

Biota

First issue, Sep 2022



In-charge : Dr. Moni Kankana Kalita

Editors : Velishna Doley

Krishna Devi Daflari

PG Department of Life Sciences

BIOTA

FIRST ISSUE: SEPTEMBER 2022



**P.G. DEPARTMENT OF
LIFE SCIENCES
DIGBOI COLLEGE, DIGBOI,
ASSAM**

IN-CHARGE

Dr. Moni Kankana Kalita

EDITORS

Velishna Doley

Krishna Devi Daflari



**This First Issue is
Dedicated to
The Great Scientist of
India
Dr. A.P.J. Abdul Kalam
(1931-2015)**

MESSAGE FROM PRINCIPLE

Dr Dip Saikia
Principal, Digboi College
Email: digboicollege@yahoo.com



ডিগবৈ মহাবিদ্যালয়
DIGBOI COLLEGE
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Message from the Principal

It gives me an immense pleasure to note that the M.Sc. Life Sciences (Botany & Zoology) of our college is bringing out its inaugural issue of their annual magazine "Biota". I hope, "Biota" will encourage our students to think and write. Our students shall develop their learning skills through this magazine. This magazine can also record the achievements and various activities of the students and faculties of our M.Sc. Life Science fraternity.

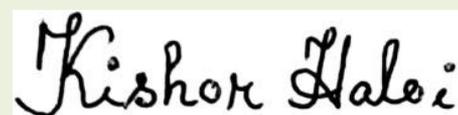
My best wishes for this entire endeavour.


Principal
Digboi College, Digboi

MESSAGE FROM COURSE COORDINATOR

It gives me immense pleasure to share my views regarding the initiative taken by the students of 3rd Semester M.Sc. Life Sciences for the 1st issue of P. G. Department of Life Sciences magazine “BIOTA”. This magazine will bring out the potential writing talents and also help in the all around development of our students. This magazine will surely help in the character building, develop great writing skills, inculcate ethical value and prepare them for the competitive world. I feel very proud and privileged being the Course Coordinator of P.G. Department of Life Sciences to witness the creativity, dedication and hard work of our students. I would also like to extend my deep regards to the respected colleagues to encourage our students in all possible ways. I congratulate the in charge teacher, editorial board members and all the contributors for bringing out such an excellent departmental magazine.

My best wishes to the editorial team to continue this efforts and achieving great heights in near future.



Dr. Kishor Haloi
Course Coordinator
M.Sc. Life Sciences
Digboi College, Digboi

EDITORIAL COLUMN

**Science and every day life cannot and should not be separated.
- Rosalind Franklin**

On the simplest level, science is knowledge of the world of nature. There are many regularities in nature that human kind has had to be recognize for survival since the emergence of Homo sapiens as a species. Science is on of humankind's blessing. We can't deny the importance of science and it's application in our daily lives . Science investigates natural occurrences based on facts and develops new technology to make our lives easier. Life sciences have always been a fundamental area of science. Which help people to understanding our natural environment and there living organisms.

"Biota" is our first annual magazine of Life sciences department. It is an assemblage of the literary contribution by our students, teachers and glimpse of our journey through this wonderful academic year.

In this context, we would like to express my gratitude to our respected principal sir Dr Dip Saikia for his keep interest and encouragement. We are greatly thankful to our coordinator Dr Kishor Haloi sir for his idea, constant support and encouragement to publish this departmental magazine.. Our sincere thanks to teacher in charge of this magazine Dr Moni Kankana Kalita, for her unfailing help regarding valuable reference. Our earnest thanks to all my department teachers for their cooperation in every possible way.

We are also thankful to all of our classmates for their contributions and help in various ways.

Editors

**Velishna Doley
Krishna Devi Daflari
M.Sc. 3rd Semester
P.G. Department of Life Sciences**

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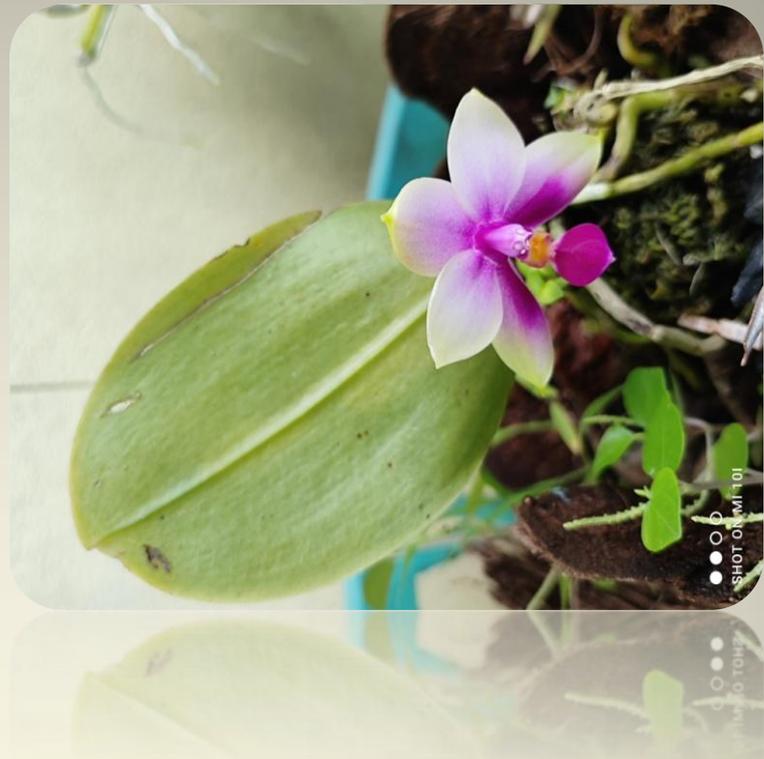


Miss Sadhana Talukdar
Asst. Prof., Dept. of Botany

ORNAMENTS OF FOREST: THE ORCHIDS

Dr. T. C. Dutta
HOD, Department of Botany

Orchids are a diverse and widespread group of flowering plants belongs to the family Orchidaceae. Nearly 1,000 genera and more than 25,000 species of orchids distributed throughout the world. The orchids are considered to be the most fascinating flowers on the earth due to their delightful appearance, attractive size, shape, pleasant scent, brilliant colours and long-lasting flower quality. Such flower diversity of the Orchidaceae family is unique, not meet in any other family of the Angiosperm. North - East India is rich in orchid diversity. More than 1330 species over 148 genera are reported from India out of which 800 species are found in North -Eastern regions including Assam. Next to Arunachal Pradesh, Assam is the second largest state of North-East India can be considered as rich store house of orchids. Around 193 species under 71 genera of orchids so far reported from Assam.



Most of the orchids are epiphytic and perennial in their habit. They grow on tree trunks of other plants but, do not derive their nutrients from their supporting plants. They have hanging roots with modified epidermal tissues called velamen which is engaged in absorption of moisture from the surrounding atmosphere and prepare their own food using light. Some orchids grow on rocks and terrestrial habitat such as forest floor rich in organic manure. They prefer cool, humid micro-climate with plenty of aeration and light. Such conditions are generally prevailing in undisturbed forest areas. Particularly Rain Forests are the homes for most of the orchids. Forests are being florist with bewildering of flowers and beautify the forests they are regarded as ornaments of forests. Depleting forests now days due to over increasing human population and their activities over the forests bring about threat to the survival of this nature's precious gift. Many species undergo extinction due to deforestation and habitat lost. Disappearance of orchids in an area indicates a major change of atmosphere and soil quality.

Orchids cultivation and their trade is now increasing trend throughout the world. First cultivation of orchids started in Europe under the initiative of British. Soon after them it spreads into different counties of the world due to their incredible shape, size, colour and pleasant odour of orchids. Habitat lost due to deforestation, over exploitation and illegal trade is now considered as a major threat to the existence of this wealth of nature. Conservation of orchids is now utmost necessary.

FIVE SPECIES NEW TO SCIENCE IN 2022

Dr. Samim Dullah
Asst. Professor
Department of Zoology

The planet we live in has a magnificent biodiversity; of which many remain undiscovered. Each day a new species gets added to the biodiversity list. Here some of the new species that has been discovered in the first half of 2022 has been brought into notice.

The magical fairy wrasse

This fish has been discovered in the Maldives' reef by California Academy of Sciences' Hope for Reefs initiative, which aims to properly understand and protect coral reefs around the world. Also known as Rose-Veiled Fairy Wrasse, it is a rainbow-coloured fish and its scientific name is *Cirrhilabrus finifenmaa*. It dwells beneath the ocean's surface ranging between 160 to 500 feet where coral reefs still need more exploration. *Cirrhilabrus finifenmaa* is the first new species to be reported by a Maldivian scientist. Apart from that, another interesting fact is that its name has been derived from the Maldivian language, 'finifenmaa' meaning 'rose', a cue to both its pink tone and the national flower of the country.



The Taylor Swift millipede

Named after the famous singer-songwriter Taylor Swift, this new species was described by Derek Hennen, Jackson Means, and Paul Marek, at Virginia Tech, U.S. Its scientific name is *Nannaria swiftae* and has been added to the list of sixteen other new species of twisted-claw millipedes reported from the Appalachian Mountains of the United States. These invertebrate species lives beneath the soil surface and feed on decayed leaves and other plant debris.



The Greta Thunberg frog

The new rainfrog scientifically known as *Pristimantis gretathunbergae* was described by Abel Batista, Ph.D. (Panama) and Konrad Mebert, Ph.D. (Switzerland). It is a black-eyed frog reported from eastern Panama. It has been named in honor of Thunberg who is known for her prominent role as a climate activist. Regrettably, the frog's habitat is hugely threatened by expeditious deforestation for plantations and cattle grazing.



The chocolate frog

Newly discovered in the Peruvian Amazon, *Synapturanus danta* has gained popularity as Chocolate Frog. Germán Chávez, a researcher at Peru's Instituto Peruano de Herpetología is the study's first author. It is very hard to locate the species and is an example of the hidden diversity present in the Amazon region. It is a burrowing frog that can be located from the frequent beeping sound produced underneath the ground.



The fabulous flaming-red snake

Discovered by Jean-Paul Brouard, Paul Smith and Pier Cacciali at Paraguay, this new species is scientifically known as *Phalotris shawnella*. It is a non-venomous snake having striking coloration with red, black, and yellow patterns. The species name acknowledges two children - Shawn Ariel Smith Fernández and Ella Bethany Atkinson as they encouraged the founders of an NGO to work for the conservation of wildlife of Paraguay. This new *Phalotris* species is unique by its red head in combination with a yellow collar, a black lateral band and orange ventral scales with irregular black spots. It is an endemic species of the Cerrado forests, Paraguay and has been listed in the "Endangered" species category of the International Union for Conservation of Nature (IUCN)



BIG BUTTERFLY MONTH

Miss Piyali Devroy
Asst. Professor
Department of Zoology

The class Insecta which is itself a very vast and diverse category of the animal kingdom, contains a very special-order Lepidoptera. Lepidoptera comprises of moths and butterflies and accounts for 10% of the total described species of living organisms. Butterflies can be distinguished from moths by their clubbed antenna and the way they fold their wings when resting as opposed to moths who tend to keep their wings spread out. The various shapes and size of wings and vibrant colours make them the true jewel of the forest. On the occasion of Big Butterfly Month 2022 which was from 1st sept to 30th sept 2022, students as well as the faculty of Digboi College, Dept. of Zoology took initiative to record and identify the various types of Butterflies in Digboi locality as well as the adjoining area of Dehing Patkai National Park. On 4th sept 2022, Sunday morning, students from Dept. of Zoology, Digboi College started the survey of knowing the butterflies in their area by doing a butterfly count. This include photographing the various species of butterflies that they encounter by mobile photography or camera. The aim of this survey was to know the different type of species that are found in the area as well as knowing their abundance by counting and taking record of the number of times a particular species is seen. The result of the survey was a positive one, as the students were able to take note of many species and it include species like Unbroken Sailor, Baron, Punchinello, Red Helen, Yellow Helen, Perak Lascar, Common Lascar, Long banded Silverline, Wizard, Commander, Blue Spotted Crow, Psyche, Orange tit, Blue Bottle, Orange Oakleaf, Archduke, and many more. The students were the ones who benefitted the most from this survey as they were able to distinguish the different butterflies and their behaviour as well. Mud puddling behaviour was seen and once the sweat from the body of students came out butterflies came and started taking minerals directly from their body by sitting on the students. This came out to be fruitful by creating a bond between nature and the young enthusiastic students.

Most of the common butterflies were identified immediately but some rare findings were confirmed of their names by uploading the butterfly pictures on iNaturalist.org, Indian foundation for Butterflies, IndiaBiodiversity Portal: where scientists confirmed the identity of the butterfly species found.

On 11th sept 2022 again, a similar survey was done but at a different location: this time at Dehing Patkai national park area, and again on 17th sept 2022, butterfly count was organised with students as well as alumni of Digboi College. The whole month of Sept has been dedicated to know the butterflies of Digboi locality and also to bring interest in students about the subject.

The Big Butterfly Month provided an ample opportunity for students to learn about butterflies as well as gave a comprehensive data about the true jewels of the area.



SCIENTIFIC INTERVENTION AND IT'S GOOD AND BAD EFFECT

Bipasha Deb Choudhury

M.Sc. 3rd Sem

Science generates solutions for everyday life and helps us to answer the great mysteries of the universe. Science is one of the most important channels of knowledge. It has a specific role as well as a variety of functions for the benefit of our society creating new knowledge, improving education, and increasing the quality of our lives. The modern world where we are living with ultra-comfort, very fast communication system, best medical and health care facility, security etc. came through systematic and scientific intervention in different fields of study.

Scientific intervention includes developing, testing, and disseminating family or community-based screenings, treatments and prevention models in service of at risk or vulnerable groups throughout the lifespan. Scientific intervention has helped people to discover about many scientific machines and systems.

Scientific intervention is necessary to unearth buried mysteries. The invention of devices like CT Scanner and others. Many archaeological remains and artifacts have revealed valuable information about the history of our past but there are many unearthed secrets which are yet to be discovered. CT Scanner, MRI machines have been widely useful for analyze many dangerous diseases like cancers and tumors. Scientific intervention has also helped in the development of many modern machines which is necessary for saving human life.

Scientific intervention allows us to unearth these mysteries so that we can understand our past that shape our present. For example if King Tut's mummy was not subjected to scientific scrutiny, we would never have known more about the great and last heir of a powerful family of Egypt. The scientific scrutiny of King Tut's mummy helped the modern world to discover a lot of things about the king that would otherwise have remained unknown.

Scientific intervention had done a great role in communication. Nowadays communication is so fast that even an incidence or the photo videos of universe and mars we get instantly which was unbelievable in the past. With the scientific intervention and invention of TV, High Speed Computer, Smart phone make all these possible.

But there are some bad affects due to scientific intervention such as deforestation, desertification, Air and waste pollution, land and solid degradation, loss of biological and wildlife species due to rapid industrialization, burning of fossil fuel, extensive agricultural activities, use of artificial fertilizer, pesticides and insecticides. As a result, a huge number of aquatic animals, variety animals, birds and insects have already been extinct or on the verge of extinction. Extensive deforestation due to industrialization and making of dam leads to serious ecological imbalance. The effluents being discharged from the different industries pollute the water bodies like rivers, lakes and seas for which a number of aquatic animals are disappearing rapidly.

The most dangerous effect of scientific intervention is the invention of weapons of mass destruction. These are Chemical weapons, biological weapon and nuclear weapon. We have already seen the dangerous effect these weapons when used in different war, mainly 1st and 2nd World War.

So, scientific intervention should be carried out only for human welfare without disturbing the ecological balance of nature and keeping our planet alive and not for the purpose of destruction, political or commercial gain or establishing supremacy.

FIRE FLIES: THE BEAUTY OF NATURE

Velishna Doley
M.Sc. 3rd sem

Many of us have great memories of watching and catching fireflies on warm summer nights. Remember sitting out on the varanda and watching them light up the backyard? But lately, especially all over the world, you may have noticed the numbers are declining. You'll may see one or two. **Are fireflies disappearing? Will the magic they bring to our warm evening soon be gone forever?**

I know a lot of people who really hate insect, but I've never met anyone who doesn't love fireflies, as Lewis added "They might be tiny, but they're among our best ambassadors for earth natural magic". Perhaps because we are so familiar with them, either from growing up chasing them or seeing them portrayed in art, film and stories.

Fireflies are beetles. Whether we call them fireflies or lightning bugs, these insects are neither files nor true bugs. Instead they are beetles, just like ladybug and rhinoceros beetles. Like other beetles, fireflies have a pair of hardened wing cases, called elytra, that the wingfold underneath. The elytra open for liftoff like gull-wing door on a car, freeing the wing for flight. Lets talk about how the fireflies light up. The light of fireflies is a chemical reaction that gives off fireflies familiar glow this light is something called cold light because it generates so little heat. When air rushes into fireflies abdomen, it react with luciferin. Consequently, it causes a chemical reaction and light is generated this phenomenon is called bioluminescence. Fireflies light up for like various reasons like reproductive, male fireflies light signals their desire for mates. Also, willing females attract males with flashes of their own. Fireflies light up to attract dinner while each fireflies species has it's own pattern of flashing, some females imitate the pattern of other species, as a result, males and next to them only to be eaten alive. There are more than 2,000 species of fireflies are found in all over the world. But number of fireflies are declined day by day so species at risk of extinction. Habitat loss is leading to decline of many wildlife species, with some fireflies suffering because they need certain environmental conditions to complete their life cycle, more surprisingly, the researchers found that the use of artificial light at night, something that has grown exponentially over the past century, was the second most threat to the creatures and including other human activities also affected the fireflies life cycle.

Help fireflies make a comeback to do few things like, **install water feature in your garden.** because fireflies spend up to 95% of their lives in larval stage and they live in rotting log, marshes or in wet, wooded area. **Turn your light off at night** because light confused them when they are trying to mate. **'Plant a garden'** garden are meccas for fireflies, helping to replace lost habitat. They also supply fireflies with lots of food sources.

If we don't save this creature then it will go extinct. And our future generation won't be able to see them.



Any set of rules that defines what is acceptable, empirical knowledge may be called a philosophy of science. Among philosophers of science and among scientists, however, there is more than one accepted philosophy. This is partly because philosophers, like members of any other discipline, are developing, changing, and assessing new ideas and formulations in an attempt to improve upon what we know. Whatever their differences, however, all philosophers of science need to address the same four basic questions: (1) When is something true? (2) If we have more than one explanation, how can we tell which one is better? (3) How can we put what we know into practice? and (4) Why do we do it the way we do it?

When is something true?

In order to be scientific, whatever we accept as our answer to the question of when something is true, i.e., our interim solution to the rational inference problem, must be based on facts—phenomena or characteristics available to anyone who knows how to observe them. Recall Sagan's (1980) second rule of science: whatever does not agree with the facts is wrong and must be changed or rejected completely. Inductive inferences cannot be proved true, but we need to use them to construct theories until we have evidence to the contrary.



Source: Internet

If we have enough contrary evidence, we can throw a theory out of our warehouse, but that does not mean that any of the theories remaining in the warehouse is true. We are left with no choice **but to provide** support for a theory by trying to show that alternative, competing theories are not true. If we make a prediction from a theory and test the prediction, and if the prediction fits the facts, then we have not proved the theory to be true; instead, we have failed to prove that the theory is false. It is difficult to think in terms of double negatives—Theory X is not not-true—but that is the logic forced on us by the rational inference problem.

How Can We Tell Which Theory Is Better?

The absence of absolute truth does not limit what we can learn in a scientific approach, but we are faced with a particular path in our quest to learn about behavior and other real-world phenomena. Testing between theories is like a grand tournament in which every theory is pitted against every other theory; the theory with the best win-loss record at the end of the tournament is the winner. Thus, during normal science, theories are compared on the basis of their fit into the existing paradigm as well as our ability to use them to account for the existing facts. During revolutionary science, comparisons occur between old and new paradigms, but the basis for such comparisons remains the existing facts.

How Can We Put What We Know into Practice?

There are no absolute truths, and sometimes what were once considered to be facts are no longer considered to be so. We have arrived at the problem of pragmatic action—determining how we should go about putting a scientific approach into practice. Essentially, those who adopt a scientific approach must get together and decide how they are going to use that approach. The solution to the problem of pragmatic action, the answer to the question of how we put what we know into practice, lies in agreement. The greater the number of researchers who produce the same research results, the more we consider those results to be facts to which we must fit our theories; notice that the theories must fit the facts, not the other way around. A variety of reasonable arguments support this agreement about objectivity, but no one can prove, in any absolute sense, that the consensus is correct. One of the problems inherent in the use of objectivity is the variety of different research methods available to study any particular phenomenon. When researchers use different methods to study the same phenomena, they often come up with different observations. Consensus, then, must extend into agreement about which research methods are appropriate for which research questions, as well as agreement about whether or not a particular method was used properly.

Observation

Whenever we observe something, we make errors; period, no exceptions, ever. The errors, which researchers generally call bias, come from selecting what to observe and interpreting what we observe, as well as from the act of observation itself. We cannot avoid bias entirely, but we can attempt to reduce error to a minimum and be aware of error that we have not been able to eliminate. When more people observe the same thing, under the same or different conditions, then the collection of observations becomes more accurate (less biased, more complete). Different observers, different situations, different locations, and different definitions of what to observe all contribute to the objectivity of data, and all reduce observation error.

Logical Analysis

The quality of observations is one distinction between scientific and non-scientific research, but it is far from being the only one. Once observations are made, we must interpret them and draw conclusions about them. Suppose I look out my window and observe 90° displayed on the scale of a thermometer. I could, of course, reasonably conclude that the temperature outside my office is 90°, assuming I had reason to believe that my thermometer was accurate. Anyone else could also look out the same window and note the same reading, and they would probably come to the same conclusion. Inductive reasoning enters the interpretation process when we attempt to move our conclusions beyond the immediate area outside my window, beyond the immediate confines of the data collection environment.

Research Reports

From time to time we may find ourselves reading a research article in which it appears as though the researchers designed their study to test a theory, collected data, and supported the theory discussed in the introduction of the article. We should know, and the researchers should know, that logic does not enable us to support a theory. Failing to disconfirm a theory is the only empirical way to provide support for a theory. But support for a theory does not mean the same thing as proof that a theory is correct. Most authors of research articles create the impression that the researchers knew, from the start, exactly how the major results of the study would come out. Instead, research is often conducted with extremely little certainty about how the results will turn out. The researchers are not trying to hide their inability to predict the results accurately; rather, they are succinctly providing a theoretical context for their results.

Definitive Studies

Although any study may satisfy someone's curiosity about a particular issue, no study ever satisfies scientific interest in an issue. That is, despite the fact that one often hears the phrase used in one or another context, there is no such thing as a definitive study—a research project that completely answers a question. Because any particular phenomenon is extremely complex, someone will always ask, “But what if...?” Such questions point out the need for additional research. Although definitive studies may not exist, there are highly influential studies that set an entire research program, or series of programs, in motion. As an administrator, we should neither look for nor believe we have found a study that conclusively proves whether or not a program is effective; we won't find such a study because they simply don't exist.

Determinism

Perhaps the most misunderstood concept in a scientific approach to research is determinism, the assumption that every event has at least one discoverable cause. As defined here, determinism means nothing more than “events do not happen by themselves.” We assume that there is always a causal agent and that the agent can be discovered through a scientific approach to research. If we think about it at all, we will realize that there could not be science without determinism. Many people, however, incorrectly mistake determinism for predestination, the assumption that events are unalterable. The two assumptions clearly are not at all similar. Indeed, there is some notion in determinism that once we are able to discover the cause of an event, we can alter the cause and thereby alter the event.

Jasmine oil is an essential oil derived from the white flowers of the common jasmine plant, also known as *Jasminum officinale*. It is popular for its sweet, romantic fragrance and has been used in some of the world's best known perfumes, for long time. The flower is believed to originate from Iran, but can now also be found in tropical climates.

The popular home remedy Jasmine oil and components of synthetic blends of Jasmine essential oil have a number of health benefits. Oil in their pure and potent form is more potent and must be diluted.

Extracting process:

The jasmine oil extracting process includes circular counter current leaching of jasmine in leaching machine for 1-3 hour to obtain leached liquid; decompression concentrating the leached liquid to obtain ropy extractum with supercritical CO₂ fluid to separate coarse Jasmine oil; and rectifying to eliminate water, residual solvent and impurity and obtain refined Jasmine oil. The said process has refined Jasmine oil yield of 48-55%.

USES:

- Jasmine oil is used as aromatherapy which effectively reduces depressive symptoms, significant increases in blood oxygen saturation, breathing rate and blood pressure.
- Made from various species of the Jasmine plant have been found to have antibacterial properties. Natural Jasmine oil derived from the *Jasminum sambac* plant, as well as its synthetic blends, showed antibacterial activity against one strain of *E. coli*.
- Jasmine is used as a home remedy to treat spasms in various parts of the body, from camp- producing stomach spasms to spasmodic cough.
- Jasmine oil has a cicatrizing effect and promote wound healing through the formation of scar tissue; beneficial in treating skin infections.
- Jasmine oil also has anti-inflammatory properties and useful in general skin care and the treatment of psoriasis.
- The brain effects of Jasmine inhalation may be connected to hormonal changes that result in increased lactation.
- Jasmine oil can increase alertness and energy levels.



Source: Internet

Whenever we burn fossil fuels like petrol, gas and coal for our kind of lifestyle, carbon dioxide (CO₂) is released into the atmosphere. A carbon footprint is a measure of CO₂ emission that result from various activities of an individual during a given time period. It is the total amount of CO₂ that a lifestyle produces. It indicate our impact of the environment through emission. Environmental issues such as global warming are also linked to CO₂ emission. Modern lifestyle demands the usage of fossil fuel for transport, electricity and other purposes. In many countries electricity is generated by burning coal. Driving a car burns fuel, which in turn releases CO₂. All these factors are taken into consideration when calculating the carbon footprint of an individual.

Carbon footprint reflects the amount of carbon di-oxide that an individual produces in his daily activities by burning fossils fuels for transportation, electricity and more.

A carbon footprint is usually expressed in tons of CO₂. According to the latest report, for example an average a person produces 28 tons of greenhouse gases in one year, mainly from transportation and energy used at home.

WAY TO REDUCE CARBON FOOTPRINT:

TRANSPORTATION:

The way of travel directly affects the environment. For travelling short distances, there is absolutely no need to use a vehicle. Walking or cycling will not only reduce your carbon footprint but also keep you fit. Whenever possible, commute by public transport as it decreases the strain on the environment.

FOOD CARBON FOOTPRINT:

An easy way to curb your food related carbon footprint is to purchase vegetables and fruits grown locally. Prefer local shops as it will also save fuel. This helps, minimize transport related CO₂ emission.

USE ENERGY EFFICIENT APPLIANCES:

CO₂ emission caused due to electricity due to electricity usage can be brought under control by using energy efficient appliances. Compact fluorescent bulbs require less electricity, so use them which can save a lot of energy .It has been observed that energy demands of certain home appliances increase over a period of time ,like refrigerators when refrigerators get older their performance decreases but the consumption of electricity increases. So it is better to replace them with new ones. Electronic goods like computer and televisions sap power, even after switch off the power switch. A better way would be to unplug these devices after usage.

RECYCLING:

Recycling can also help to reduce our carbon footprint. It is possible to achieve a smaller carbon footprint by recycling material like some metals and paper. Waste material generated in the house can be also recycled.

CARBON FOOTPRINT ACTIVITIES:

We need to encourage our next generation to do activities that help environment. Eco friendly activities such as planting trees , can make the environment cleaner and a better place to live in.

The greatest priority of every individual should be to take preventive steps to decrease the impact of environment, so that the generation to come will be able to lead a healthy life.

BROODING BEHAVIOUR IN BIRDS

Bhaswati Bharali
M.Sc. 3rd Sem

All birds are oviparous. Most birds take care and incubate their eggs with the heat of their body by covering them and show considerable concern for their young ones till they become self independent. Incubation of eggs and considerable concern for young by parent is a instinctive behavior and is a part of parental care called brooding. Incubation is usually done both parents of a monogamous pair(biparental), e.g sparrow and pigeon or may be done either by female alone(e.g duck)or by male alone(e.g jacana).The length of incubation period varies in between different group of birds. Incubation period of chickens is about 20 days,45 days in ostrich and 80 days in kiwi. Many birds start incubating after the last egg has been laid such as ducks, some species such as owl start incubation as soon as first egg is laid.

Birds can be divided into two basic groups according to the degree of their chicks at the time of hatching. The group of birds in which newly hatched chicks are well developed and soon leave the nest to follow their mother are known as nidifugous birds or nest fleeing bird. For example, newly hatched chicks of domestic chickens and duckling of duck are nidifugous. Chicks and ducklings have open eyes and they are able to walk almost immediately after hatching and soon begins to feed themselves. The parents merely protects their young ones from the enemies and other ecological hazards such as cold, heat and rain.

The birds in which newly hatched chicks stay in the nest for several weeks, since they are naked, have closed eyes and are completely helpless. For example sparrow, pigeons, crows and many other birds ,the naked and helpless nestling are fed, protected and keep warm by their one or both parents till they open their eyes, complete their development and are able to fly. These birds are known as nidicolous birds or nest dwelling birds.



Brooding is a instinctive behavior which help in preservation of species(race continuation).Fully developed embryo of birds break the egg shell and come out. As soon as nestling come out, parents take care of them and protect them from adversities of environment and enemy. Nidifugee young start taking food just after hatching but their mother show them site of food. Passerine and shore birds are precocial and both male and female take part in parental care. Generally male bring food, female break the food and put the food in the mouth of young ones. Female Baya and English Robin leave their young and become engaged in work for next generation while male bears all works of young concerning parental care. In crow both male and female brings food in shift. Koel does not care their eggs or young and eggs are incubated by their foster parent crow.

Birds shows highest grade of brooding behavior. Brooding behavior is a instinctive behavior which is inborn. Almost all birds provide food and protection to the eggs and young ones from enemy.

DEPARTMENTAL ACTIVITIES (2021 NOV-2022 SEPT)

Sl No	Date	Activity
1	8/11/2021	Inauguration Ceremony M.Sc. Programme in Life Sciences, Digboi College. Resource Person: Dr. Binay kr. Saikia, Shanti Swarup Bhatnagar Award Recipient, NEIST, Jorhat, Assam
2	5/03/2022	A Seminar on “Wildlife Conservation : Challenges and Issues in N.E. India”. Resource Person: Prof. Parthankar Choudhury, Assam University
3	2/09/2022	Career Counseling Programme. Resource Person: Mr. Jatin Gogoi, Ph.D Scholar, CCMB, Hyderabad

PHOTO GALLERY



INDUCTION PROGRAMME OF 1ST SEMESTER, 2021



FIELD TRIP TO ICMR-RMRC, DIBRUGARAH

PHOTO GALLERY



CAREER COUNSELLING PROGRAMME



DEPARTMENTAL SEMINAR PRESENTATION