December 2020
Volume 02/Issue 01

ZOOLOGICAL STUDENTS' ASSOCIATION
UNIVERSITY OF JAFFNA

ZSA NEWS 2019-2020

Jezebel Butterfly (*Delias eucharis*)
Photographed by Mr.A.A.K.P.Amarasinghe

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ANNUAL NEWSLETTER 2019 – 2020

ZOOLOGICAL STUDENTS' ASSOCIATION

FACULTY OF SCIENCE, UNIVERSITY OF JAFFNA

EDITOR'S NOTES

Welcome to the first issue in the second volume of the ZSA newsletter. It is always a delight to bring new readers to the table.

This issue offers the information regarding the performances of our team, their contributions and leadership in each event where the effort brought them to a successful end. There are also a collection of articles outlining the approaches to some of the important aspects in science.

Being the editor of the ZSA has been a great experience. It opened up new chances for me to work with so many people leading myself to share wisdom and knowledge. I would like to thank our patron, Dr. T. Eswaramohan for his support and giving us opportunities to make the events happen, our senior treasurer, Dr. Mrs. Thulasitha William Shanthakumar for her precious advices and immense coordination, and all the other members for their ideas, guidance and knowledge which made each and every event a success. It's a pleasure to present you this newsletter on behalf of the ZSA.

We believe that this issue will enthusiast our readers towards the beauty of science

Editor: Miss. Vashni Olivia Patrick

Editorial Team:
Mr.A.A.K.P.Amarasinghe, Mr.Nadika Dinesh, Ms.M.A.F.Hasna, Mr.R.Nirujan, Ms. C.Thudshayini

Zoological Students' Association

ZSA (Zoological Students' Association) is the initiative taken by the Department of Zoology with the aim to provide an opportunity for the Zoology students to do extracurricular activities and enhance their leadership quality. The first general body was formed in 2013 with the Head of the department (Dr.Mrs.R.Gnaneswaran) as patron and Prof.S.N.Surendran as the first senior treasurer. The current committee is the seventh one and they have achieved some commendable goals. The senior treasurer for the current committee is Dr.Mrs.Thulasitha William Shanthakumar.

The vision of the Association is to be a recognized entity among the undergraduates to promote Zoological based research and learning.

The mission of the Association is to train competent and graduates who excel in research and learning in Zoological aspects and to poster promote students' interest in environmental protection and conservation of fauna through community-based activities.

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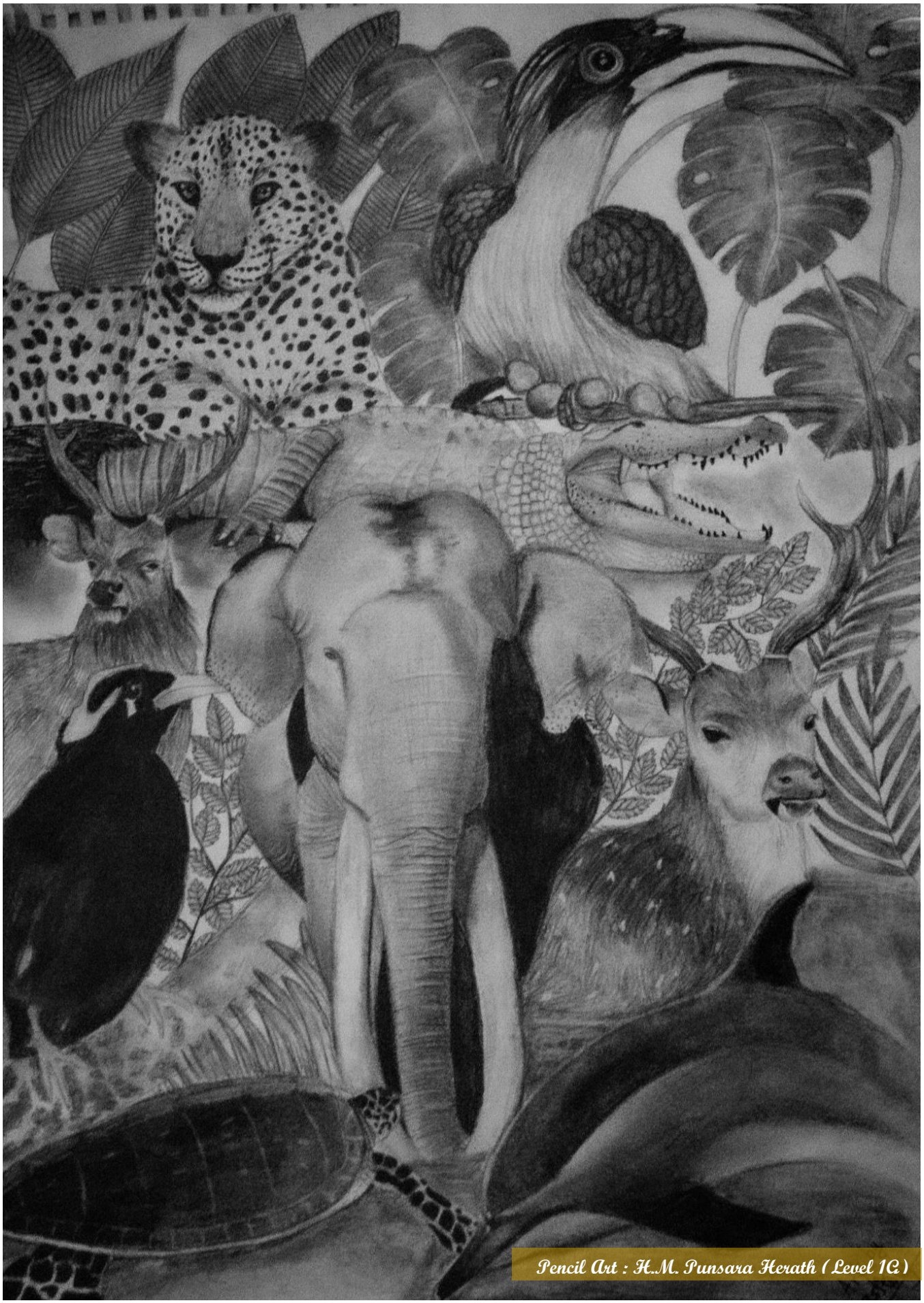

Pencil Art : H.M. Punsara Herath (Level 1C)

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MESSAGE FROM THE PATRON

Dear ZSA members, by the end of this year 2020, the term for the seventh Exco-members of ZSA will come to an end. It is my great pleasure to address the message to the second volume of ANNUAL NEWSLETTER 2019 – 2020 of ZSA. I am proud to say that the Department of Zoology is focused to develop zoological science through a variety of activities including teaching, learning and outreach activities. Our Department carries out considerable outreach programmes and disseminates knowledge to society. The ZSA was inaugurated by the Department of Zoology with the aim to provide an opportunity for the Zoology students to do extracurricular activities and enhance their leadership quality. No doubt, the outgoing committee has achieved commendable progress. They have nicely summarized all their activities in this newsletter. Also it has given a platform to other student writer's too to disseminate their ideas. While I congratulate the Editorial Team of this Newsletter, I kindly request the forthcoming Exco-members to follow their remarkable footsteps.

Dr.T.Eswaramohan, Patron

MESSAGE FROM THE SENIOR TREASURER

It is my great pleasure to congratulate the Zoological Students' Association (2019/2020) of our Department of Zoology for releasing this newsletter in December 2020. In addition to their academic activities, students are engaged in several extra-curricular activities through ZSA from its origin. Present committee also involved in several activities to show their talents and to promote the sustainable environment. Of which, workshop on First aid, wildlife photography, 3 minute research challenge and research symposium for biological students were the important events. I wish to thank AHEAD ELTA ELSE grant of the Department of Zoology and other sponsors for the financial assistance in all occasions. As a senior treasurer of the ZSA, I am very happy to see the students' progress here and also I wish them all the best for their future endeavors.

Dr.Mrs.T.W.Shanthakumar, Senior Treasurer

MESSAGE FROM THE PRESIDENT

Zoological Students' Association is a leading organization in the University of Jaffna, with the aim of encouraging Zoology Students to enhance their leadership qualities and to provide an opportunity to do extracurricular activities. I'm honoured and feel so great to shoulder this responsibility as the president of ZSA, University Jaffna. I would like to extend my gratitude to all the members giving me an opportunity to serve you as the president. This edition of our newsletter includes all the activities which were done during 2019-2020 and we were able to give an extra space to the students to enhance their writing ability creativity. I deem it's a great honour and privilege to present our annual edition to all readers on behalf of the ZSA. We believe this issue enthusiast our readers and I admire the devotedness of all members who have contributed for this issue.

Mr.A.A.K.P.Amarasinghe, President

MESSAGE FROM THE SECRETARY

The Zoological Students' Association has always set and inspiration and an example to every other student assembly in our campus. As students who are designated to study the nature, we took our utmost effort in shaping our members to gain an extra knowledge that would be helpful in their future carrier. We took the initiative steps in various kinds of activities including outreach activities, workshops and also research conferences, for the future benefit of the students and also to nurture the spirit of student life. Working with this most incredible committee and the supportive staff has been a positive impact on my life and a strength in facing challenges, and I assume that it has been the same for my colleagues as well. In this newsletter, we would like to present our dear readers, the story of our timeline during the past year.

Mr.Nadika Dinesh, Secretary

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ANNUAL GENERAL MEETING AND APPOINTMENT OF NEW OFFICE BEARERS OF ZSA

COMMITTEE MEMBERS

Mr.A.A.K.P.Amarasinghe
(4M)
President

Mr.Nadika Dinesh
(4M)
Secretary

Mr.M.N.Rafeedh
(3M)
Vice President

Mr.R.Nirujan
(3M)
Vice Secretary

Ms.M.A.F.Hasna
(4M)
Junior Treasurer

Ms.Vashini Olivia Patrick
(4M)
Editor

The 6th Annual General Meeting of the Zoological Students' Association [ZSA] was held on Tuesday, 23rd of July 2019 at the B1 lecture hall, Natural Science Block 1, Faculty of Science, University of Jaffna.

The meeting was chaired by the Vice President, Miss. Shanika Lakmali with the presence of senior lecturers, lecturers, academic staff and the students of the department of Zoology.

In this meeting, a new committee was elected from the 41st and 42nd batches of the Faculty of Science and the ZSA committee was handed over to the new committee.

The patron, Dr. T. Eswaramohan (HOD- Dept. of Zoology), Prof. (Mrs.) R. Gananeswaran, Dr. (Mrs.) T. W. Shanthakumar (Senior Treasurer) and all the staff and students congratulated the newly elected committee for their future activities.

Ms.Imesha D.Gamage
Ex.Co.Member
(4M)

Ms.C.Thudshayini
Ex.Co.Member
(3M/3G)

Ms.S.A.T.K.
Siyambalapitiya
Ex.Co.Member(2G)

Dr.Mrs.T.W.Shanthakumar
Senior Treasurer

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Activities in environmental conservation and promoting eco-friendly lifestyle

Under the financial assistance of the Small Grant Project (SGP), United Nations' Development Project (UNDP), the Zoological Students' Association and the Department of Zoology conducted several activities in environmental conservation and promoting eco-friendly lifestyle.

The activities were conducted in Kavutharimunai, Poonaryn to re-establish mangrove ecosystem in the coastal line and to uplift the livelihood of the beneficiary community in the area. The project was coordinated successfully by Mr. S. Arthiyan, Lecturer, Department of Zoology.

Activities conducted:

Plantation of 8000 mangrove seedlings at Kavutharimunai, Poonaryn.

Initiation of home gardening practices by conducting introductory workshops and distributing seedlings, seeds and tools.

Establishing a Museum of specimen collected from coastal environment of Jaffna, at the Environmental Laboratory, Department of Zoology, University of Jaffna.

Arranging workshops on home gardening practices in drought condition and field visit to organic farm in Adampan, Mannar.

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RECONTINUED PHASE OF THE PROJECT

Members of the Department of Zoology and Zoological Students' Association met Mrs. Jeyavathany (GEF coordinator- Mannar) and Dr. Vikramasinghe (Technical Expert), on 23rd and 24th of July 2020 to discuss about the continuation of the projects carried out under the UNDP fund, during the post lockdown period. The meetings came into conclusions on continuing the project with few modifications. The project was successfully coordinated by Dr. K. Gajapathy, senior lecturer, Department of Zoology and was managed by Miss. S. Subanky, Department of Zoology.

Activities conducted:

Home gardening monitoring and providing seed and seedlings to the selected beneficiaries in the community.

Training on "Palmyra pulp preservation and production" at Kavutharumunai Community Centre.

Monitoring visit to Kavutharumunai, Poonaryn to determine the survival rate of mangrove seedlings.

Plantation of Palmyra seeds by community beneficiaries.

Providing compost bins to ten (10) active beneficiaries that carried out home-gardening continuously.

Implementation of rain water harvesting system and providing plastic water tanks to active beneficiaries.

Providing trees, seeds and coconut seedlings.

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FIRST AID WORKSHOP

LIFE SAVING FIRST AID WORKSHOP - 2020

The Zoological Students' Association in collaboration with the Sri Lanka Red Cross Society (SLRC), Jaffna Branch organized a one day first aid training programme for the students of the Department of Zoology, Faculty of Science, University of Jaffna on the 8th February 2020 at the Library Auditorium, University of Jaffna. The workshop consisted of hand to hand experience on basic first aid practices, wound dressing, fracture bandaging and breathing assistance.

The technical assistance for the workshop was given by Mr. S. Pragash, Branch Executive Officer, SLRC Jaffna Branch.

50 participants received their basic training in first aid in this workshop and got received with an internationally recognized certificate on completion. Dr. T. Eswaramohan (Patron), Prof. S.N. Surendren, Prof. (Mrs.) R. Gananeswaran, Dr. T.W. Shanthakumar (senior treasurer), Dr. K. Gajapathy and Mr. S. Arthiyan graced the occasion with their presence. The Zoological Students' Association extends their heartiest gratitude to all members of the academic staff who helped in the organization of this event.

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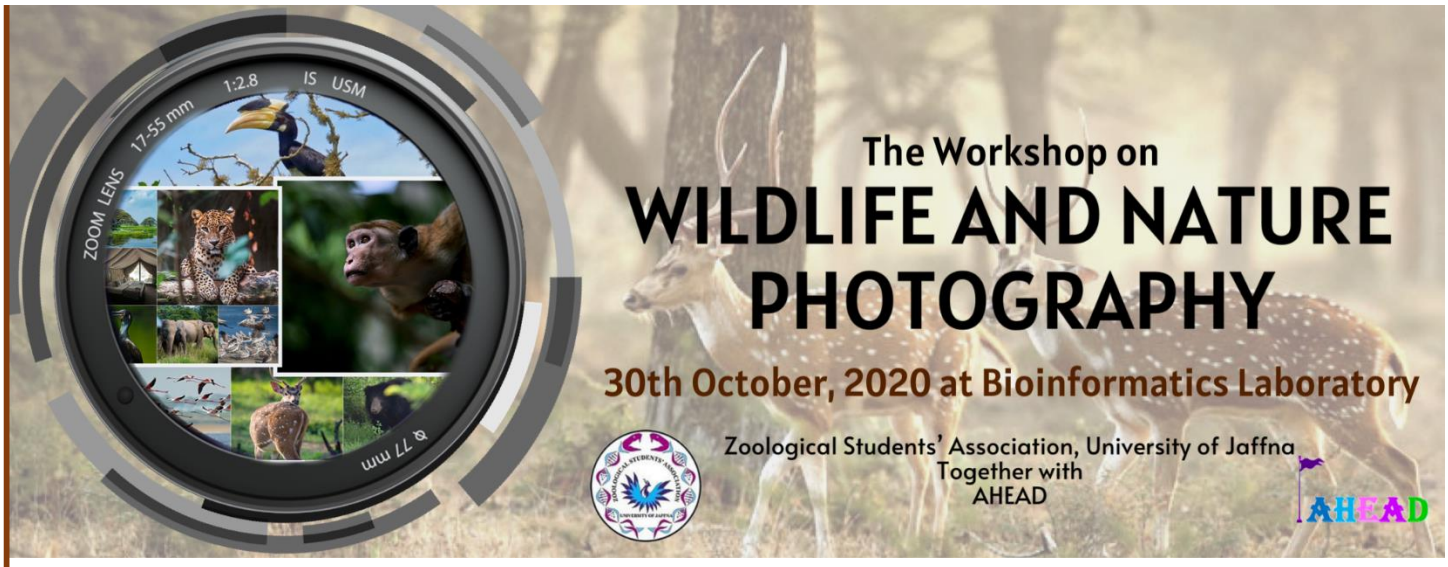

The workshop on WILDLIFE and NATURE PHOTOGRAPHY

A Wildlife and Nature Photography Workshop was organized by the ZSA on 30th October, 2020 in order to make interest and provide technical knowledge on DSLR photography and Wild Life photography.

The AHEAD/ELTAELSE grant under its vision of empowering student associations and forums to organize activities to develop their skills, granted the financial assistance to this programme. The programme was conducted in-person for the demonstrators and academic staff at the bioinformatics laboratory, department of Zoology, while the students were allowed to join via online due to the prevailed COVID-19 pandemic situation.

Mr. S. Saravanan, who is an Audio and Video Technician at the University of Jaffna, and also a Wildlife Photography enthusiast shared the technical basics of photography and his experiences in the field of Wildlife photography. Mr. Prasanna Ambigaibhagan, an award winning wildlife photographer contributed online as a resource person to give a brief idea about wildlife photography and on how to start photography at the very basic level.

The participants of this workshop enjoyed and learned many new things related to the field of photography. The workshop ended with an active session, where the participants were given chance to take photos using DSLR cameras.

The Zoological Students' Association is much grateful to the project coordinators of AHEAD/ELTAELSE, Dr. (Mrs.) Abyerami Sivaruban, Dr. (Mrs.). T.W. Shanthakumar and Dr. K. Gajapathy for their valuable support.

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3MR CHALLENGE

The undergraduate students who had already completed their final research, and the students who were about to start their research were presented their research concept and results within a limited and challenging time limit of 3 minutes. It was a mind blowing and refreshing experience for the students and the viewers.

3MR Challenge

A 3 minute research challenge was organized by the Zoological Students' Association on 17th November, 2020 at the bioinformatics lab, department of Zoology.

The undergraduate students who had already completed their final research, and the students who were about to start their research were presented their research concept and results within a limited and challenging time limit of 3 minutes. It was a mind blowing and refreshing experience for the students and the viewers.

Best presenters were awarded with certificates and a souvenir, while all participants received a certificate of participation. The winners were, (Ms.K.Vithushi, Ms.A.Salomi, Mr.N.G.Dayananda, Mr.N.D.Abeyaweera, Mr.R.Nirujan). The Zoological Students' Association is thankful to all academic staff who assisted in organizing this programme.

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RESEARCH SYMPOSIUM FOR BIOLOGICAL SCIENCE STUDENTS

The Zoological Students' Association marked the end of the year2020, by successfully organizing a Research Symposium for Biological Science Students of the University of Jaffna, taking the initiative to build up a platform for the students to publish and present their undergraduate researches. The symposium was organized by an organizing committee, headed by the conference chair, Mr. Gayan Madhusanka (41st batch) and was held on Sunday, 2nd of December, 2020. The abstracts were called upon from the recently passed out graduates that belongs to the Zoology, Botany and Fisheries Science streams, where they were reviewed by a panel of external reviewers from appropriate fields of biology

The Senior Professor S. Srisathkunarajah (Vice Chancellor, University of Jaffna), Professor P. Ravirajan (Dean, Faculty of Science), Dr. T. Eswaramohan (Head of the Department of Zoology), Professor S.N. Surendren, Professor (Mrs.) R. Gnaneswaran and all academic staff of the Department of Zoology graced the occation as chief dignitaries. The inauguration ceremony was held at the B1 Lecture Hall, Natural Science Block-1, Faculty of Science, in which Dr. Sara L. Goodacre (Professor in Evolutionary Biology and Genetics, University of Nottingham) delivered the keynote speech via online streaming. Students were allowed to present their presentation both in-person and via online. The best presenters were awarded with certificates and prizes, while all participants received certificate of participation.

1st Prize - Mr. Naruwan Dayananda

2nd Prize - Miss. Vashni Olivia Patrick

3rd Prize - Miss. Vithushi Kuganesan

The Zoological Students' Association congratulate all students who published their researches in this symposium. We would also like to extend our heartiest gratitude to the Department of Zoology, and the AHEAD/ELTAELSE/Jfn/Zoo grant for the immense support and assistance given for the success of this event and to Dr. K, Gajapathy and Mr. Arthiyan who extended their sincere support in organizing the event.

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What makes dogs so special?

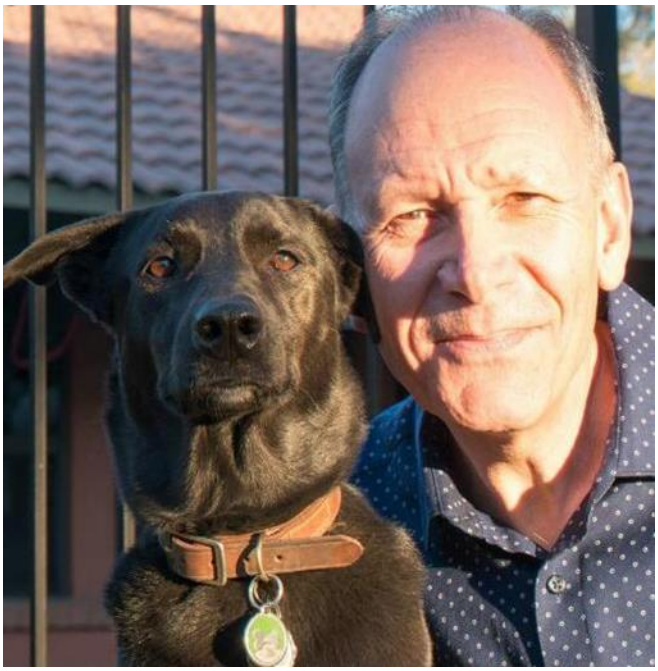
The Science of dogs: It's more than puppy love.

Dogs are often referred to as man's best friend. Domestic dogs have been selectively bred for millennia for various behaviors, sensory capabilities, and physical attributes. Modern dog breeds show more variation in size, appearance, and behavior than any other domestic animal.

We've been loving dogs for about 10,000 years now. Domestication of wolves began anywhere from 13,000 to 30,000 years ago primarily because of a partnership with humans for hunting; however, history shows a shift about 10,000 years ago. A research effort in 2017 worked to uncover a reason for that bond and revealed the love between human and dog is mutual. "When humans and dogs look into each other's eyes, both get a boost of the feel-good hormone oxytocin, which is the same hormone behind the special bond between new parents and their babies". And other research postures that we have developed an empathy to dogs based their animated facial expressions when they're in the presence of humans and that we attribute this likeness to what we might do or see in a child.

Clive Wynne, founder the Canine Science Collaborator at Arizona State University, makes the case in "Dog is Love: Why and How Your Dog Loves You." The animal psychologist, began studying dogs in the early 2000s, and, like his peers, believed that to ascribe complex emotions to them was to commit the sin of anthropomorphism until he was swayed by body evidence that was growing too big to ignore.

Titles like "The Genius of Dogs" by Brian Hare have advanced the idea that dogs have an innate and exceptional intelligence. Even wolves, dogs' ancestor species known for their ferocity and lack of interest in people, have shown the ability to follow human cues including, in a recent Swedish study, by playing fetch. Wynne proposes a paradigm shift, synthesizing cross-disciplinary research to posit that it is dogs' "hyper sociability" or "extreme gregariousness" that sets them apart.



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Williams syndrome gene

One of the most striking advances comes from studies regarding oxytocin, a brain chemical that cements emotional bonds between people, but which is, according to new evidence, also responsible for interspecies relationships between dogs and humans. Recent research led by Takefumi Kikusui at Japan's Azabu University has shown that levels of the chemical spike when humans and their dogs gaze into each other's eyes, mirroring an effect observed between mothers and babies. In genetics, UCLA geneticist Bridgett von Holdt made a surprising discovery in 2009: Dogs have a mutation in the gene responsible for Williams syndrome in humans; a condition characterized by intellectual limitations and exceptional gregariousness. "The essential thing about dogs, as for people with Williams syndrome, is a desire to form close connections, to have warm personal relationships to love and be loved," writes Wynne.

Numerous insights have also been gleaned through new behavior tests many devised by Wynne himself and easy to replicate at home with the help of treats and cups.One involved researchers using a rope to pull open the front door of a dog's home and placing a bowl of food at an equal distance to its owner, finding that the animals overwhelmingly went to their human first. Magnetic resonance imaging has drilled down on the neuroscience, showing that dogs' brains respond to praise as much or even more than food. But although dogs have an innate predisposition for affection, it requires early life nurturing to take effect.

All you need is love

For Wynne, the next frontiers of dog science may come through genetics, which will help unravel the mysterious process by which domestication took place at least 14,000 years ago.

Wynne is an advocate for the trash heap theory, which holds that the precursors to ancient dogs congregated around human dumping grounds, slowly ingratiating themselves with people before the enduring partnership we know today was established through joint hunting expeditions.

It's far less romantic than the popular notion of hunters who captured wolf pups and then trained them, which Wynne derides as a "completely unsupportable point of view" given the ferocity of adult wolves who would turn on their human counterparts. New advances in the sequencing of ancient DNA will allow scientists to discover when the crucial mutation to the gene that controls Williams syndrome occurred. Wynne guesses this happened 8,000 - 10,000 years ago, at the end of the last Ice Age, when humans began regularly hunting with dogs.

"All your dog wants is for you to show them the way," says Wynne, through compassionate leadership and positive reinforcement. It also means carving out time to meet their social needs instead of leaving them isolated for most of the day. "Our dogs give us so much, and in return they don't ask for much," he says.

You don't need to be buying all these fancy expensive toys and treats and goodness know what those are available.

"They just need our company; they need to be with people."

K.Shyarini Rashmika Gunachandra (3M)

Reference:

Phys.org – What makes dogs so special? Science says love. https://phys.org/news/2020-02-dogs-special-science.html. Accessed 6th November 2020.

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Complexity of COVID risk factors highlighted by Neanderthal DNA

It is revealed by a genetic analysis that some people who have severe reactions to the SARS-CoV-2 virus inherited certain sections of their DNA from Neanderthals. However, someone's way of responding to the virus doesn't completely depend on ancestral genes.

A key part of tackling COVID-19 is understanding why some people experience more-severe symptoms than others. Earlier, this year, a segment of DNA 50,000 nucleotides long (corresponding to 0.002% of the human genome) was found to have a strong association with severe COVID-19 infection and hospitalization. Writing in Nature, Zeberg and Pääbo2 report that this region is inherited from Neanderthals. Their results not only shed light on one reason that some people are more vulnerable to severe disease, but also provide insights into human evolutionary biology.

The COVID-19 risk haplotype described earlier this year bears variants across its entire 50,000-nucleotide span that are inherited together more than 98% of the time.

Long haplotypes such as this could be a result of positive selection, maintained in our genomes because they contributed to our species' chances of survival and reproductive success. They could also be introduced as a result of interbreeding with archaic hominin species such as the Denisovans and Neanderthals.

Some 1–4% of the modern human genome comes from these ancient relatives. Many of the surviving archaic genes are harmful to modern humans, and are associated with infertility and an increased risk of disease. But few of them are beneficial. Examples include the Denisovan-like version of a gene called EPAS that helps modern Tibetans to cope with life at extremely high altitudes, a Neanderthal gene that increases our sensitivity to pain and others that help us fend off viruses.

To investigate whether the COVID-19 risk haplotype might have been introduced from our ancient relatives, Zeberg and Pääbo compared the region with an online database of archaic genomes from around the world. They found the region to be closely related to that in the genome of a Neanderthal individual that lived in modern-day Croatia around 50,000 years ago, but it was not related to any known Denisovan genomes.

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The authors next checked the occurrence of the Neanderthal-derived haplotype in the modern human population. They report that it is rare or completely absent in east Asians and Africans. Among Latin Americans and Europeans, the risk haplotype is maintained at a modest frequency (4% and 8%, respectively).

By contrast, the haplotype occurs at a frequency of 30% in individuals who have South Asian ancestry, reaching as high as 37% in those with Bangladeshi heritage.

The researchers therefore speculate that the Neanderthal-derived haplotype is a considerable contributor to COVID-19 risk in specific groups. Their hypothesis is supported by hospital data from the Office for National Statistics in the UK. Those data indicate that individuals of Bangladeshi origin in the country are twice as likely to die from COVID-19 as are members of the general population (although, other risk factors will, of course, contribute to these statistics).

Why has this haplotype been retained in some populations? The authors suggest that it might be protective against other ancient pathogens, and therefore positively selected for in certain populations around the world. But when individuals are infected with the SARS-CoV-2 corona virus, the protective immune response intervened by these ancient genes might be overly aggressive. That can lead to the potentially lethal immune response observed in people who develop severe COVID-19 symptoms. As a result, a haplotype that at times in our past might have been beneficial for survival could now be having an adverse effect.

Despite the correlation between this risk haplotype and clinical outcomes, genetics alone do not determine a person's risk of developing severe COVID-19. Our genes, and their origins clearly influence the development and progression of COVID-19 (and other infectious diseases), but environmental factors also have key roles in disease outcomes.

For example, although the Neanderthal-derived risk haplotype is almost completely absent in people with African ancestry, this population has a higher COVID-19 mortality rate than do people of other ethnic backgrounds, even after adjusting for geography and socio-economic factors. Social inequality, and its impacts seem likely to account for a larger proportion of the risk of COVID-19 death than does Neanderthal-derived DNA.

However, the original impact of the inherited DNA on the body's response to the virus is unclear. Ongoing global efforts to study relations between our genetics and COVID-19 by analyzing more individuals from diverse populations, such as that were being undertaken by the COVID-19 Host Genetics Initiative (www.covid19hg.org), will help us to develop a better understanding of the disease's etiology. It is important to recognize that, although genes involved in the COVID-19 response might be inherited, social factors and behaviors (such as social distancing and mask wearing) are in our control, and can effectively reduce the risk of infection.

B.T.R.Godage (1G)

Reference:

Springer Nature (2020) – Neanderthal DNA highlights complexity of COVID risk factors.
https://www.nature.com/articles/d41586-020-02957-3.
Accessed 13th November 2020.

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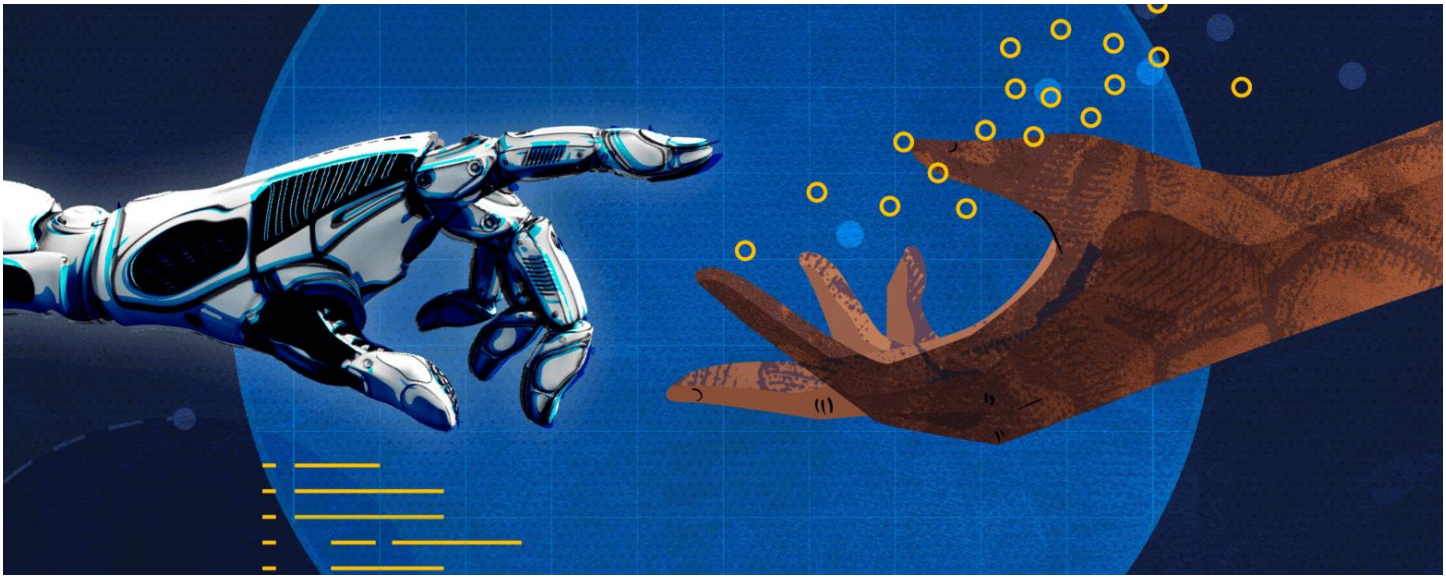

Artificial Intelligence

Artificial Intelligence (AI) is brining drastic changes in technological fields, where it can be implemented to automate the system for more efficiency and performance. AI is now getting used in multiple fields from simply the mobile phone to diagnosing diseases providing a high-performance and an accurate system that works with efficiency.

AI plays an important role helping humans. In agriculture sector, autonomous tractors and drone monitoring are used in order to enhance the productivity and crop yields. Robots and automated machines are used in these fields to monitor the health condition of crop and harvesting.

Automated warehousing and supply chain management is reducing the manpower and helping storage companies to manage the huge amount of stock or inventory with proper management and supply system. This system is helping ecommerce sector to operate with better efficiency in order to improve their operating margins and providing the insights or the customers to companies using the sentiment analysis services to understand their customer's sentiments and offer them better services to gain more market share in the industry.

Cogito is the ground breaker in generating high-quality training data for AI and machine learning development. It has squad of annotators to create such data with best level of accuracy with high volume of data at best pricing for all types of AI models. It is also specialized in supplying the labelled data for medical imaging analysis produced by qualified and highly experienced doctors to ensure the accuracy.

AI is now getting integrated into multiple fields, and further there is too much scope to penetrate new fields and industries to improve their efficiency and productivity. In healthcare sector, AI is playing a vital role in empowering the machines to diagnosis, analyse and predict the various types of diseases monitor the patient's health conditions and help scientists to explore the new drugs and medicines. However, AI is possible to do these things only when a model is well-trained through right machine. Learning, training data and using the suitable algorithms help to make it fully functional in relevant fields. Training data for AI is basically available for computer vision training through image annotation for creating a label data.

H. Imeshi Prathibha Sathsarani Weerasinghe (2G)

Reference:

Cogito Tech LLC – Whwre is Artificial Intelligance Used today? https://www.google.com/url?sa=t&source=web&rct=j&url=https://becominghuman.ai/where-is-artificial-intelligence-used-today-3fd076d15b68&ved=2ahUKEwiu1YOdoK3tAhXLAnIKHYy8AcwQFjADegQIARAE&usg=AOvVaw3HQlLgAJPH1UHVo0-0PuIN. Accessed 16th November 2020.

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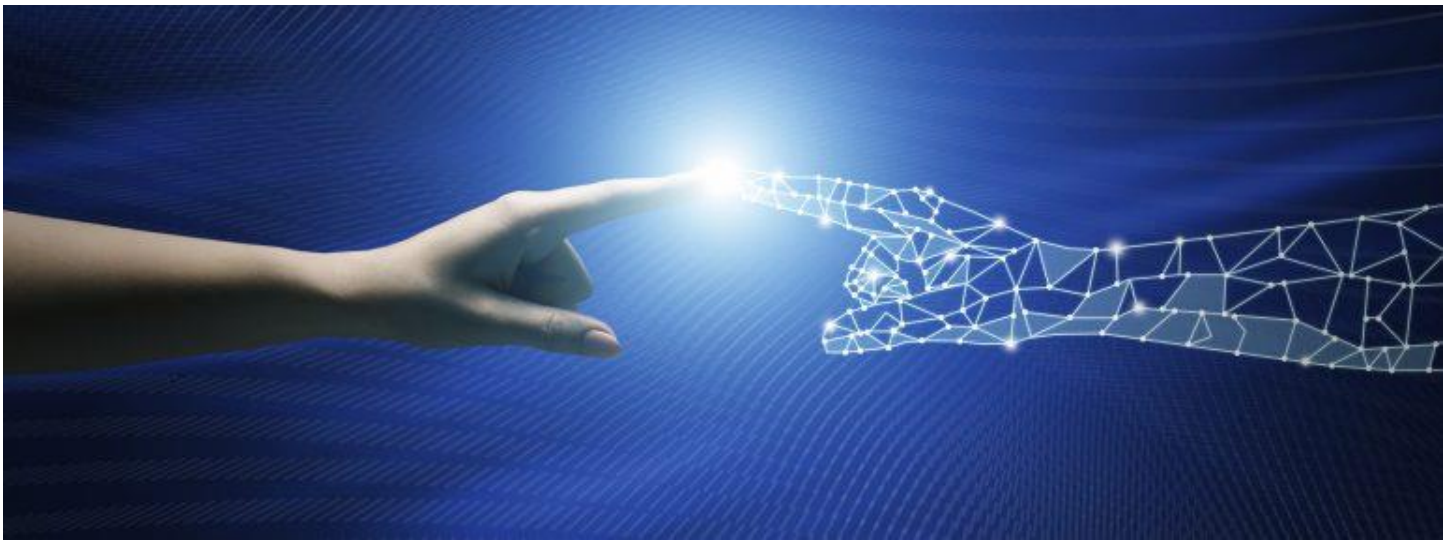


Symbiosis with artificial intelligence

Since the beginning Science has given its precious wonders to the world which are capable of reshaping the lives of the people all around the world. We can say science is an ever evolving process. How far can the human curiosity drive, that much distance is possible for the science to observe. However, science is also a kind of systematic information system. In the history of the humans there were many information systems occurred but none of them survived like science did because science produce new technologies, gadgets for the people which really upgrades the way of living. So there is no reason to leave science behind.

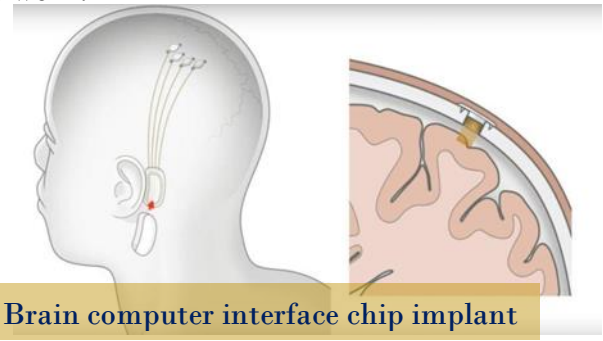
This is 21st century. This century is known as the era of artificial intelligence. People always wanted to recreate everything in the nature artificially. Human mind is a very divers and complex natural system which gives the quality called intelligence. So people wanted to recreate this mind artificially. As a result, another amazing product of science comes out called artificial intelligence. Literarily the possibilities of artificial intelligence are limitless.

Power of artificial intelligence is enormous. This power revolutionized our space exploration to banking systems in a tremendous way.

But now people think that power of intelligence evolves itself to a point that humanity is threatened, what can be the consequences of that?

Many kind of science fiction movies have been made on this topic. According to the recent estimates in the next 10-50-year time if the artificial intelligence evolved at this rate, human intelligence compared to the intelligence of AI would be equal to the intelligence of a kitten. So this could be a major problem of future humanity. Human intelligence speed and artificial intelligence speed would be very different from each other. So how can science provide a solution for this problem?

So this is where the well-known inventor multibillionaire Elon musk comes in to the picture. He wanted to have a safe money transaction method so he invented paypal , he wanted to have a safe driving vehicles he created tesla motors, like that he has invented many of the companies which are solving major problems in a futuristic way. Now his attention turned to the direction of above problem about artificial intelligence. So as usual he started a project called nura-link and entered in to the work.



Brain computer interface chip implant

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Neuralink Corporation is an American neurotechnology company founded by Elon Musk and others, developing implantable brain–machine interfaces (BMIs). The company's headquarters are in San Francisco; it was started in 2016 and was first publicly reported in March 2017. The company was aiming to make devices to treat serious brain diseases in the short-term, with the eventual goal of human enhancement, sometimes called transhumanism. Musk said his interest in the idea partly stemmed from the science fiction concept of "neural lace" in the fictional universe in The Culture, a series of 10 novels by Iain M. Banks.

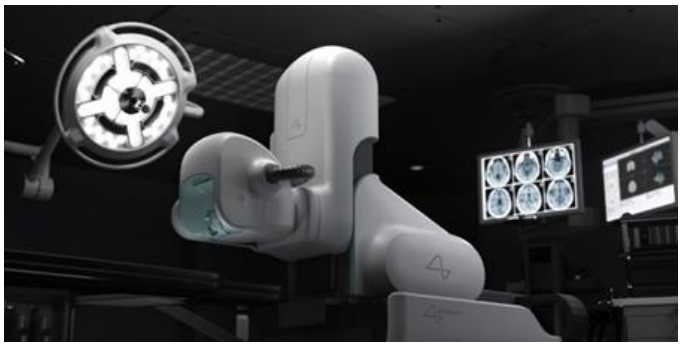
Musk defined the neural lace as a "digital layer above the cortex" that would not necessarily imply extensive surgical insertion but ideally an implant through a vein or artery. Musk explained that the long-term goal is to achieve "symbiosis with artificial intelligence", which he perceives as an existential threat to humanity if it goes unchecked. As of 2017, some neuroprosthetics can interpret brain signals and allow disabled people to control their prosthetic arms and legs. Musk spoke of aiming to link that technology with implants that, instead of actuating movement, can interface at broadband speed with other types of external software and gadgets.

Mechanism of Nura-link

In July 2019, Neuralink held a live-streamed presentation at the California Academy of Sciences. The proposed future technology involves a module placed outside the head that wirelessly receives information from thin flexible electrode threads embedded in the brain. The system could include "as many as 3,072 electrodes per array distributed across 96 threads" each 4 to 6 µm in width. As Musk described it, "it's like a Fit bit in your skull with tiny wires.

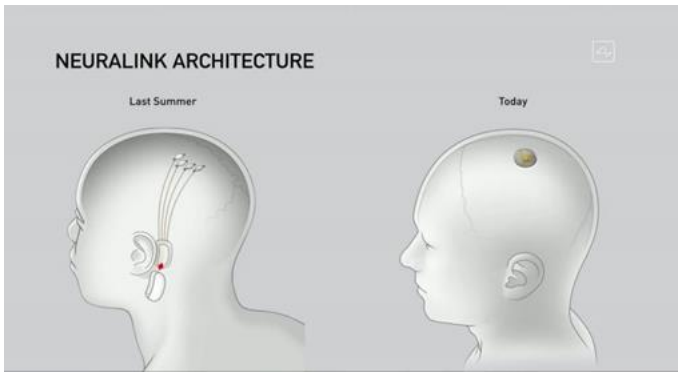
“The threads would be embedded by a robotic apparatus, with the intention to avoid damaging blood vessels. Currently, electrodes are still too big to record the firing of individual neurons, so they can record only the firing of a group of neurons; Neuralink representatives believe this issue might get mitigated algorithmically, but it's computationally expensive and does not produce exact results.

"It was complex, and you still wouldn't look totally normal; you would have a thing behind your ear," he said about the old design. "So we've simplified this to something that is about the size of a large coin, and it goes in your skull."



The in-brain device could enable humans with neurological conditions to control technology, such as phones or computers, with their thoughts. Musk also claims to be able to solve neurological disorders from memory, hearing loss and blindness to paralysis, depression and brain damage.

Finally, we can have good hopes for the future. As humans we always adapt for the environment quickly with our scientific tools and techniques. If one-day artificial intelligence came to conquer the humanity, we will be prepared if that day arrives



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Loss of Bio diversity

Biodiversity or Biological diversity is a term that describes the variation of living beings on earth. Biological diversity includes microorganisms, plants, animals and eco systems such as coral reefs, forest, rain forests, deserts etc. Biodiversity is the result of 3.5 billion years of evolution. Biodiversity has 3 principal elements. 1. Genetic diversity, 2. Ecosystem diversity, 3. Species Diversity

Habitat destruction, Over exploitation of species, , Global warming and climate change, air pollution, soil pollution, over exploitation of natural resources, hybridization or genetic engineering, invasive species and over killing are some of the causes of biodiversity loss.

One of the best examples is when there was a spread of malaria in a part of Borneo, the WHO spread DDT to control the spread of the disease, the malaria was brought to under control, the mosquitoes were eaten by geckos and in turn the geckos were eaten by cats. They started dying, and the rat population started to increase drastically causing other pandemics and rat related diseases so the WHO had to parachute 14000 cats into that area of Borneo to control the rat population.

Due to climatic change and disruption of natural systems, many parts of the world would be faced with catastrophic natural disasters and spread of diseases. In fact medicines from nature account for usage of 80% of the world's population. As David Suzuki the well-known environmentalist said "If we pollute the air, water and soil that keeps us alive and well, and destroy the biodiversity that allows natural systems to function, no amount of money will save us".

We humans have changed our lifestyle in a dramatic way in last century or so instead of an integrated life style with nature. We have learned to invent systems and technologies and commercialize them to earn profit without any regard to the destruction and devastations it would have on our bio diversity.

When we witnessed less activities of humans, during lockdown in many parts We are a species who destroy an entire rainforest and justify preserving bio diversity by allocating a plot of land, and in addition opening it up for tourists promotions in the name of eco travelling, a species with a reckless mentality of using noxious toxic material to pack a 200ml of liquid to quench its thirst, and polluting the land, sea and water worldwide.

We are on a self-destructive cause, this trend is not likely to change, unless the danger comes and stares on human faces, in the present tense, in some period of time in the future, or the mother nature decides enough is enough and shows its wrath toreverseour technologies and destructive way of life and restore condition to the primitive status, as it has happened many instances in the life time of our planet earth, or as some scientists predict we may have to find a new earth like habitable planet which looks far-fetched, as travelling millions of light years away is an insurmountable probability compared with our toddler's toys technologies at present. So the future looks very gloomy for bio diversity preservation.

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ART GALLERY

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