



Youth for Nature

Issue 6

October 2021

Walking on the Wild Side

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Editor's Note

India's history has always been closely intertwined with natural history and wildlife. This October, Youth for Nature decides to take its young readers on a virtual nature walk across India's myriad landscapes, introducing children and adults alike to the animals, birds, amphibians, reptiles, fishes, and insects that call this country home.

One of 17 megabiodiverse countries and boasting of four biodiversity hotspots (areas with more wildlife and plant diversity than anywhere else on Planet Earth), India has incredible natural wealth that must be protected at all costs. The first step to protecting wildlife, however, is gaining knowledge about these species and their needs. Where do they live? How do they survive? What do they need from us in order to continue to do so?

Wild animals are resilient and can adapt to the many disturbances we throw their way, but isn't it our responsibility, too, to try and reduce our impacts on their daily lives? Do we really need to talk loudly while on safaris or encourage safari vehicles to crowd tigers so that we can get Insta-worthy pictures? And do we really need to keep birds in tiny cages just for our own pleasure?

We hope this issue opens your eyes to the amazing diversity of wildlife found in our country!

- Priya Ranganathan & Nikita Bhat
Co-Editors, Youth for Nature



YOUTH FOR NATURE

OCTOBER 2021

LEARNING CORNER

1

How do humans learn to live alongside wildlife in the wild, in zoos, and even in backyards? Learn something new about wildlife in this section!

EXPERIENCES IN THE WILD

2

Hiking in remote valleys, wading through swamps after frogs, and tracking tigers, dolphins, and apes in lush forests...come join us on adventures in the wild!

Species in Spotlight

3

It's Wildlife Week, and we can't wait to explore some unique and fascinating wild animals that call India home! Time to grab your field notebooks!

Tales and Trails | Activity Corner

4

Read fictional stories from the wild, check out some zines, and try our fun activity!

1 | Oh, To Be A Bee!

Abhijat Shakya and Netra Bhandari |
Art by Asmita Sapre Ranganathan | Pictures by Authors

Bees are wonderful insects that pollinate most of the flowers that grow into our cultivated food. This literally means that bees directly produce 80 percent of our food, which is quite amazing! If we ask you to imagine a bee, you may think of honeybees! A common misconception is that all bees produce honey; however, only honeybees produce honey. Surprisingly, only 4 percent (4 out of every 100 bees) of the world's total bee population are honeybees or social bees, and the remaining live as solitary bees. Many bees look very similar to honeybees while others look very similar to wasps or even flies.

The Secret Life of a Solitary Bee

Let us take a dive into the life of one of the *Nomia*, a type of sweet bee.

The winters have waned and the little creature inside the pipe-hole finally feels the first warmth after a harsh, cold winter. She moves and shakes (inside her cocoon) and finally cracks it open, emerging out of the casing. As lazy as one can get, she crawls her way out and rubs her eyes. She waits for some time and then flies out into the world to explore.

She is a solitary bee, as she hovers above to drink the sweet sugary nectar from flowers, a humble gift indeed by the plant. As the day dies

down and night approaches, she finds shelter under a flower or grass stalks to spend the long weary night.

As the new day turns in and the first light touches the ground, the little creature wakes up and begins its chores. But something is amiss; a he-bee (male bee) is following her around and trying to impress her with constant loud buzzes and weird dances.

She is a mother now and is searching for a place to raise her children. The he-bee has no place in her life now. A hole is the perfect shelter. She digs holes with numerous compartments and lays her eggs. After this, she goes out in search of leaves and pollen for the larvae and stuffs them into the holes. When larvae break out of the eggs, they feast upon the food that their mother had left for them.



These Bees belong to *Nomia*, a genus of sweet bees



A colony made by female solitary bee in soil

They sleep and eat and sleep and eat, until the day comes when they shed their skin and make a hard cocoon around them. Later, the cocoon cracks and a new bee emerges. A new star is born!

The Role of Bees

Bees help in pollination, a process by which flowers turn into fruits and provide us with food. Hence, bees are very important for our survival. Without our wonderful bees there would be no flowers and without flowers there would be no bees. It is truly a cycle that helps maintain life on Planet Earth.

Bees in danger!

How often do you spot bees (social or solitary) in your garden or neighborhood? And how often do you spot bees that are not honeybees? Ask your grandparents the same question. You might get two different answers. Bees are in a grave situation now, especially solitary bees. But why is this the case?

Look around for clues and you might get a sense why some areas have more pollinators, and some don't. Scientists estimate that we may have lost a quarter of wild bee species, which is very sad. There are several reasons today that are causing bees to disappear. Firstly, when we increase the production of honey, we generally increase the population of domestic bees which exponentially increases the population of honeybees in an area which also decreases availability of wildflowers, nectar, and pollen for wild bees.

Secondly, agricultural practices like using insecticides (chemicals that kill insects) cause a lot of harm to bees by poisoning them. Also, in some regions, farmers use a lot of water for watering their crops, which

disturbs the egg-laying habitats of solitary bees and sometimes drowns the larvae too. The next reason, which you can spot easily around you, is removing wildflowers from gardens, backyards, or farms, which decreases suitable nectar sources for bees.

So, what can we do to protect these beautiful creatures? We first need to educate ourselves, our parents, farmers, and gardeners about the importance of bees in our lives. Conserving bees is a simple act of giving bees a shelter and providing them with a pasture of flowers. But this term is not as simple as it seems because we should protect the right types of bees – the native bees that belong to our region. We should promote the use of local honey brands because they most probably use wild honeybees to produce honey.

A very fantastic way to conserve bees and attract them to your neighborhood is to create bee hotels. Yes you heard that right!



Apis mellifera (A common domestic bee)



Bee Hotel in the making

Bee Hotels

Bee hotels are hand-made homes for solitary bees. They are easy to make and provide a good home for bees. All you need is some discarded wood or dry bamboo pieces (like pipes) of about 2mm to 10mm diameter and a good sturdy wooden frame of about 5-10 cm width. Next, stack all the pipes in the frame to create a structure that has holes between two pipes. Now bring in some dry grass and fill gaps which are bigger than the holes of the pipes. Now find a place which is close to a wildflower patch and also remains cool and has a water source with enough sunshine in the area. If you cannot find such an area, get your hands dirty, and plant some wild native flower species, keeping in mind that they attract bees, and a small watering bowl. A good place will have loads of flowers, proper sunshine and a water source. The bee hotel should be placed in a shady place, a little high off the ground and away from a windy area. Very soon, you will start observing bees, butterflies, and other insects coming to your pollinator patch and bee hotel.



Above: An insect hotel at the botanical garden of University of Marburg, Germany.

Left: The compartment made by a female solitary bee for her eggs.

2 | Lazy Cuckoos

Avik Banerjee | Art by Rupsy Khurana

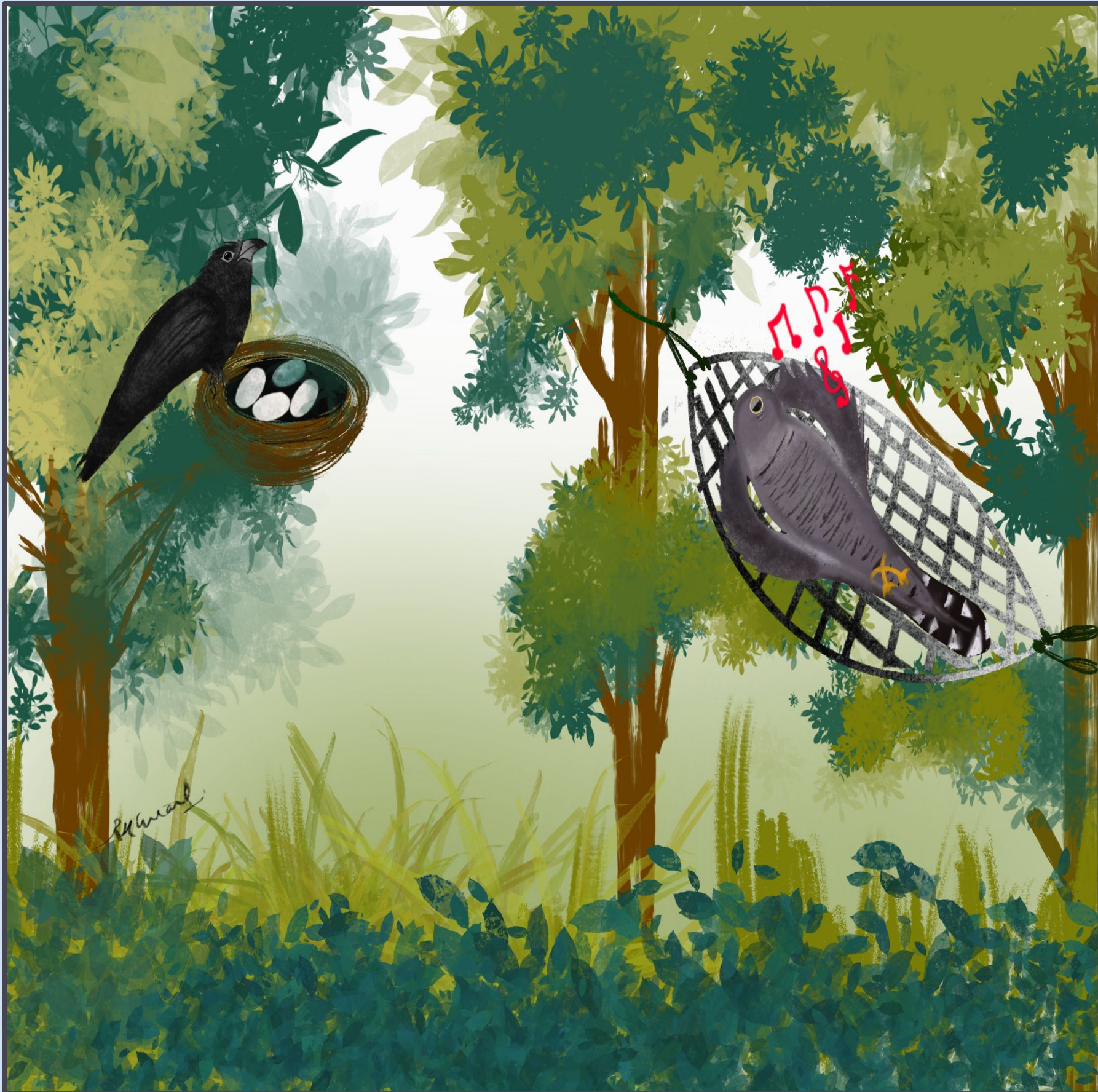
Have you heard of "lazy" birds? No? Some birds are known to be "lazy" because they do not build their own nest. These birds lay their eggs in the nests made by other birds. One famous example of "lazy" birds are Cuckoos, which are too lazy to build their own nest and instead choose to lay eggs in the nests made by crows, robins, or other songbirds. When a female cuckoo is ready to lay eggs, it searches for a suitable host nest (for example, a crow's nest). While the parent crows are away searching for food, the female cuckoo sneaks into the crow's nest. It either throws away or eats up one of the crow eggs and then quickly replaces the lost egg by laying one egg of its own, into the nest, before flying away. This cuckoo egg's colour patterns and shape resemble the other crow eggs present in the host nest. When the parent crows return to their nest, they cannot distinguish between their eggs and the cuckoo egg. Also, the number of eggs in the nest is the same. Hence, the parent crows take care of the cuckoo egg just as one of its own eggs. In the language of science, such an event where a cuckoo fools a crow into taking care of its egg is termed "brood parasitism". And the cuckoos are termed "brood parasites" of the crow.

The bluff by cuckoos doesn't end there; in fact, it's just the beginning. The cuckoo egg develops faster and, in most cases, hatches before all other crow eggs in the nest. Soon after hatching, the cuckoo chick eliminates all the other crow eggs from the nest while the parent crows are away searching for food.

The cuckoo chick carries the crow eggs, one by one, on its back and slowly pushes them to the edge of the nest, where it finally tosses them out. By doing this, the cuckoo chick makes sure that it does not have to share the food brought by the parent crows with other chicks and hence, it can grow faster. Unaware of the mischievous activities of the cuckoo chick in the nest, the parent crows, also known as foster parents of the cuckoo chick, continue taking care of it by providing it food and protection. The cuckoo chick develops faster and often grows larger in size than its foster parents. Once the cuckoo is ready to fly, it flies away from the nest, leaving behind its fooled foster parents.

These sneaky female cuckoos may also lay eggs into the nests made by robin birds, meadow pipit birds, or other songbirds. The eggs of these birds are very different from one another in their size and colour patterns. Despite this, the female cuckoos can lay eggs that resemble the eggs of their selected host nest. So, how do they do it? How are the female cuckoos able to lay eggs that resemble the eggs of the host nest? Well, cuckoos have found a simple way out to resolve this. The female cuckoos remember the host nest in which they hatched out as chicks. They remember their foster parents who helped them grow up. Therefore, a female cuckoo that grew up in a crow's nest must always return to lay its eggs in crow nests only. Similarly, a female cuckoo that grew up in a robin's nest must always return to lay its eggs in robin nests only and so on. Hence, if the cuckoos choose the correct host nest, their eggs will resemble the eggs of the host nest.

However, if a cuckoo that grew up in a crow's nest returns to lay its egg in a robin nest, the cuckoo egg will not resemble the robin eggs. And the parent robins will then be able to recognize the different looking cuckoo egg easily, and they will throw it out of the nest. So, you see, the cuckoos must choose the correct host nests for laying their eggs or else their eggs will be thrown out and never hatch.



Cuckoos are not the only birds that fool other birds into taking care of their eggs. Many other birds, such as cowbirds, honeyguide birds and black-headed ducks, lay their eggs into the nests of their host birds and fool them. And not only birds, even some fish, such as the cuckoo catfish, fool other fish into caring for their eggs. Moreover, we shall find many examples of such sneaky creatures that fool other animals into doing their work in the natural world. So, what do you think? Are these cuckoos just lazy to not build their nests or sneaky to be able to fool other birds or both?



The brood parasite egg in a nest with the host's eggs
Picture by Ted Kinsman/Science Source

3 Finding Nature in a City

Written & Illustrated by Rubina Rajan

When we think about nature, we often envision spaces such as pristine forests, river banks etc., which are typically beyond the boundaries of the city. We do not expect to encounter it on our way to school or while running an errand at the local grocery shop. We are quick to assume that our cities are bereft of fascinating life forms that come to mind when one thinks of “Nature”. This is majorly due to the conditioning we receive from a young age. From our childhood we are taught to accept these facts. While there are people who are lucky enough to be born in the hills or in smaller towns and villages who have the luxury of experiencing nature in all its glory right at their doorsteps, city folks have to look a little deeper to experience nature amidst the hustle bustle of the city. Here arises the need to retrain our minds to be able to observe nature in a city. To put things in to perspective, we cannot expect to see a Bengal Tiger strolling about in front of our apartment but it is possible for us to see a Plain Tiger butterfly fluttering about in the milkweed plants growing nearby.

Nature is all around us, all we have to do is look. They will be in the form of tiny insects, birds, snakes and trees that are present all around us just waiting to be noticed. During the lockdown

when everyone was forced to slow down, I took to spending a lot of time observing the space around me. Bound by restrictions, I was limited to constraints of my society located in a city. It was as if a different world had been revealed to me. I was able to observe birds such as White-browed Wagtails, Scaly-breasted Munias, Indian White-eye, Shikras, White-throated Kingfishers, etc. and a family of mongooses complete with little ones running around the hedges, peeking carefully to ensure their safety. The above is just a small example of how much we can observe right in the middle of the city.

You can start your journey of observing nature anywhere. I cannot describe how exciting it was to observe Red-wattled Lapwings nesting on the roof of a small building in front of my house. I was privileged enough to witness the whole process right from mating, nest building (it is only a rudimentary nest with some small stones), egg laying, incubation, nest defence and finally the hatching of eggs, bringing forth new life. Similarly, I noticed a variety of crickets gracing a green patch while taking my dog on his daily walk. They didn't catch my eye at first, but when I observed the first one, it was as if my vision was renewed. I was then able to observe countless crickets chirping and hopping about in the hedge.

Observing nature is not only helpful to learn more about how the natural world functions, but it's a fun way to keep our minds engaged and stress free. Nature's treasure box contains many a lesson to be learnt that could prove valuable in our everyday life. When I observed the parent Red Wattled Lapwing staying put, shielding her eggs even as it poured heavily, something stirred within me, for me it was a glimpse of unconditional love and sacrifice which is not very different from how human parents do their absolute best to protect their offspring.

The time spend in nature will also help you to feel the inherent connection we all have, which is often buried deep within our city bones, weighed down by technology and modernity. You will never cease to be amazed by the wonderful world around you waiting to become known to you.

Things you can do to begin your journey of being one step closer to nature:

- Grow butterfly host plants such as curry leaf plant or Castor Plant
- Keep a bowl of water or some grains in your balcony and observe from a distance when birds visit
- Go on walks near your house and be mindful of the creatures around you (Use field guides such as *Birds of the Indian Subcontinent*, a tree identification guide for your area, etc. to aid you)
- Find a local nature group and share observations and stories



Scaly breasted munia



Above: Oriental white eye
Right: Red-wattled lapwing



4 | Zootopia: Utopia Or Not?

Prerna Sharma | Art by Asmita Sapre Ranganathan

What is a Zoo?

A zoo is a place where wild animals are housed within enclosures either for public display or breeding. The zoos that you see today have evolved from private collections which were designed only to entertain rich people. Modern zoos are designed for conservation, research, education, and recreation for each one of us. They also serve as wildlife rescue centers that are meant for long term care of wild animals which are usually rescued from illegal possessions by humans, circuses, abandoned, orphaned, injured, old and sick animals. A zoo provides a unique opportunity of introducing its visitors to different animals in one place within a short time. In India, there are more than 150 recognized zoos across the country housing more than 500 species (including endemic and exotic) of animals.

How does a zoo acquire its animals?

Most of the animals come from other zoos or are born in the zoo. Zoo animals are bought through exchange programs within the country or between countries. All recognized and certified zoos may lend or exchange surplus animals with other zoos to increase or maintain species and genetic diversity. When a live animal is confiscated from an illegal possession or illegal trade, it is sent to a zoo or a rescue center for treatment and care. No animal is captured from the wild to house in a zoo.

What are the role of zoos in education?

When we see an animal up close for the first time, our eyes and smiles go wider and brighter in amazement. Zoos educate their visitors in many ways:

1. Individual information boards and interpretive signage on each enclosure allow visitors to know the species better.
2. Regular awareness events like painting, photography, elocution, debate, and many types of writing competitions are organized on eco-days, especially for young visitors.
3. Screening of wildlife documentaries, distribution of informative brochures about the zoos and their animals, clay modeling, and other art workshops are also organized by zoos to help us connect with wildlife and related issues.
4. Guided zoo tours and safari are also organized to raise awareness.
5. Interpretation centers at zoos are designed scientifically to enhance the learning experience of the visitors. A multi-sensory experience at a zoo evokes curiosity among visitors. What do animals eat? Where do they come from? Why was that animal performing that behaviour? What does that animal call sound like?
6. Zoos provide a controlled and protected environment to conduct research on animals, contributing to species conservation.
7. Zoos are also a great place to study human choices and perceptions of wildlife and connected issues.

What are the roles of zoos in conservation?

Conservation breeding/ captive breeding is a scientific process of breeding animals outside their natural environment in zoos or breeding centers. It is called **ex-situ conservation**. Captive breeding programs help zoos to exhibit and exchange many species among different national and international zoos. These programs are always part of comprehensive conservation projects of **endangered species** (species that are threatened in the wild because of several reasons such as loss or degradation of their habitat, fragmentation, urbanization, industrialization, poaching for illegal trade, and climate change).

When a few individuals of a species are left in the wild, then such programs help to revive their population by reintroduction/restocking and captive breeding. Such programs are the only hope to preserve a species and conserve genetic diversity.

In India, many zoos across the country are contributing to conservation breeding programs and species recovery programs for a wide range of endangered species. There are around 73 endangered species that are being bred in different zoos. For example:

Red panda, Himalayan salamandar, snow leopard - Padmaja Naidu Himalayan Zoological Park (Darjeeling)

One-horned rhino - Assam State Zoo/Botanical Garden (Guwahati) & Sanjay Gandhi Biological Park (Patna)

Indian pangolin - Nandankanan Biological Park (Bhubaneswar)

Lion-tailed macaque - Arignar Anna Zoological Park (Chennai)

Mouse deer - Nehru Zoological Park (Hyderabad)

Asiatic lion - Sakkarbaug Zoo (Junagarh, Gujarat), Van Vihar National Park Zoo (Bhopal), National Zoological Park (New Delhi), Rajkot Municipal Zoo (Rajkot), Nehru Zoological Park (Hyderabad)

What are the criticisms against the concept of zoos?

"The only creature on earth whose natural habitat is a zoo is the zookeeper" - Robert Brault

During the Covid-19 pandemic, we all got a taste of confinement and captive life. We all felt uncomfortable, restless, and helpless at some point in time. Thanks to this, we now understand how a wild animal feels in captivity. There are many arguments against zoos:

1. Many zoos still function like 'animal collections' which is an outmoded concept.
2. There are only a few zoos that look after the welfare needs of their animals.
3. Only a small number of zoos justify their existence by their contribution to education, research, and conservation.
4. A day trip to a zoo is not the only option to see or learn about animals. There are many other informative alternatives to it such as reading books on wildlife, watching wildlife documentaries and videos that show animals in their natural world. Some channels on television are dedicated to showcasing interesting behaviors and stories about wildlife. A visit to a national park or a sanctuary allows us to see wildlife in nature.
5. Many studies have found that large-sized animals, such as lions, tigers, elephants, and eagles, need to travel long distances to find food, shelter, and mates. These animals find it harder to cope with captivity than smaller-sized animals, which can survive on limited resources.
6. Animals are unable to perform their natural behaviors in zoos and therefore they fail to represent their species in the wild. For example, nocturnal animals are displayed in the daytime. Animals in captivity often develop stereotypic behaviors which are not present in an enriched or natural environment.

7. Most zoos have housed animals in small and barren enclosures with a very limited choice of activities. They do not have many ways to combat or cope up with stressors.

8. Due to lack of space and other resources, most zoos prefer to keep a single or at most a few specimens of most species. Social animals which are group-living in nature find it very challenging to live in isolation with no stimulation.

9. Many zoos are filled with species that are doing well in the wild and are not threatened. Such zoos do not justify their existence except for public entertainment.

10. Housing exotic animals or animals that do not belong to that region or climatic conditions are very demanding and taxing for those animals, i.e., penguins in Mumbai.

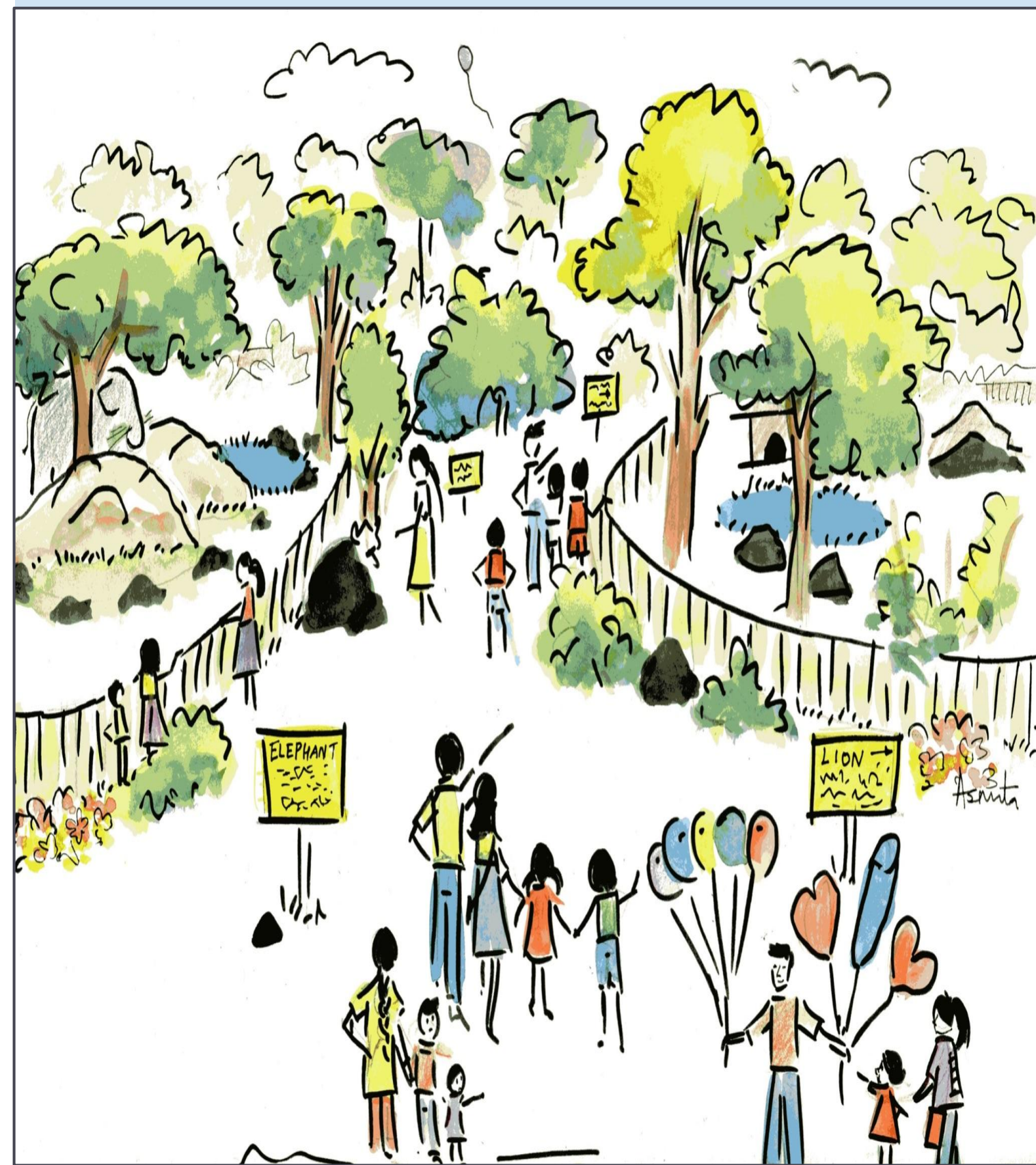
11. Studies have shown that very few visitors visit a zoo for education whereas most visitors go for social and entertainment purposes.

12. Many zoos face severe resource constraints and reflect a poor image of their management due to insufficient health care and inadequate feed supply to their animals.

What are our roles and responsibilities towards captive animals in zoos?

“Zoo: An excellent place to study the habits of human beings” — Evan Esar

The impact of visitors on animals in zoos is being studied in many zoos and animals. Our conduct in a zoo is of great importance for the welfare of the animals that are displayed for us. For example, teasing, threatening, or feeding them are punishable offenses. Similarly, littering, screaming, playing loud music or honking, smoking or consumption of alcohol, damaging any property, crossing beyond the safe zone and public pathways are strictly prohibited as they cause a lot of stress to animals.





A few zoos have started adoption programs in zoos where one can adopt an animal and bear the cost of its upkeep and food. Apart from paying the entry fees of zoos, you can always make donations or buy souvenirs from their nature shop and contribute towards the upkeep of captive animals.

Zoo Volunteer programs are also functional in many zoos. Volunteers assist in day-to-day management activities such as reception work, visitor management, zoo education programs, maintenance work, animal care, and health management.

Dear young readers, what do you think about visiting zoos?

I hope this article helps you to make your own decision. Please do share your experiences and observations of your visit to a zoo with us. We would love to hear your opinions as well.

5 | The Need for Co-Existence

Puja Deb & Debaprasad Sengupta |
Art by Meera Phadnis

Life is life - whether in a cat, or dog or man. There is no difference there between a cat or a man. The idea of difference is a human conception for man's own advantage.

- **Sri Aurobindo**

Everyone likes the concept of time travel, right? Alright then, let us travel back to the early Stone Age. The diet of the earliest hominins (the group consisting of modern humans, extinct human species and all our immediate ancestors) was probably somewhat similar to the diet of modern chimpanzees: Omnivorous, including large quantities of fruit, leaves, flowers, bark, insects and meat. There had always been a balance in the food chain and no resources had been over-utilized by humans. However, the pace of progress has led to the rise of greed in human beings. As a matter of fact, studies show that humans are just 0.01% of all life but have successfully destroyed 85% of wild animals for their hunger of materialism.

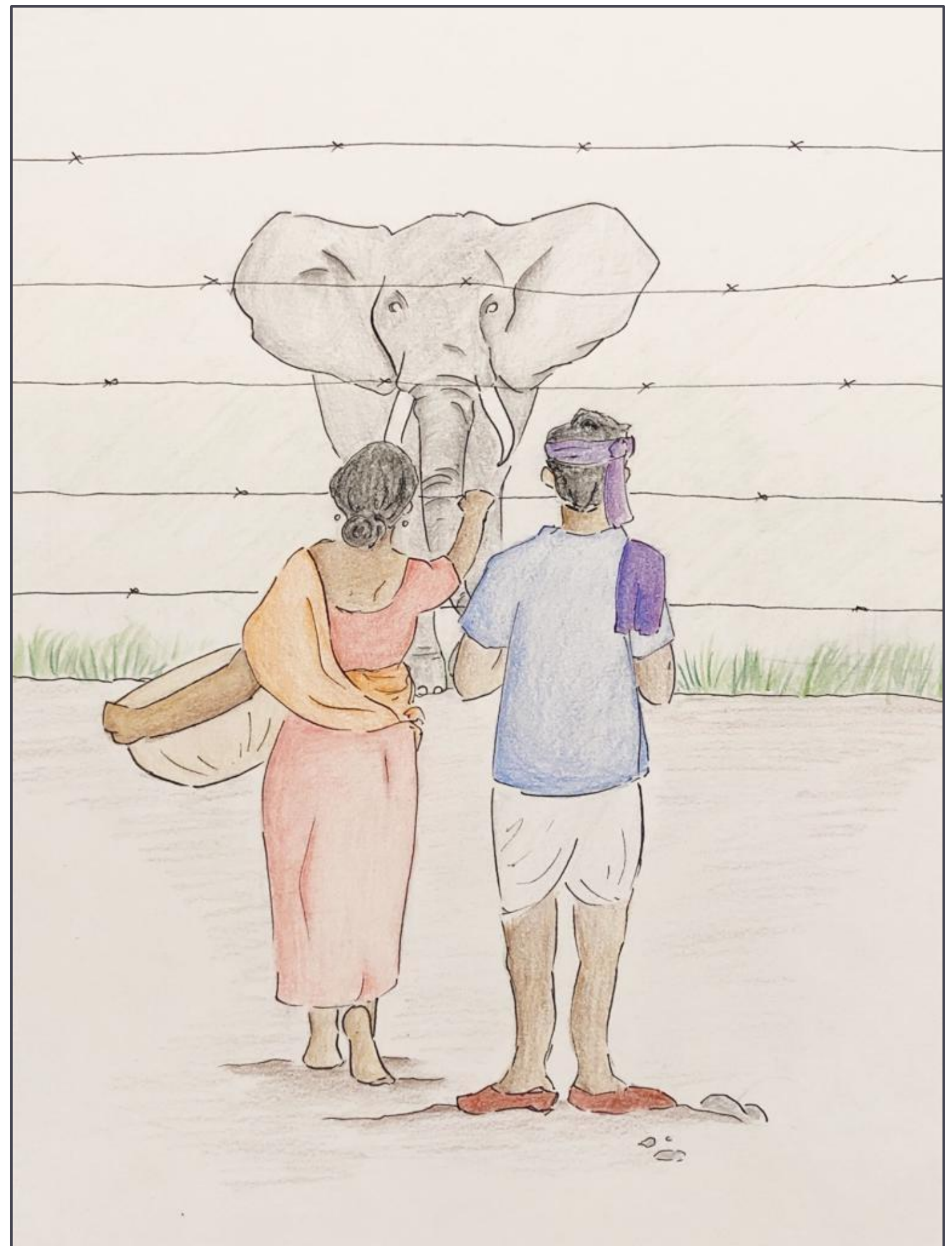
The modern era characterized by human-dominated landscapes certainly has reduced wildlife populations, and increased the chaotic climatic conditions. In this crowded world, both people and wildlife are competing for resources like food, space and other basic demands of life, due to which there are multiple encounters between people and wild animals. Sharing spaces with wildlife is not an easy thing, the result of which can be fatal to both humans and wild animals. When wild animals have reduced availability of natural food sources, this leads to seeking alternate sources. Human-wildlife coexistence refers to people and wildlife existing closely with each other. Interactions between humans and wildlife can be both positive and negative. Human beings have competed with wildlife for habitat and other resources and have successfully eradicated several species of plants and animals to be the most dominant force on earth. Human-wildlife conflict occurs when the needs and behavior of wildlife affect negatively on humans or when humans negatively affect the needs of wildlife. This is common near agricultural and other production landscapes.

Such conflict has significant consequences for human health, safety, and welfare, as well as biodiversity and ecosystem health. Some of the major causes of these conflicts are growing human populations and associated increase in agriculture (farming), land and resource use (expanding cities, mining, etc) technology, transportation, and energy (electricity consumption). As the human population increases and the demand for resources grows, the frequency and intensity of such conflicts increase. The key reasons for human-animal conflict are encroachment of human

beings in wildlife habitat for development and survival purposes as well as allowing livestock (cattle, sheep etc.) for grazing purposes in the forest area. Several laws and regulations have been established to address the issue of human-wildlife conflict. Various research studies are conducted to identify potential ways to reduce or prevent conflicts for the well being of both people and wildlife. There is increased recognition that efforts to change human behavior can be as or more important than simply reducing damage caused by wildlife. Empathy towards animals is the demand of the hour. To reduce wildlife encounters, people strangle wild animals, use snares to trap and electric fences to stop them from entering their areas. Human efforts to kill wildlife simply because they are considered a nuisance are not justified.

Wildlife has diverse and important values. From global economies to local livelihoods, they contribute various ecosystem services and support human well being. Wildlife plays an important role in balancing the environment. Wildlife provides stability to different processes of nature. We are also a part of wildlife to make ecological balance on earth. Sadly, we fail to understand the significance of wildlife in human lives and end up harming them. The only way to live together is finding a sustainable yet effective way to share resources and thus, live in harmony.

Other than laws and policies, we can also get involved in reducing human-wildlife conflicts by creating awareness, educating people about nature and natural resources and teaching others that sharing resources with other species is necessary. It is very important for all of us to understand that wild animals are not meant to be fed by humans.



Many negative encounters happen when people show over-enthusiasm in feeding wild animals. Conflicts can arise when animals get used to human presence or associate them with food, which is why you should never feed wild animals. Feeding wildlife changes how animals view people, to their detriment, and to ours. We need to remember that we share our habitat with wild animals, and that they were here first. We all have to share this planet, so we might as well get along. We can always participate in afforestation programs, wildlife seminars, webinars, workshops to better grasp the knowledge of these enchanting beings and learn about their nature and behavior. We need to keep in mind that the solutions to these conflicts should be beneficial to both the animals and the local human communities affected by conflict so that they can coexist. The time has come for us to step back and rethink how we can reduce and manage conflict between people and wildlife and foster coexistence for the benefit of both wildlife and people. The way we treat animals shows how we view people and indeed how we treat people.



An elephant attempts to cross the road (Image by Authors)

6 | A Chance Meeting

Written & Illustrated by Clarita Mendes

It had been hours since we left
wandering through winding paths,
in search of your kind.

The land lays barren before our eyes,
Shrivelled trees and scorched boulders
As the sun travelled over our heads,
we sought shade under woven branches.

A sudden noise startled us
Was it the one we were looking for?

Or

Spotted deers picking their way through fallen leaves,
Shying away from our sight?
Langurs feeding on wild fruits,
While the young ones watched us pass by with curious eyes?
We moved from rocky hills, through streams and flat lands.
Yet you evaded us.

A sigh of disappointment escaped my lips,
Would I ever get to see you,
uninterrupted by a thousand camera flashes?
The memory of you walking away from the noise men created.
They were only here for a couple of pictures,
and you gave them a treat.

Crouched, with elegance oozing out of your skin,
lapping up water to cool down from the summer heat.

The sun continued its journey across the sky,
While we waited, unhappy and disappointed.

The day was coming to an end
and it was time to go back home.

The forest filled with calls of birds
and huge vultures soared in the skies,
So, we busied ourselves with watching them.

Suddenly my world came to a stop.

A spot of orange, just a few feet away.

Paws laid flat against a tree, muscles coiled with strength,
Stripes that could have their own fashion magazine
Yet camouflaged so well with the surrounding.

There you stood, in all your glory.

Alone and unbothered.

Silence rang through the air,
except the sound of your claws ripping through leaves.

You walked towards us,
closing in the already short distance.

We remained watching,
Memorizing all your features
The white patch behind your ears,
And a tail that swayed back and forth.

The jeep roared back to life,
We had our fill, and it was time to leave.

As the world began to move,
I looked back at you with wonder in my eyes,
and maybe you saw me too.

While your fight for survival still continues,

I shall not remember you from scary stories

Rather

My mind shall go back to this day,
Goosebumps on my skin,
and a heart soaring through cloud nine.

People may not understand me,

But on a rainy day,

I shall sit with a steaming cup of chai,

and whisper in their ears,

"I had a chance meeting with a tiger."



7 | A Biologists' Adventure

Vishrutha Rao | Art by Sowmya Anand

As a child, I always sensed that there was more to the world than just buildings, offices and “jobs;” I always sought after whatever this was, in the small patch of wilderness behind my house where I felt it lurking. Something bigger and grander than our constructed human world seemed to live there, like a force that was ancient and wise, a force that spoke to me of untold magic. I was lucky to live in a safe campus with a group of equally curious friends to go on such adventures. I didn't recognize it then, but I had fallen in love with the natural world and had developed respect and awe for all the beings who inhabited it. They were simply part of the magic.

You might know the feeling. The feeling of curiosity, adventure and of surrealness when you find something that you think is beautiful, perhaps a colourful sunset in the sky? Or a clear starry night with a bright moon lighting up the world around you? Or even simpler feelings like a soothing breeze, the warmth of sunshine on a cold day and the sounds of birds, flowing water or music.. They are the moments that you want to stay with and feel to the fullest. The next time you feel this, be in the moment and allow yourself to experience and recognise this beauty in all of its forms. Because what you are feeling is not a fantasy.

As I grew up, I began to feel silly that I was “romanticizing” my love for nature but now, after working in the wild for six months, I think these feelings are the remains of our connection to the ancient world.

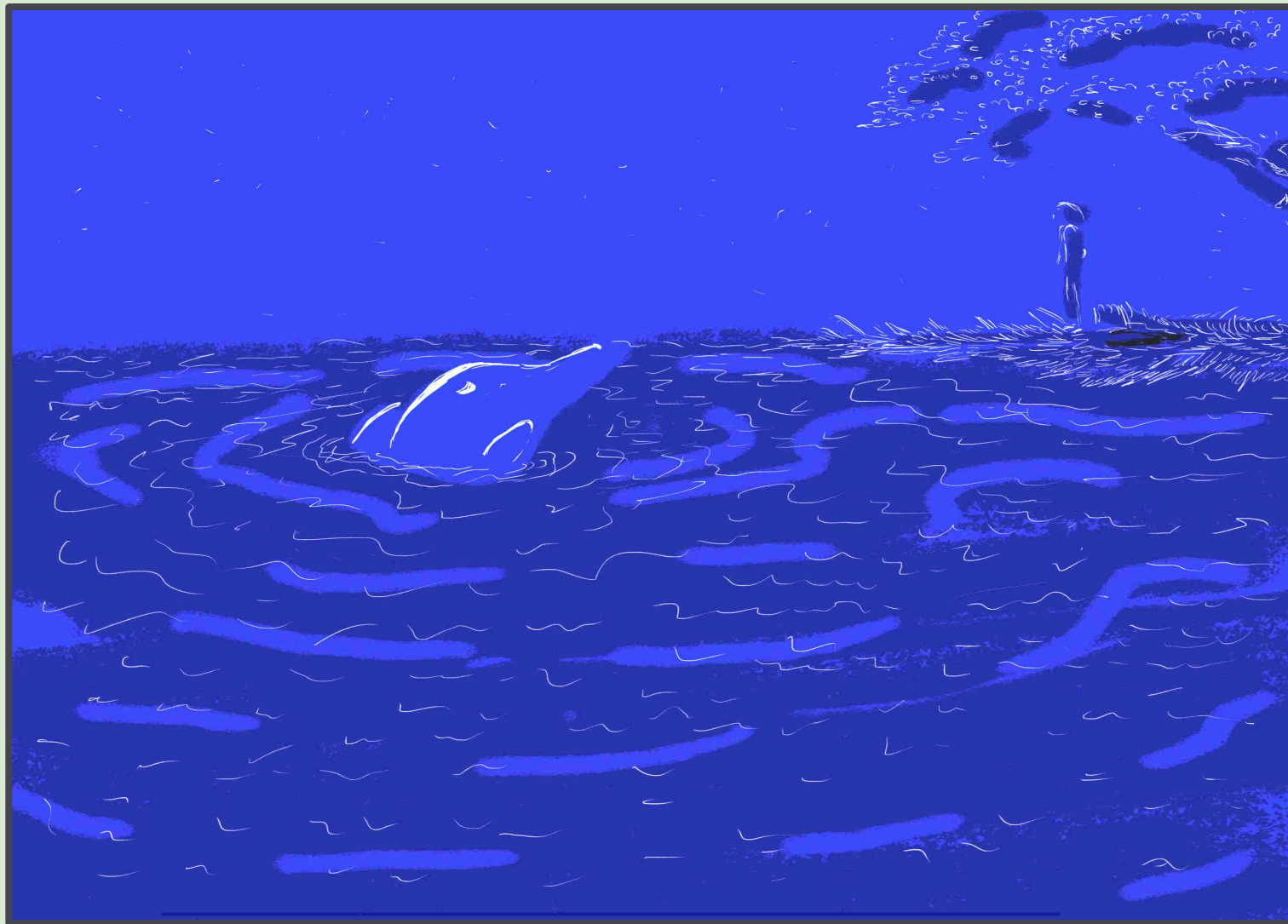
Here, allow me to explain myself through the story of the Ganges River Dolphin.

Dolphins are not just friendly, cute and curious animals of the sea, but are also extremely shy, sort of ugly and scared animals found in our Ganga and Brahmaputra rivers.

As part of a research team working for scientists, we spent most of our time in Assam, where the Brahmaputra River flows, either living very close to Kaziranga National Park (known for rhinos) or living on the river itself, in a boat that was big enough for 17 people. Our work consisted of gathering information by observing and counting dolphins when we saw them. Sometimes, we would go in search of them on the boat and count how many lived in the Brahmaputra, but other times, we would stay on the riverbanks and wait for the dolphins in order to observe them.

Now, don't imagine this to be as easy as it sounds. Think of how rivers look. Can you see the riverbed? Mostly, no, unless the river has absolutely no mud and is not very deep. The Brahmaputra, however, was very muddy, so we couldn't see the dolphins unless they surfaced to breathe. But if we can't see them below the water, then how do these dolphins see each other and the rest of their underwater environment? Well, the answer is that they have evolved to be blind creatures. Since their ancestors couldn't see underwater either, their eyes no longer served a purpose and now the calves (dolphin babies) are born blind with small pinholes where the eyes once were. You see, although these “river” dolphins are relatives of the sea dolphins, they have lived in the rivers for so long that they evolved to be very different in appearance and behavior.

When I remember my time along the Brahmaputra, it's not studying dolphins that stayed with me, but the small moments that took place. Every evening, after a tiring day of work, we'd pack up our scientific equipment and sit on the boat deck to have a hearty meal while watching the sun sink into the river. We'd curiously search the riverbanks near the boat for the pugmarks of wild animals and sometimes we'd even find those of a tiger that might have passed by earlier in the day.



And those nights that we spent on the boat? We used to come up for dinner and eat hot food on a cold quiet night, floating on the river under the stars, surrounded by forest. It's these small moments that remain.

I often recall one such night on the boat when I saw a bright white light streaming inside, and, yet again, I felt that familiar call of magic. I pushed through the door and climbed up to the brightest night I'd ever seen! I had entered a different world. The moon was so bright that it was bleeding all across the river, making my surroundings shimmer, much like how I imagined a magical land would look. The surrounding forest was quiet, peaceful and crisp, except for the sound of the flowing river. My senses were heightened; I was excited. I climbed to the top-most deck of the boat to witness this serene beauty and I remained there for a while, until I heard splashes in the shimmering water. I turned to find a couple of dolphins sharing that moment with me (they were probably hunting for food or frolicking). And it was at that moment, I realized, I had become part of the magic.

Maybe it's the simplicity of such connective moments that make them so profound to the human heart. But since that moment, I know exactly what I am fighting to defend. It is no longer an abstract feeling or book knowledge alone that drives me to work for our planet's wellbeing. Such moments are like small glimpses of magical reality that reminds us of the larger world we are part of. Human creation is indeed fascinating and commendable, but this ancient world has more grandeur than what we perceive, and we are a part of it.

So, here's your mission should you want it: find a career you are passionate about and make it such that our earth and oceans do not suffer because of it. Let's revolutionise the way human society functions by reintroducing nature at our doorsteps because, child, that will be the only way we can dream of surviving.

And if it brings magic back into our lives, then isn't it worthwhile?

8 Expedition Talley Valley

Anurag Mishra | Art by Muskan Gupta

The northeast of India remains shrouded in mysteries, disconnected from mainland India till very recently. Situated at the conjunction of different geological masses, the region hosts incredible biodiversity, not seen anywhere else in the world. I was on my way to **Talley Valley Wildlife Sanctuary**, situated in a plateau near **Ziro**, a town in Arunachal Pradesh. Monsoons were at their peak at this time of the year in Northeast India, and the resultant mist and the occasional mudslide impeded our journey almost every hour.

I had been involved in a long-term project studying the altitudinal distribution of herpetofauna (snakes, frogs, and lizards) across the Eastern Himalayas. Using data from field surveys and insight from DNA sequences, we hoped to better understand how geography influences the distribution of organisms. We reached Ziro late in the evening, and the exhaustion from the journey meant we curled up into our sleeping bags early.

Ziro is the land of the Apatani tribe, famed for their innovative and sustainable practices in agriculture. The farthest our field vehicle took us was **Mani Palyang**, a small village at the edge of the sanctuary limits. We parted ways with the driver and began the 8km trek up to **Pange**, which was to be our base camp for the expedition. The short burst of sun had brought out numerous species of butterflies. Once in a while, we came across *mithuns* — large, domesticated bovines (members of the cow family) kept by inhabitants of hill forests, which are an indicator of social status and



serve as dowry during marriages among the Apatanis.

Surveying for frogs and reptiles happened after dusk, and we had the mornings to amble leisurely in the jungle, watching birds and butterflies. Green rat snakes are common around the camp. They are a spectacular shade of green with black stripes along the length of the body. Flycatchers, leothrix, warblers and babblers flitted about in the forest understory.

The vegetation at this elevation is typical of tropical rainforests — high trees with dense canopy, so dense that sometimes while looking up from jungle trails, one cannot see the sky. Talley Valley has sizeable populations of the rare and elusive clouded leopard. But, the peak of monsoons meant vital signs that could give away its presence, such as poop or paw impressions in the soil, would be washed away.

After a few nights of surveys around Pange, we made the decision to go deeper to the Valley Camp, a rough 12km trek uphill through abandoned, non-motorable trails. On the way up, the thick rainforest canopy gave way to more temperate pines and silver firs. We reached the Valley Camp in the late afternoon. The **Nimapema** mountain range of Bhutan looked majestic in the distance against the setting sun. Vegetation is mostly restricted to stunted shrubs and bamboo; the ferns, orchids and lichens, all more discernible now, due to the absence of bigger trees. The bamboo here is a different species found only in Talley. The animal communities are different from lower elevation Pange, and I was particularly thrilled to see many species of butterflies for the first time.

We returned to Pange after two nights in the Valley Camp. As far as the Clouded Leopard was concerned, the trek down was as luckless as the trek up. However,

we came across a Jerdon's Pit Viper, a typical high elevation species in this region, but hard to spot due to its ambush predatory behaviour.

Back in Pange, we met the Range Officer Mr. Reddy Bei, who came for his fortnightly visits to the camp. The conversations with this jolly man left me very hopeful for the future of these forests. He also invited us to attend **Dree** — the annual harvest festival of Ziro, which brings together the entire town of Ziro. Sacrifice rituals are performed to appease the Sun and Moon gods and avoid famine. The rains were good and the harvest bountiful, and the entire town was in festive spirits as they ate, drank and celebrated.

Even though I had been there for just two weeks, the camaraderie we developed while living and working together made it hard to say goodbye to these wonderful people. Talley and the Apatanis, with their infectious passion for life and nature, had left an indelible impression on my mind and heart. I was humbled by the generosity of their vast knowledge about the jungle, and their determination to save this land they call their own. I returned with memory cards full of photos, notebooks filled with data (hopefully useful!) and a heart filled with sincere admiration for the cheerful and passionate Apatani way of life. There was a tinge of sadness at not having seen the Clouded Leopard this time. But, for now, I would rest easy knowing it is in a safe haven in Talley, under the watchful vigilance of the Apatanis.

9 | The Swinging Ape

Parvathi K. Prasad | Art by Rubina Rajan

In a patch of forest, where trees stand tall
On a winter's morning we walked;
With every sight and every call,
The forest, to us, talked.

But, with one such call, all else drowned;
It came from high up in a tree,
We hurriedly walked, following the sound,
To find hoolock gibbons, a family of three.

One of them instantly caught my eye --
A male, whose coat was a brilliant black.
He delicately sat in a tree nearby,
Occupied with a leafy snack.

Above us was the female, light brown;
Her blackened face resembled a mask.
She hung by an arm, looking down,
As though it were the simplest task.

I noticed that around her belly,
Was wrapped a little something buff;
The third member of this family,
Was her little baby, a ball of fluff.

I stared after them, the baby and the mother
Paying no heed to my neck's crick,
As the female swung from a branch to another
At once, graceful and acrobatic.

Gibbons are creatures of the trees,
In treetops, poetry in motion.
But, on land, they are not at ease,
And this matter demands some caution.

As agricultural lands and infrastructure
Rapidly replace our forests,
A gibbon's home may shrink and fracture
And its movement likely arrests.

Yet, as I write, I am filled with hope
That in India's changing landscape,
We will always ensure that there is scope
For the future of our only wild ape.



10 | A Night In The Forest

Anand Meharwade |
Art by Asmita Sapre Ranganathan

It was July, and herping season was almost upon us! Do you know what herping is? It's when we head out in the night to look for herpetofauna, which includes snakes, frogs, toads, lizards, and many more amphibians and reptiles.

Our herping trips went well until August. A week-long torrential downpour occurred across entire Uttara Kannada district of Karnataka, which created numerous calamities. Floods formed, landslides occurred, and roads were barricaded. A week passed by, and we were back in the field. The forest bustled with life and activity.

One night, we went herping with a naturalist, Omkar Pai. He was well-known for his knowledge about herpetofauna, despite being quite young. With a total of four people ready in gear, we travelled south from Sirsi towards Yana. We tirelessly traversed through the wet forest in search of wildlife.

As we ventured further far away from the human landscape and deep into the forest, the air became cold and damp. We then soon followed a forest trail that led us to a rare, hidden ecosystem: the *Myristica* swamps.

Myristica swamps, along with sacred forests, are the most important parts of the rainforests of the Western Ghats. These unique swamps are present along forest streams and are home to many unknown animals and plants. The trees associated with these swamps are highly threatened. These kinds of forests are found in very few places, which makes them even more

important to protect. Our senior companion took the lead, walking carefully along the side of the narrow stream as he explained how these streams that flow year-round and the cool, dense canopy cover create the perfect habitat for survival, courtship and egg-laying of **endemic** frogs, which are only found in these areas of India. The Kempholey Night Frog, which we encountered that particular night, lays its eggs on leaves or low-lying branches near the water.

The occasional canopy opening gave us a glimpse into the clear starry sky and, apart from the sound of the trickling stream, which was joined with the croaking of the frogs, the night was quiet and peaceful. Thanks to our noisy rustling, the croaking stopped. Without their calls to guide us and thanks to their camouflaged bodies, finding frogs became a game of hide-and-seek.

Suddenly, danger approached! The creature wasn't large or a ferocious beast, but a foot-long reptile, the Malabar Pit Viper, a fascinating snake that calls the swamps home. With a range of camouflage colours, these creatures are nocturnal and live in the dense moist evergreen forests of the Western Ghats. The viper in front of us was green and lay four feet above the ground, coiled around a branch in an S-shape. Their ability to sense heat and sudden ambush attacks make these vipers truly remarkable. This was our first viper sighting of the season.

For frogs, the stream was an ideal place for survival and breeding, and for the vipers, this was the perfect hunting ground. The frogs continued to croak, totally unaware that a fearsome ambush predator had its eyes on them all along. This is nature's domain: a world between life and death.

After that exciting encounter, we found a tea stall on the way to our next route. The stall owner was chatty and friendly and recounted his observations of a possible habitat of a frog species. Under his direction, we arrived at the location. The hill wasn't steep and there was a wider stream at the bottom. We explored this place, but we heard nothing unusual.

Disappointed to hear nothing new, we decided to leave. But suddenly, the whole valley was filled with melodious notes. A frog! This frog had an orange-brown body, with a golden iris surrounded by an iridescent blue ring. The Yellow Bush Frog or Blue-eyed Bush Frog is an endemic frog species that shines like a gem in the dark night. Who knew the chai-waala would lead us to such an interesting species!

On the half-submerged rocks in the streams, we found dancing frogs displaying their dance moves to woo females and compete with other males. Those flexible leg movements are bound to inspire many questions, yet little is known about them. We also happened to see some glittering objects in a trench below. Upon closer inspection, we found them to be eggs of a particular spider with an intricately designed web.

Just as the night brings life to nocturnal creatures, so does it bring about the fear of the unknown. The shadows of the trees and the rustling of leaves can rob one's sense of thought and perception, particularly at night. In the words of Earl Nightingale: "Whenever we're afraid, it's because we don't know enough. If we understood enough, we would never be afraid."

While part of our research involved documenting frog diversity, we also assessed the threats that frogs and their habitat face. Apart from the numerous road kills we found, *Myristica* swamps undergo immense pressure as people continue to build homes and convert forests to farmland. Climate change is another big threat to swamps. People depending heavily on the perennial streams for agriculture use and construction of unnecessary bridges have drastically changed the landscape. Not only do these streams sustain animals and plants living both in the water and in the forest, but they also play an important role in water and soil conservation and in preventing floods. With bittersweet feelings, we left the *Myristica* swamps that day, unsure of what lies ahead for this ancient, highly diverse ecosystem.

These swamps provide a glimpse into the biological history of nature, and we must prevent them from collapsing.

The question is not will we take action, but *when* will we take action.



11 | Becoming a Wildlife Biologist

Team YFN in conversation with PhD student Chetan Misher

At home in the harsh desert landscape of Rajasthan and equally fond of the Banni grasslands, **Chetan Misher** isn't afraid of getting up close and personal with wildlife of these unique regions. A PhD student at ATREE, Bangalore and a trained Wildlife Biologist, Chetan took a few minutes to speak with the editors of Youth for Nature about his journey in Wildlife Biology and tips for students interested in entering this field.

What do you do? What would you say your job entails?

My work entails studying mammals in desert ecosystems and how the changes in the landscape, specifically due to invasive species, are affecting native mammal species in the landscape.

What kinds of animals do you study?

Mostly small and mesocarnivores, and rodents and vultures. I focus on the various interactions that occur in the system and how these interactions are being affected by invasive species. My species include rodents as the prey community, foxes and jungle cats as the predator community, and vultures as the scavenger community. How are these different guilds affected by invasive species?



A desert fox captured by Chetan Misher

What was your educational journey to enter this field?

I did my B.Sc. in Biology and then my M.Sc. in Wildlife Biology. In M.Sc., we studied ecology, environment, basic biology, taxonomy, and others.

What is the most important thing to know for someone considering wildlife as a field?

If you want to take up a Masters in Wildlife Science, most institutes allow people of all science backgrounds to join. Of course, people from a biology or botany background will find it easier! Also, wildlife as a field involves people from many

different backgrounds. Social science, geospatial analysis, engineering tools to create techniques for conservation monitoring, and communication are some fields that are now important for the smooth functioning of wildlife conservation. Interdisciplinary is the keyword of the future, and most conservation work takes place on such a large scale nowadays that interdisciplinary studies are critical.

Why do you like your field?

Well, animals are nice and mind their own business. Frankly, I think that we all live in the same landscape, so why should only one species - namely humans - get all the attention? We live with many other species, and we are affecting animals' day-to-day lives too. It is important to know about them, and on a larger scale, we are affected by landscape processes, wildlife, and natural habitats, and we need to understand the interconnectedness between humans and nature better.

What options for jobs exist for students graduating with a degree in Wildlife Biology?

There are actually plenty of options. You can be a professor or lecturer. You could be a zoologist, or work as a consultant in various organizations. These days, climate and biodiversity are at the forefront of the work done by many organizations in India, so there are definitely opportunities. But most of all, you have to really be interested in it. You should not just join this field to get a job. But if you truly want to find something in this field, you will easily find something. It's about how passionate you are about this field. If you are passionate, you will definitely get something. Every year, universities are opening new courses on zoology, environment, and wildlife. The future lies in these fields.



In conversation with Chetan Misher

12 | Monkey See, Monkey Do

Priya Ranganathan | Art by Meera Phadnis

The leaves rustle wildly, and a hornbill flaps its wings irritably, hopping to a higher branch. The rustling grows louder, and now a booming *oomph-oomph* echoes around the humid, moist rainforest. You can almost taste the heaviness of the air, the water waiting to pour down from the low-hanging clouds above. You kneel down on the dirt path, your knee resting against soggy leaves and fallen berries, and peer up between the swaying branches. High up in the Hollong trees, you spot something cream and frosted gold, watching you silently.

A black faced monkey with elegant cream-and-peaches fur, its long tail swaying as it dangles from the branch, stares back at you curiously. It looks so much like the grey langurs that you see in other parts of India that you wonder if it is a uniquely coloured member of that species. But no, your guide tells you, this is an entirely different animal – the rare and endangered **golden langur**.

Found only in a small part of western Assam, one of the most forested states of Northeast India, the golden langur is worshipped by the people of the Himalayas. This langur is rarely spotted by visitors, living high in the trees and rarely coming down to the ground. They love eating fruit, especially mangoes, guavas, and berries.



The golden langur is in danger of going extinct because its habitat is constantly shrinking. As tea plantations, towns, and agricultural fields continue to grow where forests used to stand, the golden langur continues to lose its home. This monkey has nowhere else to go, trapped slowly by development on all sides. You click photographs quickly, and the langur leaps away lightly, startled by the sound of shutters clicking. It's time for you to rejoin the group.

Let's now take a bumpy bus ride through the winding, narrow hill roads from Assam, where you met your first primate, crossing the border into lush Mizoram near Ramnathpur, crossing the Tlawng River multiple times until signs for Dampa Tiger Reserve appear on the horizon.

Inside Dampa, you walk cautiously, keeping your eyes peeled for the tigers that prowl in the dense forest. This tiger reserve is so green, so full of life, that you hardly know where to look! But suddenly, the forest guard accompanying you holds up a hand. You halt, scanning your surroundings frantically. "Look up!" the guard hisses. You tilt your neck back. There's a long tail swishing above you, a tiny face peering down at you! Furry cheeks, just like an untidily bearded man, and a funny little face with beady black eyes – it's the **Pharyre's leaf langur**!

This langur is found across Southeast Asia and Northeast India, fond of eating fruit, flowers, and leaves. It gets its name from its fondness for leaves, you see. Did you know that leaves and flowers have a lot of protein and give energy?





When hungry, this monkey travels long distances searching for tender young leaves to snack on. Now here's a great example of a true foodie!

It's time to catch a flight to your next destination –the Western Ghats of peninsular India. The Western Ghats are elegant, sloping hills, holding species that hint at India's ancient past, full of gurgling, laughing rivers and tall evergreen trees. Many tribal communities live here too, just like in Northeast India, and they worship these forests, protecting them from development.

Up next is a shy, unassuming monkey found in certain parts of the Western Ghats. Your destination for today is the Sharavathi Lion-tailed Macaque Wildlife Sanctuary, nestled in the most forested district of Karnataka between two powerful rivers – the Sharavathi and the Aghanashini. This tropical paradise is the home of the **lion-tailed macaque**, a large black monkey with a tufted tail, just like a lion's tail! This macaque has a distinctive silvery mane around its face (another lion-like trait!), standing out from its otherwise-black fur. It lives in the upper parts of evergreen trees, where it feeds on fruit, leaves, insects, and sometimes small animals. The lion-tailed macaque has been losing its forest home to plantations of teak, coffee, and tea, and because it prefers to avoid humans, this monkey finds itself stranded in tiny patches of forest, looking for a way out. They live in the dense rainforests of Tamil Nadu, Kerala, and Karnataka, but as rainforests continue to shrink,

it is important that we take action to protect the lion-tailed macaque and its home.

Thinking about the plight of the lion-tailed macaque, you catch a train from Sirsi and travel south. Our next destination – the Nilgiri Hills. Named for their beautiful bluish hue that is easily sighted from a distance, these hills are home to over 100 mammals and are rightly part of the Nilgiri Biosphere Reserve. This means it is home to more wildlife than most other parts of the world!

Here, you prepare to search for our next monkey. It's large, built like a grey langur, but black like the lion-tailed macaque. It's hooting, echoing call haunts the forests in the early morning, amidst the mist and low-hanging clouds. You trek up the hilly trails, taking in the expanses of colourful flowers and the birds that flit and flutter around them. A peacock struts self-assuredly across the path.

You hear the echoing call of the langur before you spot it.

“There it is!” A black shape can be seen, faint in the thick mist. A long tail, rounded at the end, and thick black fur distinguishes this from the other monkeys in the region. This is the **Nilgiri langur**, one of two rare monkeys to call the Nilgiri Hills home. The other, of course, is the lion-tailed macaque. The Nilgiri langur is in danger of being hunted for its fur and flesh, which is used in traditional love potions. But this monkey is very important for the health of the Nilgiri ecosystem. It feeds on fruits and helps plants grow by dropping





seeds in different parts of the forest, allowing for new trees to grow. If this langur vanishes, the forest will fade away as well.

And now, finally, satiated with the forests of mainland India, you hop aboard a rickety helicopter headed to the Andaman and Nicobar Islands. Today, Nicobar is your destination. Here begins your search for the mangrove monkey of India – the **Nicobar long-tailed macaque**.

Fond of coastal forests and mangrove swamps in Great Nicobar, Little Nicobar, and Katchal islands, this macaque is found on the ground more often than its other monkey relatives on mainland India. While it prefers eating fruits and nuts, it is also known to eat crabs. These monkeys are hunted as they are considered pests by settlers, who are angry about damages caused by macaques on coconut plantations. They are also hunted for food by the indigenous Shompen people of Great Nicobar.

A fun fact about this mangrove monkey is that it can swim quite well, an excellent adaptation for a creature whose home is an island!

As you walk along the beaches of Great Nicobar, admiring the sunset and waiting for your mobile phone to pick up sufficient signal to call the helicopter, you hear the faint call of the long-tailed macaque from the depths of the dark, damp swamp forest. Darkness is falling quickly, and it is time for you, primate that you are, to return home too.

The Fig Tree's Love Story

Navya K.K | Art by Fatima Jableen

Most lovers of dried fruit must have had a bite of dry fig. Did you know that when eating a fig, you are becoming a frugivore (animals dependent on the nutritional composition of fruits) and possibly an entomophage (the human practice of eating insects)? If you are getting your fruits from your local market then you are not. But if you are eating figs from a wild fig tree then you are definitely eating some decayed wasp too! Let us see how.

Have you ever seen a fig tree with bunches of fruits? Let's have a look at it. You may see a fig tree in the middle of a deep forest. Watch carefully, the tree itself is an ecosystem! You can hear the melody of birds, the buzzing of bees, and the chorus of cicadas. You can see the marching of ants around the tree barks, voracious caterpillars eating fig leaves, spiders weaving webs in a hurry and so on.

The tree bears bunches of green 'fruits'. These bunches are not the exact fruits, instead they are the inflorescence, meaning a group of flowers. One such inflorescence bundle with green color and fruit shape is called **syconia**.

Don't flowers need to be attractive and fragrant? Every flower needs a pollinator but what will happen if the tree is hiding the flowers inside a cavity? Well, it is waiting for a special guest - the fig wasp. When the female flowers are matured, the fig tree sends an enticing aroma that attracts only female fig wasps specific to that fig tree. Fig wasps are the specialized pollinators of fig trees. The intimate relationship story of fig and fig wasp starts here. The fig wasp enters each of the 'fruit' or syconia through a tiny opening at its **apex** (tip). Even though the fig wasp is a special guest, the entry through the pore is not an easy task. It will lose its wings and antenna while going through the opening.

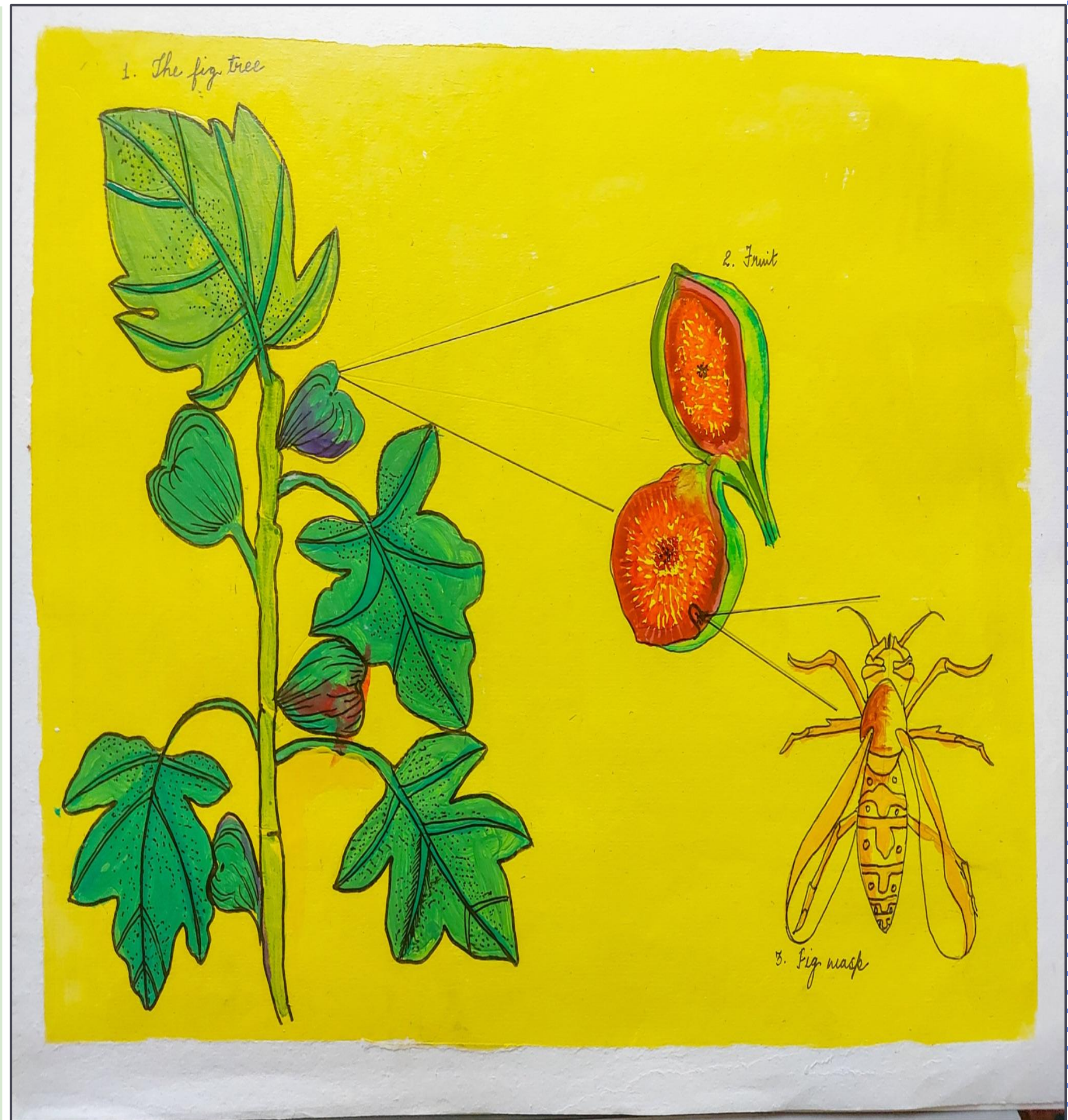
The wasp goes into the secret garden with a special gift too - the pollen from another fig tree! As its antennae and wings are lost, life outside is now impossible for the wasp. Hence it lays eggs on some flowers inside the syconia. While doing so, it pollinates flowers with the collected pollen from another fig tree. The life of a fig wasp ends after the completion of egg laying.

The flowers act as a breeding nursery for the laid eggs. The males hatch first and once they come out, they quickly mate with the females which are still in the cocoon. Their other duty is to help the females to fly away from this fig nest. They start carving an exit for the females and then the males die inside the fruit itself. Meanwhile after mating, females emerge from the cocoon and collect the pollen from the matured male fig flowers and simply escape through the hole made by their mating partners. The female, looking to provide a nursery to her and her siblings, carries the pollen to another fig tree.

But if she does not carry the pollen, the tree she visits has a mechanism to punish such a 'lazy' wasp. The tree drops such fruits and it decays in the soil, so that the eggs laid by 'lazy' wasps can't hatch. The syconia, after the emergence of wasps, becomes a sweet and attractive fruit with seeds ready for disposal.

The benefit of this exclusive relationship is that both the partners can evolve specific and efficient strategies and adaptations to support each other. The female loses its wings and antennae but in turn gets a breeding nursery with extreme protection. The tree must wait for the fig wasp, but it makes sure that the pollen only from another fig tree goes into the flowers.

The relationship of the fig wasp and the fig tree could end here but if this story were so smooth, then each and every fig wasp egg would emerge and there would be more than an abundant number of fig wasps. But nature does not allow that. It interferes in this relationship with the help of certain parasitic wasps. We learnt that the entry to syconia is allowed only for fig wasps so how can this parasitic wasp attack a fig wasp egg? Try finding the answer for yourself! There are numerous fascinating stories from the world around you. Try to observe them, be gentle and kind with every little form of life around you for each creature has its own unique purpose within the mystical realms of nature!



14 | The False Panda

Deepthi Saravana | Art by Meera Phadnis

Kung Fu Panda is one of the most popular animation franchises, especially among kids. Many kids can recognize what type of animal a particular character is. Do you know which animal Master Shifu from Kung Fu Panda is? He is a Red Panda and not a Raccoon! It was misunderstood that Master Shifu is a Raccoon because of his appearance but later, he was confirmed to be a Red Panda.

The Red Panda is one of the most amazing and beautiful species on Earth. They are red in color and have a bear-like appearance with a fluffy tail. The fluffy tail helps it maintain balance during walking and while climbing tree branches and its thick fur protects it from harsh weather conditions. Its ancestors date back to tens of millions of years ago and its present habitat is in the Himalayan forests. Red Pandas are mainly found in Nepal, Bhutan, Burma, Northeastern and Southwestern parts of India. The word "panda" is derived from the Nepali word "ponya" meaning "bamboo eater" or "bamboo footed" and although they share the same name as pandas, they are not actually related but similar to each other in the aspect of diet - a preference for bamboo. They also like to eat fruits, roots, berries, grasses and eggs. They are called vegetarian carnivores. Though carnivores are meat-eating animals, this doesn't necessarily mean that they eat meat. Red Pandas descend from the meat-eating ancestors, but the present-day species are mostly omnivores and vegetarians.

Red pandas live in hidden habitats that are not easily accessible. Over time, they developed false thumbs (the extension of wrist bones)

which helped them climb trees easily. They move around during the dark hours. A group of Red Pandas is called a pack, though they seldom form packs. The Red Panda prefers to be alone and comes together only for mating. Females (also called sows) give birth in the spring and summer seasons, preferring to give birth in tree hollows. Before the birth, females collect brushwood and grass and then build a nest to protect the young ones. The males are not involved in caring for young ones after birth, since both males and females can have multiple mating partners.

As the birth rate of this animal is low, its population is drastically declining and therefore it has been recognized as an endangered species. Red Pandas fall prey to Martens and Snow Leopards. But, the main reason for its population declines is attributed to environmental destruction, climate change and expansion of agricultural activities. Humans also kill Red Pandas for their fur which is used for commercial purposes. There are less than 10,000 red pandas left in the world and of this, about 5,000-6,000 Red Pandas are found in India.

These animals are great escape artists. Rusty the Red Panda once escaped the Smithsonian National Zoo and his search attracted internet users to use the hashtag #findrusty until he was found in a nearby neighborhood. Similarly, they have also escaped from many other zoos in Birmingham, London, Germany and Rotterdam. The Red Panda which escaped from Rotterdam was found dead shortly after the search began. Though its death was reported, many people claimed to have seen it alive. People mistook cats or dogs for the escaped Panda and it is said that people who wanted to see the Red Panda, saw one. This psychological observation was called "The Red Panda Effect".

One of the best ways we can help prevent Red Pandas from going extinct is by educating ourselves and others about them. Protecting their habitat by reducing deforestation in turn protects them from their predators and is the most effective way to prevent their population decline.

The Red Panda has been recognized as Sikkim's state animal and was also considered the mascot of the Darjeeling film festival. Protecting the entire Red Panda habitat will help us save other endangered animals as well. In order to conserve Red Panda species, many organizations, especially NGOs, are taking suitable mitigation measures such as creating protected areas and encouraging more deployment of forest department staff to monitor their presence.



A red panda eats a bamboo stick
Image by Mathias Appel



15 | An Egg-celent Meal...or Not?

Surya Narayanan | Art by Aditi Ramchiary

Snakes are one of the mysterious and most misunderstood creatures in the world, of which humans are most scared. Snakes are found in almost every part of the world and in all climatic conditions, except a few regions where they are absent like Ireland, New Zealand and Greenland. Scientists say that snake-like animals first appeared around 130 million years ago, and the true snake likely evolved around 110 million years ago. Interestingly, unlike now, early snakes are believed to be completely **fossorial**, meaning that they lived underground and only rarely came out to the surface. Scientists also believed that the snakes evolved from a four-legged lizard-like ancestor animal and eventually lost their limbs when they adapted themselves to burrowing and underground habitat.

Till date, some of the oldest known snake groups that are still living are burrowing snakes. However, over time, snakes came out from underground and explored the possibility of living above ground, wanting to make use of the resources available there. While early burrowing snakes are believed to be smaller in size, early terrestrial snakes are likely much larger in size. These are the pythons, anacondas and other related large sized constrictor snakes that we see today.

Once these snakes came out of the ground, they dispersed across the world and adapted themselves to most available habitats. From the deep sea to the deserts and from the coldest mountains to the wettest forests, today

we can see snakes in almost all the habitats. Some of these snakes specialized to live in these conditions. Also, this coincides with human dispersal; human beings are another species that adapted to live in most parts of the world and all climatic conditions.

This is likely one reason why we are more scared of snakes and have hundreds of stories about these poor little creatures. Snakes' food is one of the most interesting topics, and several hundred stories and assumptions lie about their feeding ability and behaviour. While there are stories of how anacondas can swallow an adult human, there are also stories in India about how much snakes enjoy eating eggs. Although the tale of anacondas eating humans still remains a story with almost no evidence, the belief about snakes eating eggs is interesting, and both true and false.

So, do snakes eat eggs?

To get an answer to this question, we first need to understand how snakes eat and a little about their basic dental set up. We all know that snakes have two large fangs which they use to inject venom into their prey. But apart from these, most of the snakes found in the world are non-venomous and do not have true fangs. All snakes, including venomous snakes, have a series of two pairs on the upper jaw and one pair in the lower jaw that are called maxillary, pterygoid, palatine or mandibular, depending on the bones it is present. All of these teeth are sharp and inwardly- pointed, which helps snakes grab their prey and not leave it, but on the other hand these teeth only support swallowing behaviour. Clearly, such a dental arrangement does not support eating hard shelled eggs and breaking them using their teeth.

Then where does the story of snakes eating eggs come from, and can snakes still eat eggs and somehow break them?

The answer is, not all the snakes can successfully feed on eggs and break them, but there are a few snakes that evolved special adaptations in their bodies to

feed on eggs. One such group of snakes is the egg-eating snake, found in India and Africa, that are specialized egg eaters. The species that is found in India is the Indian egg-eating snake (*Boiga westermanni*), one of the rarest snakes in India known to feed only on eggs. Although we now know that the snakes cannot break the shell with their teeth, these snakes do it with the help of their unique vertebral projections. These snakes swallow eggs and place the egg in the front portion of the body between their special vertebral bones that have a sharp knife-like structure pointing inwards. These special bones help them break the egg shell from inside the body and swallow the contents, while broken egg shell bits are spat out by a process called **regurgitation**. This special adaptation in the physiology makes them specialized or true egg-eaters in the snake world and this is not seen in any other snake in the world.

But do only *these* snakes eat eggs?

No, not really. There are a few other snakes that are known to feed on eggs, but none of these snakes have the unique adaptation that the egg eater snakes have. Some other relatives of egg-eaters in India (cat snakes) and some keelback snakes (water snakes in general) are also known to feed on amphibian eggs, but these are not shelled eggs, so it's all about swallowing and digesting them. Beyond these, Kukri snakes that are found in South and Southeast Asia are also known to feed on small eggs, but these are not specialized egg feeders. The name *Kukri* comes from a uniquely shaped Nepalese knife which looks like the posterior (back) teeth of Kukri snakes. These teeth are believed to help these snakes break or cut the small eggs they feed on. The most common “egg eater” snakes (falsely called thus) are the cobra or the spectacled cobra, which actually do not possess these abilities. While they sometimes swallow eggs, they often end up regurgitating the

whole egg without breaking it. However, we are still discovering whether other snakes have egg-eating or other unique adaptations.



16 | Mongoose In My Metropolis

**Anurag Mishra|
Art by Adyasha Nayak**

The covid-forced lockdowns in 2020 meant an almost complete absence of humans outside their homes, even in urban spaces. Many species coexist with humans in urban areas and it is well documented. During lockdowns, the activities of these species in places earlier occupied by humans became more noticeable.

Right outside my home in Bhubaneswar city (Odisha), a family of Small Indian Mongooses was often seen in an abandoned construction site. Almost every single afternoon, I could see the mother and her three pups playing about without a care. I had seen the species on a few occasions in the fields around our house, but it was never more than just a fleeting glimpse as they scurried across the roads and disappeared into the bushes. Their presence wasn't really a surprise, but the change in their behavior in the absence of human activities was.

Small Indian Mongooses (*Herpestes urvapunctata*) are species of drier habitats and are known to be tolerant to human modified landscapes. They are native to west and south Asia and have been introduced to many parts of the world. In fact, they are more abundant in secondary forests (forests that have grown back after the primary vegetation was cleared for some purpose) compared to dense primary forests. Without any natural predators in human-dominated landscapes, they even cause decline in populations of native species like birds and small rodents and have been designated among the most significant invasive species.



16 | A Froggy Tale

Pooja Pednekar | Art by Nikita Bhat

Hello my young friends! Let me tell you about myself today. I am commonly called the Sri-Lankan Painted Frog by humans (my official name is *Uperodon taprobanicus*) and I am a frog species that loves trees more than the ground. I hate sunbathing (my skin can burn very quickly) so I tend to hide in tree trunks, wooden logs, under leaf piles or even create shelter by digging the soil while the sun is up. I love rainy nights and I take advantage of this weather by climbing high up on trees.

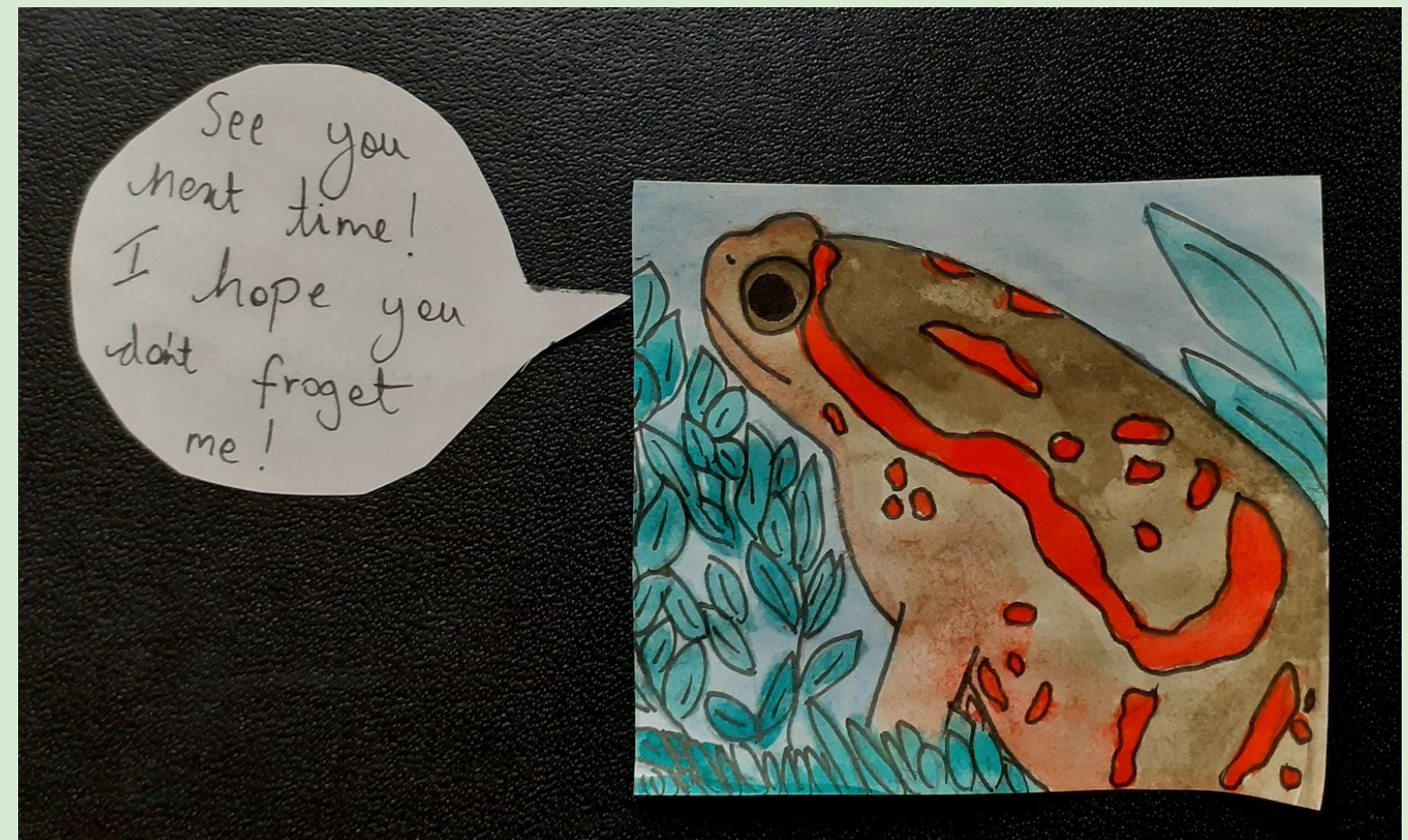
Are you a food lover? I am a big foodie. I love ants and termites, which might sometimes bite you. So you see what I am doing here? I am protecting you, my best buddies. That's how friendship works, by loving and protecting. As both ants and termites are often seen on and inside wood, I love those places so that I can hide and eat till my stomach is full. This is the reason I may seem like a plump frog! Truth is, I puff up like a balloon when I feel frightened by my enemies and protect myself from them by appearing larger than I actually am. I have many friends and enemies here. Some humans feel lucky if I make my presence before them. Seeing them joyful and excited makes me feel like a movie star. People are attracted to the strips of orange on my greyish-black body. I look vibrant and beautiful. Don't I?

Can you guess why I love rain? Ahhh. Let me tell you that I found the love of my life during this season. I adore my lady but impressing her is a bit of a hard process. She has taught me the most important quality in life - patience! After being able to see her and having a chance to mate with

her, I am privileged to welcome our children into this world, just as cute as you! When it rains, if you see puddles of water, don't just jump in there! Have a closer look and maybe you will find our lovely kids playing in it.

I have come a long way before having a chance to talk here before you. From an egg I turned into a swimming form called a tadpole (that's the stage I spent in water puddles) and after some weeks into a froglet (young frog). Then, by eating and sleeping well, I turned into this adult form and am now ready to discover the beauty of nature my whole life. I enjoy what I do now. Eat, climb, hide, puff up and repeat, I love this routine!

Oh no! It's night time again, I can't miss my routine so I will have to leave now but I hope to see you around. Croak! Croak!



17 | Let's Take A Wild Ride!

Nikita Bhat | Art by Dhanush Shetty

What comes to mind when you think of wildlife in India? Do you picture a tigress prowling around a watering hole, looking for a shaded resting place, while a gigantic grey elephant serenely bathes itself? Perhaps you think of gorgeously coloured peacocks prancing about while a cobra raises its head swaying to the melodious rhythms of a bansuri player! While all of these well known animals are beautiful and worthy of their acclaim, there are several other remarkable species across India about whom not much is known or talked about. Let's find out if you have heard of or been one of the lucky few to have seen some of these endemic species! (This means they are found only in the area of their origin and nowhere else) Strap in, here we go!

Kolar Leaf Nosed Bat

There is a gigantic rock that juts out of the ground in Kolar district, Karnataka. When you approach the base of this rock, you see a wide slit that leads into a subterranean (underground) cave. Squeeze yourself in carefully, there's no room to stand up so you have to crawl on your belly here. Your eyes adjust to the darkness in the cave and you continue crawling, guided by the narrow strip of light emitted by your headlamp. Do you smell that? It's a pungent smell that makes your stomach turn. You instantly recognize that the smell is guano (bat excrement) and excitedly look around because this means you are very close to the colony. Look up, quick! A small fuzzy golden ball with large dark wings glides above you. Unfortunately, due to bats having an unfair reputation with humans as disease carriers or possessing supernatural properties, these bats have been killed in large numbers and their habitats destroyed.

They are critically endangered, however, over the past few years, scientists are studying these bats and making efforts to conserve them with the help of locals. By instilling a sense of pride and educating them on how this unique species exists only there, residents of Kolar can help protect and promote peaceful co-existence with this marvellous mammal.

White Rumped Vulture

You walk along a narrow lane lined with slaughterhouses in Mumbai city. The air is thick with the metallic smell of fresh blood and entrails. Suddenly, a large shadow momentarily blocks out the morning sun. As you turn your gaze skywards, you notice groups of birds flying in small, tight circles above. They have broad wings and pink heads with dark feathers all over, except a contrasting silver-white tail and back. You excitedly recognize that this beautiful yet slightly intimidating animal is the white rumped vulture! Once the most common vulture found in India, their population declined drastically in the 1990's and they are now critically endangered. They're found all over the Indian subcontinent as well as in parts of Southeast Asia. They are scavengers, meaning they feed on dead animals, and are often seen feeding on dead livestock (cattle, goats etc.) and even human bodies that are left for the vultures, instead of burial or cremation, as done in the Parsi tradition. These vultures tear open flesh with their beaks and feed quickly making sure to eat all parts of the animal, often fighting amongst themselves as they feast. Sometimes they eat so much that they are unable to fly! As scavengers, they play a very important role by cleaning up dead and decaying carcasses rapidly, preventing the spread of diseases in the process. When they are not eating, they roost (gather and rest) in trees. They also build their nests, lay eggs and raise young ones there. Due to aircraft accidents, reduced habitat and mainly chemical and pesticide poisoning, these majestic vultures have declined in population by around 95%. Slow conservation and protection

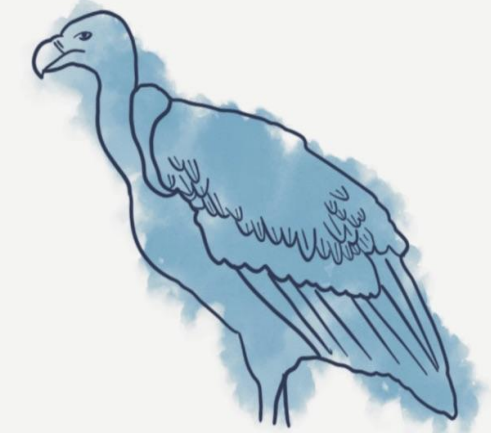
measures are being carried out but a lot more has to be done in order to save these unique raptors.

Nilgiri Langur

You are high up, seated comfortably in the fork of a teak trees' branches, deep in the Western Ghats. You look through a pair of binoculars at the lush canopy of trees surrounding you. The forest is humming and full of life, a truly breathtaking sight! But you're here to look for one elusive animal found only in the Western Ghats in southwestern India. A rustle of leaves makes you direct your attention to one of the tree canopies near you. What's that? You first only see a blur of glossy black shapes moving amidst the leaves, elegantly gliding along the branches. Could it be? You wait with bated breath until at last! Here comes a troop of 9 -10 Nilgiri langurs, on their way to find a resting spot to escape the late afternoon sun. They are beautiful creatures with shiny black coats and a prominent golden mane around their faces. They have long limbs and an even longer tail that snakes behind them and is essential for helping them maintain their balance as they walk on narrow branches and leap from tree to tree. What do they do all day hanging out on trees? They feed, rest, groom, play and everything in between! That's why they're considered 'arboreal' or tree dwellers. They eat a very leafy diet and you can imagine what a rich pantry the forests of the Western Ghats are for them. They feed on leaves, flowers, seeds, fruits, stems, insects and even soil, which is thought to act as an antacid. They engage in many social activities and are mostly peaceful but can sometimes show dominance and aggression to one another. Their language of communication includes touch, body postures and gestures as well as vocalizations that depend on what they're trying to say. For example in case of a threat, they let out short high-pitched barks and during fights



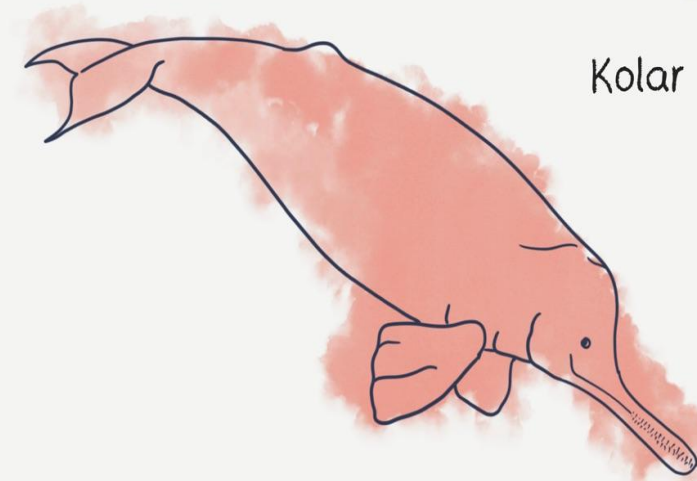
Sangai deer



White rumped vulture



Kolar leaf nosed bat



Ganges river dolphin



Nilgiri langur

between females, they let out long screeches and squeals. This species is currently in a vulnerable status due to human encroachment, destruction of habitat and extensive use in traditional medicine. Conservation efforts are slowly being carried out and there has been a decline in killing Nilgiri langurs for traditional medicine due to community participation and better protection in recent years.

Ganges River Dolphin

A rickety wooden boat takes you along the deep undulating waves of River Ganges. The constant motion can leave one nauseous but you are intensely focused on trying to spot a very interesting animal. The water is a muddy silver and it has been several hours already but no sign of the creature. You continue to stay optimistic and keep a keen eye out for any big movements in the water. Suddenly the local boatman accompanying you points at something in the distance. A long snout with jagged teeth sticks out of the water. Slowly the rest of its body emerges, long, grey and cylindrical. What a sight the Ganges river dolphin is! It resides in the densely populated Ganga - Brahmaputra river system and is not found anywhere else in the world! Unfortunately it is endangered with only about 1,000 individuals remaining. Dam construction, heavy water pollution and accidentally being caught in fishing nets (bycatch), make it a very difficult environment for these unique mammals to survive. They have a preference for deep waters, where prey availability is high. They mainly feed on fish and invertebrates, using the unique method of echolocation (sound) to detect their prey, as they are almost completely blind. The government of India declared it the National Aquatic Animal in 2009 and several scientists and conservation specialists have been working to preserve the species and continue to study its fascinating behaviours.

Sangai Deer

You crouch low, hiding in the tall grasses at Keibul Lamjao National Park in Manipur. The crystal waters of nearby Loktak Lake begin to shimmer as the first rays of the early morning sun strike its surface. Listen closely, it sounds like soft hooves hitting the ground near you! The long brown antlers appear first, floating in the tall grasses. You follow the path of the antlers excitedly, until finally the full body of the ethereal deer comes into focus as it stops to quench its thirst at a clearing near the edge of the lake. Only found within the boundaries of this one National Park in the whole world, the sangai deer is a very unique species of deer. They have a soft reddish-brown coat and distinctive antlers and often move their legs in a hop (this is why they're also called the dancing deer!) They feed on a variety of plants, grasses and shoots. Considered almost extinct in the 1950s, the state of Manipur ensured the protected status of the sangai as their 'State Animal', which has helped in recovering the total population to around 200 individuals now. The Sangai has historically been revered in ancient Manipuri folklore and been the subject of many legends and princely tales. It holds a similar status of respect and admiration in Manipur even today.



18 | An Evening With Elephants

Written and Illustrated by Medha Nayak

Ravi lived with his parents and grandparents in a village by a forest in the state of Odisha. Every year, usually around the harvest season of Kharif paddy crops, a herd of elephants was seen in his village, causing a lot of concern.

Ravi had only heard of these issues but had never encountered an elephant. So, when he heard in his school that elephants were approaching, he rushed home and announced “Grandpa!! Grandma!!! The elephants are here again!”

Everyone in the house came running to hear the news.

“Don’t worry, Father. I am grown up now. It’s my turn to chase the elephants from our farms and guard our village with the other people,” Ravi declared.

Grandpa spontaneously said “But, why should anyone chase the elephants? If they are threatened, they will cause more damage.”

“Ravi, elephants are our friends; they are not to be disturbed. Let them roam freely like we do, and they shall return to their forests” added Grandma.

Ravi was perplexed. “But the elephants damage our crops every time,

leaving our family troubled and worried.”

Ravi’s father tried to explain. “When our crops are being eaten and trampled by the elephants, it hurts, because your mother and I put in days of labour and care to grow those crops. But, trust me, the productivity is surprisingly better whenever the elephants have stepped across our fields.”

Incredulous and even more confused, Ravi wondered, “But how is it possible? Why are you all being so kind to them?”

“Ravi, when you know them better, you will not dislike or fear them but love and respect them for who they are,” replied his father.

In the meantime, Ravi’s mother rushed out with a conch shell and blew into it a few times. Many other conch shells were heard from houses near and far that joined the chorus. The arrival of elephants was worthy of announcement by conch shells as it was popularly believed that elephants are the Goddess Laxmi or her incarnations, bringing blessings, prosperity and good fortune.



Soon, Ravi's father realised that Ravi needed to witness elephants to care for them. He decided to take Ravi to their farmland on a day when elephants were supposed to come.

Finally, the day arrived. The sun was about to set when a huge dark shape emerged from the forests into the farm. Even before Ravi and his father identified it to be an elephant, ten more appeared.

Ravi clutched his father's hand tightly, as he was both frightened and thrilled.

"Here comes my favourite animal," whispered Ravi's father, trying to comfort him.

From a safe distance, both father and son watched the elephant herd grazing.

"Besides being gorgeous animals, the elephants contribute to protect biodiversity within their range," said Ravi's father. "They play an important role in the creation and functioning of a healthy forest. Elephant dung carries various nutrients that acts as manure that fertilizes the forest vegetation. They help in seed dispersal as their dung carries the seeds of their favourite fruits and it ensures diversity in forest tree species. When an elephant consumes the leaves and branches of a tree, it helps maintain adequate distance between trees. Many smaller organisms like dung beetles and other micro-organisms feed on elephant dung."

"But, Father, what do they do for us?" enquired Ravi.

His father smiled. "They give us the forest that we are dependent on in our everyday lives. This healthy forest ecology contributes to good air and water quality that cater to all life forms, including us. Moreover, the sight of elephants is fascinating. Isn't it, my son?"

"Yes, Father. See how innocent they look. And check out the little one hurrying around," Ravi replied, ecstatically. Ravi's father folded his hands and prayed. "Dear elephant god, eat whatever you want, but leave some for us." Seeing his father's compassion for the elephants, Ravi too joined his father in prayers.

That one evening spent with elephants changed Ravi's perception of the gentle giants forever.

And so, boy and animal coexisted forever after.



19 Dawn Of The Panther

A Story from the Hills of Garhwal

Priya Ranganathan | Art by Kshiti Mishra

Landour sparkled in the pre-dawn mist, the snow-capped Himalayas a perfect, silvery backdrop to the lush deodar and oak forests that crowded the lower Garhwal range. A goat bleated plaintively, its voice cutting sharply through the silent air, and a rooster crowed doubtfully in response.

Ten-year-old Ananya knew every rock and pebble on the dirt path leading up the hillside to Three Sisters Bazaar. Her feet, clad in worn cloth slippers, trotted quickly, and her jet-black hair was tightly bound back in a headscarf, protection against the cool wind. Landour was nippy in the early hours of the day!

Ananya swung her cloth bag as she trudged up the path. As she reached the dargah, a shrine to a Muslim saint, at the fork in the path, she suddenly heard a low growl. It came from the low mulberry tree to her left. The little girl froze and slowly pivoted to face the tree.

Two golden eyes stared at her from the dense leaves, pinning Ananya where she stood. She saw inky fur and a low, sleek body poised tensely on the thick branch. A black panther! Ananya could not remember ever seeing a black panther before. She had seen many leopards in the hills – it was hard to avoid leopards in this part of the Himalayas – but one as beautiful as this midnight cat had not yet crossed her path.

What do I do now? Ananya wondered, feeling slightly unnerved by the cat's piercing gaze. She suddenly remembered the advice her father had

given her when she was a small child – never turn your back on a predator. So, she slowly took a step backwards, never turning her back on the panther. The cat continued to watch her, until she had retreated up the path. Only then did Ananya turn and run towards the market, half-expecting the panther to chase her.

But nothing came after her.

A month passed and Ananya did not see the black panther again. But one night, when she was lying on her thin mattress trying to fall asleep, a gunshot rang out, echoing around the hills.

“Papa!” Ananya cried, jumping to her feet. She rushed to the door, where her father stood, looking outside. “What was that?” she asked, clutching his arm.

“A gunshot,” her father replied. He flagged down a young man who was jogging past their house. “What happened?” he asked the man.

“They’ve killed a leopard up by the ridge,” the man replied excitedly. “I’m going to see the fun.”

Ananya’s eyes were as round as saucers. “They killed a leopard?”

“A black panther, they’re saying,” the man said, nodding wisely. “I heard it was hard to catch. They finally cornered it by the dargah and put a bullet through it.”

Ananya clapped her hands to her mouth, horrified, and her father waved her inside, muttering irritably to the young man about scaring children with such stories. When he shut the door, he put a hand on his daughter’s shoulder.

“Why did they kill it, Papa?” Ananya asked sadly. “Don’t the leopards deserve to live freely too?”

“It’s just a leopard, beta,” her father said calmly. “There are many more in these hills, and there will be another one to take its place soon enough. At least now I know that you won’t be attacked on your morning walk to the market.”

Ananya said nothing, but deep down she knew that some part of the mountain path's magic was now gone.

The next morning, Ananya trudged up the path gloomily. There would be no panther sightings to look forward to. As she neared the market, however, she heard a loud commotion. Four large dogs were snarling and barking at something in their midst. Ananya heard a faint mewling sound.

The dogs must have caught a kitten, she thought, rushing over to help the poor thing. The dogs reluctantly moved aside as she shoved through the pack.

To her great surprise, a tiny black leopard cub stood on shaky legs in the middle of the pack, its thin tail sticking straight up and its teeth bared. When it saw Ananya, the cub wailed again.

“Oh, you poor little thing!” Ananya exclaimed. Then she bit her lip. *If the villagers see the cub, they will kill it,* she thought to herself. *Maybe I should take it away from here.*

She crouched down and offered a hand to the cub. It mewled again but inched closer. When it was close enough to sniff her fingers, Ananya gently patted its soft head. The cub jerked back, but after a moment of staring at the girl, nudged her fingers for more petting.

Ananya heard voices approaching and made a split-second decision. She picked up the startled cub and bundled it in her shawl, taking care to hold it securely. She then scampered off in the opposite direction from the village, towards the unused Tibetan shrine where wandering monks occasionally paused to pay their respects. No one was at the shrine, and after looking right and left, Ananya slipped inside and unwrapped the leopard cub. It gazed up at her with big golden eyes and she rubbed its ears, murmuring softly to it.

“I’m going to keep you here,” she told the cub firmly. “You’ll be safe, and no one will even know, but you can’t keep crying loudly, okay? I’ll come and stay with you in the night, but in the daytime, you’ll have to be quiet.”

The cub, almost as though it understood, rubbed its head against her chin. Ananya wondered what to feed it. Perhaps milk would be a good start. She left the leopard sniffing around the shrine and dashed off to the nearest milk stall. When she returned with a packet of milk, the cub was standing by the entrance to the shrine waiting. “No, no, come back inside!” Ananya hissed. She tore open the packet and allowed the milk to dribble over her hands. The cub enthusiastically licked at the milk, and then greedily began drinking from the packet. When at last the packet was empty, the little panther had a round belly and was almost asleep.

Ananya left it asleep in the corner of the dark shrine and rushed back to her home, where her mother scolded her thoroughly for being so late. All day, she could barely focus on her tasks, wondering how her cub was doing on its own in the shrine.

At night, she returned, the moon her only guide. The shrine was a dark silhouette against the backdrop of the snow peaks. The cub was wide awake, playing in the corner with a dead mouse. Ananya paused, impressed. “Did you kill it all by yourself?” she asked the leopard, who came bounding over to lick her toes. “I’m proud of you,” she told it, picking it up and cuddling it. “Let’s take a walk? Show you the area?”

Ananya took the silent ridge road, which looked down over a valley of tall trees that faded into the Himalayan peaks. She pointed out the familiar sights of Bandarpuch and the other peaks to the cub, who bounded at her heels sniffing the brush and generally having a good time. As Ananya walked, she sang songs in the language of the hills, her sweet voice carrying on the gentle breeze. The girl and the panther walked for hours until the cub began to whine. Only then did they return to the shrine and curl up to sleep.

Every day, Ananya worked quickly and tried to finish her schoolwork before the evening set. Each night, she rushed up the ridge road to the abandoned shrine, where she took the cub (whom she had named Saavli, which means shadow) for



shadow) for a walk. Each week, Saavli seemed to grow bigger and eat more. Ananya begged the local butcher to give her scraps of meat, saying it was for dogs, and then smuggled them to Saavli, who gobbled them down and demanded more. Soon, the village folk began to speak of a strange, eerie singing that echoed around the hills at night. Others said that they saw a witch followed by a ghostly panther. The people muttered and guessed that it must be the ghost of the panther that was killed earlier on the ridge road. Families began locking their doors at night and children were told to stay inside, so that the panther's ghost would not steal them away in revenge.

Ananya giggled and continued her nightly walks with Saavli.

And then, one day, when Ananya went to the shrine to find the panther, who was considerably larger now, she found Saavli munching on the remains of a stray dog.

“Did you kill it yourself?” the girl asked the wild cat, impressed yet disgusted. The panther made no sign of listening, feasting hungrily on the dog. Ananya considered her options. Clearly, Saavli was now capable of hunting for herself. That meant it was time to return the panther to the wild, where she belonged.

That night, Ananya whistled softly to Saavli, who leapt down from a nearby tree where she was napping and joined the girl on their nightly walk. Ananya was quiet, her heart heavy at the thought of letting Saavli go. But she knew it was the right thing to do. A leopard, after all, cannot survive among humans for long.

Suddenly, Saavli pricked up her ears and froze, sniffing deeply. Ananya paused. She heard the familiar bark of the muntjac, a strange little deer that lived in the low hills. Saavli made a small sound. Ananya felt the brush of rough silk against her thigh as the panther padded forward, focused entirely on the sound of the deer. The deer called again, and another muntjac



Image by Shaaz Jung

responded. Saavli glanced back at Ananya for a heartbeat, and then leapt down the hillside, vanishing into the inky night.

Ananya ran for her house, forcing herself to not look back.

A month passed, and Ananya walked the ridge road each dawn, hoping to catch a glimpse of Saavli. But the cub seemed to have vanished, erased from the landscape like a ghostly dream. The villagers talked too. The witch's song had ended, they said, and the ghost cat had vanished, its need for revenge quenched. They took it as a sign that they had repaid their debt to the dead cat, and life continued as before. As the days passed, Ananya began to take a different route to the bazaar. Saavli was gone, and there was no point in hoping to see her again. Winter descended on the hills and the ridge road was too cold for the little girl to take.

When the snows melted and new leaves began to grow on the Banj oaks, Saavli decided to take the ridge route once more. The hills were beautiful, pale green with the sturdy, evergreen deodars standing out like dark-green soldiers guarding the land. As Ananya passed the old tree where she had once encountered the old panther, she heard a small huffing sound and froze. Turning slowly, she saw two bright eyes like twin amber coins shining at her. A panther, black as inky waters, stared back at her.

Was it Saavli?

Slowly, ever so slowly, Ananya stretched out a hand. The panther purred low in its throat, a rumbling sound, but made no move to approach the girl. Ananya grinned, and the cat turned and vanished as silently as it had arrived.

The reign of the panther had dawned on the hills once more.

20 | Nadi's Tale

Srishty Pareek | Art by Asmita Sapre Ranganathan

Nandi Hills in Bangalore, Karnataka is home to a variety of diverse wildlife. The hills are rich in birdlife, exotic plants and animals. Among them is the monkey species *Rhesus Macaque*. This monkey species has always had a positive relationship with humans and they can often be seen interacting with people. This story will take you through such an interaction with a little monkey named Nadi.

Nadi was the youngest member of his family. He lived with his three older brothers and parents on a large tree near Crystal Lake. Their troop (*a group of monkeys is called a troop*) had lived on the outskirts of the lake for over a 100 years. Nadi had always been a curious little monkey. Among the thousands of questions he asked, his most favourite topic was the human. You see, Nadi was born during the COVID-19 pandemic. He'd never seen a real human in his life. That, however, was going to change the next day, because the pandemic induced lockdown was coming to an end.

The next morning, Nadi was the first to wake up and excitedly got ready for the day. They had a community meeting with the new Leader. They found an area near the edge of the lake and chatted with the other monkeys. Once the Leader arrived, all of them got up to greet her.

"Welcome my friends. I'm very glad that you could all make it here. As you may know, the Hills are opening again today. The humans will be back. However, this time you are strictly prohibited from meeting them.

Humans have not been careful with their trash and due to that our lake is heavily polluted. I don't think it'll ever be clean again. I cannot let our home get further destroyed. It is my job to protect you, therefore, if I find anyone breaking the law, they will be punished". With this, the Leader leaped onto the nearest tree and left the troop who remained in stunned silence.

While all the monkeys complained among themselves, Nadi climbed onto a tree and ran. He was very sad. How could he not meet a human? He had waited all his life and now - suddenly Nadi heard a noise and froze. When he turned around, he saw a little human girl! He couldn't believe his eyes. Slowly Nadi got down and watched her. She saw him too and waved at him. But before Nadi knew what to do, she ran away. He stood there for a long time when he realised he'd just met his first human. He climbed the tree again and started going home, when he heard his name called out.

"NADI!" It was the Leader.

Nadi stopped, terrified and went to the Leader.

"Where were you?" She asked angrily.

"I— I was by the river" cried Nadi.

"I saw you trying to communicate with the human girl. You know the law. You will be punish—" The Leader didn't get to finish her sentence because at that moment someone yelled out, "Leader, one of the infants (*a baby monkey is called an infant*) has fallen in the abandoned well!"

Everyone started panicking as they didn't know what to do. None of them knew how to get down to the infant in the abandoned well. Nadi ran along with the Leader to the well and could hear the echoes of the little infant crying.

Suddenly, Nadi remembered stories from the Elders about how humans used their intelligence to make tools and would find ingenious solutions to problems. Maybe they could help in some way! He knew what he had to do.

Nadi ran back to the little girl and found her near a camp with many other older humans. He tried his best to communicate with them and gestured to them to follow him. When he ran back, he saw a group of humans following him.

When they reached the lake, Nadi gestured towards the infant and the humans understood what had happened. They started talking and moving around, figuring out what to do and within a few minutes, they had found a rope and one of the humans had gone into the well. After a few nerve-wracking minutes, the human came out carrying the scared little infant in his arms. Hurrah the little monkey was saved! The humans brought him out and checked to make sure he was okay. Everyone, including the Leader, was relieved. The humans didn't stop there. After they saw how polluted the lake was, they brought in a team of helpers and cleaned the lake. Within a few days the lake was clean and beautiful again.

Although the humans and monkeys couldn't directly communicate, Nadi knew that the humans understood how important the lake was. The Leader was also pleased and decided to take away the 'no human contact' law. She knew that the humans would now respect their home and keep it clean. Nadi couldn't have been happier!

This story teaches us to always respect nature. There is life everywhere and it is our responsibility to respect it. Another lesson is that we shouldn't be afraid to ask for help when we really need it or assist anyone who needs our help. We must do our best to help and care for one another, every living creature and the environment.



21 Ecosystem Zines

By Shrushti Patil | References available on our website

LET'S DECODE DESERT ECOSYSTEM

Arid Landscape with less rainfall & vegetation

3 Types of Deserts

Hot & Dry Desert

Cold Desert

Coastal Desert

A DESERT ECOSYSTEM

Diversity in Desert Ecosystem

Plants In This Ecosystem

TEXAS RAINBOW
Echinocactus digglesi

LACESPINE PINCUSHION
Trichocereus banneri

SCOTILLO
Dasylirion spaldingii

PINKFLOWER HEDGEHOG
Echinocactus floridanus

ORGAN PIPE
Stenocactus thurberi

KING CUP
Echinocactus triglochidatus

TEDDY BEAR CHOLLA
Cylindropuntia leptocoma

PRICKLY PEAR
Opuntia

FISHHOOK BARREL
Parastrephia chaltana

SAGUARO
Carnegiea gigantea

Desert Animal

Animals In This Ecosystem

DID YOU KNOW?

- ★ Succulents (Store Water in Stems)
- ★ Widespread Root System
- ★ Spines Instead of Leaves (Protection)
- ★ Small Surface Area (Minimise Evaporation)

- ★ Nocturnals (Hunting food at Night in Cold)
- ★ Animals Fur, Feathers & Skin is bright in colour (Reflects Light & Keep Cool)
- ★ Famous "Camel" (Special Body Structure To survive = HUMP, which store Fat then convert into Energy & Water whenever required)

Shrushti

By Shrushti S. Patil

LET'S DIVE INTO MARINE ECOSYSTEM



Biggest Ecosystem, Covers 71% Earth Surface & 97% of Planets Earth



Includes Oceans, Estuary, Lagoons, Coral Reefs, Hydrothermal Vents, etc.

Species that live within Marine Ecosystem

PLANT

- # Seaweeds
- # Marine Algae
- # Seagrasses
- # Mangroves

- # Marine Mammals
- # Phytoplanktons
- # Cephalopods
- # Reptiles
- # Sea Turtles
- # Corals & Invertebrates

ANIMAL

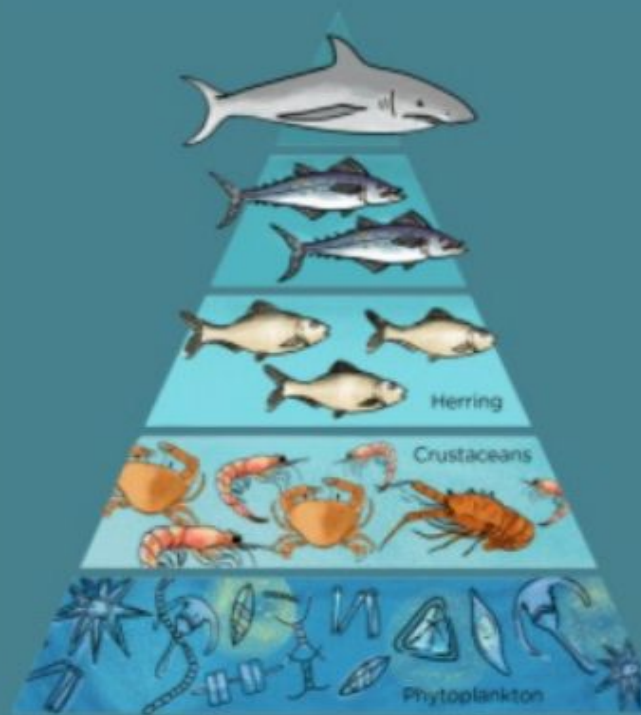


Corals are Animals. Because they do not make their own food.

Corals have tiny tentacles- like arms that they use to capture their food from water.

Dolphin can see through animals to see whether they are full or pregnant..

Colossal Squid digest food with their Brain. Its digestive system runs right through brain.



Food Chain

Coral reefs are not only a haven for marine life, but are indispensable to humans. They help keep shorelines intact, and contribute billions of dollars annually to the global economy through tourism and fisheries.



Coral occupy less than 0.1% of the world's ocean surface, and are yet home to more than a third of all marine species! This earns them the title, 'Rainforests of the Sea'.



Wondrous Tundra Ecosystem



A Treeless Polar Desert found in high altitude in Polar Region.

Located 50-70 degrees North, primarily in Alaska, Canada, Russia, Greenland, Island and Sub-antarctic Islands. It is a World Coldest Biome



Types Of Tundra



Arctic Tundra

Alpine Tundra



Antarctic Tundra

- # Arctic Moss
- # Pasquale Flower
- # Diamond Leaf Willow
- # Bear Berry
- # Dwarf Shrub
- # Arctic Poppys



PLANTS

- # Caribou & Volves
- # Ermine
- # Water Bird
- # Polar Bears
- # Arctic Fox
- # Wolves
- # Eagles

ANIMAL



Tundra is ecosystem used in Ice Age Movie & the animal and plant in the movie are almost all the same to plant and animal live in Tundra



Tundra Animals



Shruchti



See ! It's Grassland Ecosystem

More than Ten names across the World



Savannah

Savannah



Prairie

Prairie



Steppe

Steppe

TYPES OF GRASSLAND

➔ Tropical Grassland

➔ Temperate Grassland



Found in every continent except ANTARCTICA

Grasslands are cross between Forest & Desert

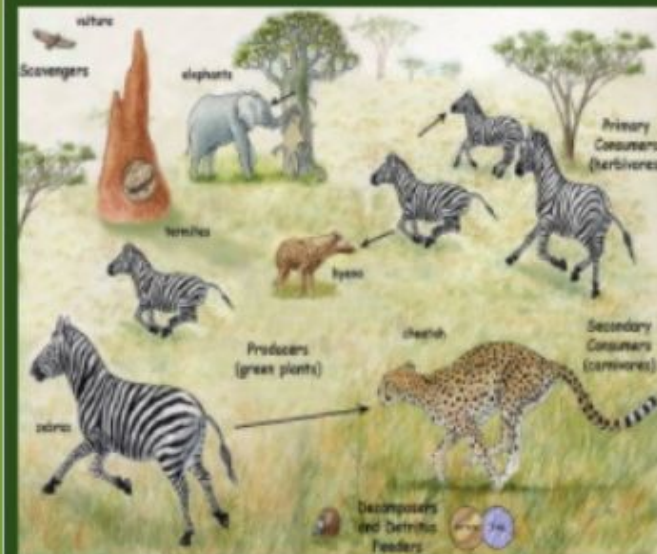
True Kingdom of our Animals



Grassland Animals & Plants



Food Web Of Grassland



Grasses can survive vast temperature changes (-25 to 70 degree celsius)

Rainfall is important factor, determines the kind of grasses and their growth

02 Sessions only (Rainy & drought)



Shrushti

Activity Corner

By Kshiti Mishra

Spot all the wildlife you see in the adjoining picture! Try and go to your own backyard or a nearby park to find such commonly occurring wildlife. Jot down any other animals you see as well! If you want to go a step further, try to find the exact species names. Finally, compare your answers to the answer key on the next page. Don't forget to have fun along the way!



Answer Key

- a. Cat
- b. Spider
- c. Garden snail
- d. Lizard (Gecko)
- e. Dog
- f. Babblers
- g. Parrot
- h. Woodpecker
- i. Butterfly (Common grass yellow)
- j. Squirrel
- k. Monkey (Rhesus macaque)





Meet the Team



Our Editorial Team:

Co-Editors: Priya Ranganathan & Nikita Bhat

Priya Ranganathan is a wetland ecologist and geologist by training who works in the wild Western Ghats. When she isn't out wading through swamp forests, she can be found scribbling away in her notebook or practicing Bharatanatyam. Check out her website ['On Life and Wildlife.'](#)

Nikita Bhat is an environmentalist from Bangalore who is currently in Canada, completing a Master's program in Environmental Assessment. She is particularly interested in issues of environmental justice and building resilience in social-ecological systems. She is looking forward to hiking, camping and travelling to far and distant lands in a post-COVID world.

Meet Our Writers:

Abhijat Singh Shakya is a student of the 12th class. A nature enthusiast and an amateur nature photographer who likes to share wonderful life processes and occasionally writes articles about nature.

Anand Meharwade completed his Bachelor's in Forestry from College of Forestry, Sirsi, Karnataka. Currently, working as a field assistant at LaCONES, Hyderabad, he is trying to understand how variations in time

and space influence tree interactions and their functioning. Apart from this, he is learning how to design magazine pages.

Anurag Mishra is an Indian Forest Service officer of the 2020 batch (Odisha cadre). An ecologist by training, he holds an integrated bachelors-masters from IISER, Pune and worked as a researcher at NCBS, Bangalore and ETH Zurich. He is passionate about science communication through photography and visual arts.

Avik Banerjee is pursuing a PhD at the Center for Ecological Sciences at Indian Institute of Science, Bangalore. His research includes studying behaviour of lizards and their diet. Avik is a nature enthusiast who loves to travel around and learn new things. He also has a keen interest in nature photography.

Clarita Mendes is currently doing her Master's in Biological Sciences and aspires to carry out research in the realm of Animal Behaviour. When she's not submerged in a novel, you shall find her writing snippets or playing with her paints.

Debaprasad Sengupta is an Ecologist who believes everything in life can be achieved in life through optimism. Prior to joining The Celestial Earth as a Specialist (Ecology and Ecosystem Services), he has monitored reintroduction of tigers at Sariska Tiger Reserve, Rajasthan and was also actively involved in Ganga Rejuvenation Project with Wildlife Institute of India.

Deepthi Saravanan is currently pursuing an undergraduate course at Mount Carmel College in Chemistry, Zoology and Microbiology in Bangalore, Karnataka. She has always been passionate about conservation of plants and animals which makes her write about endangered species like the red panda.

Medha Nayak is into teaching Sociology having a PhD in Humanities and Social Sciences. She worked on understanding human-elephant interactions in Odisha. Beyond pursuing academics and research, she also enjoys painting and travelling.

Navya KK is a research scholar at the Kerala Forest Research Institute. She loves to write articles about nature.

Netra Bhandari is a Ph.D. student at the University of Marburg, Germany. She works in the field of ecological informatics and is actively involved in creating pollinator gardens to conserve local biodiversity and spreading awareness about them.

Parvathi K. Prasad is a research affiliate with Conservation Initiatives, India, and is currently pursuing her PhD with Deakin University, Australia. She works on elephant ecology and human-elephant interactions in Assam, Northeast India.

Pooja Pednekar has completed her Bachelor's Degree in Zoology from D. G. Ruparel college, Mahim. Apart from that, she has a keen interest in studying the ocean and its animals. Often, she goes tidepooling as well as on nature trails in and around Mumbai. In general, she loves to study all types of animals and their habitats. Pooja is currently preparing for her exams to complete her further studies in ecological subjects.

Prerna Sharma is a conservationist. She has worked for more than a decade in wildlife research, rehabilitation, and animal welfare. At present, she is enjoying motherhood and exploring the wonderful world of children.

Puja Deb holds a Masters' in Wildlife Biology and being a die-hard carnivore fan, she has worked extensively in Sathyamangalam Tiger Reserve on large carnivores. Currently she serves as a Resource Mobilization Officer at Wildlife SOS to create awareness on protecting India's wildlife and saving them from human clutches.

Rubina Rajan is fascinated by nature, having completed her post graduation in Wildlife Science she hopes to contribute through her art and writing while finding her niche. Her major areas of interest include human animal interactions, animal behaviour and primates.

Shrushti Suresh Patil is an Ecologist who pursued research in Freshwater Ecology and in Limnology. She has completed her Master's in Biodiversity and Bachelor's in Environmental Science.

Srishty Pareek is a science student at Mount Carmel College. She is pursuing her 2nd year Bachelors degree in Environmental Science. Srishty is very passionate about the environment and has always loved to read about wildlife. Along with her studies, she also loves to play tennis and swim. I even love to read. Oftentimes, her friends and family find her sitting in a corner with a light and a book in hand.

Surya Narayanan is a herpetologist currently working with ATREE, with a special interest in snake taxonomy and natural history. His work primarily focuses on identifying and describing new species, and he has been part of six newly described snake works in India, and

also published a few papers on natural history of snakes.

Vishrutha Rao is a marine biologist who studied the oceans and how it interacts with the planet, as part of her M.Sc in Marine Science. She hopes to incorporate her research interests in whales and plastic pollution to address our climate crisis and to protect our Earth & Ocean ecosystems.

Meet Our Artists:

Aditi Ramchiary is a recent post-graduate from the School of Human Ecology, with an M.A. in Environment and Development, Ambedkar University, Delhi.

Working in wildlife, **Adyasha Nayak** found a way to marry her love for nature with her love for art. Through art, she tries to shine a light on the diversity of wildlife around us, and the challenges in conservation of that life.

Asmita Sapre Ranganathan is a doctor, Sanskrit teacher, artist, poet, and writer from Mumbai. She enjoys wearing her many hats and especially enjoys illustrating for children's books and magazines.

Dhanush Shetty is an aspiring conservation ecologist. He is currently a Ram Hattikudur fellow at the Zoo Outreach Organisation, Coimbatore. Along with his interest in conservation ecology, he enjoys science communication and nature education through art. To know more - @ dhanushshetty.com

Fatima Jableen is a JRF at ZSI, Solan, H.P. and a Visiting Researcher at Evol-EcoLab, CCMB, Hyderabad studying Mayfly evolution. My artwork is inspired from visits to the wild, interactions with field ecologists and her own observations. Furthermore, nature journaling and active participation in science communication keep her going.

Kshiti Mishra is pursuing a PhD in physics in the Netherlands and occasionally likes to dabble in different kinds of art.

Meera Phadnis is in the 10th standard at Campolindo High School, San Francisco, California (USA). She is an avid artist, reader, and Kathak dancer. She also is a member of the school debate team and enjoys exploring new places and meeting new people.

Muskan Gupta has very recently discovered a love for nature during the lockdown period. Since then she has been using the medium of art to spread awareness about the need to conserve nature. You can reach out to her on instagram @kuriousketupa and @mangiferachild.

Rupsy Khurana is a wildlife biologist and an independent multimedia science communicator. She has worked on different molecular ecology projects investigating animal behaviour, genetics of Asian elephants and herpetofauna across diverse landscapes in India. She regularly writes and illustrates stories covering recent ecological research.

Sowmya Anand is an art juggler who loves to illustrate for kids and encourage their happy souls! Her spirits rise up when she is around them.



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Youth for Nature focuses on bringing current environmental news, informative pieces on India's wildlife and wild places, and engaging activities to bring children closer to nature. We take pride in showcasing the work of children as well as professionals working to save India's wilderness to inspire youth to speak for our natural world.

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