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ISSUE 5 (MAY)



# Natura Zoologia

THE OFFICIAL NEWSLETTER OF  
NATURAL SCIENCE ASSOCIATION  
ST. JOSEPH'S COLLEGE (AUTONOMOUS),  
BENGALURU



Cover photo of a Purple Sunbird in eclipse plumage,  
taken by Maria Anjum in Rabindra Sarovar, Kolkata.

Feature articles: Serpents of India | Sharks and Conservation  
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Click a bee and frame a quote

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# EDITORIAL

## Chief Editor



**Dr. M Jaysahankar**

## Associate Editor



**Kishan Nag M P**



# GUEST EDITORIAL

As a result of the pandemic, the process of education has gone through drastic changes. Everyday, we are spending hours in front of a screen, attending classes at a stretch. It's no wonder that monotony soon sets in and our attention span starts to wear off. While there are drawbacks, one plus side to the shift to an online platform is the knowledge exchange that happens in the form of webinars. Organisations across the globe are conducting various virtual seminars which help us to get insights from renowned subject experts. The Natural Science Association too conducted various webinars throughout the lockdown period. One of them was the National Level Virtual Conference on the 'Diversity and Distribution of Indian Birds' held on 1st May. It gave participants the opportunity to interact with eminent speakers and present their individual research. With in-person interaction restricted, an online platform becomes crucial to bring together like-minded people.

During lockdowns, when life as we know it is brought to a standstill, we suddenly find ourselves with a lot of time. Cooped up in our homes, most of us inevitably start observing and appreciating nature. We notice the inconspicuous caterpillar on the plant pot, pay attention to the bird songs in the morning, appreciate the hues of the sunset and look at nature from a whole new angle. The pandemic is proof that we can't be reckless in our actions. Right now, we wear masks and declare lockdowns as precautions against the virus. The day is not far when we will be doing the same because the air outside is too toxic to breathe. Ask any Delhite and you will know that it's exactly what's happening! According to a report published in 2020 by the Swiss organisation IQAir, 22 of the world's 30 most polluted cities are in India. The signs are right in front of us and we must pay heed. Only when we acknowledge the problem, will we be able to come up with effective solutions. At an individual level we should work towards being a responsible cohabitant of the planet. Planting saplings whenever we can, keeping water pots for birds and animals, remembering to turn off lights when not in use, being a conscious consumer- if these seemingly small steps are taken by the 7.9 billion people who are living on Earth, they will cumulatively make an enormous difference! The pandemic is a wake up call for humans to mend their ways before things go beyond control.

Let's remember to give back to nature as much as we take. While we are locked up in our homes, let's introspect. Let's work towards a new 'normal' where each one of us takes responsibility for this blue planet which we call home.

Maria Anjum  
25 May 2021



The lockdown has allowed students and faculty to absorb and assimilate knowledge through the online medium. While nothing can beat an offline event, highly educative sessions organized by the NSA have stimulated the minds of students and enthusiasts. Distinguished and notable speakers have graced our virtual halls.

The highlight of the month stands the National Level Virtual Conference on 'The Diversity and Distribution of Indian Birds' held on 1st May. Many students participated in oral and poster presentations and attended the talk given by Raju Kasambe, Assistant Director-Education, BNHS. 'Click a Bee and Frame a Quote' campaign was organized on World Bee Day, with students submitting their photographs of bees and original quotes to go along with them.

The opportunities to make the most out of what we have are aplenty. The college has put in countless efforts in educating us on various topics and seeking our involvement through webinars, discussions, online sessions, virtual seminars, conferences, panel discussions, competitions, and awareness campaigns. There is so much knowledge out there, just waiting for us to grab it. It is up to us to seize these opportunities when they arrive.

Nandita Madhu  
25 May 2021





# MONTHLY HIGHLIGHTS OF NSA ACTIVITIES

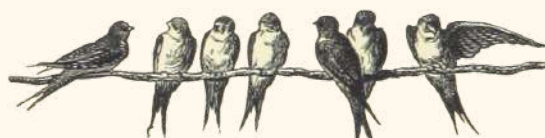
## NATIONAL LEVEL VIRTUAL CONFERENCE ON 'THE DIVERSITY AND DISTRIBUTION OF INDIAN BIRDS'

Aves are undoubtedly the most colorful group in the animal kingdom. India, a land rich in flora and fauna hosts around 1300 species of birds. It is also home to several critically endangered birds like the Great Indian Bustard, Bengal Florican and the elusive Forest Owlet. Keeping in mind the rich treasure trove of birds, a national level conference on the 'Diversity and Distribution of Indian Birds' was held on **1st May 2021**. In view of the pandemic, the conference was held on a virtual platform, MS Teams with participants logging in from across India.

The conference commenced at 10 AM with a welcome address by Prof. Thomas P. Zachariah, HOD of the Zoology department, St. Joseph's College. The keynote speaker was **Dr. Raju Kasambe**, Assistant Director for Education, Bombay Natural History Society who gave an insightful talk on 'Biogeographic Zones and Endemism of Birds in India'. **Dr. Abraham Verghese**, Editor-in-Chief, Insect Environment narrated his experience in his inspiring talk 'An entomologist's quest with birds'. In the presence of the above two eminent personalities, NSA launched the **Josephite Forum for Birders (JFB)**, an initiative to bring together passionate bird enthusiasts. **Natura Zoologia**, the association's newsletter was also launched. After a short break, the conference proceeded with Sumanth N.S., student organizer of the conference summarizing the key findings of the 'State of Indian Birds 2020'. Anthony Lawrence, a bird photographer shared his experience, besides taking the participants on a virtual journey into the colorful world of birds. Three other student organizers, Rohan Sharma, Anuraag Avadhanay and Rohan Bhaishya too shared their birding journey.

At 2 pm, oral and poster presentations began. There were a total of 24 oral presentations, 3 research based posters and 15 information based posters. These sessions were chaired by professors from various institutions. Abstracts of these presentations have been compiled into a book of abstracts.

**You can get in touch with us for a soft copy of the book of abstracts.**



### Keynote Speaker

**Dr. Raju Kasambe**  
Assistant Director for Education, Bombay Natural History Society

Topic  
*Biogeographic Zones and Endemism of Birds in India*

TAP HERE TO REGISTER

Scan this QR to Pay



8618341078@paytm

### Call For Papers

Participants are requested to send abstracts related to the theme *Diversity and Distribution of Indian Birds*. All abstracts (150 words with 3 to 5 key words) should not have been published previously. Participants can also make oral/poster presentations on the theme mentioned above.

**Last Date for Submission**  
April 30th, 2021. Mail the abstracts to: [sjena.zoology@gmail.com](mailto:sjena.zoology@gmail.com)

**Registration Fee**  
For UG/PG students - ₹100  
For Research Scholars - ₹150  
For Academicians and NGOs - ₹200

**Rules**  
1. Oral Presentation: Participants need to make a PowerPoint presentation of their findings (**original research work including field data**) and present online during the allotted time slot.  
2. Poster Presentation: Participants need to make a poster related to the topic of the conference. The poster can be **digital or handmade** (handmade posters need to be scanned and sent) and should give a short talk explaining their poster during the allotted time slot.



St. Joseph's College (Autonomous)  
Bengaluru - 560027

Natural Science Association, Department Of Zoology

Presents

## NATIONAL LEVEL VIRTUAL CONFERENCE

# DIVERSITY AND DISTRIBUTION OF INDIAN BIRDS

**DATE: 1ST MAY, 2021**  
**PLATFORM: MICROSOFT TEAMS**

## ABOUT THE SPEAKER



Dr. Raju Kasambe, works with the Bombay Natural History Society, Mumbai as Assistant Director - Education. An author of 20 books on birds and butterflies. His eBooks and other writings were read more than 3,00,000 times from ResearchGate. After working on pharmaceutical industry in a multi-national company for more than 17 years he joined BNHS. His passions being birds and butterflies! He has been recognized as Ph.D. Supervisor for the subject of Zoology in University of Mumbai, Maharashtra, appointed on the editorial board of "Newsletter for Birdwatchers" (one of the oldest Ornithological journals in India), elected as Executive President of Maharashtra Pakshimitra Sanghatana w.e.f. January 2015, elected as Vice Chairman of the Asia Council of BirdLife International w.e.f. November 2014-2018 and has been appointed National Coordinator: Asian Waterbird Census (2015-2017). He has published many books which are especially focused on the birds of Maharashtra and the country at large. He has published 15 Research papers in International journals and 135 papers in Indian journals as of 5th April, 2021. He has also contributed 11,000 photographs of flora and fauna in India to Wikipedia.

Birds play a significant role in maintaining a healthy ecosystem by acting as pollinators, predators, seed dispersers, predators, scavengers and also as prey in food webs. They have always been an important part of the Indian culture and tourism. But, the State of India's Birds 2020 (SOIB) points to a drastic 80% decline in several common birds.

The National Level Virtual Conference on Diversity and Distribution of Indian Birds organized by the Natural Science Association, Department of Zoology, St. Joseph's College (Autonomous), Bengaluru intends to bring together birders, birdwatchers and ornithologists from different parts of the country to share their experiences on documenting bird diversity and to discuss various issues that are affect birds.

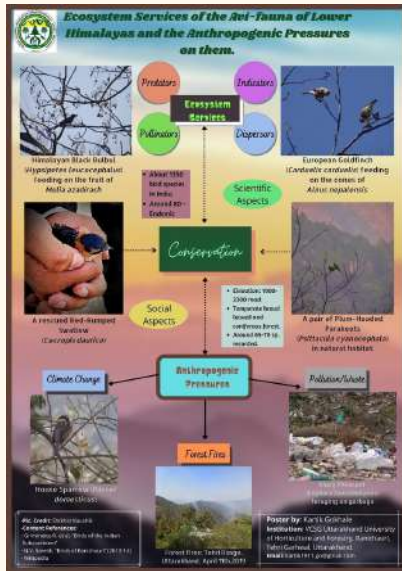


**Event Coordinator:**  
Dr. M. Jayshankar (Asst. Prof, Dept of Zoology, St. Joseph's College)

**Student Organizing Committee**  
Sumanth N S  
Anurag Avadhany  
Rohan Sharma  
Rohan Bhaishya

**Organizing Committee:**  
Thomas P.Zachariah (Assoc. prof. & HOD)  
K.S.Shankar (Assoc. prof.)  
Dr. Sabitha Thomas (Asst.Prof)  
Dr. John Paul. A (Asst.Prof)  
Ms. Prathibha R.D (Asst.Prof)  
Dr. Vijello Pavana Mendonca (Asst.Prof)  
Dr. Kavya Krishappa (Asst.Prof)  
Dr. Punit Banerjee (Asst.Prof)  
Dr. Santosh Jagadeeshan (Asst.Prof)





### Commensalistic relationship of cattle egret with cattle

Commensalism is a relationship between two animals where one derives benefit and the other derives neither benefit nor harm.

The relationship between cattle egret and grazing cattle is a classic example of commensalism. The egrets always feed close to where cattle are grazing. As cattle graze or move, they stir up insects which the egrets then feed on. They also feed on flies and bugs which bother the cattle, as well as parasites such as ticks and mites.

### A SHORT-TERM STUDY ON PARENTAL CARE PRIOR TO FLEDGLING IN WHITE-CHEEKED BARBETS (MEGALAIMA VIRIDIS)

Mania Anjum  
St. Joseph's College (Autonomous), Bangalore

**ADULT** **YOUNG**

**VISITATION** **FEEDING**

**FOOD FOR THE YOUNG** **NEST SANITATION**

### BENGAL FLORICAN

By MANJARI PRASAD, 1st Year CBZ

The Bengal Florican (*Houbaropsis bengalensis*) is an exquisite bird unique to the diversity of Bengal. Scattered in the grasslands of South and South East Asia, this is the rarest bird in the world. Unfortunately, it is listed under critically endangered by IUCN.

The Bengal Florican is romantic at heart, it performs beautiful courtship behaviours that include males leaping up from the tall grass and arching their neck backgrounds while flapping their wings. The male displays complex patterns of dance moves and footwork. The mating season starts in the month of February and ends in July. The males, territories small patches of grasslands and exhibit their flight display to attract the female floricans for mating.

**CONSERVATION**

This species is a flagship species. Hence, it is crucial to conserve and protect them. The dwindling in number at an alarming rate is mainly due to anthropogenic activities. The grasslands must be sustained as it is the primary habitat of floricans.

### ROSY STARLINGS IN INDIA

Kishan D. Shrivastava  
St. Joseph's College (Autonomous)

**COLOUR (FEMALE):** Head, neck, tail, wings - Blackish-brown. Breast, mantle - light brown.

**COLOUR (MALE):** Head, neck, tail, wings - Black. Breast, mantle - pink.

**MORPHOLOGY:** Length - 19-20cm, Wingspan - 37-42cm.

**NUTRITION:** Feed on insects, fruits and nectar of some flowers.

**HABITAT:** Breeding Ground - Eastern Europe & Central Asia. Wintering ground - India. Most of their global population is found in India.

**MIGRATION AND BEHAVIOR:** Are extremely gregarious; migrate and feed in large groups. Form large murmurations which look like clouds in the sky. Are long-distance migrators. Migrate from west to east as against the common north-south migration.

### VULTURES OF INDIA

All the vultures of India are listed in the IUCN Red Data Book as being facing a high risk of extinction.

**WHY VULTURE SPECIES ARE DECREASING?**

- Vultures depend on their natural carcasses to which they are treated with antibiotics.
- The capture and sale of vultures for their feathers and bones in traditional medicine.
- Diclofenac.

**Captive-breeding program of vultures in India**

**HEALTHY VULTURES - HEALTHY ECOSYSTEM - HEALTHY LIVESTOCK**

WISHWANTH K. T. N. H. CHANDRASEKHAR, BANGALORE



**ANISHA GOGOI, KEERTHANA G**  
St. Joseph's College (Autonomous)

**NEST BOXES ARE USED TO ENCOURAGE SPARROW BREEDING.**  
<https://www.wetland.org/>

**PROJECT GREAT INDIAN BUSTARD PROVIDE SECURE BREEDING ENCLOSURES TO THESE BIRDS**  
<https://www.nature.org/>

**FIGHT FOR THEIR FLIGHT**

**KOKREBELLUR- VILLAGE NAMED AFTER THE PAINTED STORK WHICH IS CALLED "KOKKARE" IN KANNADA**  
<https://www.wildlife.org.uk/kokrebellur>

**IN PAKKE TIGER RESERVE, TRIBES ONCE HUNTED HORNBILLS FOR THEIR BEAKS TO MAKE THE TRADITIONAL HEADGEAR OF THE NYISHI TRIBE MEN, NOW PROTECT THEIR NESTS.**  
<https://www.conservatorindia.org/>

# BROOD PARASITISM IN INDIAN BIRDS

**EGG MIMICRY:**  
Eggs mimic the colour and pattern of their host eggs, to avoid egg recognition and rejection.

**NESTLING MIMICRY:**  
How baby birds deceive their foster parents; begging calls provide nesting brood parasites with a powerful and flexible tool for avoiding rejection, altering parental provisioning and competing with the host nest mates; mimicry at different levels (size, shape, colour pattern) is evolving in concert.

**Red Cuckoo:**  
Breeds during the onset of the seasonal rain. Their breeding season coincides with the rainy season. The common hosts of pied cuckoo are Jungle, Large Grey and Yellow-billed Babblers.

**Common Hawk Cuckoo:**  
In India, its host are normally Turvokes and Corvus species, with a Jungle Babbler being reported as a common host. Their eggs are not easily distinguishable from those of their host because of their very similar colour and size. The cuckoo nesting has been reported to evict young of the host from the nest.

**Asian Koel:**  
It has been reported that it often lays more than one egg in a host's nest, usually two to three, and that house crows, Corvus splendens and long-tailed shrikes accept them, while common mynas are more likely to desert parasitized nests. The cuckoo nestling may evict host eggs or nestlings with the hosts own young.

**Common Kaur (Mukta Kukraja/Balikesila):**  
References: 1. Indian Birds, Vol.17, No. 2, 3, 3, (July, 17 October 2019).

**St. Joseph's College (Autonomous)**  
From Natural Science Association

# RAPTORS OF INDIA

- Habitat - Depends on Species - found in grassland, desert; dense forest & cities.
- Hunting Mechanism - 3 Main Tools, Their Talons, Hooked upper Beak, Large Eyes.
- Role in Ecosystem - Top in Food Chain, keeps population of small mammals in check. Some are scavengers.
- Threat - Habitat loss & fragmentation, Tower kill, Dieldofenac Poisoning, etc.

# IMPORTANT BIRD AREAS IN INDIA

To conserve and relish nature's elegant creatures

S Dinesh, Second year M.Sc in Zoology, Dept. of studies in Zoology, University of Mysore, Karnataka.

- Total area of IBAs 19, 415,798 Ha
- Number of species in IBAs around 1,212

**What are IBAs?**

- Places of international importance for the conservation of birds and other biodiversity.
- Recognized world-wide as practical tool for conservation.

**Objectives of IBAs**

- To safeguard a vital population of species, group of species or subspecies commonly.
- Identify potential bird areas using some criteria and standardized criteria.

**Why do we need IBAs?**

- Serves as a conservation area for protection of birds at the global, regional or sub-regional levels.

**Indian Perspective**

- There are around 44 IBAs.
- Covering wetlands, wet fields, forests, grass lands, scrub lands and ocean biodiversity hotspots.
- 60% of IBAs are under protected areas, rest 40% are in outside protected areas.

**What are threats?**

- Habitat destruction
- Climate change
- Rapid urbanization
- Hunting and trapping

**What you and we can do?**

- Protect natural habitat
- Educate society
- Reveal the regular, Endemic birds and its habitat
- Regular studies at ground level

# THE BIRDS IN HINDU MYTHOLOGY

- Common name:** Hanu Crow  
**Scientific name:** Corvus splendens  
Vehicle of Lord Shani (Planet Saturn). Tread on inauspicious.
- Common name:** Crowed Sengul Eagle  
**Scientific name:** Spheobates cyathus  
Caraka, vehicle of Lord Vishnu. Known to have participated in the Mahabharata war.
- Common name:** Raven's Wood Owl  
**Scientific name:** Strix nebulosa  
Vehicle of Lord Krishna.
- Common name:** Indian Barn-owled Owl  
**Scientific name:** Phalaena leucotis  
Vehicle of Lord Krishna. Known as Kankar (Shukal, Jagmohan Gadhak, Monaka and Aerial). Used in predicting the future.
- Common name:** Parakeet  
**Scientific name:** Pseudaucheniptera  
Vehicle of Lord Vishnu. Feathers used as ornaments.
- Common name:** Male Swan  
**Scientific name:** Cygnus cygnus  
Vehicle of Goddess Saraswati.
- Common name:** Yellow  
**Scientific name:** Cypripedium  
Jagya, taught with Hanu on one Godless Day.

Lockhart, R. CHRIST (Deemed to be University)  
Sources: [http://www.hinduism.co.uk/Know/Customs/rituals/rituals\\_877.aspx](http://www.hinduism.co.uk/Know/Customs/rituals/rituals_877.aspx), pinterest.com, google.com

# AVIAN SEED DISPERSAL IN THE WESTERN GHATS

Sachin Bhaskar, SSC  
[sachinbhaskar221@gmail.com](mailto:sachinbhaskar221@gmail.com)

**INTRODUCTION**

Tropical forests represent an arena for many biotic interactions among the wide array of plants and animals. These intriguing interplay between them is termed plant-animal interactions of which seed dispersal is an elite example.

**RESEARCH METHOD**

Direct observations on the frugivores of 22 common and uncommon tree species was carried out within a 20 square km area from 1991-1994 at the undisturbed mid-elevation (1250m) evergreen forests of Kakachi in the KM tiger reserve.

**OBSERVATIONS**

Out of the 22 tree species observed 16 (73%) of them produced fleshy fruits and the most common seed disperser were birds accounting for up to 49.5% of the plant species.

The Black Bulbul, Yellow-browed Bulbul, Red-whiskered Bulbul, White-throated Sparrow, Mountain Jay, and Nighthawk were the common birds found to feed on fruits and disperse intact seeds.

Bird-dispersed species above accounted for 22.7% of the tree families out of the 22 total tree families studied.

Bird-dispersed fruits are fleshy and small with color ranging from purple to orange. Their nutritional qualities are dominated by either sugars or lipids.

**CONCLUSIONS**

Seed dispersal strategies of the plants in the Western Ghats are poorly studied. Knowledge about these associations, however, can provide valuable insights into species coexistence.

**REFERENCES**

T. Ganesha and P. Devidas (2005). Dispersal modes of tree species in the wet forests of western Western Ghats. Current Science, 94: 40-47.  
S. Ghosh, T. Dattaraj, B. Ghosh, and P. Ghosh (2007).



### BIRDS AS National and state symbols

Mishra Ratana  
Department of Zoology  
St. Joseph's College (Autonomous), Bangalore, India

To reflect the rich diversity of India, each state has its own exclusive set of symbols. These are the official symbols which represent the uniqueness of each state in terms of culture and natural wealth. The state symbols include symbols like state animal, state bird, state flower, state tree and many more. The main motive of this presentation is to inform people about birds as national and state symbols of India.

**CRITERIA FOR NATIONAL BIRD**  
The bird must be well distributed in the country, (original must belong exclusively to the country which it represents). A country often chooses an animal or a bird that would embody the traits that the country values and believes that it possesses. Also it is preferable that the animal or bird has a part in tradition, myth or folklore of the nation.

**BIRDS ON STAMPS**  
The first bird to appear on a Indian stamp was a peacock pigeon issued in 1954. In 1962, on the eve of Children's Day, a stamp was issued again depicting a pigeon (Columba livia) which was represented as an apostle of peace and harmony. The first bird which appeared on a postage stamp was an intermediate Egret (*Ardea intermedia*) issued in 1924.

**Why is peacock the national bird of India?**  
In 1963, the peacock was declared the National Bird of India because of its non religious and legendary involvement in the Indian traditions.

**The Indian Roller bird (Corone)**  
The rollerbirds were chosen by Karnataka, Odisha and Telangana as their state bird.

**National bird of India - Indian Peafowl**

1. Andhra Pradesh	2. Arunachal Pradesh	3. Assam	4. Bihar	5. Chhattisgarh	6. Gujarat	7. Haryana	8. Himachal Pradesh	9. Jharkhand	10. Karnataka	11. Kerala	12. Madhya Pradesh	13. Maharashtra	14. Meghalaya	15. Mizoram	16. Nagaland	17. Odisha	18. Punjab	19. Rajasthan	20. Tamil Nadu	21. Telangana	22. Uttar Pradesh	23. Uttarakhand	24. West Bengal	
2. Indian Peafowl	2. Indian Peafowl	2. Indian Peafowl	2. Indian Peafowl	2. Indian Peafowl	2. Indian Peafowl	2. Indian Peafowl	2. Indian Peafowl	2. Indian Peafowl	2. Indian Peafowl	2. Indian Peafowl	2. Indian Peafowl	2. Indian Peafowl	2. Indian Peafowl	2. Indian Peafowl	2. Indian Peafowl	2. Indian Peafowl	2. Indian Peafowl	2. Indian Peafowl	2. Indian Peafowl	2. Indian Peafowl	2. Indian Peafowl	2. Indian Peafowl	2. Indian Peafowl	2. Indian Peafowl

References:  
1. <http://www.india.gov.in>  
2. <http://www.india.gov.in>  
3. <http://www.india.gov.in>  
4. <http://www.india.gov.in>  
5. <http://www.india.gov.in>

### Sunbirds of India

Sunbirds make up the family of Nectarinidae of Passerine birds usually with downward curved bill. Many are brightly coloured with iridescent feathers especially the males. The range extends from Africa to South-East Asia, they feed mainly on nectar and insects and spiders. There are 145 species with 16 genera and 12 of those species are found in India.

some of the species found in India are- Purple sunbird (*Cinnyris asiatica*), Luteo's sunbird (*Cinnyris lotenensis*), Purple rumped sunbird (*Leptocoma zeylonica*), Vigor's sunbird (*Actopygia vigorisii*), etc

### References

Done by -Harshita at year CEZ and Shreyanshi at year CEZ.

### INDIA'S HORNBILLS

St. Joseph's College (Autonomous)

**TRIBES AND HORNBILLS**  
The hornbills are found in the tropical and subtropical regions of Africa, Asia, and Australia. They are known for their unique appearance and their role in the ecosystem.

**GENERAL CHARACTERISTICS**  
Hornbills are characterized by their large, often brightly colored bills. They are typically found in forested areas and are known for their social behavior.

**IUCN STATUS**  
The IUCN Red List assesses the conservation status of various species of hornbills. Many species are listed as vulnerable or endangered due to habitat loss and poaching.

**DISTRIBUTION AND THREATS**  
Hornbills are distributed across various regions of India, including the Western Ghats and the Eastern Ghats. Major threats to their survival include deforestation and illegal trade.

**THE NINE SPECIES**  
There are nine species of hornbills found in India, each with its own unique characteristics and habitat requirements.

**REFERENCES**  
1. [IUCN Red List](#)  
2. [BirdLife International](#)  
3. [Conservation International](#)

### St. Joseph's College (Autonomous) NEWLY REPORTED BIRDS

Abstract: F. Debnath & S. S. CEZ

**Introduction**  
This study reports the discovery of several new bird species in the region of Karnataka, India. The birds were found during a field survey conducted in the Western Ghats.

**Major Organizations THAT CONTRIBUTE TO BIRD RESEARCH**

- World Wildlife Fund (WWF)
- International Council for Bird Conservation (ICBC)
- FES (Forest Ecology Society)
- The Nature Conservancy
- Wildlife Conservation Society (WCS)
- BirdLife International
- Conservation International
- World Conservation Union (IUCN)

### PHENOLOGY MISMATCH IN INDIA & HOW IT AFFECTS THE DISTRIBUTION OF BIRDS

**Parus major**  
The Parus major, commonly known as the Great Tit, is found in the north eastern region of India & other parts of Asia & Europe. They have a relationship with the tree & moth species found in the respective niche. During the suitable climate, fruit leaves green which is the optimum time for the moths to lay their eggs.

**WHAT IS PHENOLOGY MISMATCH?**  
Phenology is the study of life cycle events of living organisms on earth and how these are influenced by seasonal and interannual variations in climate and habitat factors. Phenology mismatch occurs when interacting species change the timing of their life cycles with respect to the change in climate.

**References:**  
1. Vignati, M., & Ghera, P. Evolutionary and demographic consequences of phenological mismatches. *Nat Ecol Evol* 3, 879-885 (2019). <https://doi.org/10.1038/s41562-019-0880-8>.  
2. Parra, C. M. "The role of caterpillar food quality." *Edward Gray Institute, Department of Zoology, University of Oxford*, 185 (2019).  
3. Vignati, M., & Ghera, P. "Climate Change and its Impacts on Indian Birds: Phenology and Mismatching Phenology Birds." *Current Science*, vol. 101, no. 9, 2011, pp. 1140-1142. <https://www.jstor.org/stable/4027960>, accessed 20 Aug 2021.  
4. <https://www.india.gov.in>



# CLICK A BEE AND FRAME A QUOTE



*"If the bee disappeared off the face of the Earth, man would only have four years to live."*

*-Albert Einstein*

Bees render various ecological services, the crucial most being pollination. If they were to disappear, crop yield would decrease drastically, leading to shortage of food. It is aptly said, "There's no bee, there's no we". On 20 May, on the occasion of World Bee Day, an initiative was taken to spread awareness and ignite creativity. Participants were asked to send photos of bees visiting flowers and frame quotes for the same. There were a total of 35 entries. few of those have been added in this issue.

**St. Joseph's College (Autonomous)**  
36, Langford Road, Bengaluru-560027, Karnataka.

Recognized as College of Excellence by UGC  
Re-accredited with A++ and 3.79/4 CGPA by NAAC  
Awarded DST Star Status and DST FIST Grant by the Ministry of Science and Technology, Government of India

School of Life Sciences  
Department of Zoology  
Natural Science Association  
Presents

# CLICK A BEE AND FRAME A QUOTE

On the occasion of World Bee Day

## INSTRUCTIONS

- Click a bee visiting a flower in and around you and frame a quote to the image and mail it to us at [sjcnsa.zoology@gmail.com](mailto:sjcnsa.zoology@gmail.com)
- Images clicked between 17th and 20th May will be considered.  
**STAY SAFE**

## ABOUT WORLD BEE DAY

The United Nations Organization designated 20th May as *World Bee Day* to raise awareness of their importance as pollinators. It is crucial to monitor them considering the ecosystem services they offer

## REGISTRATION

There is **NO** registration fee

OR **TAP HERE TO REGISTER**

Scan the QR Code to register

**CERTIFICATE OF PARTICIPATION WILL BE AWARDED TO ALL PARTICIPANTS**





" A gift "



" If I BEE,  
you will BE ! "



" One gets a lot to learn from  
a bee,  
but to learn generosity takes a  
lifetime... "



" If I Bee, you will be ! "



" Flower without bee is like air  
without oxygen "



" True Lovers of  
Nature "





" Not a bee but  
, let me be !! "

" Honey bee AS SOLITARY  
AS the (Sun) flower "



" A gift "

" On the lap of Flower,  
with the hope of Honey "



" If I BEE,  
you will BE ! "



" The hum of bee  
is the voice of  
garden "

" To Bee or  
Not to Bee "

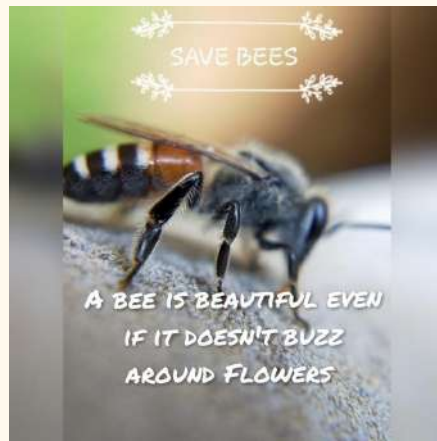


" Bees seek goodness in  
nature and that's honey,  
be like BEE "



" Bees and life of humans  
both are tied with a thin  
thread  
And this thread is  
becoming thinner  
everyday.. "





# FEATURE ARTICLES



## Serpents of India

-A Syed Saqlain (19CEZ33017)  
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Snakes are perhaps the most falsely interpreted creatures. These days people who are deceitful, betrayers and backstabbers are compared to snake. People are so certain of their bad preconceptions about snakes that they fail to notice the beauty of these magnificent reptiles and their role in the ecosystem.

India has a great diversity of snakes. It is home to around 300 species of snakes out of which 60 are venomous enough to cause human fatalities or serious injuries. Banded Krait (*Bungarus fasciatus*), Malabar Pit Viper (*Trimeresurus malabaricus*), Bamboo Pit Viper (*Trimeresurus gramineus*), Green Vine Snake (*Ahaetulla nasuta*), Ornate Flying Snake (*Chrysopelea ornata*), Cat snakes are some examples of venomous and mildly venomous snakes. They come in different shapes, sizes and colors. Ranging from the tiny Braminy Blind Snake (*Ramphotylops braminus*) that measures 12 cm to humungous reticulated Pythons that measure up to 10m. From glossy vibrant colors to warn predators that they are toxic [eg. Striped Coral Snake (*Calliophis nigrescens*)], Common Krait and the Travancore Wolf Snake (*Lycodon aulicus*) that mimics its venomous counterpart to dull light colors which help them camouflage (eg. Russell's Viper and Saw-scaled Viper).

Most snakes are either venomous or non-venomous however there are a few species of snakes that are both venomous and poisonous (eg. Red Necked Keelback (*Rhabdophis subminiatus*). 'Poisonous' and 'venomous' are two different terms. When a substance comes in contact with skin, inhaled, eaten or touched and causes fatalities, it is termed as 'poisonous'. When a substance is injected through fangs or stings into the blood stream it is termed as 'venomous'.





Maria Anjum

Figure 1: A Russell's Viper, one of the 'Big Four of India'

## SNAKES AS BIOCONTROL AGENTS OF RODENTS

A mouse litter consists of 6-8 pups and a single female mouse can produce up to 10 litters a year. Rodents can reproduce exponentially in the absence of predators, if left unchecked rodent population can take over the world causing destruction and spreading diseases. In India rodents destroy 25% of the food grains produced. Snakes play a major role in keeping the rodent population in check, as they are able to enter burrows and tight places where other predators like cats or hawks can't go. Snakes such as Indian Rat Snake (*Ptyas mucosa*), Trinket Snake (*Coelognathus helena*), Banded Racer (*Argyrogena fasciolata*) and Sand Boas (*Gongylophis conicus*) are very common to find near human settlements like urban areas, rural areas and agricultural lands as these areas are infested by rodents.

## SNAKES AS FOOD

People are more dangerous to snakes than snakes are to people. Worldwide millions of snakes are caught and killed for their skin and meat. Snakes are generally consumed in Southeast Asian countries like Indonesia, Malaysia, Thailand, Vietnam and China. Although not very common, snakes are consumed in India in states like Arunachal Pradesh and Nagaland.

The Ao tribe from Nagaland is renowned for eating almost all wild animals including snakes. James Angami, a teacher in Nagaland says that the elders encourage the youth to eat snakes in the belief that it makes them immune to snake venom. A man from Jharkhand's Harmu village in Lohardaga hit the headlines when he chewed and swallowed a snake after the snake bit him.

Commandos of the Indian army are taught to eat snake as a part of survival training lesson as snake are abundantly available in the forest and they are easy to skin and prepare.

## IN TRIBAL FOLKLORE AND TRADITIONAL MEDICINES

There are many traditional beliefs/myths in India regarding snakes. One such myth is the Naagmani. Naagmani or snake-pearl is believed to be a precious stone found in the head of the snake. Its size could vary from a grain of a rice to an average size pearl depending on the age of the snake. It is now scientifically known that it is formed when the excess amount of venom start depositing in head region of the snake, it solidifies as a blue or black stone. It is believed that Naagmani is a magical gem which holds amazing powers. A person in possession of the Naagmani is thought to be powerful enough to annex the whole world.

The Red Sand Boas (*Eryx johnii*) are species of non-venomous constrictors found in India. These double headed snake are believed to have special power in detecting hidden treasure and bringing good luck to people. Due to this belief they are very popular in black market. These beliefs are nothing but just myths and the snake doesn't even have two head, it is just an evolutionary adaptation in which the snake's tail resembles its head so that if predators attack they will go for its tail instead of head. Their population is near threatened because of their popularity in illegal trades.



Figure 2: A Red Sand Boa  
They are believed to bring good luck to people

Shuayb Ahmed

## VENOM EXTRACTION AND ANTI-VENOM PRODUCTION

India accounts for nearly 46,000 deaths from snakebites i.e. half of the global snakebite deaths annually. The antivenom used in India is polyvalent antivenom which is derived from the venom of four species of snakes called the 'Big Four Of India'. They are the Indian Cobra or the Spectacled Cobra (*Naja naja*), the common Krait (*Bungarus caeruleus*), the Russell's Viper (*Daboia russelii*) and the Saw-scaled Viper (*Echis carinatus*). These snakes are responsible for the most number of deaths in India. The antivenom is prepared by injecting small quantities of venom into the domestic animals like horses and sheep and antibodies that are formed are collected from the animal's blood and purified. However a study conducted by scientist at IISc's evolutionary venom lab along with herpetologist Gerard Martin and Romulus Whitaker found out that this antivenom can be ineffective as the snakes found in different regions have different compositions of venom.



Shuayb Ahmed

Figure 3: A Saw-scaled Viper  
It is called so because of the serrated scales on its body

Common misbeliefs and superstitions about snakes in India are:

1. Snakes take revenge: this even portrayed in some Bollywood movies such as 'Hisss' and serials like 'Naagin' where snakes are depicted to avenge the death of other snakes. This is not true as the snakes do not have well developed nervous system hence they cannot remember a person or any event.

2. A snake sways/dances to the tune of the snake-charmer: snake do not have ears and they can only sense vibrations through their bodies

3. Snakes loves to drink milk: as snakes are reptiles they cannot digest milk.

4. Snake wine is an alcoholic beverage that can be found in China, Vietnam and a few places in India. This toxic alcoholic beverages are made by infusing a full snake in rice wine or ethanol. Snakes are dipped into the drink for their essence and venom which gets dissolved in the liquor. They are kept like this for months so that their fluids can mix well with wine. The fatal venom of the snake is neutralized by the ethanol present in the drink which unfolds the proteins and hence makes it inactive.

These drinks are believed to have some medicinal qualities. It is said that it revives a person and refreshes him. Locals believe that it can cure far-sightedness, hair loss and that a few sip can improve sexual performance of a man.

## PROTECTION OF SNAKES

Non venomous species such as Travancore wolf snake, Dumberil's black-headed snake, File snake which look alike to their venomous counterparts (i.e. Common Krait, Slender Coral Snake, Hook-nosed Sea Snake respectively) are killed even though they are harmless, just because of the lack of knowledge.



Snakes are revered and worshipped throughout India. Snake worship is a tradition being followed in India since ages and is present in several ancient cultures, where snakes are portrayed as an entity of strength. Underlying cultural and religious beliefs in serpent deities has played a major role in protecting these majestic creatures.

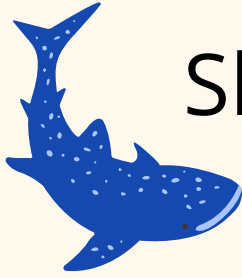


Shuayb Ahmed

Figure 4: A Checkered Keelback

Snakes are protected under Wildlife Protection Act 1972. Killing or holding indigenous species captive without any permit is an offense and can land anyone in trouble. Killing a snake like cobra or a rat snake is a non-bailable offense. The punishment may vary from a three year imprisonment to a fine or both as per the placement of species under the schedules. For example Indian Egg-eating Snake and Pythons are placed under schedule I (part II), Checkered Keelback, Indian Rat Snake, Dog Faced Water Snake, Spectacled Cobra, Monocled Cobra, King Cobra, Central Asian Cobra, Andaman Cobra, Olive Keelback, Russell's Viper are placed under schedule II (part II) and rest of the snakes are placed under schedule IV.





# Sharks and Conservation

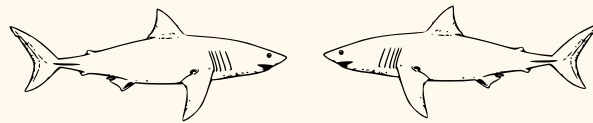
-Reni Sophia Damien (19CEZ33016)  
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Sharks are the ocean's apex predators and one of nature's keystone species. They are responsible for making sure our oceans remain clean. So why does a species so feared by mankind, where people keep unhealthy distances from and demonise it, deserve our protection and a necessity to conserve now?

The reason is very visible if one would take the time to venture out and dive into an ocean that was once so healthy, teeming with life and absolutely breathtaking which has now reduced to a medium where you have to go through a flurry of plastic waste and watch as creatures get hopelessly trapped in our junk in their home. Over the years, marine conservationists have shared various video footage of the damage we have been inflicting upon the ocean and its habitat. There was also a video which went viral on social media in which a turtle had a plastic straw stuck in its nostrils and scientists helped remove it. The entire video was painful to watch and it led to the declined usage of plastic straws and an increased use of steel straws and many other such videos urging people globally to avoid plastic as a whole. But what does this have to do with sharks? Truth is everything. Sharks have had and continue to have a reputation of being ruthless and mindless creatures who feel nothing. There is videographic proof in documentaries such as "Sharkwater" and "Sharkwater: Extinction" by late shark conservationist Rob Stewart who risked his life in order to bring to light the true plight of sharks. On an average year, 100 million sharks are brutally killed for their fins for 'shark fin soup' a delicacy in South-East Asian countries. This isn't the only reason though, they are also killed for their meat, liver (liver oil), skin (leather), teeth (jewelry or ornament) and cartilage (protein supplements).

They are also killed for sport because of the stigma that “sharks are monsters” which is truly pathetic because they’re reversing the role of the real monsters when they brutally treat a creature that has survived 3 mass extinctions and is responsible for the ecological balance of the ocean.

Why conserve them though? Sharks have always had a reputation of being monsters because of two main reasons, firstly movies and secondly folklore and myths that are scientifically null and void. But if we continue to let movies dictate our opinions on sharks without even taking the plunge to dive into their mysterious world, this species will go down in history as the species that never had a chance to truly thrive without being truly understood. We can make a choice today, either we let the stigma of sharks remain and rot in our minds or we can actually take a plunge into their world and learn about them, raise and spread the real importance to conserve them in a world that is rapidly changing due to climate change.



# ALUMNI CORNER

Natural Science Association (NSA) is one of the oldest associations in the college. I had the privilege to be an active member of this association for all the 3 years of my under-graduation at SJC. I was the a volunteer for events organized by NSA for 2 years and in my third year, I was the head of publicity committee. The best part of being in NSA is that in this association we get to learn about the subject and also the soft skills required for organizing events. This association was an opportunity for both academic and soft skill development. The HOD, Prof. Thomas P Zachariah and the all lecturers of Department of Zoology were so kind and helpful in increasing the graph of my personality growth curve. I was lucky enough to be a part of this association and host the workshops and seminars from St. Joseph's and other colleges as well. The feelings and the positive vibes we get after a successful event is incomparable. It gave so much joy to see happy faces and students walking out of the event after learning from the sessions we organized. It's nice to be in touch with the association although I have graduated from college as there is no end in learning about nature. It was, is and will always be happy learning with NSA.



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# REAL TIME RESEARCH EXPERIENCE

About two years ago, my friend and classmate, Rayaan D'Mel, and I undertook an analysis of waste water of the college sewage treatment plant, under the guidance of professor M.R.E Wilson from the Environmental Science department. We analysed the waste water entering the system from the lavatories and compared it with the treated water. We looked at the concentrations of different chemical components of the samples along with physical properties like pH, electrical conductivity etc. We found that the wastewater treatment plant was working efficiently. It removed chemical toxins from the water, allowing the treated water to be reused. This idea of an integrated waste water plant drew my interest. I found the working of the system quite elegant, the water that is used in the college is reused after treatment with simple methods like sequence batch reaction (A sophisticated way of saying that the water was treated in two separate batches, a collection batch and a treatment batch), flocculation and filtration of chemicals. Although the treated water was not fit for consumption, it was clean enough to water the college lawn.

This was the first time that I conducted a chemical analysis and undertaking this project made me feel like a component in the functioning of the college (Analyses like these are of utmost importance to understand the efficiency of treatment plants). It also led me to research further on waste water treatment. I learnt how sewage is treated in the city and realized the crucial role of treatment plants. Finally, this project gave me a good sense of how practical analysis should be carried out. I learnt how to work together as a team, using methods we learn in everyday classes to tackle new challenges. This, I believe, is the very essence of science.



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# A review on review based research

I have worked on a review paper titled 'Evolution of *Panthera leo*: Genus, mane and group-living'. In review-based research, we not only learn about new discoveries but also the various methods employed to make them. It also helps us to learn the scientific way of thinking, making hypotheses and analyzing data. This makes it possible to improve the already existing theories and make new predictions.

For those attempting review-based research, here are two suggestions:

1. If you are new to research, it is best to begin with a review paper as it gives you a better understanding of how to design your study.
2. If you're facing difficulties in finding reference materials, find at least one paper and check its reference section. There you will find multitudes of material that will aid your research including books, journals and several other research papers.

Happy Researching!

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# ZOOWISDOM

- *Xylophis deepaki*: A new species of wood snake named after Indian herpetologist Deepak Veerappan (<https://journalsofindia.com/xylophis-deepak/>)
- Indian researchers sequence 624 pangolin scales to tell the variation between the Indian and Chinese Pangolin (<https://www.thehindu.com/sci-tech/science/wildlife-forensics-helps-cause-of-pangolins/article34515874.ece>)
- *Subdoluseps nilgiriensis*: A new species of skink discovered from the Western ghats (<https://www.thehindu.com/sci-tech/energy-and-environment/new-species-of-skink-found-from-western-ghats/article34567454.ece>)
- 8 Asiatic lions test positive for SARS-CoV2 virus in Hyderabad zoo (<https://www.thehindu.com/news/cities/Hyderabad/eight-asiatic-lions-test-positive-for-coronavirus-in-hyderabad-zoo/article34480453.ece>)



# INPUTS FROM A FIELD BIOLOGIST

Ravi Jambhekar has always had a soft spot for nature, be it while rescuing and rehabilitating animals or looking after his house plants. He grew up in Mumbai and while looking after the occasional cat, dog or pigeon, he loved to observe reptiles, amphibians, and waterbirds in a wetland near his apartment. His interests diversified into biodiversity and animal behavior, which ultimately led him to pursue a Bachelor's in Zoology.

Faculty, especially the Head of Department, played a huge role in encouraging him to pursue his interests while conducting formal scientific research and undergoing training. He did his Master's in Pune University and during that period, worked for a summer internship on birds and butterflies in the South Andaman with the Zoological Survey of India. He presented his work in a 'Young Ecologists Talk and Interact' (YETI) conference. After coming upon an opportunity to intern with CES, IISc, he realized that research is where his heart lies.



Figure 1: A picture of Ravi with a bonnet macaque



His Ph.D. focused on the effects of landscape features like habitat area, type, and fragmentation on butterfly behavior and population. Localized studies were undertaken to assess the resource distribution of nectar and host plants of species and correlate that with the behavior of the butterflies. He conducted research in Goa, Karnataka, and Maharashtra. He established a generalist and specialist index for every butterfly he recorded. Body size, flight ability, host plant use, etc. were some parameters used for other indices. Butterflies are his favorite taxa to work with. Bigger animals, Ravi says, are usually the focus of research studies and conservation grants as they are thought to be keystone species, are culturally important, and also play a huge role in tourism. Insects and other small creatures are usually overlooked as they are difficult to study. This can be due to a number of factors like identification and taxonomy gaps, variable size, complex behavior, and sheer diversity of species.



Figure 2: An illustration of the Southern Birdwing, the state butterfly of Karnataka by Ravi

Ravi is a skilled botanical illustrator. His hobbies include sketching, drawing, and painting. A few sessions on oil painting which he took during his Bachelor's were his only formal training and he is mostly self-taught.

He would use his free time after field work in remote regions to sketch specimens like leaves, flowers, and dead insects like beetles and butterflies he brought back from the forest floor. The owner of one of the field stations he worked in was an artist and conservationist. He made a suggestion to use bigger canvases, paint every day, build a repository, focus on one taxa to paint and do it in a scientifically accurate manner, so as to build upon his skills and hone them.

He decided to work with leaves as they are easily available. The ephemeral nature of the hues and patterns of leaves compelled and motivated him to paint them in two hours rather than two weeks! Thus, began his journey into illustration. A few botanists from his department convinced him to illustrate for scientific papers and publications.

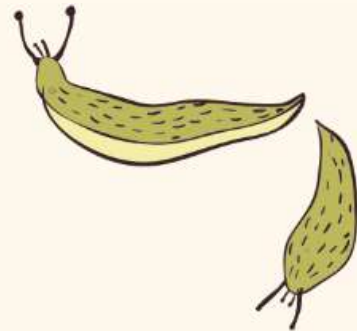
Art is an incredible platform for conservation, according to Ravi. Visuals are vital for science and awareness. Local communities are major stakeholders in conservation and are majorly impacted by photographs or paintings.



Figure 3: An illustration of a leaf by Ravi

Ravi is a field biologist, at large. He enjoys conducting field work. He doesn't hesitate to mention its limitations though. Weather, for one, is often unpredictable and may affect your data considerably. When working in small villages, field assistants often play a huge role in helping you work on your research goals.

They mostly belong to tribes and other indigenous communities. Your entire study is sometimes dependent on their availability, which can be limiting if they have festivals or other commitments. Other logistics like transport should also be taken care of. He would hitch-hike quite frequently during his Ph.D. fieldwork. Field work to be entirely controllable by the researcher or student is one huge misconception. Isolation often majorly impacts the mental health of biologists when venturing out into the forests alone for extended periods of time. Network is predictably weak in the forest. He remembers waiting for hours just for messages to get sent and be received. These factors must be thought about and considered seriously before deciding to undertake field studies.



### **A day in the life of a butterfly biologist**

- Wake up at 7:00-7:30 AM.
- Reach the field site by 8:30 or 9:00 AM.
- Behavioral studies do not require long treks. For population estimations and other biodiversity data, he would walk a lot and explore different habitats.
- Collect data till 12:30-1:00 PM.
- Have lunch
- Go back and conduct studies till 3:30-4:00 PM.
- Come back, check for ticks and leech bites, wash clothes.
- 4:00-6:00 PM - free time.
- He would make it a point to dedicate 1 to 1.5 hours to record data.
- After dinner and data analysis, he would go to sleep.





## Field Memories

Ravi recounts one of the most beautiful memories he made during his Master's dissertation in BR Hills Tiger Reserve, Karnataka. Field assistants from the Soliga tribe accompanied him on all his trips there. They do not worship idols but have trees or sacred groves as worship sites.

In the core, some 17-18 kilometers inside the reserve, is one particularly religious site where a *Magnolia champaca* tree or 'champak' stands. The tree is magnificent, with an all-encompassing canopy, a wide girth and had a bat roost present inside its hollow trunk. A stream with clean water and fish such as loaches flowed nearby. Heaps of champak flower petals settled on the floor under the tree, lots of ferns and other evergreen species were present and butterflies like the Common Map were spotted. He remembers seeing them feed on dead crabs left by Brown Fish owls (*Bubo zeylonensis*). It remains to be one of his favorite sites in the reserve.



Figure 4: A painting of a pair of Common Maps made by Ravi

You can read few of Ravi's articles here:

1. 'Singing With The Magpies'

<https://www.natureinfocus.in/environment/singing-with-the-magpies>

2. 'The Private Lives of Butterflies'

<https://jlrexplore.com/explore/on-assignment/the-private-lives-of-butterflies>

3. 'Butterflies in the Grasslands and Forests of the Western Ghats'

<https://jlrexplore.com/explore/from-the-field/butterflies-in-the-grasslands-and-forests-of-the-western-ghats>



Figure 5: A few more illustrations by Ravi

# CREATIVE CORNER

## Thinking on the lines of sustainability



Shot at Ahobilam, Andhra Pradesh

How beautiful this small little bird is, isn't it? If we can observe and appreciate even the littlest of the birds, I think we are sensitive enough to look at the big problems that appear small.

How easy it has become to buy a small thing: use it and leave it after its purpose is served.

Pens, refills, milk packets. Almost everything comes in plastic containers. And do we know for sure where it all goes?

Animals excrete and it is food for another life form, but plastic? Plastic is buried deep within the soil for months, years, decades... and still no life thrives on it. Why? For worse, it kills - sea animals, dogs, cows and the list goes on.



Oh and we want to eat food. We live for food. We eat 5 to 6 times a day, switch on our ACs, drive to the most walk-able locations and turn on lights and forget to turn them off. Eh, just another normal day.

But this is actually concerning. We are all aware about these resources that are being used like crazy and still refuse to believe that we are the cause for global warming. Not in little ways but in huge ways that we are blind to.

So, what do we do and how do we stop being the cause for climate change? Well, it's beautiful that this question even came up. Now, it's for us to explore it - to question every step and see if there's an alternative. Is there a more sustainable way of doing it.

Sunidhi N Murthy

20TEP002

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# Call of the Wild

The morning dewdrops,  
Sparkling diamonds on the grass.  
The sunrise sky,  
Canvas of a berserk lover of red hues.



Frenzied calls of barking deer in the distance,  
A leopard's on the prowl, somewhere in the vale.  
The melodious trill of a whistling thrush,  
Clarion call for a companion to love and trust.

The rustling of the leaves,  
Caressed by the mountain breeze.  
Ah! The wholesome mountain breeze,  
Take a deep breath and your mind will be at peace.

The lichens on the rocks,  
Epitome of perseverance;  
The first to conquer a barren land.  
With a slight change in air, they fade away;  
Like unpretentious sentinels, warning of an impending doom,  
If only you were to pay heed.  
The occasional flitting butterfly,  
Colorful streaks amidst the verdure.  
The warm sunlight through the canopy,  
Stage light for the tiny droplets in the forest air.

And then when night falls,  
The Queen of the night ascends her throne in the sky;  
Guarded by countless soldiers,


Holding tinkering torches in their hands.  
Occasionally, few attain martyrdom,  
Falling, they leave a valiant streak in the Heavens.

The cicadas kickstart their orchestra,  
Musicians that lull forest inhabitants to sleep.  
Fireflies make their way mystically,  
Tiny dancing flames in the dark.

Winter or spring, day or night,  
She's always pulsating with life.  
She is solace, she is peace,  
A drained soul's refuge.

She is a paradox,  
Complexity in simplicity.  
She has much to offer,  
Lessons for you to learn.

She is the Wild.  
And she's calling you to explore,  
Oh, Nature's Child!



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# Irony of the Ivory

Huge innocent ones, walking through the grasslands,  
Tracked down by their giant stomps, by the ones with power in their hands.

They are a friend to us; they understand us and their eyes are filled with love for us.

Yes, it is a fact that we are like their pups,

Yet these marvelous creatures are hunted for their tusks.

Ask me why and you will know, the brutality but the reality of us homo sapiens.

We the so-called intelligent, self-aware, smartest beings on this planet,

Fail to understand how wonderfully nature operates.

Greed and boundless freedom has got a hold of our brains,  
we kill these animals who have no sort of gains.

It takes 35 shots to kill an animal this size.

Yet, for the killer, one murder is not sufficient.

Next thing we know, these tusks are in the market,  
sold under huge illegal racket.

You'll see big shots spending in lakhs,

Just to decorate their dusty old book racks.

Here's something contradicting,

We half-witted, unaccomplished creatures think making money is a must,

Small elephant carvings and engravings, scrimshawed from these long tusks.

Well, this is the IRONY OF THE IVORY.

Siya Bhagat

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# SPECIES OF THE MONTH

## Purple Sunbird (*Cinnyris asiaticus*)

The Purple Sunbird inhabits thin forests, gardens and even dense urban areas, where they are usually observed near flowering shrubs and trees. A bird with a relatively short bill, a dark and short square ended tail, it has distinctive sexual dimorphism. During breeding season, the male transforms into a metallic purple color while the female is olive brown. The cover picture of this newsletter is that of a male Purple Sunbird in eclipse plumage. For few months after the breeding season, this sort of plumage is worn by male birds of certain species. It 'eclipses' the usual bright plumage. Soon after, they molt and new feathers are formed. The purple Sunbird has a fast and direct flight. It feeds on flower nectar, insects and spiders. While, they often perch at the base of flowers to take in the nectar, they can even do so while airborne, just like a hummingbird. Its nest is typical of Sunbirds, an oblong pouch of soft grass, rubbish and cobwebs draped with pieces of bark and woody refuse, with a pouched lateral entrance near the top.



Maria Anjum

# GALLERY



## BONNET MACAQUE

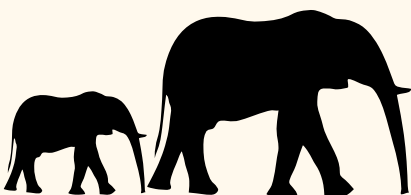
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# Who am I?

1. I am the state bird of Karnataka. During breeding seasons, I exhibit a variety of aerobatic displays.
2. I am the most trafficked mammal on this planet. The majority of my diet consists of ants.
3. I am a dragonfly making annual multigenerational migrations, one of the farthest known of all insect species.
4. Recently discovered in northern Madagascar, I am the world's smallest reptile.
5. Native to China's Yangtze River, I was one of the world's largest fish, now declared extinct.
6. I am the smallest wild cat species in India.
7. I am the only species of apes found in India. I live in the Northeastern parts of the country.
8. I am a bird. The Hargilla army or Stork sisters of Assam works extensively for my conservation.



Answers: 1. Indian Roller 2. Pangolin 3. Globe Skimmer/Wandering Glider 4. Nano chameleon 5. Chinese paddlefish  
6. Rusty-spotted cat 7. Hoolock gibbon 8. Greater adjutant stork



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THANK YOU FOR READING!  
Stay tuned for more.

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