

**ACADEMIC ACTIVITIES - 2022 – 2023**  
**DEPARTMENT OF ADVANCED ZOOLOGY AND BIOTECHNOLOGY**

**MOTHS OF WOMEN’S CHRISTIAN COLLEGE-A FIELD GUIDE LAUNCHED BY  
THE DEPARTMENT OF ADVANCED ZOOLOGY AND BIOTECHNOLOGY ON  
IT’S CENTENARY YEAR**

The event began with the department choir rendering the classic hymn” All creatures of our God and King” by William Henry Draper based on a poem by St. Francis of Assisi. The Principal of Women’s Christian College, Dr. Lilian I Jasper welcomed the gathering and fondly recollected the mothing adventures of the Department over the years. Dr. Vanitha Williams, Head of the Department of Advanced Zoology and Biotechnology, presented the History of the Department since its inception in 1922 and highlighted the leadership across the decades. She further elaborated on why we chose to study moths emphasizing their beneficial aspects and adding interesting facts about them.

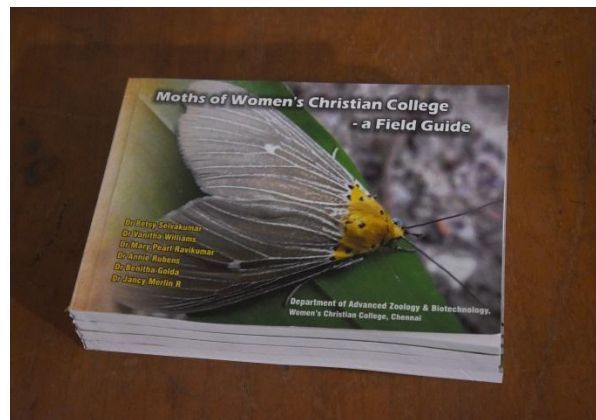
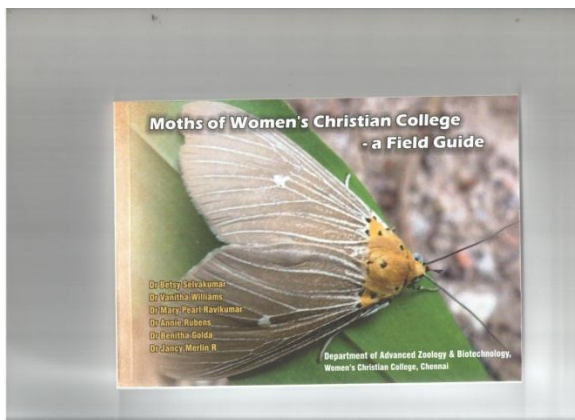
The Chief Guest Dr. R.W Alexander Jesudason, Pro -Vice -Chancellor, Hindustan Institute of Technology & Science, Chennai, congratulated the department and recalled the dedication and commitment of the former faculty of the department. He was delighted to have his research guide and mentor Dr. B. Vasantharaj David grace the occasion and fondly recalled how four generations of students were a witness to the centenary celebrations of the department. He was very appreciative of the initiatives and efforts by the faculty of the department and prompted them to plan ahead for the years to come. He surmised that Artificial Intelligence, which began as a concept in 1955 is now a much-researched area in technology and prompted the students and faculty to undertake interdisciplinary research to benefit society. Dr. Alexander Jesudasan eloquently weaved the life cycle of moths into a life lesson for the students by elaborating on how a slowdown in learning need not necessarily be negative. Just like the moths that come out of the cocoon with increased vigor and take flight, the students can hope for a better tomorrow even after setbacks.

After his address, Dr. R.W Alexander Jesudason launched the book “Moths of Women’s Christian College- a Field Guide” authored by six staff members of the Department - two retired and four currently serving in the Department—Dr. Betsy Selvakumar, former Head of the Department of Advanced Zoology and Biotechnology, Dr. Mary Pearl Ravikumar, Former faculty, Dr. Vanitha Williams, Head of the Department of Advanced Zoology and

Biotechnology, Dr. Annie Rubens, Dr. Benitha Golda, and Dr. Jancy Merlin, Assistant professors in the Department. The first copy was received by Dr. B. Vasantharaj David, an internationally renowned Entomologist, Ex-Chairman, Scientific/Academic Board, International Institute of Biotechnology and Toxicology, Padapai. Copies of the book were also received by the Principal Dr. Lilian. I. Jasper and former heads of the department Dr. Pamela Sahayadas, and Dr. Betsy Selvakumar.

The Purpose of the book is to introduce the users to get a glimpse of the fascinating world of urban moths documented by the staff and students of Women's Christian College for eight years from 2014 onwards. The book describes 104 species of moths belonging to 13 different families in the order of abundance on campus.

Dr. Vasantharaj David, appreciated the efforts of the department to document the moths on campus. He underlined the dearth of research in Taxonomy and emphasized the need for students to engage in taxonomic studies of insects. This was followed by felicitations by Dr. Pamela Sahayadas and Dr. Betsy Selvakumar, Former Heads, Department of Advanced Zoology and Biotechnology.





**RACHEL PHILIP ENDOWMENT WORKSHOP-REPORT**

**Date: September 20, 2022**

Rachel Philip Endowment Workshop was held on September 20, 2022 by the Department of Advanced Zoology and Biotechnology. The day's speaker was Ms Aganya Pari, co-founder of the prestigious company SACS Vanya, who spoke about the importance and efficiency of vermicomposting. She began her presentation by briefly explaining what vermicomposting is and then moved on to the necessary materials needed for vermicomposting such as bedding, worm food, moisture, aeration, temperature, and so on. She then discussed how to prepare a **worm bin** economically using household products. She educated us on the various types of earthworms, emphasising that not all are suitable for vermicomposting. The red wiggler (*Eisenia foetida*.) or compost worm, is the most commonly used earthworm for vermicomposting. They are surface feeders, can withstand a wide range of temperatures, are voracious feeders, and can reproduce quickly in captivity. She also went on to explain the likes and dislikes of red wiggler food preferences (likes: coffee, leaves, egg shells, cattle dung, food scrapes, shredded paper, cardboard, etc.; dislikes: onion, meat, oily food, citrus food, dairy food, etc.) before thoroughly explaining how to use a vermicomposting system.

#### **STEPS INVOLVED IN USING VERMICOMPOST FOR MAXIMUM YIELD**

- For seeds. Use the vermicompost as a seed-starting booster. Sprinkle it into the holes dug for seeds
- For plants, A handful or two can be added on the top soil around the plant . Repeat it every two weeks
- For indoor plants, this is the most preferred fertilizer. Remove a small portion of the topsoil and add about half an inch of vermicompost
- For trees, Add about 2kg at the time of planting and about 5-10kg every 3 months for older trees.

#### **HANDS-ON TRAINING**

We were then taken to the college's vermicomposting pit, where we prepared the vermicompost bed by adding leaves, soil, manure, and water. Fruit waste was brought from the juice stall in our college canteen. To mix the materials, we were given long-handled shovels, spades, and forks. We checked the pH and temperature of the soil before adding water, and then again after tilling the mix. As a result, heat should be generated, allowing us to know that the vermicomposting process has begun. Ms Aganya Pari accompanied us and guided us

throughout the event. We had a completely new and unforgettable experience. She educated us on how vermicomposting was done on a large scale in her industry, and the main disadvantage is that the worms reproduce and lay eggs in the soil that cannot be separated because they are too small, so they are packed with the compost, which is actually an added benefit to the consumers.

Ms. Aganya Pari was gracious enough to provide free compost to all students and teachers. Many questions were enthusiastically asked by both the teacher and the students, to which she cheerfully responded. Her speech inspired students to try out vermicomposting and also plant more using compost.



## **REPORT ON INVITED TALK MONASH UNIVERSITY 28/09/2022**

On 28th September 2022, the departments of Advanced Zoology and Biotechnology Advanced Zoology and Biotechnology Plant Biology & Biotechnology, in collaboration with AECC Global organized an invited talk by eminent professors Dr John Carroll, foundation Dean of the sub faculty Biomedical Sciences and Dr Giuseppe Lucarelli, lecturer and manager of Master of Biotechnology, Monash University, Australia.

The programme started with a Prayer song by the final year students of both departments, followed by welcome address and introduction by Dr. Vanitha Williams, Head of the department of Advanced Zoology and Biotechnology. The talk was also attended by Mr Tim Gawn, Manager, Student Recruitment, Mr Tim Stephens, Faculty General Manager, Ms Asha Balaji, Team Leader, Special Projects, Ms Bindu Mary, Head of Operations, Tamil Nadu, AECC Global and Prashanth, Assistant Manager, AECC Global.

Dr. Giuseppe Lucarelli was cordially invited for the first lecture. He started off with a quick run-through of basic principles that govern the functioning of a microscope. Then he went on to explain the working of a fluorescent microscope with laboratory images which showed a clear contrast between F-actin, nucleus and mitochondria of the sample. The main focus of the lecture was on the functioning of fluorescent microscope, its parts and the types of fluorescent agents used. He explained in detail the analytical techniques used to study a sample with precision. Pictorial representations, graphics and clear microscopic pictures helped us comprehend the concepts better. Some of the alluring dyes, he mentioned were fluorescein, syto red and Hoechst. He emphasized on the use of fluorescent proteins as an important tool to introduce fluorescence into the cell samples. In a nutshell, the photons absorbed by the cell sample emitted in "visible light" of emission spectrum enables us to form the desired images. The various images of different wavelengths are then overlaid and computed to form a single picture.

The session was followed by a lecture on Oocyte Mitochondria-Regulation of fertility and embryo development by Dr. John Carroll. The main focus of his lecture was on the effect of mitochondria on oocytes and embryo competency. He started off the session with a quick question to analyse our knowledge on mitochondria and cell cycle. The audience were quite receptive and responded enthusiastically. He began with a brief introduction of oocytes and its

proliferation. The research for this study was done on mice. A graphical representation of the fertility rate of the oocytes in mice was used to explain the subject. Aneuploidy due to the abnormal chromosomal alignment at the metaphasic plate was regarded as one of the reasons for abnormalities during pregnancies. This aberration was due to the deteriorating functioning of mitochondria. The reactive species, oxygen (ROS) formed during oxidative phosphorylation proved to be the reason for mechanical stress which hindered the formation of normal embryos. The lecture concluded with methods to overcome this; by the supplementation of MitoQ and BGP- 15.

The session ended with a round of discussion and vote of thanks by Ms Anamika Sudheer. III AZBT.

### **REPORT ON CAMPUS BIRD COUNT**

The Great Backyard Bird Count India is the Indian implementation of the global Great Backyard Bird Count, which runs for 4 days every February. This great event is supported by the Cornell Lab of Ornithology and the National Audubon society. As part of this global event, Campus bird Count can be conducted in campuses of institutions alongside after registration.

Women's Christian College is recognized as a hot spot and Department of Advanced Zoology and Biotechnology participated in Campus Bird Count on 18<sup>th</sup> February, 2023. Twenty seven final year students of the department along with the course teachers of the Field Zoology, Dr. Vanitha Williams, Head of the dept, Dr. Benitha Golda, Assistant Professor and Dr. Jancy Merlin were involved in the bird count. The entire campus was divided into 8 major sites and the observers were assigned different sites on campus to take the bird count from 8:45 AM to 9:45 AM in a fifteen minute interval. Observers identified the birds by sight and call too.

Students participated enthusiastically and have recorded 16 different species of birds on campus. The report from each site was consolidated and the species list along with the count was uploaded in Campus Bird Count website.

#### **BIRD SPECIES AND THEIR COUNT**

| S.NO | BIRD SPECIES | COUNT |
|------|--------------|-------|
|------|--------------|-------|

|     |                           |     |
|-----|---------------------------|-----|
| 1.  | Rock Pigeon               | 205 |
| 2.  | Asian Koel                | 2   |
| 3.  | White Egret sp.           | 1   |
| 4   | Pond Heron sp.            | 1   |
| 5.  | Shikra                    | 10  |
| 6.  | Black Kite                | 38  |
| 7.  | Spotted Owlet             | 11  |
| 8.  | White-throated Kingfisher | 3   |
| 9.  | Woodpecker sp.            | 7   |
| 10. | Rose-ringed Parakeet      | 244 |
| 11  | Black Drongo              | 1   |
| 12. | House Crow                | 306 |
| 13. | Large-billed Crow         | 99  |
| 14. | Common Tailor bird        | 4   |
| 15. | Common Myna               | 85  |
| 16. | Purple-rumped Sunbird     | 6   |