

Editorial Board

Chief Editors:

Ms. Y. Jinthusa
Mr. H.A. Sangeeth Nimsara Hettiarachchi

Committee Members:

Mr. P. Navaneethan
Ms. G. Abarna
Mr. Mohamed Ilyas Mohamed Asfhaq
Ms. D. Thiviyatharshini
Ms. L.K.M.E.W. Sanjaya Madushan Ellepola
Ms. N. Dilukshana
Ms. Shaja IF

English proofreading:

Dr. G. Jeyaseelan
Head,
Department of English Language Teaching
University of Vavuniya

Published by:

Department of Bio-science,
Faculty of Applied Science,
University of Vavuniya.
(Studentnewsletter.dob@vau.jfn.ac.lk)



ENVIRONMENTAL STUDIES

NEWSLETTER

January to December 2023

Volume IV



Department of Bio Science, Faculty of Applied Science
University of Vavuniya

Environmental Society

The Environmental Society is a squad of Environmental Science undergraduates on raising public awareness and committing to sustainable practices and environmental challenges. ENSOC aims to build a community that promotes sustainability through creativity. The activities carried out by ENSOC have achieved their purposes, including raising public awareness of environmental issues, advancing environmental science, encouraging undergraduate career development, and establishing a connection between the university and the relevant environmental organisations.

ENSOC Committee members

Patron:

Dr.S. Wijeyamohan
(HOD/Senior Lecturer)

Senior Treasurer:

Dr(Ms.) V.Sharaniya
(Senior Lecturer)

President:

Miss. A.C. Azha (Level 3)

Vice president:

Mr. S. Sankeeth (Level 2)

Secretary:

Mr. N.G.B.S.M. Nawagamuwa (Level 3)

Junior treasurer:

Ms. J. Sujana (Level 2)

Editors:

Mr. M.M.M. Ishtiya (Level 3)
Ms. H.A.O. Dinethma (Level 2)

Members:

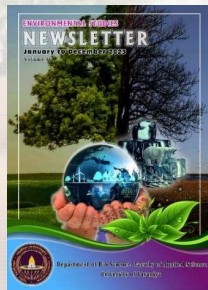
Ms. A.S.F. Shama (Level 4)
Ms. E. Jesika (Level 3)
Ms. M.A. Banu (Level 2)

"WE NEED TO CHANGE, NOT CLIMATE CHANGE", THE WORLD NEEDS US

Climate change poses a significant threat to humanity with widespread and severe consequences for people, the natural world, and the global economy. The impacts of climate change can be felt across the globe, threatening ecosystems, human settlements, and infrastructure. These impacts hinder efforts to meet the Sustainable Development Goals (SDGs).

As a small island and a developing nation, Sri Lanka is highly vulnerable to the adverse effects of climate change. Extreme weather occurrences are currently happening in Sri Lanka due to climate change. Adaptation is the key strategy available for facing the impacts of climate change. Adaptation refers to taking actions to reduce the negative impacts of climate change and build resilience to climate-related risks across all systems. These actions can include changes in processes and practices as well as physical changes to the environment to better manage climate impacts by mitigating potential damages and seizing opportunities due to climate change.

Since human activities have already added vast amounts of greenhouse gases to the atmosphere, the world is now experiencing the adverse effects of climate change. We are responsible for the consequences of climate change. As a global community, we need to prepare for and adapt to these changes while moving towards sustainable development to protect human health, water and food supplies, our cities and natural habitats.



Cover page designing &
Cover story
Y. Jinthusha
2018/ASB/09

Wildlife-based Community Outreach Programme

Students of the Department of Bio-science (2018/2019 Batch) organised a community outreach programme for primary and Secondary school students from Vavuniya and Mannar districts under the guidance of the Department of Wildlife Conservation and Dr.S. Wijeyamohan to celebrate World Wildlife Day. This program was held on the 3rd of March, 2023. This programme was aimed to educate about wildlife and create awareness on wildlife and the importance of wildlife conservation among the students. Following that, a quiz competition was conducted for them.



Carbon Dating

Carbon dating is a scientific method developed in the late 1940s by Professor William Libby to determine the age of carbon-based materials originating from living organisms. It relies on the radioactive isotope carbon-14 (^{14}C), formed in the upper atmosphere and absorbed by plants and animals during their lifetime. When these organisms die, the ^{14}C content begins to decay constantly, allowing scientists to estimate their age by measuring the remaining ^{14}C . The half-life of carbon-14 is 5,400 years.

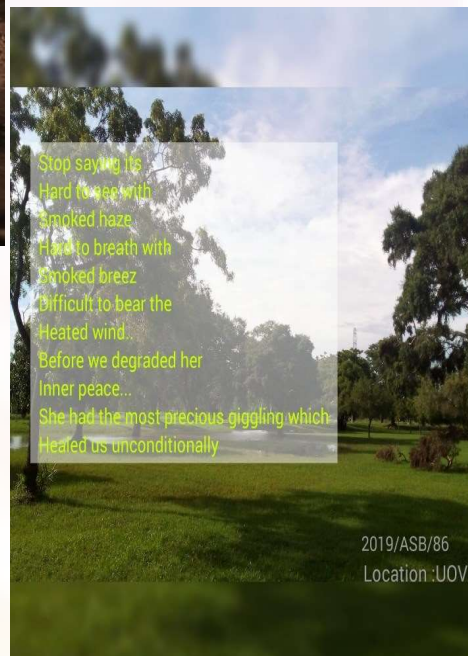
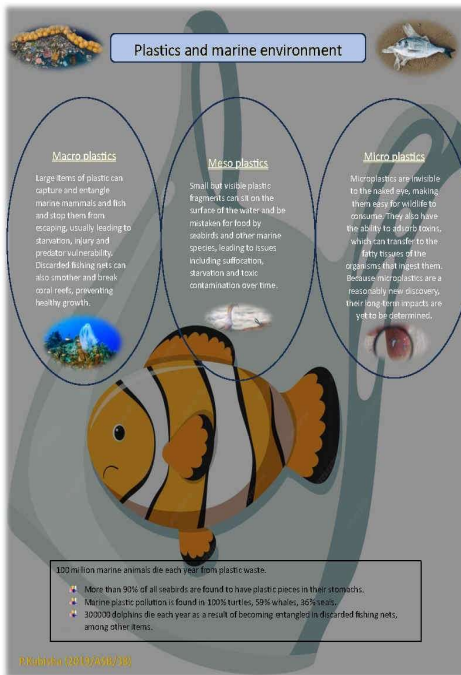
Limitations of carbon dating include susceptibility to contamination, inability to date inorganic materials, cost, difficulty in dating samples older than 40,000 years, and the impossibility of dating samples over 60,000 years old. Carbon dating has significantly impacted archaeology, geology, and forensic science despite these limitations by providing accurate age determinations for organic materials. It has become a crucial tool in understanding Earth's history and the timeline of its inhabitants. Though subject to controversies, the method remains essential for scientific research and discovery, offering valuable insights into the past that would otherwise be lost.

T. Mathivathani
2018/ASB/16



Being a water-saving superhero while brushing your teeth and brainstorming offbeat ideas in the shower, all in a day's work!!!

Reg No: 2019/ASB/18



Green Consumerism



The Impact of Individual Choices and Behaviors on the Environment and the Economy

Green consumerism refers to making purchasing decisions with environmental considerations in mind. It involves buying products and services that are more sustainable, eco-friendly, and have a lower environmental impact. It can include choosing items made from renewable materials, supporting companies with transparent sustainability practices, and reducing overall consumption. While it can promote positive change, some critics argue that it might not be enough to address more significant environmental issues.

It is important to note that while individual actions are valuable, systemic change is also necessary. Government policies, corporate regulations, and industry-wide initiatives are essential to effectively address larger, more significant environmental issues. Nevertheless, green consumerism remains an impactful tool for raising awareness, influencing market trends, and encouraging a shift towards a more sustainable and responsible economy.



Critical features of green consumerism

- A focus on the environmental impact of products
- Preference for sustainable materials
- Consideration of ethical labour practices
- Seeking transparency in production processes
- Supporting responsible companies
- Choosing durable products
- Favouring local and small-scale options
- Driving innovation
- Participating in advocacy
- Awareness embracing the circular economy,
- Promoting personal empowerment.

Ethical consumerism, also known as ethical consumption or responsible consumerism, is a practice where individuals consider ethical and social considerations when making purchasing decisions. It includes factors like human rights, labour conditions, and animal welfare. It is closely associated with products labeled as fair trade, organic, and cruelty-free. For instance, opting for

green products and those with eco-labels supports sustainable production practices. Reducing waste, especially by using reusable bags, water bottles,

and coffee cups contributing to reducing plastic and paper consumption. This simple act can have a substantial impact. One person using these reusable items can save up to 1700 plastic bags, 150 plastic water bottles, and 1000 paper cups each year. These small but collective efforts can significantly reduce resource consumption, waste generation, and pollution, contributing to a more sustainable and environmentally conscious society.

Barriers to green consumerism

- Including lack of awareness
- Higher upfront costs
- Limited availability and competing priorities
- Shift in societal values.



Practical strategies to overcome these barriers involve education campaigns, financial incentives for eco-friendly products, and policies promoting sustainable practices. Collaborations between businesses and consumers can co-create innovative solutions, aligning products with environmental goals. Implementation of these strategies aims to break down barriers and foster greater adoption of green consumerism, contributing to a more sustainable and environmentally conscious society.

Dilini Tharuka Mendis
2018/ASB/01

The Butterfly

Orange and black Colour Wings
Little White spots on an upswing
Comes to flower bed no any miss
Gives fun to nearby kids
It comes on it's habit

But it was incorrect
It had to be lasted
By spider's strangled

Hasini Nawanga Kuruppuarachchi
2019/ASB/41

Climate-Smart Agriculture

Climate Smart Agriculture (CSA) is an approach to farming that seeks to address climate change challenges while improving agricultural productivity and food security. Climate- Smart Agriculture involves using practices and technologies adapted to the local climate and environment. Those are Conservation tillage, Agroforestry and Drought resistant crops.

Climate Smart Agriculture is an approach for transforming and reorienting agriculture production systems and food value chains so that they support sustainable development and can ensure food security under climate change. It helps stakeholders at all levels to identify agricultural strategies suitable to their local conditions. It supports the organisation's goal to make crop and livestock systems, forestry and fisheries and aquaculture more productive and more sustainable.



Implementing climate-smart agriculture involves a range of actions, including assessing the local climate and environment to identify the most appropriate climate-smart agriculture practices and technologies for a given area, adopting practices that improve soil health (cover cropping, crop rotation, conservation tillage), using drought-resistant crop that is better adapted to changing weather patterns, implementing water saving techniques (drip irrigation and rainwater harvesting), introducing agroforestry practices that combine trees with crops and livestock to improve soil health and biodiversity and reducing greenhouse gas emissions from agriculture by using renewable energy sources (solar/wind power).

S. Birunthiga
2020/ASB/41

Nature and life

I like to watch the sun rise.

In the morning, when I am alone
I ask for hard music on Love Birds
I drink fresh water from outside

flower bloom a riot of colour and grace
Petals that smile in every tranquil space
The stars at night, a celestial display
In the dark canvas, they gently way

The whispering leaves in a tranquil glen
Tell tales of life again and again
The symphony of birds in the trees, singing melodies
that put our hearts at ease.

The moon is shining fresh and bright
the sky outside is clear and blue My mind is calm,
my heart is light
Today and future will be a good day

Water deep, where secrets lie.
pollution shadow, a silent cry
Rivers, lakes and cleans once pure
Now hear the scars we can't ignore

Smoke stacks rise, spewing despair
Particles linger in the hazy air.
a Vail of breath, thick and grey
Choking our breath, day by day

A.G.S.M.S.Kumari
2019/ASB/61



Unlocking the Green Potential: Discover the Incredible Benefits of Azolla

Azolla is an invasive plant in wetlands and freshwater lakes in Sri Lanka. It can alter aquatic ecosystems and biodiversity substantially.

Benefits of Azolla



Azolla As Green Manure

- Azolla has been used in rice paddies as a companion plant.
 - It tends to block out light to prevent competition from other plants.
 - Azolla is the most commonly used green manure for rice crops due to its high growth rate, nitrogen-fixing capacity, and ability to scavenge nutrients from soil and water.
 - Azolla increases soil fertility by increasing total nitrogen, organic carbon and available phosphorus in soil.
 - Azolla is relatively sensitive to salt; cultivation in a saline environment for two consecutive years decreased salt content from 0.35-0.15 and desalination rate.
 - Reduced the EC, pH of acidic soil and increased calcium content of soil.
- Azolla As Bioremediation
- Azolla can remove chromium, nickel, copper, zinc, and lead from effluent.
 - It can remove lead from solutions containing 1-1000 ppm.
 - Azolla exhibits a remarkable ability to concentrate metals such as Cu, Cd, Cr, Ni, and Pb and nutrients directly from pollutants or sewage water.

Azolla As Human Food

- Few researchers have experimented with
 - preparing Azolla in soups or "Azolla meatballs" as food for man.
 - Effectively as traditional cough medicine.
 - Used as a salad in Western countries due to its high quantity of protein.
- Recent research in collaboration with the Space Agriculture Task Force suggested Azolla as a component of the space diet during habitation on Mars (found to meet human nutritional requirements on Mars.)

Azolla In Production of Biogas and Bio Energy

- Anaerobic fermentation of Azolla results in the production of methane gas, which can be utilised as fuel and remaining effluent can be used as a fertiliser.
- A non-polluting, high-energy fuel, when Azolla-Anabaena is grown in a nitrogen-free atmosphere and or a water medium containing nitrate, the nitrogenise in the symbionts, instead of fixing nitrogen evolves hydrogen, using water as the source.

Azolla As Mosquito Repellent –Larvicide

- The plant grows in a thick mat on the water's surface, making it difficult for the larvae to reach the surface to breathe, effectively choking the larvae.
- Azolla can also be used to control mosquitoes, for a thick Azolla mat on the water surface can prevent breeding and adult emergence.

Bioplastics From Azolla

- Bio plastics can be produced by Azolla.
- Prepare the edible and compostable plate



R.M.H.S.Rathnayake
2018/ASB/61

AI IN ENVIRONMENTAL SCIENCE



AI PLAYS A SIGNIFICANT ROLE IN ENVIRONMENTAL SCIENCE IN VARIOUS WAYS

Climate Modeling

AI is used to enhance climate models by analyzing vast datasets. Helping Scientists understand climate change patterns and make more accurate predictions.

Remote Sensing

AI Algorithms can process satellite imagery and sensor data to monitor Deforestation, Track wildlife population and Assess changes in land use.

Air and Water Quality Monitoring

AI driven sensors and data analysis Improve the monitoring of Air and Water Quality. Helping identify pollution sources and mitigate their impact.

Mental health

The Quality of the environment can also impact mental health. Green spaces, access to nature and clean surroundings can contribute to reduced stress and improved mental wellbeing.

M.M.S.N. Hafsha
2020/ASB/80

DOCTOR NEEM

Neem products

- Insecticide
- Fungicide
- Repellent
- Bactericide
- Nematicide

Active ingredient

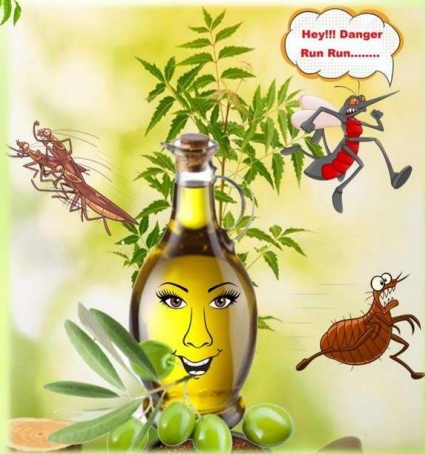
- Azadirachtin

Mode of Action

- Stomach poison

Effects

- Antifeedant
- Oviposition inhibition
- Growth & metamorphosis inhibition
- Effect on Fecundity & egg-sterility



Target

- Agricultural pest
- Stored-grain pests
- Household pests
- Livestock pests
- Vectors of human diseases

Benefits

- Safe for predators, pollinators
- Organic & biodegradable
- cheaper
- Can be mixed with synergists
- Development of pest resistance is less common.



Environmental Health & Human Well being



The connection between environmental health and human well being is significant. Environmental health refers to how the quality of our environment, including Air, Water, soil, And Ecosystem, effects human health.

Here are some key points about this connection

Clean Air and Water

Access to clean air and water is essential for human health. Pollution in the air and water can lead to respiratory disease, Waterborne illness and other health issues.

Bio Diversity

Biodiversity loss can affect human health. Ecosystems provide food, medicines and Regulate disease vectors. Loss of biodiversity can disrupt these services.

Food and Agriculture

Environmental conditions influence food production. Soil quality, climate and water availability all play role in ensuring a secure food supply.

Mental health

The Quality of the environment can also impact mental health. Green spaces, access to nature and clean surroundings can contribute to reduced stress and improved mental wellbeing.

F. H. F. Haaneem
2020/ASB/62

ENVIRONMENTAL MANAGEMENT SYSTEMS

Environmental management system is a set of processes and practices that enable an organization to reduce its environmental impacts and increase its operating efficiency. Each company's EMS is tailored to the company's business and goals. EMS helps a company address its regulatory demands systematically and cost-effectively. It reduces non-compliance risk and improves health and safety practices for employees and the public.

Why should an organisation have an EMS?



- To check whether organisation required
- to comply with environmental laws and regulations.
- It is a way to improve overall environmental performance.
- to check significant liability of the state of organisation's environmental affairs.
- Does a lack of time or resources prevent organisation from taking charge of its environmental obligations?
- Does organisation know how its environmental objectives relate to business objectives.

Basic Elements of an EMS

- Reviewing the company's environmental goals
- Analysing its environmental impacts and legal requirements.
- setting environmental objectives and targets to reduce environmental impacts and comply with legal requirements.
- Establishing programs to meet these objectives and targets.
- monitoring and measuring progress in achieving objectives.
- Ensuring employees' environmental awareness and competence.
- Reviewing the progress of EMS and making improvements.

Benefits of EMS



- Minimise environmental liabilities.
- Reduce waste.
- Maximise efficient use of resources.
- Demonstrate a good cooperate image.
- Build awareness of environmental concern among employees gain better understanding of the environmental impacts of business activities.
- Increase profit through more efficient operations.
- Improving environmental performance through more efficient operations.

I.M.N.H.Induwarani
2018/ASB/05



M.A.Fathima Asna
2018/ASB/45

Sri Lanka as a biodiversity hotspot, hosts several endangered species



Srilankan elephant (*Elephas maximus maximus*) is the largest terrestrial mammal in Sri Lanka and is listed as endangered due to habitat loss, human-wildlife conflict, and poaching.

Sloth bear (*Melursus ursinus*) is categorised as an endangered species. Native to the Indian subcontinent, including Sri Lanka, these bears are distinct with shaggy coats and a V-shaped mark on their chest. Their status as endangered is primarily attributed to habitat loss, as forests are cleared for agriculture and human settlement.



Sri Lankan Leopard (*Panthera pardus katiya*) is designated as an endangered species, facing severe threats to its existence. As a subspecies of the

leopard native to Sri Lanka, these majestic big cats are under considerable pressure due to habitat loss, driven by human activities such as deforestation and agricultural expansion.

Purple-faced Langur (*Semnopithecus vetulus*)

commonly known as the purple-faced leaf monkey, is an endangered primate species exclusive to Sri Lanka. Recognisable by its striking purple-blue face and golden-brown fur, this langur faces critical endangerment primarily due to habitat loss and fragmentation resulting from deforestation and human encroachment.



Srilankan Frogmouth

(*Batrachostomus moniliger*) is an endangered bird species native to Sri Lanka, known for its nocturnal habits and distinctive appearance. Major threats are habitat loss and degradation resulting from deforestation.



Srilankan Red slender loris (*Loris tardigradus*) is a small, nocturnal strepsirrhine primate native to the rainforests of Sri Lanka. *Loris tardigradus* is endangered by the IUCN's Red List of Threatened Species and is listed under Appendix II under the Convention on International Trade in Endangered Species of Wild Fauna and Flora. Major threats to their persistence include habitat loss, hunting for the pet trade and for their meat, road kills, superstitious kills, and traditional medicine.



N.Dilukshana
2020/ASB/35

JUNK FOODS AND HUMAN HEALTH

Foods low in nutrients and high in saturated fat added sugar, and added salt are called junk foods. They are convenient, tasty and affordable. Junk foods consist of high amounts of carbohydrates, proteins and fats, which are quickly absorbed by the body. These are typically highly processed foods. Junk foods are also known as discretionary foods. These are very appealing. The focus of making junk food is making them tasty. Then, people eat a lot of junk food. The most popular junk food in Sri Lanka is pastry, wade, pizza, rolls and buns. The most common snack is "Murukku".



Junk foods can



trigger the dopamine released in the brain, making us feel good when we eat these foods. Dopamine is called a "happy hormone". We can commonly find refined sugar in junk foods. That leads to a quick drop in blood sugar because it is digested quickly by the body. This can lead to tiredness and cravings. When we eat junk food, we notice decreasing energy and increasing hunger sooner. Junk foods can easily be prepared and sell. Then, they can earn more money because people are addicted to junk foods.

Junk food vs. healthy foods

Junk foods contain high calories, fat, and added sugar, resulting in high blood pressure and obesity-like diseases. However, healthy foods contain many useful nutrients. For example, orange fruits contain vitamin C which helps to make collagen in our body.

Junky facts about junk food

- Coca-Cola is used as an all-purpose cleaner. Though we know this is harmful, we are still using Coca-Cola for party functions. This is the addiction.

- Daily junk food intake (candies) in children has been linked to violence later in life. They are in high risk to be serial killer in future.
- A single donut will make your allowance for the Trans fats for the whole day. But we don't stop eating at one donut.

Short term impacts	Long term impacts
<ul style="list-style-type: none"> • Increased stress levels • Fatigue • Difficulty sleeping • Concentration difficulties • Feeling down • Tooth decay • Tiredness and craving • Decreasing energy • Increasing hunger sooner 	<ul style="list-style-type: none"> • Type 2 diabetes • Heart problems • Osteoporosis • Obesity • Certain cancers • High blood pressure • High cholesterol • Depression • Eating disorders

Important facts

- Eating unhealthy breakfast (junk foods) for 4 days in a row causes disruption in the brain's learning and memory parts.
- Every fifth child in the world is overweight or obese because of junk foods.
- Junk foods should not exceed 10% of your daily energy intake. It means a small muffin or a few squares of chocolate per day.
- All the junk food is not harmful. Some can be healthy as some junk food contains folate, vitamin, vitamin B6, protein, Ca, and Fe such as dark chocolate, popcorn and ice cream.
- Eating junk foods occasionally is okay, but not more than 10% of daily energy intake.

S.M.Y.P. Subasinghe
2018/ASB/24



Who are the butterflies?

Butterflies are day-flying insects and are very attractive because of their brightly coloured wings. Butterflies play a significant role as pollinators in ecosystems and belong to the order Lepidoptera within the class Insecta.

The approximate number of butterfly species in the world is estimated to be around 20,000, and there is 245 species in Sri Lanka, 26 of which are endemic. Eighty-four species of butterfly species found in the University of Vavuniya.

Sri Lanka has six families of butterflies. *Papilionidae*, *Pieridae*, *Nymphalidae*, *Lycanidae*, *Riodinidae* and *Hesperiidae*, and we could find all the 6 families in here.

- *Papilionidae* 8
- *Pieridae* 10
- *Nymphalidae* 27
- *Lycanidae* 29
- *Riodinidae* 1
- *Hesperiidae* 9

There are some specials for butterflies. Those are,

- International Butterfly Day – the 14th of March
- National butterfly of Sri Lanka – Sri Lankan Birdwing (*Troides darsius*)



Sri Lankan Birdwing (*Troides darsius*)

Special features of some butterflies in University Premises

Banded Peacock (*Papilio crino*)

*Shiny & fast flying butterfly

*Has a median band on the upper side.

*Band color varies from emerald-green to royal blue

*According to the angle of light. Because of the reflection of light.



Common Gull (*Cepora nerissa*)

*Fast flier, prefer hot hours.

*It opens its wings only to the first sun rays in the morning.

*And becoming very active after that.



Common Sailor (*Neptis hylas*)

*Fly like an ocean wave.

*The name derived from it.

Active during most of the day except early morning.

Common Leopard (*Phalanta phalantha*)

*Busily flying around the larval food plant.

*The Most special thing is that males come to the larval plant for mates. During this visit, males can even mate with newly emerged females who are not yet ready to fly.



Glassy Tiger (*Parantica aegle*)

*The special thing is that feeding plants provide toxins and retain them throughout the life cycle as a protective mechanism.

*Because of this toxin, they are unpleasant to predators.



Glasswinged butterfly

*Transparent wings

Queen Alexandra's Birdwing
Anna's Eighty-eight
Western Pigmy Blue



Psyche (*Leptosis nina*)

*Pure white, have black spots on edge.

*Flies among herbs & grasses never above 2 feet.

*Hide their fore wings between the hind wings.

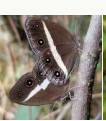


Mating of some butterflies in University Premises

Mating of
Common Pierrot



Mating of
Medus Brown Small



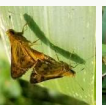
Mating of
Salmon Arab



Mating of
Tawny Coster



Mating of
Common Grass



Mating of
Yellow Tropic Dart



Weird butterflies in the world

Glass-winged butterfly



Transparent wings

Anna's Eighty-eight



Queen Alexandra's Birdwing



Western Pigmy Blue



Most giant butterfly in the world. Smallest butterfly in the world

Brimstone butterfly



Long lived butterfly

Blue morph butterfly



L. B. M. S. N. Chandrarathne 2018 / ASB/ 40

R. M. D. L. B. Rathnayake 2018 / ASB/ 52

State of climate -2023

Climate change refers to long-term alterations in global temperature and weather patterns, primarily driven by human activities, such as burning fossil fuels, deforestation and industrial processes. It leads to various consequences, including rising temperatures, melting polar ice, rising sea levels, and extreme weather events.

So, under the current status of climate change in 2023, the first half of 2023 has been hot worldwide as a developing El Nino event on top of human-caused climate change caused temperatures into record-breaking territories. Extreme heatwaves have an impact on many parts of the world. After a relatively cooler start to the year due to an unusual triple dip La Nina event, the world has witnessed an increasingly strong El Nino event that contributed to record-setting temperatures in June and July.

Both June and July 2023 exceeded prior record average global temperatures for the month by close to 0.2°C and 0.3°C respectively. 2023 is now more likely than not to be the warmest year on record. Sea surface temperatures have been at record levels over the world's oceans since mid-March. Extreme global temperatures in 2023 have contributed to heartwaves, wildfires and heavy rainfall. **July is the hottest month in 2023.** World Weather Day is the 22nd of March, and the theme is the future of weather, climate and water across generations.

Jasika Navanesan
2019/ASB/54

Eyelash Mites

Eyelash mites, also known as Demodex mites, are tiny cigar-shaped bugs found in bunches at the base of our eyelashes. Each mite has four pairs of legs that make it easy to grip tube-shaped things like our lashes. We can't see eyelash mites because they are only about a millimetre long and see-through. It may be unsettling, but we all have a small number of these mites living in the folds of our eyelids. They stay



hidden in the hair follicles during the day and emerge at night to eat, lay eggs and excrete waste. The mites are part of our body's natural microbiome, and by cleaning up dead skin cells and excess oils, they act as a natural cleaning system. As long as their numbers stay low, Demodex mites are harmless.

M.M.S. Sara
2019/ASB/50

Nature is dying.....

Huge mistake ever I created
Poor creatures are shivering
By death shadows that u send
Where your heart
Look it's flying away
See what u did
Selfishness is empering
I created this world not only for you
It's for all...
Stealing is your hobby
But be a human as I created
With heart and brain
Returns will come
Not as good, it will burn you
Be responsible..... All you did is enough
Be a human as I created with heart and brain.....
Where is the green world?
Are they in your house?
Giving shining, proud to your shade
Wait..... One day you will suffer
Hanging, tank on your back
Be responsible human as I created
I'm your mother who killed by her own child

P.P.M.Sathsarani
2019/ASB/06



The environment is a
creature
But
She near death

2020ASB03
S.K.Rejina kumari

The environmental newsletter claims a great history from its initiation. It ultimately reflects the multidisciplinary minds of Environmental Science undergraduates. The current newsletter version of 2023/2024 is also equipped with precious Environmental -related articles and various brilliant creations from undergraduates in the Department of Bio-Science. As the Environmental society secretary, I believe this newsletter will be an ornament for the entire department to highlight the supremacy of great minds.

N.G.B.S.M. Nawagamuwa
2019/ASB/08
Secretary, ENSOC

Shining Light

Let truth be a beacon, a shining light,
In the darkness, it leads us to what is right,
A flame that burns bright, a guiding star,
Illuminating the path, no matter how far.

In shadows, falsehood seeks to hide,
But truth, with its brilliance, cannot be denied,
It shines a light on the darkest deceit,
Exposing lies that try to compete.

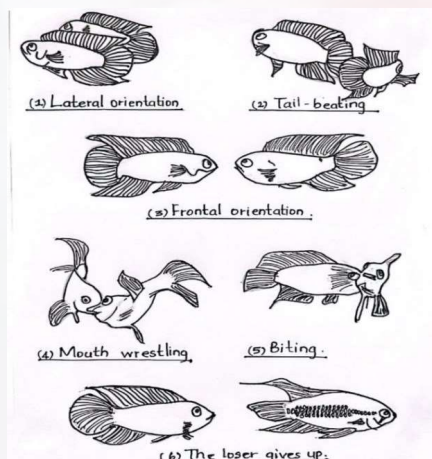
Let us seek truth, wherever it may be,
And let its radiance set our minds free,
For in its glow, we find our way,
And live our lives without dismay.
So let us light up the truth, without fear,

And let it guide us, year after year,
For only in its radiance can we see,
The world as it truly ought to be.

Nizamutheen Fathima Nadheera
2019/ASB/14



Fighting Sequence of Nannacara anomala



D.Thiviyatharsini
2019/ASB/66

Growing Resilience: Embracing Climate-Smart Agriculture in Sri Lanka"



A new chapter is unfolding in the heart of Sri Lanka, where agriculture intertwines with tradition. The island nation is navigating the challenges of climate change with an arsenal of innovative techniques under the umbrella of Climate-Smart Agriculture (CSA). Here, we explore the dynamic landscape of CSA in Sri Lanka, where sustainable practices are shaping the future of farming.

Crop Diversity: Sri Lankan farmers are diversifying their crop portfolios, cultivating varieties that withstand the uncertainties of a changing climate. This proactive approach safeguards against crop failures and fosters a resilient and varied food supply for the nation.

Water Wisdom: As monsoons become less predictable, water management takes center stage. Adopting rainwater harvesting, efficient irrigation systems, and technology-driven water conservation methods empowers farmers to make judicious use of this precious resource, ensuring sustainable farming practices.

Precision Farming Revolution: Satellite imagery, sensors, and data analytics are transforming how farmers optimise their resources. This shift towards precision boosts yield and minimises environmental impact, marking a leap towards sustainable agriculture.

Harmony in Agroforestry: Agroforestry, a marriage of trees and crops, is gaining momentum. Farmers are reaping the benefits of enhanced soil health, increased biodiversity, and improved resilience to extreme weather.

Beyond this, agroforestry becomes a potent weapon in the fight against climate change through carbon sequestration.

Adaptable Farming Practices: Sri Lankan farmers are becoming champions of climate resilience through adaptive practices. Conservation tillage, cover cropping, and embracing organic methods are not just farming techniques; they are commitments to nurturing soil health, reducing erosion, and mitigating climate impacts.

Community-Driven Solutions: In Sri Lanka, community spirit is vital to CSA success. Farmer cooperatives, extension services, and grassroots organisations are fostering knowledge-sharing and collaboration. Together, communities are driving the adoption of climate-smart practices, ensuring that the benefits of resilience are shared. Overall, we can say that as Sri Lanka sows the seeds of resilience, the embrace of Climate-Smart Agriculture is transforming the agricultural narrative. From crop diversity to water wisdom, precision farming to agroforestry, the nation is forging a path towards sustainable growth. We celebrate the farmers and communities not just adapting to change but leading the charge for a climate-smart future where agriculture thrives amidst challenges, ensuring a bountiful and sustainable harvest for generations to come.

A.S.F. Shama
2018/ASB/42



2021/ASB/66

Field Visit to Mannar

Students of the Department of Bio-science (2019/2020 Batch) visited Mannar on 08/08/2023 under the supervision of Dr S.Wijeyamohan. During the visit, they observed a hanging bridge, Madhu church. Thiruketheeswaram Kovil, Arippe fort, Adams bridge in Thalaimannar and Baobab tree. After that, the field visit adjourned with the dinner, discussion, and demonstration about the ecotourism idea in Mannar.



Field Visit to Mullaitivu

Students of the Department of bioscience (2018/2019 Batch) Visited Mullai Yogurt Production Centre to learn about Yogurt production on 25/05/2023 under the supervision of Dr. Jeyagowri Nimalan. During this visit, they observed how the yoghurts and -based beverages are made and what methods, ingredients, and machines are used in the centre.



ERADICATING CKDu FROM SRI LANKA

People's believe that polluted drinking water is the primary vehicle through which environmental toxins are absorbed into the bodies of Chronic Kidney Disease of unknown etiology (CKDu) patients in the CKDu-endemic areas in Sri Lanka. Data were collected in 2013 and 2019 in Anuradhapura and Polonnaruwa districts in North Central Province of Sri Lanka. People's agitation, activism, and pressure to bear on, together with the media's work in bringing the issue of polluted water to the forefront of political discussion, have prompted the government, private sector agencies, and community organisations to provide clean water to affected communities. The government's decision to supply reverse osmosis (RO) water to the affected communities caused an enormous change in drinking water behaviours. Informants perceived the supply of RO water as having



brought about many positive results in the health and disease progression of CKDu patients. Environmental toxins and agrochemical pollutants are widely considered causative agents of CKD of unknown aetiology (CKDu) in Sri Lanka. The belief that polluted water causes CKDu was highlighted in the media and by political activists. The high prevalence of and death rate from CKDu from 1990 to 2018, especially in rice farmers in the age range of 35–55 years, and the proliferation of the disease into many newer locations have intensified public participation in issues surrounding CKDu. The new discussion around the disease defined it in biomedical terms as caused by environmental toxins and agrochemical pollutants.

In subsequent WHO research in 2008, the Department of the Regional Director of Health in the North Central Province (NCP) instituted a range of actions in villages. Also, Villagers were educated and awaked through local health education committees about the prevention of kidney disease, the turning away of locally grown vegetables and fish, the use of safe potable water, the safer use of pesticides, and the identification of early symptoms and treatment of CKDu as imparted by hospitals and clinics.

The epidemiological research and research on CKDu in the area led to the assumed link between the quality of drinking water and the disease being proved. The research findings of epidemiologists and biomedical scientists, driven by lay ideas about a link between CKDu and contaminated drinking water with a foul taste, provided the basis for government action. This new knowledge was endorsed through WHO research that found drinking water and local foods in CKDu-affected areas contain heavy metals. These findings were transmitted to local communities through the media.

The identification of polluted drinking water as a cause of CKDu has had involvement for in the local hydraulic culture that was previously based on the sharing and management of water by local communities for irrigated rice agriculture, domestic use, and ritual practices. Drinking water is turning out to be a commodity, and the need for individual action to collect it is another outcome of this new development. Addressing the underlying causes, improving healthcare infrastructure and raising awareness among the population are crucial steps towards combating CKDu and alleviating the burden it imposes on individuals and communities.

N. Fathima Shamama
2018/ASB/25



Bosco Verticale (Italy)

Royal Hotel Pickering(Singapore) Clear point Residencies (Rajagiriya) Cinnamon Bay (Beruwala)

GREEN BUILDINGS

BUILDING THE FUTURE WITH INTENTION

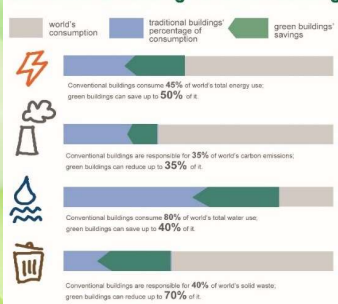
What is Green Building?

It is also Known as “green construction”, and “sustainable building”. Green building refers to a structure and the application process that are environmentally responsible and resource-efficient throughout a building’s life-cycle.

Generally, building design is concerned with economy, Utility, durability and comfort. Green building practices expand and complement the conventional building designs. Elements of Green Building are,

Material Energy Water Health

Conventional Building VS. Green Building

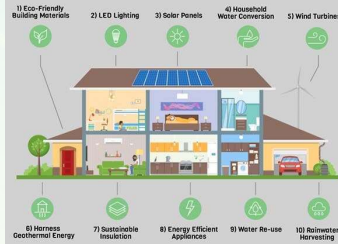


Merits of green building

- ✓ Cost effective
- ✓ Enhanced health
- ✓ High efficiency
- ✓ Enhanced environment

Demerits of green building

- ✓ High initial cost
- ✓ Availability of materials
- ✓ Longer time to construct
- ✓ Selection of location



Green Building Council of Sri Lanka (GBCSL)

It is the leading authority in implementing green concept and green building practices. They provide the building sector with innovative standards, verification services, education, and training. It provides a framework for affordable, healthy, and environmentally responsible buildings. It is the leading authority in implementing green concept and green building practices.

They provide the building sector with innovative standards, verification services, education, and training. It provides a framework for affordable, healthy, and environmentally responsible buildings.

Leadership in Energy & Environmental Design (LEED) is a green building rating system. It is a leading-edge system for designing, constructing, operating and certifying the world’s greatest buildings. They provide certified, silver, gold, platinum certifications based on the performance.

GREENSL® is a rating system in Sri Lanka

Jelshe Sellar
2018/ASB/43

Industrial Training Programme - 2023

Students of the Department of Bioscience 2017/2018 Batch



S. Yogasubanuja
Measurement Units,
Standards & Services Department



B. Kajan
SWRO Desalination Plant,
Thalayadi, Jaffna, Sri Lanka



R. Rafaya
District Agriculture Training Center (DATC)



G.K.D Fonseka
National Aquatic Resources Research and
Development Agency (NARA) , Colombo



E. Pavithra
Beekeeping Unit, bindunuwewa, Badulla



P.M. Batuwita
Central Environmental Authority, Battaramulla.

Celebrating World Soil Day-2023

A clean-up program was organised by the ENSOC Society of the Department of Bio-science as a commemoration of World Soil Day to raise awareness about the environment. The event was held on the 5th of December 2023 with the approval and inspection of the Vice-chancellor of the University of Vavuniya, Dean of the Faculty of Applied Science and Head of the department. The campaign was implemented through the Vavuniya-Mannar road between the University of Vavuniya hostel premises and the Technical College. However, this initiative was a mini-campaign parallel to the primary clean-up campaign organised by the Northern Municipal Council. This program brought together the efforts of all the undergraduates of the Bio-science department together with both academic and non-academic staff for the successful completion.

The program began with a brief orientation. It was made clear that the primary aim of this drive was to instil a sense of responsibility towards the environment as an Environmental Science student. Students were divided into groups and assigned to different locations along the Vavuniya-Mannar route. Each group were armed with garbage bags, gloves and sticks. As we moved along the road, we encountered a sea of debris that had accumulated over time. The sides of the roads were filled with wrappers, plastics, polythene, glass bottles, food waste, and medical waste. With renewed determination, we started picking up every trace that lingered. The collected waste was handed over to the Pradeshiya Sabha.



Once the clean-up drive concluded, students gathered at the university for the closing program. The Vice-chancellor, Dean and Head of the Department expressed their gratitude to everyone who participated and shared some statistics about the clean-up drive's success. It was remarkable to learn that students had collected several bags of trash, which would now be appropriately disposed of. As students concluded the clean-up drive, the transformation was remarkable. The feeling of accomplishment was overwhelming, knowing that the students had significantly impacted our environment in just a few hours of hard work. This program reinforces the idea that every small action

counts and that working together can create a cleaner and healthier environment for ourselves and future generations.

'I am a life itself'-The Environment.

Trees sway in the gentle breeze,
Birds chirp in the rustling leaves,
Nature's beauty surrounds us all,
But alas! We choose to let it fall.
Pollution chokes the air we breathe,
Waste litters the land and sea,
Animals suffer, their homes destroyed,
The environment, by us, is being toyed.
We must act now before it's too late,
To save our planet, our only fate,
Reduce, reuse, recycle, we all must do,
To keep the environment clean and new.
Let's plant more trees, and clean the soil,
Protect the creatures, let them roam and frolic,
For a healthy environment is a healthy life,
And we must strive to make it thrive.
So let's come together and take a pledge,
To protect our environment, to the very edge,
For it's the only home we have, you see,
And we must keep it safe, for you and me.

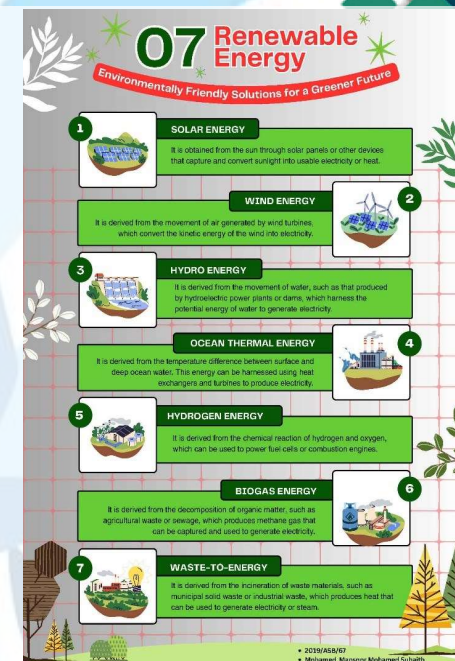
M.M.M.Ishthiyaq
2019/ASB/90

An end to the drought.

The fiery sun is slowly setting,
Yes.....That is a dark cloud.
It is dark here even before evening,
Yes.....It is a good omen.
The sound of a flock of birds flying,
Yes.....It is a happy tune.
A silver light from clouds suddenly,
Yes.....it is a blessing from god.

A new smell comes from the around
A sign that drops are soaking the ground.
A happiness with heaven and earth bound.
Here is an end to the drought.....

A.A.L.S.Amarasingha.
2019/ASB/32



Solid Waste Management practices in Sri Lanka



Solid waste management (SWM) in Sri Lanka is a significant challenge. The country generates approximately 6.5 million tons of municipal solid waste (MSW) annually, and only a small fraction of this waste is recycled or composted. Most MSW is disposed of in open dumps, which can have negative environmental and health impacts.

The Sri Lankan government has developed a National Action Plan on Plastic Waste Management (NAPPWM) 2021-2030, which aims to reduce plastic waste generation and improve SWM practices. The NAPPWM includes many initiatives, such as:

- Promoting waste segregation at the source
- Expanding recycling and composting programs
- Investing in waste treatment technologies
- Raising public awareness about SWM

Challenges need to be addressed in order to implement the NAPPWM effectively. These challenges include:

Lack of resources: Local authorities in Sri Lanka often lack the resources to implement effective SWM programs.

Lack of public awareness: Many Sri Lankans are unaware of the importance of waste segregation and recycling.

Lack of enforcement: Weak enforcement mechanisms are in place to ensure that businesses and individuals comply with SWM regulations.



More information at WWW.CEA.LK

Despite these challenges, several positive developments are taking place in SWM in Sri Lanka. For example, some local authorities have started implementing waste segregation programs and expanding recycling and composting programs. Additionally, there are several private companies that are developing innovative SWM solutions. Some specific examples of SWM practices in Sri Lanka:

Waste segregation at the source: Some local authorities in Sri Lanka have started to promote waste segregation at the source. This involves households segregating their waste into categories, such as recyclables, compostables, and non-recyclables. This helps to reduce the amount of waste that needs to be landfilled and to improve the efficiency of recycling and composting programs.

Recycling programs: A number of recycling programs are operating in Sri Lanka, but they are still relatively limited in scope. Some local authorities collect recyclable materials from households, while others have set up recycling drop-off centres.

Composting programs: There are also several composting programs operating in Sri Lanka. Some local authorities collect food scraps and yard trimmings from households for composting. Others have set up community composting bins or composting centers.

Waste treatment technologies: The Sri Lankan government invests in waste treatment technologies, such as anaerobic digestion and gasification. These technologies can help to reduce the amount of waste that needs to be landfilled and generate renewable energy.

Overall, SWM in Sri Lanka is still in its early stages of development. However, several positive developments are taking place, and the government is committed to improving SWM practices. With continued investment and public awareness, Sri Lanka can achieve a more sustainable SWM system.

Mohamed Ilyas MohamedAsfha
2019/ASB/03

Magical marine species(dugong) PUSHED TOWARD EXTINCTION



A "sea cow" that evoked tales of mermaids is being driven to the edge of extinction. According to an update of the official extinction list, the dugong is almost wiped out in some parts of the world.

The dugong's current distribution is fragmented. The IUCN lists the dugong as a species vulnerable to extinction, its range spans 48 countries within the tropical and subtropical coastal and inland waters between east Africa and Vanuatu in Oceania. Dugongs are represented by diminished remnant

populations, many of which are close to extinction.

Dugongs are particularly vulnerable to anthropogenic disturbances because of their long life span (of 70 years or more) and their slow rate of reproduction. Populations worldwide have suffered overexploitation primarily due to direct capture for its meat, hide and oil, and also because of habitat loss (silting of sea grass beds).

The most significant threat to Dugongs is fatalities caused by gill nets which entangle them as bycatch. Other threats include pollution, boat traffic and illegal

hunting. A listing on Appendix 1 of the Convention on International Trade in Endangered Species (CITES) prohibits or limits the trade of this species or its parts. However, despite having legal protection in many countries, the Dugong remains extremely vulnerable to continued human pressure and applying conservation policy to legally address gill netting regulations are urgently needed.



DUGONG

Dugong dugon is the only extant species of the family Dugongidae, and one of only four extant species of the Sirenia order, the others forming the manatee family.

G.ABARNA
2018/ASB/29

Marine Pollution

Trash and chemical waste combine to form ocean pollution, also known as marine pollution. When debris and chemicals are purposefully thrown, washed, or blown into the water, it is considered as marine pollution.

1. Chemical Pollution

- Marine water quality and wildlife are seriously affected by oil from spills, discharge and shipping.
- Major oil spills capture headlines and are difficult to clean up but are in fact declining due to improved technologies and policies

2. Plastic Pollution

- Mismanagement of the shore
- Abandoned fishing gear
- Microplastic particles from personal care items
- Household cleansers
- Sticky clothing are further contributors

3. Littering

- Littering is a common cause of atmospheric pollution
- A form of ocean pollution in which things are blown to the ocean by the wind.
- It consists of plastic bags and other single-use items as well as styrofoam containers.

Other Major Factors for Marine Pollution

Factory waste

Shipping waste

Beach waste

DOMESTIC WASTE

2019/ASB/74
Priyanchana Selvarajah