



**CENTURION
UNIVERSITY**
*Shaping Lives...
Empowering Communities!*

Conserving & Engaging with Ecology: **A Butterfly Garden**

OCTOBER 2021



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The Background:

Centurion University: A Pledge to a Green Ecosystem

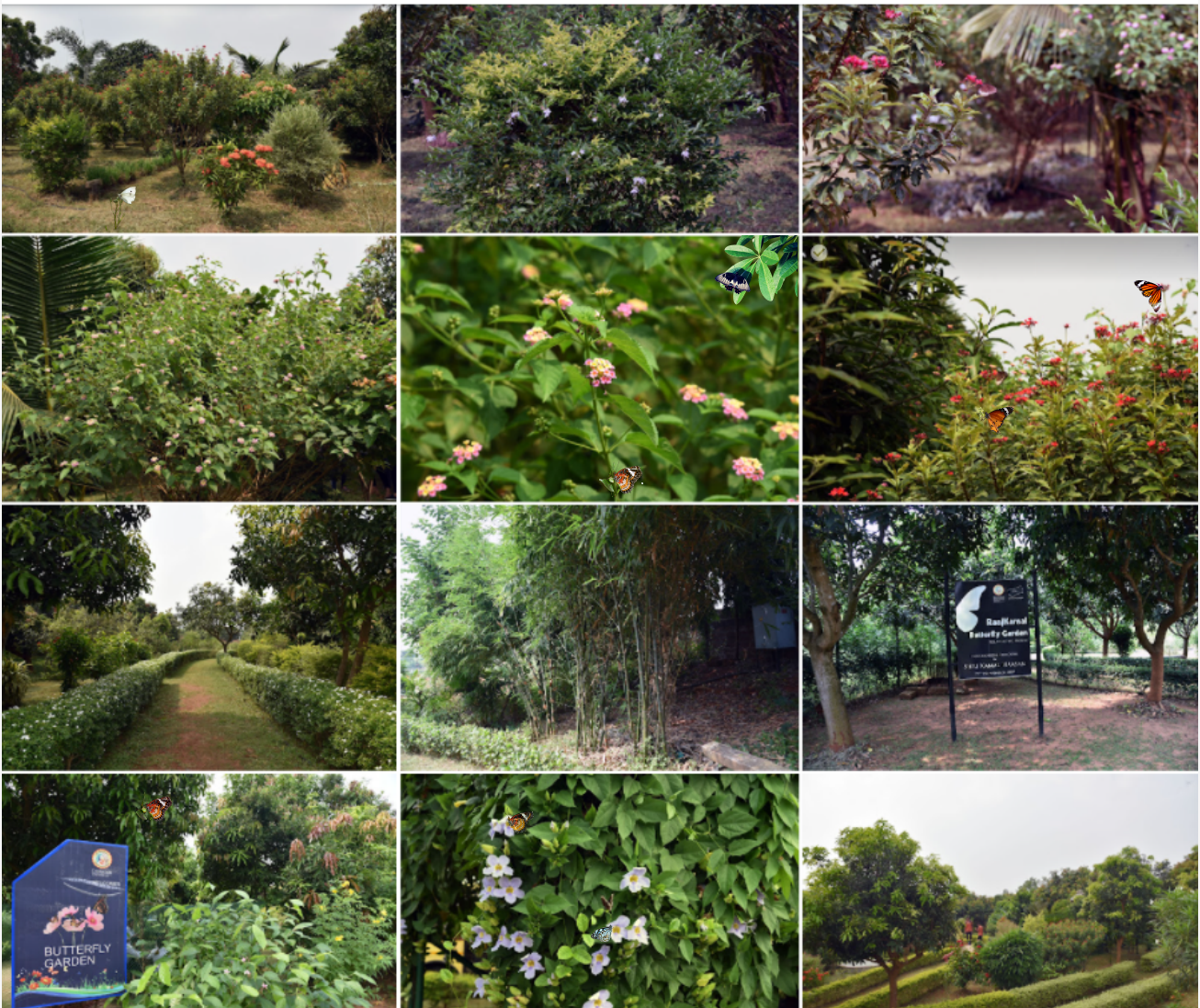


Centurion University was established in 2010 as the First State Enacted Private University in the country vide CUTM Act no 4/ 2010. In the short span of a decade the University has earned global recognition for its unique, futuristic and all-inclusive skill-integrated into higher degrees education model. In 2017, Centurion University has notified as “Skill University” by the Government of Odisha and in 2019, Government of India conferred the status of “Centre of Excellence”.

Cited by name in the General Assembly of United Nations debate on Right to Education as an education model for the world, Centurion University has always been a pioneer and pathbreaker. It is the youngest University to be accorded Grade-A by NAAC (National Assessment and Accreditation Council, Ministry of HRD, Govt of India).

Green Interventions:

A Continuous Effort to become a Complete Green Campus



The University in its quest to become a Green Campus, has more than 3,000 trees over its 40 acres Campus at Bhubaneswar, which attract a wide variety of flora and fauna. In addition to providing research, technology and information on sustainable, profitable and ethical development of the agricultural industry, the MS Swaminathan School of Agriculture has launched a mega project of organic and responsible farming with financial support (soft loan) from NSDC for small, marginal and tribal farmers. This also helps to establish and promote an environment and sustainability consciousness among students.



Through its social enterprise entity, Gram Tarang Foods, the University has successfully reversed migration in Gajapati district with the help of its CO₂ extracting plant. It employs environment friendly Supercritical Fluid CO₂ Extraction (SCFE) technology, which provides un-degraded extracts with freshness and high concentration of desired active components. The SCFE provides for 'Green' and 'Recyclable' extraction with no residual solvent. The end-products are free of biological (microbial) contaminants and has a longer shelf life.

GTF works together with more than 5,000 farmer families to cultivate traditional crops such as ginger, turmeric side by side with cash-heavy innovative crops such patchouli and vetiver among others restoring the degraded ecosystem and economy in the region.

Centurion is among a handful of universities in the country who have made the effort to solar-power the entire Campus, to conserve energy and relieve pressure on non-renewable energy resources. Unfortunately, the two cyclones, Titli and Fani have disrupted most of it, but it is being restored gradually and steadily in pace with the available resources.

The Butterfly Garden is one other small but very solemn step towards fulfilling Centurion University's commitment to work towards sustainable, green environment in its Campus and surrounding areas.

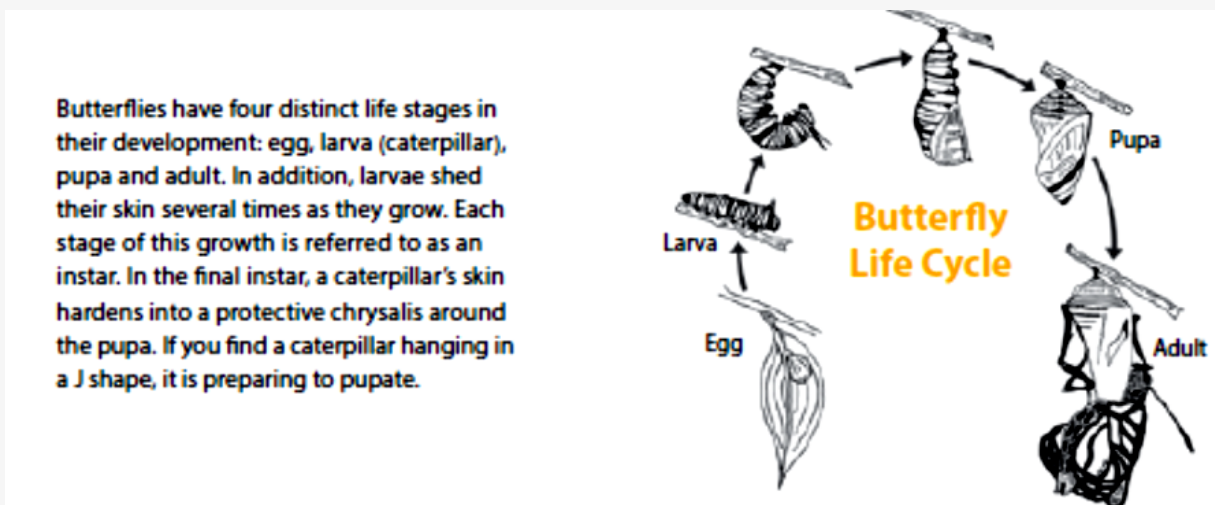
The Butterfly Garden:

A Miniature Thriving Highly Diverse, Ecosystem

SDG 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.

A Butterfly Garden is a conservation of habitat designed to promote breeding and life of butterflies. The scientific name for it is “lepidopterarium” as butterflies belong to the order Lepidoptera. This order is sub-divided into six families, i.e., Lycaenidae with 5,000 species, Nymphalidae with 5,000 species, Hesperidae with 3,000 species, Papilionidae with 600 species, Pieridae and Danaidae accounting for the rest.

In total, there are some 20,000 species of butterflies in the world, out of which 1,504 or 8.7% are found in India. The first butterfly in India is the Banerghatta Butterfly Park, Bengaluru (Karnataka).



Creating a butterfly garden is quite easy; however, to maintain and sustain its appeal requires hard work and complete commitment. Planting a good variety of local host and flowering nectar plants would make the garden a magnet for the butterflies.

However, to ensure that they make it their home, the garden requires to cater to the entire life-stage of the butterfly, i.e., egg -> larve -> pupa -> adult, and promote a happy life and breeding. Hence, a butterfly garden would always have a water body, along with the widest variety of regional nectar and host plants.

“Nectar” plants are those on which the butterflies feed upon, while the host plants are those on which the larvae (caterpillars) feed. A balance of both is critical to the acceptance of the butterfly.



A little about Butterflies...



Why do Butterflies Matter?

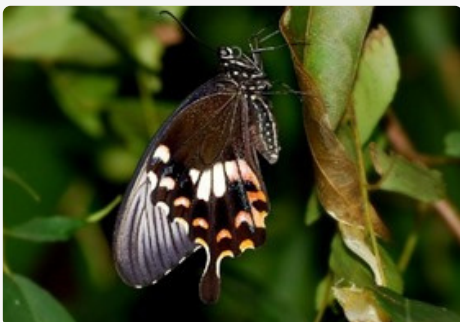
Butterflies, besides being so beautiful to the eye, are useful as pollinators. With the pollinators on the decline globally, setting up a butterfly garden is an active and very potent step towards green environment and its sustainability. Pollinators need all the protection and encouragement they can get, and the Butterfly Garden at Centurion University is just that, i.e., a little welcome note to the butterflies as one of the chief pollinators of Mother Nature.

Advantages about Butterflies

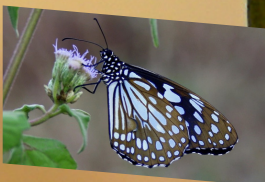


Plant Pollination - about 1/3rd of all plants require pollination to survive. Butterflies are the second largest in number pollinators, the first being the bees. Butterflies feed on the nectar and by flying from flower to flower they perform the much needed pollination.

Ecosystem Barometer - scientists have observed that butterflies are very sensitive to changes in weather and change pattern in flying and feeding when they sense something is amiss. Studying their patterns can offer warning to natural calamities.



Butterflies are Beautiful - it cannot be denied that butterflies are indeed 'flying flowers'. It is immensely pleasant to spend time in a butterfly garden, where you find not only beautiful flowers and greenery, but also beautiful butterflies fluttering around.





Reduced Use of Pesticides - since the butterflies depend on the flora of the garden, pesticides cannot be used. This is one of the key reasons why butterfly gardens attract and encourage the growth of regional flora and fauna. Many insects will populate the area such as dragon flies, ladybugs, spiders, ladybugs, praying mantis, beetles, and so on.



Increased Bio-diversity - with butterflies and their life cycle, come all kinds of animals in the food chain, such as birds, frogs, lizards, toads, bats, wasps, and so on. The butterfly garden, within no time, becomes the home of a large diversity of life.



Regeneration of Local Variety / Native Flora - a butterfly garden will require nectar and host plants available in the region for the regionally located butterflies. This ensures that the native plants have a better chance of survival through conservation and landscaping.

Facts about Butterflies

- Butterflies are nicknamed “flying flowers”. They are beautiful and can brighten the mood whenever you watch them.
- The wings of butterflies are made of chitin, and are transparent? The vivid colours and designs are made by minuscule scales!
- The taste buds of the butterfly are situated on its feet. Yes, they use their feet to taste!
- The lifespan of a butterfly is just three to four weeks. However, its whole metamorphosis from the stage of egg to death would be between two and eight months. A few species of butterfly lives for only 24 hours.





Facts about Butterflies

- Butterflies are cold blooded and to be happy and optimally mobile, they require a body temperature of about 85 degrees. When it becomes cold, butterflies migrate towards warmer climate. The Monarch butterfly is known to migrate as much as 2,500 miles!
- Butterflies eat only liquids. Since they do not have teeth to chew, they can only drink the nectar using their proboscis (mouth) like a portable straw.
- Butterflies use their wings for camouflage against predators. Besides the designs that sometimes make butterflies look real intimidating, they also know how to fold them in specific way to scare away predators.
- All butterflies have four wings. The top two are known as forewings, the bottom ones, hindwings. The wings make a pattern of '8' when in flight.
- Butterflies are quite different from moths, though they look similar at a quick glance. While butterflies are diurnal, moths are nocturnal. Moths rest on landing with their wings flat stretched out, while butterflies fold them upright. The antenna of the butterfly is clubbed at the top, while those of the moth is plain.





A little about bees:

The Bees: Partners for Human Life

The Centurion Butterfly Garden is the home to two medium sized beehives. The bees happily coexist with the butterflies adding value and beauty to the amazing biodiversity of the garden.

The name of the species of the bees living in these two beehives is *Apis cerana indica* or the Indian honeybee. These bees are known to be non-aggressive and non-swarming and hence, ideal for beekeeping.

There are three types of bees in a beehive, i.e., the queen, the workers, and the drones. The queen rules the beehives with the help of chemicals that she emanates from her body.

Her main job is to regulate the work of the worker bees and lay eggs for the next generation of bees. The workers are exclusively female and their key job is to collect nectar and pollen from flowers.

Another important job they have is to keep the hive ventilated by flapping their wings. The drones are the mating partners for the queen. The drones are welcome during summer; in the winter they are expelled from their home.

A little about Bees...



Why do Bees Matter?

Bees are the world's major pollinators. As much as 3/4ths of the world's plants representing 90% of the food globally, require pollination for survivals, and depend on bees for this purpose.

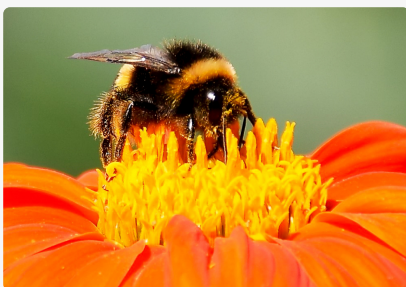
If bees decline or disappear, many food crops will disappear as well - such as apples, tomatoes, cocoa, squash, coffee, most nuts, etc. The food security of human beings would be heavily affected if the bees populace decline drastically.

Advantages about Bees

Besides pollination, which is the major role of the bees, there are many advantages to cultivating and promoting bees:



Food source for wild animals - bees are responsible for the propagation and sustenance of many wild plants that produce nuts, seeds, berries and fruits that serve as food for wild animals.

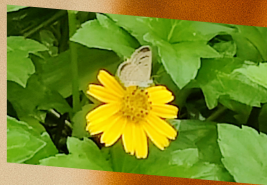


Wild plants propagation - through pollination, bees promote and keep alive a huge number of wild plants all over the world. The existence of the savannah woodlands, tropical forests and temperate deciduous forests heavily depend on bees. Many trees and plants species, such as poplars and willows cannot grow without pollination.



Honey as food for animals and humans - honey is a major food component for many animals such as birds, insects, racoons, among others.

The link that interconnects earth's biodiversity - bees are the main link in the earth's complex ecosystem, which makes it possible for a host of different species of plants to coexist. Along with the plants, a huge number of animals owe their existence to bees.



Facts about Bees

When the queen bee dies, the worker bees of that hive will choose one healthy larva and make it the queen by feeding a special food, known as “royal jelly”. This is a highly nutritious, specially formulated food, that helps the larva grow into a fertile Queen Bee.



The bees can fly at a speed of 25 km per hour!

The wings of a bee can beat as fast as 200 times per second!



The lifespan of a worker bee is 5-6 weeks. During her lifetime, she will produce approximately 0.5 grams of honey.

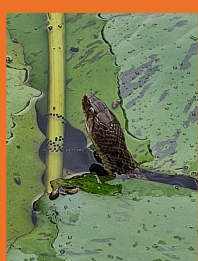
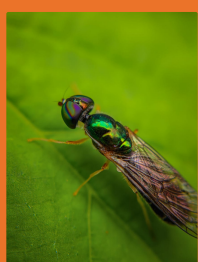
The Queen Bee will lay about 2,500 eggs through out her life, which spans over 4-5 years.

The worker bees communicate among one another to indicate the best source of nectar by “dancing” making an eight-figure in that direction.



The number of bees is fast declining, which can be catastrophic to the earth ecosystem and even survival of humans.





Conclusion: Butterfly Garden Restores Biodiversity

The Centurion Butterfly Garden was conceived as action-learning-research project for halting loss of biodiversity and conservation of the local ecosystem. There are a number of direct and indirect beneficial outcomes from this action-research project.

Hands-on, live learning for students

The creation of the Butterfly Garden requires the collection and nurturing of local plants, shrubs, bushes, creepers and trees that belong to the wild habitat on the region. Not only it provides a continuous hands-on teaching and learning experience for our botany and zoology students, but also has created a small patch of local, regional biodiversity.

Conservation of local biodiversity

What started with a collection of local plants and flowers as nectar and host plants for the butterflies, has evolved over just a few years into a complex ecosystem with a wide variety of insects, reptiles, and small animals that delight the Campus residents, students, and visitors alike.

Restore and rejuvenate native plants and plantations

Many of the native regional flora, which presently faded from the knowledge and use of the local populace have been revived through this Butterfly Garden. The variety include plants that have medicinal, food and aesthetic properties.

Generate awareness

The exceptional success that this Butterfly Garden showcased has proved that with a little care and enthusiasm, the ecosystem can be restored, rejuvenated, and sustained. In this work, butterflies and bees can play a major role, despite their diminutive size and lifespan.

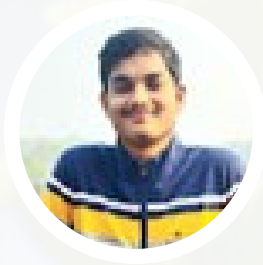


Testimonials



"The vivid wing coloration and flapping of wings in the flight path of butterflies impart an exceptional touch of beauty to the nature. This butterfly garden plays an important role in conserving local butterfly species. Besides maintaining a sustainable environment, this garden heals mind and body."

Dr. Sagarika Parida, Associate Professor,
Department of Botany



"The butterfly garden is mesmerising! The abundance of flora and fauna here is a breath of fresh air and delight compared to the monotonous classroom environment. It has even fueled my curiosity to learn more about the environment. "

Saumya Smruti Ranjan Parida, B.Sc. (Zoology)



"Faunal diversity plays an important role in understanding the varied biotic interactions occurring in the nature. Exposure of student learners to the nature and studying the biodiversity is proven to be an excellent approach to realize the importance of various species as well as the impact of environment. "

Dr. Bibhudutta Mishra, Assistant Professor,
Department of Zoology, SoAS

Testimonials



"The species diversity and abundance of butterfly was carried out in and around, CUTM, Bhubaneswar campus. Great opportunity to have a visit and field study at butterfly garden. Feels like coordination of love and learning."

Sibsankar Nayak, M.Sc, Department of Zoology



"Planning and tending a garden is an avenue for all students to build character and gain skills. It provides opportunity for the students to expand their capabilities in a collaborative and hands-on setting mode. Creating the pollinator butterfly garden was a great way to connect classroom learning to the natural world, and to experience direct outcomes."

Dr. Bibhudutta Mishra, Assistant Professor,
Department of Zoology, SoAS



"Centurion University of Technology and Management took an effective step to protect and conserve different species. The Butterfly Garden is now a home to a wide variety of species which looks magnificent and helps us to gain invaluable knowledge about the species variety."

Rojalin Mishra, B.Sc, Department of Botany

**CONSERVING & ENGAGING
WITH ECOLOGY:
A BUTTERFLY GARDEN**

**GOT ANY
QUESTIONS?**

EMAIL US AT
SIBAKRIPA.BOSE@CUTM.AC.IN

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