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NATURA ZOOLOGIA

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



This issue contains an eye-opening poem, "Animal World, a realization" and a fascinating write up, "The Arcane blue in nature".

Photography Credits: Kishan Nag M P, 20CBZ24



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EDITORIAL

Kishan Nag M P



Starting college in the pandemic year and attending a completely online college did take out my hopes in the beginning from having some good college time and learning a lot of things. My decision about choosing marine biology as my career was set in stone and I was only looking forward to learning good enough and taking another step towards my dream. After befriending a few people at my college, I realized that colleges have more than academics alone. This was quite a transition from my previous academic institution and would involve a lot of exposure to various fields. One of the most active groups in college was the Natural Science Association which was headed by Dr. Jayashankar, a professor from the zoology department. NSA was organising interactive webinars and still trying to make most of the

situation although we were facing a pandemic. I joined the Natural Science Association's documentation team following the example of a classmate who did the same and involved myself in a number of NSA webinars and competitions. This gave me quite the varied exposure and also made me realize that my curiosity and passion was not for marine biology in specific but for knowledge and learning in general. NSA also organised webinars with a marine biologist in the month of February and a student webinar series on sharks as well. These webinars and loads of other activities are the ones which helped me realize that I still have a number of choices and don't have to hurry and plan out my entire career path already.

As a member of the documentation team, I got the opportunity to be the editor for this March issue of the NSA Newsletter. This newsletter includes the activities and achievements of NSA students, showcasing their involvement in college activities and event. It also contains the testimonials of Pavithra, an alumna from St. Joseph's College and former NSA member sharing her experiences of NSA from 10 years ago and how it helped her. Saqlain, a student from the college shares his experiences of recording herpetofauna in and around the college campus which in a way tells us that opportunities to learn are in plenty and abundance and it's just us who have to make the effort of looking and utilizing them. It also includes the creative corner where 4 other students share their pieces of the animal world's connections with them. There's the species of the month for which I have chosen to write about *Orcinus orca* and share quite some interesting facts and information about our marine cousin. It is followed by the gallery that has some amazing shots of the animal world and some artistic sketches and paintings done by our Josephites.



Dr. M Jayashankar
Chief Editor

SPECIES OF THE MONTH

- KISHAN NAG M P
(20CBZ24)

We humans have occupied the top of the food chain are also known to be the most dominant creature on the planet. This is mainly because our social abilities, cognitive functions and body structures have helped a lot to share information and to make the best use of things around us. Although this holds very true, we are not the only social animals. We also have observed that primates like monkeys, gorillas, chimpanzees and even elephants exhibit social relationships and show signs of emotion. However, this is not just restricted to terrestrial animals. Aquatic animals have been observed to exhibit social relationships, especially the cetaceans, a group considered to be our aquatic cousins. One of the most superior ones among the cetaceans is *Orcinus orca*, also known as the black and white cetacean.

The Orca is more commonly known as the killer whale and it gets this name from hunting and killing whales, for which it's distinctly known. Apart from whales too, orcas prey and hunt on a variety of creatures from penguins and seals to dolphins and sharks. Being the apex predator, orcas have some considerable advantages in hunting when it comes to hunting. Although it's a mammal and breathes through lungs which limits the time it can spend in the water, it has other advantages which make up for this seemingly large disadvantage. The average orca ranges in size from 6 to 8 meters and size plays a major role in hunting. This huge size of the orca is composed of some strong muscles and a muscular tail all of which helps the mammal to gain an incredulous speed of 35 mph. To make the struggle with the prey less, it has a bone breaking bite force of 19,000 psi whereas a typical human has that of 160 psi. This comparison might help you understand how pulverizing the Orca's bite is.

Added to imminent physical features, the orcas also have a well-developed brain and can also use echolocation to see the unseen. Thus, orcas can also hunt in areas where their vision is compromised, widening their area of hunt. Orcas like most other cetaceans have unique hunting strategies and techniques employed by certain families of orcas. These techniques have been passed on through generations from one mother to daughters as they are matriarchal in hierarchy like elephants, lions and a few other members of the animal kingdom.



Source: Pinterest

These ocean giants are known to take down sharks with quite the ease although they don't prefer hunting them a lot. Sharks are not nutritionally rich for orcas although their livers sure are and hence when orcas hunt for a shark, they only eat the liver although they do kill the shark in the process. Similarly, a particular group of orcas hunt for seals on the shore by hiding beneath the waves. Different pods of orcas are also known to co-operate together to take down an entire whale.

Although they seem to be quite the ferocious and violent animal, they also exhibit very prudent emotional and social behaviour. They are also sentient beings and show signs of depression as well. A mother who has lost its calf clings on to the carcass for days together before what seems to be letting go of it and moving on from its death. It is not only the mother but all the members of the pod gather around in a manner which seems to be mourning. This tells us that they are emotional beings and they are observed to have cultures amongst themselves as well. Thankfully, these mammals are quite friendly and helpful to humans. There have been various instances of orcas helping people or showing up near a boat to play.

Although these animals are very kind to us, they are not received with the same kindness. While them being hunted for their meat is one thing, them being captured and forced to live in captivity is an entirely different kind of torture. The most noticeable sign of depression is their dorsal fin slacking off which is seen in almost every captive orca. They are also known to become very violent in captivity and attack humans and their own trainers as well. There has been an instance where a mother dragged its trainer to the bottom of the pool and held him there for about five minutes. This was because the trainer forcibly took away its unhealthy new born which it gave birth to in captivity. Forcing these majestic creatures to stay in cooped up spaces so that we can watch them toying and playing to our desires is quite sadistic of our species.

There have been a number of orcas that have been born and bred in captivity which makes them helpless in the actual outside world. These orcas are rejected by other wild pods as they are alien to all their customs, traditions and manners. Keiko is an orca that got popular by the movie, Free Willy and was forcibly released back into the ocean when people started fighting for its freedom. Since it has no ability or skills to hunt and survive out in the real world, it ended up dying out of starvation. But to ensure that these whales which have been born and brought up in captivity are able to survive as well, a Whale Sanctuary is being set up so that they can slowly interact with the wilderness and learn to live in the outside world as well. The Whale Sanctuary Project is not restricted to just orcas but also other cetaceans subjected to captivity like beluga whales and dolphins.

The orca is the animal that inspired me greatly and made me choose my career option as a marine biologist. Hopefully, this species persists against the extremely harmful and destructive anthropocentric activities.

CREATIVE CORNER



A Realization: The Animal World
–Mrunali Sundar (20EJPA008)

The Arcane Blue in Nature
– VAISHNAVI R K



India's National Butterfly
– MITHUNA

The Amur Falcons of Pangti:
Slaughtered to Sheltered
– AMRIT PILLAI
(20EJPA006)



Animal World: A Realization

“Will you tell me about ants?” he eagerly asked.
The tiny one can carry fifty times its own weight;
Spiracles and trachea are what helps them breathe great.
“Humans have a trachea too. Now, something about the butterfly?”
Well, Rhopalocera have taste receptors in their feet;
To fly when it’s cold, they thermoregulate to produce heat.
“Is there any other species that thermoregulates?” his curiosity peaked.
You and I do, dear. We sweat, we shiver;
The hypothalamus in the brain ensures the set point is near.
“Next about Kangaroos. Wait! About the Kangaroo rat”
The furry nocturnal rodent constructs a complex burrow in sand,
similar to humans, with a purpose for each piece of land.
“Tell me something about elephants now”
Well, think on how they could use their tusks and trunks.
And like us, they have rituals to follow, and death customs.
“Is there a bird that does something similar?”
The male penguin drops over his pebbles politely,
and the Red Capped Manikin appears to dance to court his lady.
“Hehe! Isn’t that how marriage happens? Do animals also marry?”
You know that swans live with their life long partners,
But sometime gibbons divorce and the marriage scatters.
“I think it’s sad that Madagascar is the only place for lemurs”
Yes, it is, and we need to ensure their extinction isn’t near.
Tell me, who’s up next on your ‘animal list’, dear?
“Do you have a favourite?” he childishly asked.
I indeed do, good question, I said.
It’s late now. I think you should go to bed.
“No, tell me which one is your favourite animal?” he insisted.
Very well then, here you go; The species is termed Homo sapiens.
In conventional terms, they are called humans.
“Humans are animals?”, he innocently wondered.
Kingdom Animalia, Phylum Chordata;
And on this species, we have a lot of gathered data.

“I know we are mammals and that primates were our ancestors”.
You are wrong there; we are primates dear;
We belong to Class Mammalia, and Primates is our Order.
“But we are so different, how can that be?”
Very well then, let me tell you a story:
Beginning from Dryopithecus, evolution brought us long way.
But we still retain our animal instincts to this day.
We adapted to better survive,
To enable us to live a better life.
Humans eat their meals in chunk like carnivores,
And have a wide variety of taste like herbivores.
We go to work to substitute hunting.
“Socialising” is just a form of grooming.
We might have fancy whims and wishes,
But the human embryo is similar to that of fishes.
To powerful individuals, we surrender;
Our Basic need is to fulfil our hunger.
What we are is an animal,
Our basic instincts are very much primal.
We have taken upon ourselves “The best species” trophy.
Albeit, remember: All it will take is a catastrophe.
We might never know when our end is near,
But this one thing should always be clear:
In destroying the world, we destroy our self,
And this thought in our minds must always dwell;
Humans belong to the animal world; a fact I appreciate.
As Desmond Morris says, Homo sapiens are in fact, “The Naked Ape”.

**~Mrunali Sundar
(20EJP008)**

The Arcane Blue in Nature

Vibrant and flamboyant creatures wander around this planet, adding to the nature's allure. All kinds of colourful animals, from peacocks with their rich feathers, to toucans with their striking, patterned beaks inhabit Earth. Animals come in plenty of colours, but blue seems to be the rarest. When we do find blue creatures, they're remarkable.

Animals use colours to communicate, and deliver messages among themselves. Chemistry, evolution and physics help us understand the concept of colours in animals. The brightest and most colourful insect that we find is the butterfly, with its highly intricate and patterned wings. These hues come from the tiny scales present on the wings. The scales contain all kinds of pigments like brown, red, orange etc.

Some animals like flamingos, with red, orange, yellow and brown shades get their colours from the pigments in their diet. They are what they eat. But that isn't the case with blue. Blue as a pigment is extremely rare in nature. A habitual blue creature we find among the rare is the blue Morpho butterfly. Their blue wings might almost seem like an illusion as they're not actually blue in colour. As to how they look blue is a little astounding. The colour comes from the shape of the wing scales.



The codified arrangement of the branches in their wing scales allows the blue light which has the perfect wavelength to get reflected, and this is what our eyes see. This staggering effect is the work of the microscopic structure of the wing scales that act as a light filter. What's stunning about these wing scales is that they're water resistant, so the wings stay elegant even when it's pouring.

It's not just the butterflies that exhibit this wondrous phenomenon. The feathers of Blue jays and peacocks and other birds with blue feathers have similar features, which enhance the grandeur of blue. Uncovering this secret of animals has been spectacular, looking into how they've made use physics to fabricate the colour blue. The pristine artistry we find in nature every day never ceases to blow our minds. The luminous beauty of animals will forever keep the minds of the curious content. (Stirred by, <https://youtu.be/3g246c6Bv58>)

**~Vaishnavi R K
Atria Institute
of Technology**



A hunt for the National Butterfly

Having read this article by Butterflies Of India (BOI), I appreciate the National Butterfly Campaign Consortium for taking up this commendable initiative to nominate and elect a National Butterfly for our country. Identifying the significance of butterflies, a natural treasure as mentioned, was a matter of utmost importance. Shortlisting contenders for this poll out of the numerous species was surely a big deal.

A National Butterfly is often a symbolic representation of the country's rich heritage and culture. Most of the countries are better known from their symbols rather than the country itself. Therefore, shortlisting species which are indigenous, in myriad and indicative of the history of the country was a basic prerequisite.

The factors considered in taking up this initiative are absolutely praiseworthy. It's high time we recognize the significance of these species. As said, butterflies are indicative of the nature's health. They are often portrayed as the essence of nature, an epitome of freedom, peace and beauty. Being delicate and sensitive to change, when they struggle to survive, it is a warning about the health of our environment. Both butterflies and moths are indicators of a healthy environment and ecosystem. Without these insects, many plant species would be unable to reproduce causing a dramatic decrease in their population as these plants require a pollinator to reproduce. As the bee populations deteriorate, the role of the butterflies becomes more vital. Considering the value of these species, they surely deserve a worthy position at the national level. Assigning them with such a position will make it more necessary for us to conserve and save these species. In turn, conserving them is a boon to our nature and our ecosystem. Keeping in mind the standing of this position, the consortium have very well arrived at a final list of seven species.

The characteristics considered to shortlist these species have a sense of its importance to the nature, ecosystem, its charm and its indication of the history of the country. Hence, I highly appreciate the efforts taken by the National Butterfly Campaign Consortium to publicize the importance of nominating a National Butterfly.

Choosing a National Butterfly in a democratic manner is another commendable act. After shortlisting the contenders assiduously, the citizens are given an opportunity to make their choice and cast their vote. Having said that, we ought to have a National Butterfly for our country and I am thankful for BOI for initiating this movement.

Reference:

<https://www.ifoundbutterflies.org/national-butterfly-poll>

**~Mithuna R
Mount Carmel College**

The Amur Falcons of Pangti: Slaughtered to Sheltered

This is a review for the article, “The Pangti Story: How a Nagaland Village Turned from Hunting Ground to Safe Haven for Amur Falcon” by Sahana Ghosh, which appeared in the online publication, Scroll, in 2018.

Right as the reader delves into the article, the author appears to waste no time to introduce two of the three protagonists of her story, Sesino Yhoshu and the Amur falcons, with the mention of a life-changing experience, which helped transform the lives of each other. This clever way of instilling a sense of royalty within the Amur falcons, through this incidence where thousands of these winged creatures roosting by the Doyang reservoir, in such a remote place, despite their majestic stature, almost seemed like an insult to them.

It’s inevitable that every protagonist has an origin story to mark the beginning of something great. Such was the case of the third major protagonist, the village of Pangti. However, as far as protagonists go, contrary to popular belief, the story of Pangti didn’t possess such a noble inception.

What was once in 2012, a globally known village, for the spine chilling slaughters it carried out against the magisterial winged birds, had almost instantly proved to become a safe haven and a sanctuary for those same creatures. How exactly did that happen? How long did it take? Why did the fate of the Amur falcons change from being slaughtered to being sheltered? These are some of the many questions Ghosh takes on, with help from the documentary of Naga filmmaker, Sesino Yhoshu, as we tag along, in this custom-fitted journey, one that almost seems too good to be true.

Ghosh, further on, in most parts of her article extensively speaks about Yhoshu’s 26-minute documentary film, The Pangti Story, which managed to attract popularity after winning the 65th National Awards for Best Environment Film in the non-feature category in 2018. Through her documentary, Yhoshu is seen to have impacted both the global audience and the people of Pangti, in turning their hunters into conservationists and boosting the recognition of the Amur falcons to an amazing extent.

The latter half of the article intends to compress, cover and showcase the sweeping influence of the documentary while bringing in various aspects of the Pangti story, such as the natural habitats and migratory patterns of the falcons, the scenario of Pangti during their hunting days versus their current one, major steps taken towards the conservation of the birds and its effects on the total cultural and demographic population, etc, under the following sub-headings marked within the article; “Beginning of the end”, “Once hunters, now guardians”, “ Change for greater good ”, “On the world map”.

Conclusively, Sahana Ghosh in her article has done justice to the encapsulation of the whole Pangti Story by maintaining an engaging narrative for the reader to grip on to. Provenances like the documentary film, The Pangti Story, by Sesino Yhoshu, national statistics and demographic accounts have helped the author in deriving an almost purist, first-hand form of the entire Pangti-falcon monologue. However, usage of extravagant statements to indicate a complete turn-around of events within the concerned regions, despite a lack of emphasis and research on those other areas, which pertain to and naturally host the winged animals, makes the entire story of Nagaland, too virtuous to be completely real.

Reference: <https://amp.scroll.in/article/877928/the-pangti-story-how-a-nagaland-village-turned-from-hunting-ground-to-safe-haven-for-amur-falcon>

~Amrit Pillai
(20EJP006)

REAL TIME RESEARCH EXPERIENCE (RTRE)



- A SYED SAQLAIN
(19CEZ33017)

In the month of November 2021, I had the opportunity of recording the species of herpetofauna found in and around our college campus, done under the guidance of Dr. M.R.E Wilson from the department of environmental science. It was an amazing experience for me, surveying the college campus, doing something that I enjoy doing, but haven't got an opportunity to do it often. So, it was a relatively new thing for me, this survey helped me in getting to know of the different methods and techniques involved in observation, data collection and interpretation.



I also got to learn about the different species of flora and fauna that are found on our campus. You don't necessarily have to be in a forest to observe the animal life around, the SJC campus which is normally bustling with students during the day comes to life with chirping of crickets, croaking of frogs, clicking of bats and lizards at night. I got to observe a toad species, *Duttaphrynus melanostictus* and lizard species, *Hemidactylus parvimaclulatus*. This is what I believe is nature in its glorious form in an urban landscape, I have been fortunate enough to carry out this research and learn more things in the process. I'm grateful to NSA and NSA coordinator Dr. M Jayashankar for providing me the platform and opportunity for carrying out this survey.

ALUMNI CORNER



- PAVITHRA R

One of the most interesting stages in life that gives you an opportunity to explore is the college days. My days at SJC will always be precious moments, made me the person who I am today... Bold & Confident...!! It's the time when you decide your career...

In the book entitled, "What is Life?" written by Erwin Schrodinger asked, "How can the events in space and time which take place within the spatial boundary of a living organism be accounted for by physics and chemistry?" Indeed, all roads lead to the biological sciences.

Throughout my education, I have felt the pull of the life sciences. And that's how I got through CBZ, St. Josephs College of Arts & Science and this particular course was suggested by Rev. Father Ambrose Pinto.

Through the years, we had been part of NSA. The association helped us to think of our life in nature, daily to be shown matter and hence realized the life science reveal the truth of our existence. The events conducted by NSA involved lot of activities exploring living species, understanding the development of therapeutics and medical devices and human health.

The association served as a crossroads, where we have accumulated memories of our time there- the last - minute group studies for exams, competitive projects, seminars, jokes in our labs, debates, advice from our dear professors. Remembering all the kind faces and character defining moments that have helped shape our outlook.

I become grateful for being a part of this association as we strive to reach our career aspirations. Having crossed different channels, I am currently working in Indegene Pvt. Ltd., Bangalore, as a Quality Lead wherein I check the quality of the pharma packaging components and medical devices.

Finally, my words to my dear juniors, let's build a community to help better utilize your skill set, stay on top of the latest trends, keep a pulse on the job market, meet prospective mentors and gain necessary resources that will foster your career development in the respective field.

Thank you!

GALLERY



Crocodile

Shreyas Vijaykumar

MES Degree College of Arts,
Commerce and Science



Common Iguana



Iguana

GALLERY



Skipper Butterfly



Argiope Spider

Hemanth Kumar A N
Kristu Jayanti College, Autonomous

Ramitha D K
(20MCZ25)



Dragon Fly

GALLERY



Vaishnavi R K
(Atria Institute of Technology)



Mithuna
(Mount Carmel College)



Pranamyia K
(Mount Carmel College)

GALLERY



Brinda K
(Mount Carmel College)

ACTIVITIES AND ACHIEVEMENTS OF NSA STUDENTS

1. VIDHYU LEKHA.S - 20CZBT01 -
 - Drawing the line - organised by Consilium - 06/03/2021
2. SRIRAKSHA KARTICK -20CZBT04
 - Participated in Neerathon 4th edition 2021 - organised by WACC at St Joseph's College - 14/03/2021
3. ANISHA JUDITH J - 20CZBT06 -
 - Took part in western acoustics in Jehoshua, Christ University's gospel fest - 03/03/2021
4. URSHITAA MUKHERJII - 20CZBT07 -
 - Organised Open Heart 2021 - as part of the Organising Committee of Open Heart - 20/03/2021
5. FATHIMA IQBAL - 20CZBT12 -
 - Attended the offline event "Corporate Genesis 2021" conducted by the Office of Placements and Public Relations, St. Joseph's College - 27/03/2021
6. BHOOMIKA RANI U - 20CZBT23 -
 - Volunteers for plastic drive awareness in Bannerghatta forget by NSS - 1: 1/03/2021-06/03/2021
 - Volunteered for observational study on slums by NSS -1: 1/03/2021-13/03/2021
 - Attended webinar on personality development webinar by NSS - 1/03/2021-15/03/2021
 - Attended seminar and activity on water pot distribution for birds and animals by NSS - 27/03/2021
 - Participated in Neerathon organised by WACC - 14/03/2021
7. YUKTA NARENDRAN - 20CZBT25 -
 - Participated for Neerathon organised by WACC - 14/03/2021
8. VIJETHA SHETTY - 20CZBT27 -
 - Attended the event "THE CORPORATE GENESIS: THE RENAISSANCE" conducted by the entrepreneurship cell SJCAC Bangalore - 27/03/2021
9. DHARSHANA G RAGHAVENDRAN - 20CZBT48 -
 - Participated in Digital Art, Creative Writing, Improv, and Personality, Pratibha.
10. SAMRIDHI UPADHYAY - 20CZBT58 -
 - Secured 2nd position in Kavya Khel, Pratibha.
11. SHARATH SHAJI THOMAS- 20CZBT65 -
 - Participated for Neerathon organised by WACC - 14/03/2021

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