causing some populations to decline. Firefly larvae need moisture to survive, therefore the increase in droughts brought about by climate change is a concern for their survival.

The elusive nature of fireflies is a reminder of the importance of being curious about the natural world. With much that remains to be learnt about their lives, their conservation needs people who ask questions and are willing to look for answers. Every new discovery brings us closer to understanding how we can ensure their survival. In fireflies we find a clear message- that nature's greatest wonders are sometimes found in its smallest beings.

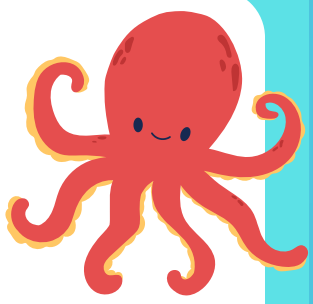
In Sri Lanka, there are close to 19 species of firefly, found in different parts of the country.

They are known to exist in grasslands, wetlands and even in urban home gardens- so next time you happen to be out in a garden after dark, keep your eyes peeled to possibly catch a glimpse of these fascinating bugs.

Climate change and human activity threaten fireflies just as they threaten many other species. These insects are particularly sensitive to artificial light. Our bright street lamps, and garden lights disorient them as they try to communicate with each other. This makes it difficult for males and females to find each other, therefore stopping them from mating.



OCEAN ANIMALS



WORD SEARCH

Find the ocean animals named below and read on to learn more about some of them!

O	C	T	O	P	U	S	X	D	S	T	F
A	L	K	S	Q	R	Q	R	Z	T	M	H
E	O	L	E	S	T	U	S	H	A	R	K
B	W	H	A	L	E	I	T	C	R	A	B
C	N	M	L	V	Y	D	U	I	F	O	A
D	F	N	P	D	O	L	P	H	I	N	C
F	I	O	T	U	R	T	L	E	S	Q	E
G	S	E	A	H	O	R	S	E	H	R	X
J	H	J	E	L	L	Y	F	I	S	H	S

- CRAB
- CLOWNFISH
- WHALE
- JELLYFISH
- SEAL
- SQUID
- DOLPHIN
- OCTOPUS
- TURTLE
- STARFISH
- SHARK
- SEAHORSE

Fun Facts shark

Sharks have been around for a long time – over 400 million years, which is long before dinosaurs came around!

Did you know?

Some sharks have to keep swimming to breathe. Sharks don't have lungs, but instead use gills to filter oxygen from the water.

Sharks don't have bones! They belong to a special category of fish called "elasmobranchs". These fish have a type of tissue called cartilage instead of bones. Cartilage is the same tissue that makes up human ears and the tips of our noses! (Touch the tip of your nose to see how flexible and light it is!)

Many sharks have several rows of teeth, and they can replace the ones they lose with new ones throughout their life.

Did you know?

The biggest sharks in the world are Whale Sharks (*Rhincodon typus*), which can be found in waters around Colombo! They are not whales but are actually the biggest fish in the world!

Sharks are very curious, but most will not hurt humans. They are hunted for food like shark fin soup, and can be caught accidentally in fishing nets. Many species are threatened, and we should do everything we can to protect them! This includes telling people how cool they are, and learning more about them!

Conservation Focus

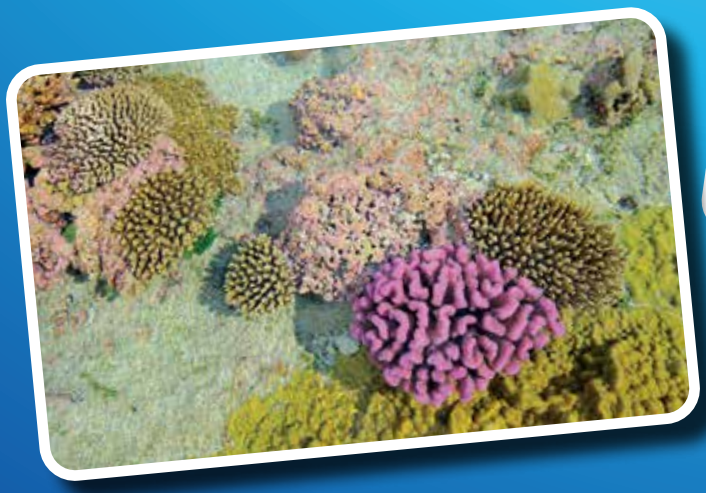
Coral Reefs

We may have heard about coral reefs in Sri Lanka and how lovely they are to see. Coral reefs are one of the most diverse ecosystems in the world, and are home to MANY species, large and small!

Unfortunately, coral reefs all over the world are affected by changing temperatures in the seas and oceans.

What are corals?

Corals may seem like plants, but they are actually animals! They are marine invertebrates and are usually found in closely packed groups called colonies. They can secrete a substance known as calcium carbonate to form a hard skeleton that helps to protect and anchor them.



A mutually beneficial partnership

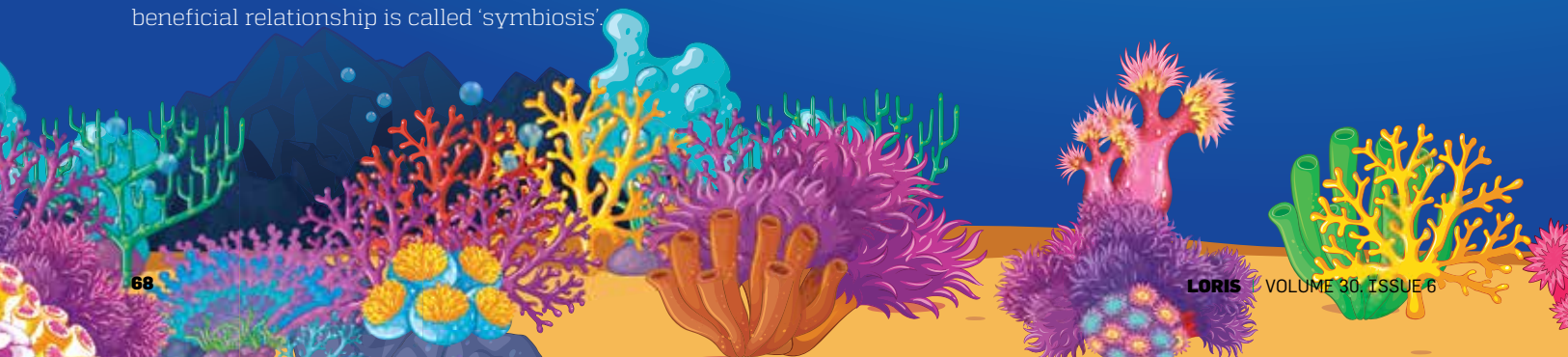
Corals have tiny algae called zooxanthellae (pronounced *zoo-zan-thel-ay*) growing within them. The algae can make food through photosynthesis (like plants) and provide the food that the corals need to survive and make their skeletons. In return, the corals provide protection and nutrients to the algae. This type of mutually beneficial relationship is called 'symbiosis'.

What is coral bleaching?

Corals are sensitive organisms and don't react well to changes in salt levels, light, nutrients and temperature in the water they live in. When these conditions change, corals can get stressed and expel the algae living within them. This causes the corals to lose their colour (which was provided by photosynthetic pigments of the algae), and corals appear white or light in colour. This is called 'coral bleaching'. However, not all bleached corals are white. Some severely stressed corals become bright pink, yellow, or blue while they are bleaching.

What causes it?

Some of the biggest threats to coral reefs include pollution, damage caused by ships and boats, damage caused by human activities like fishing, snorkelling and diving, and climate change. Climate change can cause ocean temperatures to rise, which makes the water warmer and more acidic, and cause tides to get lower. All these factors cause stress to the coral, which can cause bleaching.



Did you know?

It's not just water getting warmer that can cause bleaching! Water getting colder has also been known to result in bleaching events.

What happens after bleaching?

Bleached corals are still alive, but more prone to starvation and diseases, which can lead to death eventually. Some reefs can recover after a bleaching event if conditions return to normal soon, but others may take years or never recover.

How can we help?

We can all do our part to protect coral reefs and oceans in our own little way.

- ★ Volunteer with marine conservation organisations and coral reef restoration programmes
- ★ When swimming, snorkelling, or diving, don't stand on corals or touch them. Don't remove any corals from their natural environment
- ★ Use sunscreen that is safe for corals when going out swimming
- ★ Support the establishment of more Marine Protected Areas (MPAs)
- ★ Learn more about corals and other ocean animals, and talk to people about how important they are and why we should protect them

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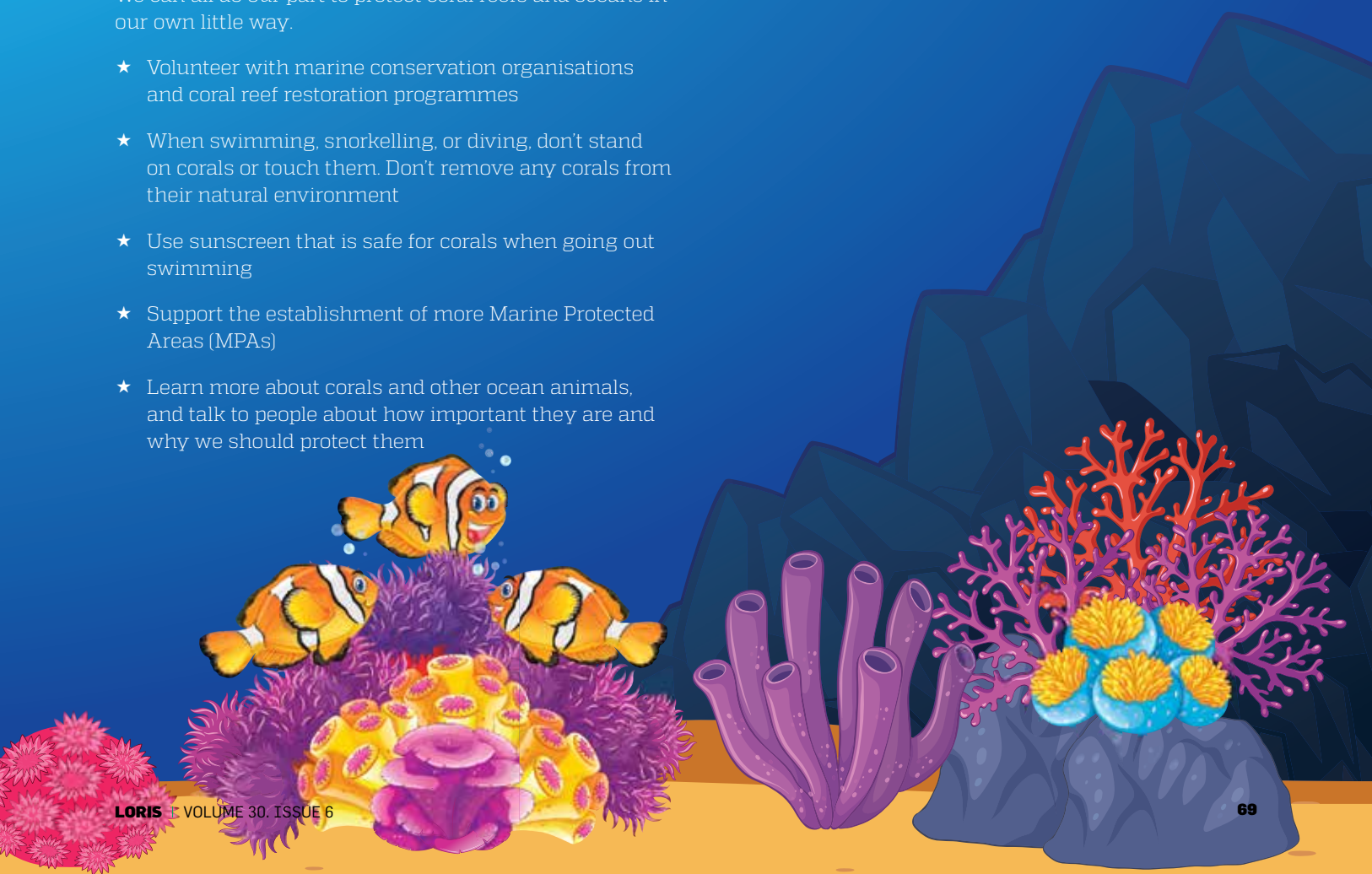
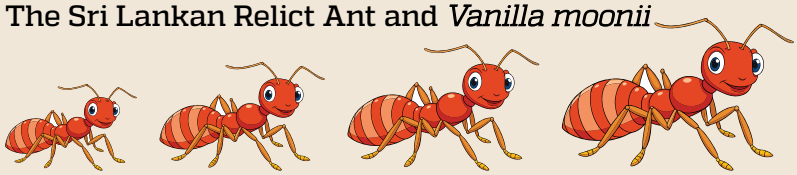


Epic Endemic

The Sri Lankan Relict Ant and *Vanilla moonii*



An endemic species is very special as it is only found naturally in one area in the world! Sri Lanka has many endemic species, and it is important that we protect them, because if we lose them, the whole world loses them!

The Sri Lankan Relict Ant

A 'relict' species is a surviving species of an otherwise extinct group of organisms. The Sri Lankan Relict Ant, *Aneuretus simoni*, is the only living member of its genus and subfamily, making it a remarkable link to ancient ant lineages once known only from fossils.

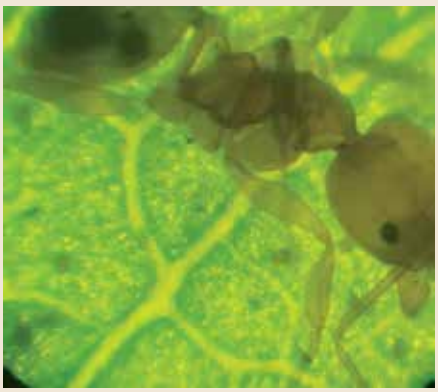


Photo credit: WNPS Critically Endangered Endemic Species Subcommittee

DID YOU KNOW?

The group name for ants is an 'army' or a 'colony'

An ant colony consists of different levels of members, including the queen and workers. According to researchers, Relict Ant colonies have two types of worker ants–major workers and minor workers. Usually, an ant colony consists of thousands of worker ants, but in this species, the number of workers is less than a hundred. These ants can be found in several forests, including Sinharaja and Knuckles.

Ants are very important to the ecosystem and help in many ways. Their tunnelling and digging maintains soil health and promotes the cycling of nutrients. They act as pest controllers by preying on other insects and help with decomposition of animal and plant matter when they scavenge for food. They also aid in the dispersal of seeds.

DID YOU KNOW?

The ant is one of the world's strongest creatures in relation to its size. A single ant can carry up to 50 times its own body weight!

VANILLA MOONII

Photo credit: Sashini Paranagama

Vanilla moonii is one of only three species of Vanilla naturally found in Sri Lanka. It is an orchid named after the botanist Alexander Moon, a pioneer of Sri Lankan plant collections. Vanilla flavouring used in cooking comes from other members of the Vanilla family found around the world.

Sri Lanka has over 3,000 flowering plants on the island, and of them, over 800 are endemic!

Want to know more about endemics? Read the report from the WNPS subcommittee working hard to protect endemic species on page 81.

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WNPS Critically Endangered Endemic Species Subcommittee

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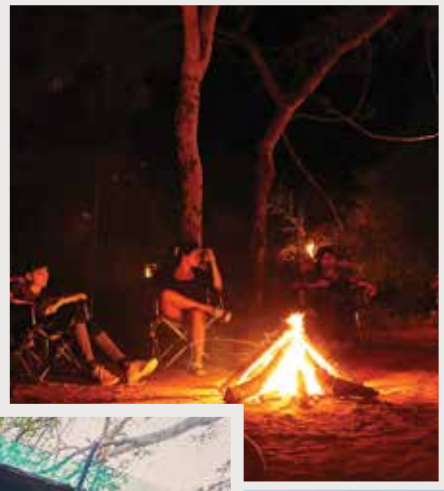

A

Journey

through the wild

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NURTURING YOUNG MINDS FOR NATURE

WILD KIDS ACTIVITIES 2025

Throughout 2025, the WNPS Wild Kids Subcommittee has continued to inspire and nurture a generation of environmentally conscious young minds through an engaging series of activities that blend fun, learning, and conservation action. From biodiversity lessons and wetland explorations to creative nature journaling and hands-on fieldwork, each initiative has been designed to deepen children's understanding of the natural world and empower them to become active stewards of the environment.

The year began with an interactive lecture on biodiversity held at Holy Family Convent, Bambalapitiya. Conducted by Ms. Pavi Attanayake from PLANT, the session introduced students to the work of the WNPS and the Wild Kids initiative. The presentation was lively and engaging, featuring visuals, discussion, and a group quiz that kept students involved throughout. Another school-based activity soon followed for 85 students from Colombo International School, held at Diyasaru Park. Themed "Nature's Diaries," the event focused on nature journaling and wetland species identification, encouraging children to observe, record, and connect with nature on a personal level.

In February, the Wild Kids Subcommittee proudly contributed to the World Wetlands Day celebrations, organized in collaboration with the Ministry of Environment under the guidance of Prof. Sevvandi Jayakody. A special video compilation featuring Wild Kids members sharing their thoughts on the importance of wetlands was showcased during the event, reflecting the young participants' growing awareness and sense of responsibility towards protecting these vital ecosystems. Continuing the momentum, the "Wild About Wetlands" program in March gave children the opportunity to explore and discover the wonders of Sri Lanka's wetlands firsthand. Conducted by Nethu and Mendis Wickremasinghe at Diyasaru Park, the event brought together 60 enthusiastic Wild Kids. Through exploration and guided observation, the children learned how wetlands support biodiversity, regulate climate, and sustain both people and wildlife. The positive feedback received reaffirmed the impact of experiential learning in fostering conservation values among youth.

April brought an unexpected international highlight when ten Wild Kids members were invited to contribute speeches to the Earth Day Celebrations in Los Angeles, USA, organized by the America Sri Lanka Photographic and Art Society (ASPAS). Their speeches, focusing on environmental issues and conservation, were shared across three U.S. states—California, Washington D.C., and New York. The participants were formally recognized with certificates awarded by ASPAS and the Mayor of Los Angeles, marking a proud milestone for the WNPS Wild Kids as young ambassadors for nature on a global stage.

In May, the program "Capture and Journal the Wild" gave children a



hands-on introduction to wildlife photography and nature journaling. Under the expert guidance of naturalist Rukmal Rathnayake, and wildlife photographers Thimandari Pathirana and Sachini Rasadari, participants learned how to observe and document nature using spotting scopes, binoculars, and DSLR cameras. The 32 participants not only gained technical skills but also developed an appreciation for mindful observation and creative documentation of the natural world.

The Special Kids Program held at the Legacy Institute in July focused on biodiversity and animal conservation, emphasizing that "every species matters." The program encouraged children to recognize the role of humans as caretakers of nature—echoing the stewardship exemplified by Noah's Ark—and to take small, practical steps to protect wildlife and habitats.

Later that month, a Tree Planting Campaign was conducted at Dikhena Kanishta Vidyalaya, where 100 trees were planted by students of Grades 5 and 6. The initiative aimed to cultivate environmental ownership among children, reinforcing the importance of habitat restoration and conservation. In addition to tree planting, school supplies were distributed to the participants, ensuring that the event was both educational and rewarding.

In August, the Wild Kids embarked on a nature walk titled "Let's Know Our Wetlands," once again at Diyasaru Park. The event was designed to help children explore urban wetland ecosystems, identify flora and fauna, and understand the interdependence of living organisms. Through interactive learning and guided observation, the 45 participants gained valuable insights into the importance of wetlands and were inspired to take small steps toward conservation in their own lives. All participants were awarded WNPS certificates recognizing their commitment and participation.

The month of September concluded with a fascinating program titled "The Hidden World through the Lens", conducted in collaboration with Professor Devanmini and the Department of Zoology and Environmental Science of the University of Colombo. This event introduced 55 Wild Kids members to the microscopic world, allowing them to observe and appreciate the tiniest elements of life through microscopes. The experience sparked curiosity and a sense of wonder, while also highlighting the ecological importance of microorganisms in maintaining the balance of ecosystems.

From school visits and field programs to international engagements and hands-on science experiences, 2025 has been a remarkable journey of learning, exploration, and inspiration for Wild Kids. Each activity has helped strengthen the bond between children and nature—instilling curiosity, respect, and a lasting commitment to conservation. The Wild Kids Subcommittee remains dedicated to shaping these young explorers into informed and compassionate guardians of our planet's precious biodiversity.

Addressing Conservation Challenges Through Female Entrepreneurship: WNPS PLANT, Otter Fonds and Lanka Environment Fund Join Hands

With a vision to develop forest corridors and unify fragmented forests through private sector engagement, the WNPS (www.wnpssl.org) set up Preserving Land and Nature (Guarantee) Ltd, (PLANT) a few years ago (www.plantsl.org). The initiative gained rapid momentum thanks to a very focused approach, multiple partner engagements, and a passionate team. Outgrowing its initial aspirations, PLANT seemed to be ready to accelerate – but soon began to hit a massive roadblock. The ambitious, long forest corridors being created in the hills needed way more montane plants than were readily available, as they had to come from within the right native species which were sought. Species are carefully selected by the teams, and with no precedence of large-scale reforesting projects in the hill country, the few existing nurseries were unable to cater to the demands. The slow growth rate of montane plants provided yet another challenge. The team had to either slow down or change plans and moderate their aspirations. The leadership decided to do neither, and instead went for a bold plan, for which it sought willing donors.

The idea was multi-dimensional: seek out female talent who would be passionate about conservation and help them commence plant nurseries, fund them at the start-up stages to provide a solid safety net, train them extensively in forest nursery management and entrepreneurship to make them best in class, employ added female staff and make it an exclusive female-led initiative, part subsidize their capital costs so that the returns would be faster, present the plan to willing donors for funding, and provide a safety net by purchasing the output from the nurseries. The idea was to accelerate the creation of several successful and profitable ventures which would not just address the conservation challenge at hand, but also bring social stability and a financial infusion into multiple families within rural society.

A passionate plea by the PLANT Chairman during the WNPS public lecture in January, coupled with well-crafted proposals, resulted in two donors lending incredible support to the initiative. Otter Fonds from Netherlands, and the Lanka Environment Fund both lent tremendous support towards this vision and willingly agreed to fund 3 and 2 entrepreneurs respectively. A wide-ranging search, a robust application process, multiple days of visiting prospects by the PLANT team, meticulous marking and a rigorous final interview step resulted in the ultimate choices. Locations needed proximity to our sites, road access, water, proper land ownership, forest proximity and specific soil conditions, while the incumbents needed intellect, physical capability, a certain leadership aspect and good reading, writing and communication skills, among others. After four months of hard work by the young and energetic PLANT team members, the final awarding and agreement signing was held with the 5 female recipients, the WNPS and PLANT teams, along with the donor representatives, on the 23d of October 2025. With this milestone step, the WNPS was once again pioneering a fresh thought process by making major infusions

into community aspects and entrepreneurship as a bridge for its conservation endeavours.

WNPS President Graham Marshall, reflecting on the initiative, stated that "This project by WNPS PLANT resonates with what the WNPS as a Society would want to achieve as outcomes of conservation initiatives. Livelihood enhancement is critical in any conservation effort. This project is special because it is about empowerment, creating leaders, and independence of women in conservation".

The journeys up to the point of receiving the award were hard, but the personal stories the ladies shared were heart melting and inspirational. Ms. A.G.Anoja from Ginigathhena, in the Nuwara Eliya District, is a housewife and a motivated community member with a strong interest in home gardening and native plant restoration. She also managed a small flower nursery.

At 63, she brings both life experience and genuine enthusiasm to the role of nursery manager. Her determination stemmed from a comment made by her son when she requested some money from him, where he encouraged her to "try and earn her own income". She says she became determined to carve out a path towards financial independence and self-employment. Ms. M.G.K. Chandanie Devi, a 60-year-old resident of Divithotawela near Welimada, brings both experience and strong family support to her role with some previous casual work exposure to nurseries. Since her husband passed a few years ago, it has been a challenging journey of dependency, living with her daughter and grandchild whom she supports and cares for, while her son-in-law acted as the single income earner. Her extended family is deeply engaged in nursery and plant propagation activities, and she mentioned that "a stable income will uplift her entire family circle and give her confidence and positivity for the future".

Ms. M.G.K. Samandhika, a 55-year-old resident hailing from Diganatenna near Bandarawela, brings hands-on experience and a strong personal commitment to native plant restoration. Already involved in agriculture and nursery work from her home garden, she is well-positioned to take on a leadership role in managing the nursery and has an extended family who are in this field. Her husband is paralyzed, and they have three children. Her youngest is in Year 9, and this initiative would provide financial stability and release her daily search for some gainful labour- intensive work to keep the home fires burning.

Ms. Anoja Kumari, a resident of Marakkayakumbura, Hapugasthalawa, near Nawalapitiya, is an experienced community member with a strong interest in cultivation and native plant restoration. With over 15 years of involvement in tea cultivation and two years of experience in vegetable nursery management, she brings valuable agricultural knowledge and practical skills. Her husband is actively engaged in vegetable farming, and she has three children, with the youngest son in Year 8. She has completed her A/L's and has over 10 years of experience working as the treasurer of village societies, highlighting her organizational and financial management skills.

Ms. R.M. Rasika Priyanthi, a 44-year-old resident of Pebotuwa, in the Ratnapura District, is an experienced nursery worker with a strong grounding in both fruit tree propagation and native plant restoration. With over eight years of hands-on nursery management,

she brings deep knowledge of lowland flora and practical experience to the proposed native plant nursery initiative. She is confident of using digital tools to coordinate activities. The family's longstanding involvement in plant propagation has cultivated strong practical expertise in seedling care, plant identification, and community-level nursery management. The low price and small margins on some of the fruit and other trees they sell would often mean a very limited annual income stream through the existing business, resulting in little upward momentum for the family with this added income.

Amy McCulla, Grants Manager of Otter Fonds from Netherlands (www.otterfonds.com), was very positive about this initiative. "The Otter Fonds is proud to collaborate with PLANT on this innovative project to empower local women to become entrepreneurs and start their own nurseries. PLANT will teach these women how to start and run their own businesses, leading to increased income in the community. These nurseries will provide the montane plants that are necessary for PLANT to continue to create connected corridors of protected forest ecosystems within the southwestern quarter of Sri Lanka. The Otter Fonds looks forward to watching these nurseries, and these recipients, develop and thrive", she said.

"We are extremely excited to support this landmark initiative by WNPS PLANT, which we know will signal a shift in how restoration is carried out on our island. Although there is an appetite for reforestation, there is a dearth of endemic and native plant saplings available to supply this demand. Our hope is that these female-led native species nurseries can fill that void, while also supporting local female entrepreneurs and enrich local communities. The Lanka Environment Fund (LEF) believes in investing in long-term holistic projects, such as this, that will serve as a catalyst within this conservation niche" said Vinod Malwatte, Director of Lanka Environment Fund in support of the project (www.lankaenvironmentfund.org)

PLANT wishes to maintain a sustainable supply chain of plants for its restoration work while keeping the communities involved. This also makes the community bigger stakeholders, which is crucial since these areas of restoration are in very close proximity to populated areas, and plant damage is often caused by human intervention. WNPS felt that women would be better custodians of this with the opportunity to create home-based employment, create economic empowerment and uplift their social standards since the trickledown effect of income to the family is far better in the case of women (alcohol being one of the main contributors to burning up limited income earned in rural settings).

The recipients now head into the intense residential training phases with different experts who will guide them along the path ahead. Designs are being worked out in parallel for construction to commence on each nursery location. The initiative is already proving to be far more than a conservation step, and becoming a beacon of Hope, Dignity and Economic empowerment. These women may very well be the torchbearers for a new breed of conservationists from among those who live in the frontlines of our last remnant forests. The strength of WNPS and the vision of PLANT, along with Otter Fonds and the Lanka Environment Fund, will certainly be there to lift them high.

Climate Change Subcommittee

'STAGE IS YOURS' CLIMATE EXPRESSION COMPETITION

"Stage is yours" was a climate expression competition themed "Let's combat climate change" "nature-based solutions to mitigate climate change". It consisted of 3 rounds - the script submission round, the semi-final round via zoom, and the in-person Grand Finals at University of Colombo, Faculty of Science.

It was an island-wide competition and consisted of two main categories, which were the student category between ages 10-19, and the open category between ages 20-40. It was further divided as the Poem Category, Short Story Category and Short Speech Category.

The finals were held on September 14th 2025. The Winners/ Best Competitors of each Category are named below:

1. **Student Category**- Short story- *Lohasna Senarie Perrera.*
2. **Open Category**- Short story- *Dilki Wiriththamulla*
3. **Student Category**- Short Speech- *Thisansa Chenulee Gunasekara*
4. **Open category**- Short Speech - *Lieutenant Commander Sasitha Rajapaksha*
5. **Student Category**- Poem- *Suhanya Vishinie Gamaarachchi*
6. **Open category**- Poem- *Wimukthi Sandaruwan Dayarathna.*

The following individuals participated as special guests and judges of the competition: Prof Sampath Seneviratne, Prof Deepthi Wickramasinghe, Captain Lakmal Ranawalge, Captain Harinda Deeshana, Mr Spencer Manuelpillai, Lion Ravi Sivakumar, Mr Hashitha Wijesundara and Lion Paul Desilva.

This competition was a collaboration between the Climate Change Subcommittee of the Wildlife and Nature Protection Society of Sri Lanka along with Sasnaka Sansada Foundation, Lions club Colombo Central, Leos306 D3. The Climate Change Subcommittee as the initiators of the event, lent its expertise throughout the competition.

Climate? Nah, We're Too Busy Scrolling

Poem by Suhanya Vishnie Gamaarachchi

Oh wow, what a lovely day,
The sky is grey in a toxic way!
The sun blazes like it's out for revenge,
And the air smells like a toxic stench!

The ice caps are melting - no big deal!
Just polar bears losing their only meal.
Who needs penguins, snow, or ice?
Turning Earth to dust, isn't that nice?

Sea levels rising? What a treat!
Now we can swim in city streets.
Goodbye beaches, take a bow!
Beach day's canceled, it's under water now.

Elephants? Oh, let's ignore them!
Losing homes to "progress" - ahem...
Once they roamed proud, wild, and free -
Now they're just stories on the documentary.

And whales? They sang deep ocean blues,
But now they're dodging floating shoes
Tangled in nets or choking on trash,
All for our straws and fossil fuel splash.

Coral reefs are turning white,
They must be tired of looking bright.
Who needs fish or the ocean's charm,
When we've got plastic causing harm?

But don't you worry - we've got our plans!
Like arguing online and sending emoji claps
Leaders meet and give long talks,
While glaciers slide like melting blocks.

The future's bright - just wear shades,
Ignore the warnings and rising waves.
Why fix the mess when we can just scroll,
Post a meme and lose self-control?

Oh, climate change, you're such a gift!
You've given our planet quite a shift
You've made sure our tomorrow's fried,
But hey.. we shared it online... So yeah.. we tried!

THE GRANDMOTHER WE ALL SHARE

Short Story by Dilki Wiriththamulla

Once upon a time, there was a grandmother. She was old — 4.5 billion years old, to be exact. But despite her age, she was beautiful. She wore forests as her hair, rivers as her veins, and oceans as her wide, blue eyes. Her grandchildren loved her. They played in her gardens, climbed her mountains, and feasted on her fruits. She gave them everything — sunsets, mango season, waterfalls, even Wi-Fi. But the grandchildren grew careless. They cut her hair in ugly patches, poured plastic into her eyes, and filled her lungs with smoke. When she coughed, they called it "climate change." When she cried, they called it "floods." And when she burned with fever, they called it "global warming." Still, the grandmother gave. She was patient. She was kind. But lately, she has been growing tired. And sometimes, late at night, I imagine her whispering: "Dear children, I don't know how much longer I can keep this up." The grandchildren heard her, but only some listened. Most were too busy with their games — building bigger houses, faster cars, shinier gadgets. One day, one of the grandchildren looked around and finally saw the truth. The grandmother wasn't just theirs. She was the only grandmother anyone would ever have. And if they didn't take care of her, they would have no place left to play, no food left to eat, no air left to breathe. So this child began with small acts — refusing single-use plastics, planting trees, walking instead of driving. The others laughed. "That's too small to matter," they said. But slowly, another joined. Then another. And soon, the grandmother's tired eyes began to shine again. Because hope, unlike fear, is contagious. And here's the moral of the story: we are not separate from our grandmother. We are part of her. Every breath we take is her gift. Every grain of rice is her blessing. If we protect her, we protect ourselves. If we lose her, we lose everything. Jane Goodall once said, "What you do makes a difference, and you have to decide what kind of difference you want to make." So, my choice is simple. I will not be silent. I will not let my grandmother fade. The story is still being written. The ending is still ours to choose. And the time... is now.

Critically Endangered Endemic Species Subcommittee

Endemics – the Battle to Survive

Episode 1 – Life on the Edge

Introduction

Sri Lanka is a true jewel in the global biodiversity map, home to countless species found nowhere else on Earth. Yet many of these endemic plants and animals are now on the brink of extinction, threatened by habitat loss, climate change, and human activity. Protecting them is about safeguarding our natural heritage and ensuring a thriving environment for future generations.

The scale of the challenge is stark: nearly 2,000 species are threatened, with over 400 listed as Critically Endangered. In response, the Critically Endangered Endemic Species Conservation Project was launched in September 2022, financially supported by Hemas Holdings PLC and fully managed on the ground by the Wildlife and Nature Protection Society of Sri Lanka (WNPS). Its goal is to conserve 52 Critically Endangered endemic species - including plants, fish, butterflies, and amphibians - through structured, science-driven interventions.

By restoring habitats, propagating threatened species, monitoring wild populations, and engaging local communities, the Critically Endangered Endemic Species Conservation Project seeks to improve the chances of survival for these species and also facilitate the downgrading of species from their Critically Endangered status in the IUCN Red List, while strengthening ecosystem resilience.

Already, 26 active projects are underway across fragile habitats in the Central Highlands and lowland wet zone - landscapes that also safeguard vital ecosystem services such as clean water, fertile soils, and carbon storage. Together, these efforts bring hope that Sri Lanka's rarest species can survive and thrive once more. The initiative has faced numerous challenges, especially when it came to finding credible species-related projects, obtaining the relevant approvals from authorities, the speed of progress on ground, monitoring and reporting and many more. Three years on however, we see momentum and progress on different fronts, which is very encouraging. Given below are snapshots of some of the species the project focuses on, and the work that has been done so far. We are at the halfway point on the species number and hope to continue with the same vigour and passion as we add on more species in the coming periods.

IMPATIENS SUBCORDATA

Impatiens subcordata is a herbaceous plant of the Balsaminaceae family, locally known as Kudalu. Endemic to Sri Lanka, it is noted for its uniquely colored flowers and heart-shaped leaves.

Impatiens subcordata Arn. was first described in 1836 in the *"Companion to the Botanical Magazine"*. However, it remained elusive for over 110 years and was listed as "Possibly Extinct" in the National Red List of Sri Lanka in 2012.

After years of fieldwork, it was rediscovered in the Nuwara Eliya District, including Mandaram Nuwara and Queensberry Estate. It is now listed as Critically Endangered in the 2020 Red List in the *National Red List of Sri Lanka (2020)*.

The species is threatened by habitat clearing, ornamental plant collection, flooding, and climate change. Genetic studies confirmed it as truly endemic and distinct from its Indian relatives *Impatiens cordata*.

Propagation trials showed stem cuttings as the most effective method, producing over 300 plants at Hakgala Botanical Garden and Dilmah's Queensberry Estate. These were reintroduced to selected sites such as Kadiyanlena Ella and Mahakudugala Forest Reserve.

This conservation effort was led by Mr. Bhathiya Gopallawa, Mr. Indrakeela Madola, Prof. Deepthi Yakandawala, Prof. A. M. T. A. Gunaratne, Prof. Gehan Jayasooriya, and Prof. Kapila Yakandawala.

APONOGETON JACOBSENII

Aponogeton jacobsenii is an aquatic flowering plant belonging to the family Aponogetonaceae, and is locally known as "Kekatiya." Sri Lanka has six species of *Aponogeton*, four of them endemic, with three classified as Critically Endangered.

The species was first described by Bruggen in 1983, who reported its former abundance in the Nuwara Eliya District, including Gregory Lake. However, at present, its natural populations are confined to the Horton Plains National Park. It is considered the second rarest species of the genus in Sri Lanka, listed as Critically Endangered (CR) in the 2020 IUCN National Red List, and remains at high risk of extinction due to its restriction to a single location.

To reduce this risk, conservation work focused on establishing new populations in suitable habitats. Propagation trials at Hakgala Botanical Garden showed seed propagation as the most effective method, producing over 250 healthy plants.

Reintroductions were carried out at Horton Plains and nearby water bodies, where around 100 second-generation plants are now growing naturally.

Further restoration was conducted at estates in the Nuwara Eliya region, including the St. Coombs Estate during its centenary celebrations, as well as the Hauteville and Holmwood Estates.

These ongoing efforts aim to increase both the population size and distribution, supporting the potential downlisting of *A. jacobsenii* from its current Critically Endangered status.

The project was successfully led by Prof. Deepthi Yakandawala, Prof. A. M. T. A. Gunaratne, Prof. K. M. G. G. Jayasuriya, Prof. Kapila Yakandawala, Mr. Indrakheela Madola and Mr. Bhathiya Gopallawa.

VANILLA MOONII

Vanilla moonii belongs to the family Orchidaceae and the genus *Vanilla*, which is characterized by a hemi-epiphytic, vining, monopodial growth habit, with roots produced at each internode, fleshy fruits, and wingless seeds with a hard seed coat. Only three species of the genus *Vanilla* are naturally found in Sri Lanka

Named after botanist Alexander Moon, a pioneer of Sri Lankan plant collections, this species was categorized as Endangered in the 2012 National Red List and later upgraded to Critically Endangered in the 2020 edition due to habitat fragmentation, buffer zone clearance, and environmental changes caused by human activities.

Currently, populations are limited to a few sites in the lowland wet zone, mainly the Dombagaskanda Forest Reserve and Madakada area, and the species is highly sensitive to environmental changes.

As part of conservation efforts, over 150 plants were propagated through stem cuttings in the Dombagaskanda Forest Reserve, while others were introduced to the Seethawaka Botanical Garden. Awareness programs were also held for local students and villagers to reduce threats to the species.

This valuable effort was carried out in collaboration with the Young Zoologists Association of Sri Lanka.

CRYPTOCORYNE WALKERI

Cryptocoryne walkeri is an aquatic plant belonging to the family Araceae and the genus *Cryptocoryne*. This species is endemic to Sri Lanka and is locally known as "Athiudayan." It is characterized by its upright and rigid structure.

It has a very limited distribution, recorded only in two locations—the Mahaweli River and Badulu Oya. The rhizomes of *C. walkeri* help prevent soil erosion, while its canopy provides shade and shelter for aquatic life.

C. walkeri faces serious threats from habitat loss, overuse, and environmental changes, leading to a sharp population decline. Consequently, this species has been classified as Critically Endangered in both the 2012 and 2020 IUCN Red Lists.

As part of conservation efforts, *C. walkeri* was successfully propagated through tissue culture and reintroduced to Meegahakiwula and Wee Oya, where over 150 plants are now established. *Ex-situ* conservation has also placed plants in the Seethawaka Botanical Garden, Dehiwala Zoo, and Uva Wellassa University.

Awareness programs carried out by the team for schoolchildren and officials highlighted the importance of protecting this species, and future planting is planned in Galle, Kandy, and Kegalle with community participation.

These efforts mark the start of a long-term commitment to ensure *C. walkeri* thrives in its native freshwater habitats for generations to come, thanks to the dedication of Dr. B. V. A. S. Manori Bambaranda, Prof. D. M. Deepthi Yakandawala, and their team.

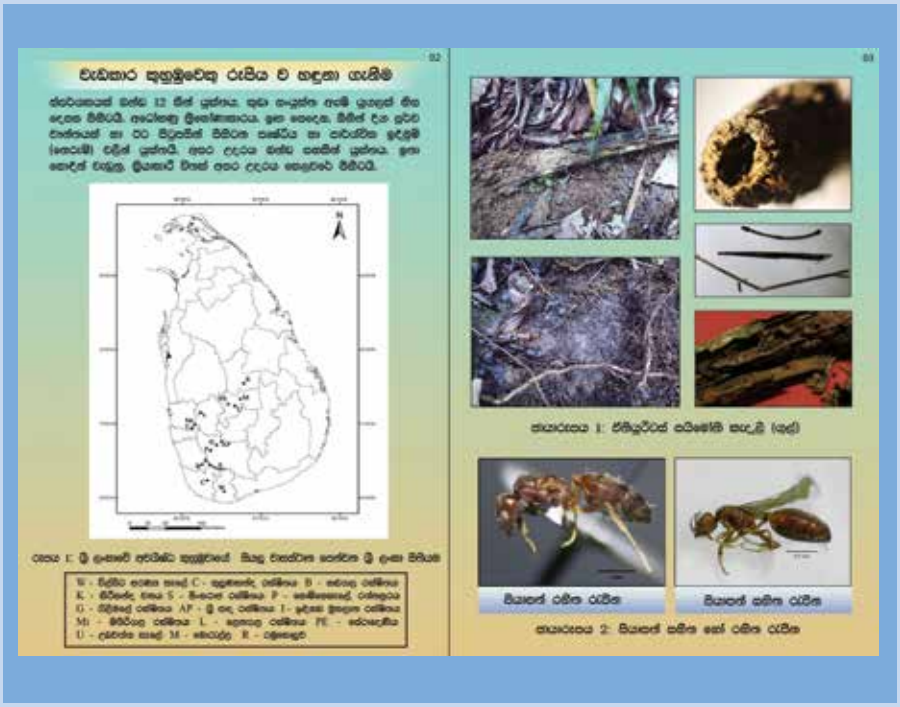
ANEURETUS SIMONI

The Sri Lankan Relict Ant, *Aneuretus simoni*, is the only living member of its genus and subfamily, making it a remarkable link to ancient ant lineages once known only from fossils. It holds an intermediate position between the subfamilies Dolichoderinae and Formicinae, offering valuable insights into ant evolution. Endemic to Sri Lanka, *A. simoni* is listed as Critically Endangered on the IUCN Red List.

The species is found in the wet and intermediate zones of Sri Lanka, first recorded in 1893 from Peradeniya and Kandy. It is now known from several forests, including Sinharaja, Knuckles, and Meethirigala. Populations in Meethirigala and Lenagala are the most disturbed, as colonies near forest edges are vulnerable to littering and firewood collection.

To address these threats, a conservation project was launched in the Meethirigala and Lenagala Forest Reserves. It aimed to improve habitat quality by removing litter, conserving fallen wood, and establishing new colonies in core forest areas. Awareness programmes and notice boards were used to engage the public. As a result, conditions improved, relocated colonies are thriving in safer areas, and dead sticks were added to support breeding.

The project is supervised by Professor R. K. Sriyani Dias and Dr. W. Sudesh Udayakantha.



POLYSPHORA DASSANAYAKEI

Polyspora dassanayakei is an endemic tree species belonging to the family Theaceae and the genus *Polyspora*. It was originally described as *Gordonia dassanayakei* by Wadhwa and Weerasooriya in 1996 and later reclassified under the genus *Polyspora* in 2012. This species is restricted to the montane forests of Sri Lanka, typically occurring in hilltop regions characterized by unique climatic conditions.

The tree can grow up to 20 meters tall and is distinguished by its thick leaves and pink-colored flowers. *P. dassanayakei* is found in the montane forests of Sri Lanka's central highlands. Today, this species is severely threatened by agriculture, forest loss, dieback, and climate change, leaving only a handful of individuals surviving in the wild. In the 2012 IUCN Red List, *P. dassanayakei* was categorized as Endangered, but by 2020 it had been uplisted to Critically Endangered due to its increased vulnerability to extinction.

Seeds of *P. dassanayakei* were collected and successfully germinated through soil and tissue culture. One well-established plant and 28 healthy plantlets are now thriving, with further propagation ongoing. These efforts give hope for the recovery of this Critically Endangered tree.

Although the plants are still in the hardening phase, these achievements offer renewed hope for recovery, thanks to the dedicated efforts of Ms. S. H. Bandumala and her team. The project also aims to reintroduce *P. dassanayakei* into its natural montane habitats so this rare tree can once again flourish in the wild.

As we look ahead, the journey to protect Sri Lanka's most threatened species continues with renewed hope and determination. The next phase of the Endemic Species Conservation Project will bring many more stories to life, with around 6-8 new species joining our growing circle of protection. Each new project brings fresh challenges, discoveries, and collaborations, but above all, it offers another chance to keep a piece of our island's natural heritage alive.

From the mist-covered highlands to the deep green lowlands, the work ahead will build on what we have already learned, nurturing seedlings, restoring habitats, and reconnecting people with the wild beauty that surrounds them. Future efforts will also focus on strengthening scientific monitoring and innovation, from genetic studies to improved field-based observations that guide restoration and propagation work. It's a journey led not only by science, but by compassion, commitment, and a shared belief that these species deserve a future.

Together with our partners, scientists, and communities, we remain steadfast in our mission to ensure that Sri Lanka's rarest and most fragile life forms continue to thrive, not just as names on a list, but as living, breathing stories of resilience and survival.

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