



## VIVEKANANDA COLLEGE

(Residential & Autonomous – A Gurukula Institute of Life – Training)

College with Potential for Excellence

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Affiliated to Madurai Kamaraj University, Managed by Sri Ramakrishna Tapovanam, Tirupparaiturai, Trichy

Tiruvedakam West, Madurai District-625 234, Tamil Nadu

**DBT STAR COLLEGE SCHEME**



Department of Biotechnology, Government of India, New Delhi

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## Group Project Report 2021-2022

Sl. No	Project Mentors	Title of the projects	Project outcomes	No. of Beneficiary	Page No
1	<b>Dr.M.Shunmugavelu &amp; Dr.K.Kamatchi</b>	Biodiversity of Spiders (Arachnida: Araneae) in Alagar Hills, Dindigul District,Tamilnadu, India.	Ten spiders were identified up to species level. The spiders belong to 4 families of the order Araneae. Including, <i>Leucauge bengalensis</i> species are identified. In this study, 8 species of web building spiders and 2 species of non-web building spiders were observed.	5	3
2	<b>Dr. G. Ponraj &amp; Dr. S.Selvaraj</b>	Isolation and Identification of Bacteria from Termites Gut obtained from Alagar Hills Reserve Forest, Dindigul District, Tamil Nadu	Cellulose degrading bacteria from termites gut flora were identified. Four termite species were identified as <i>Cryptotermes</i> species by morphological characters and behavioural activities. Gram positive and negative bacteria were Identified from termites gut.	5	4
3	<b>Sri. R. Muthupandi &amp; Dr. M. Pavunaj</b>	Faunal Diversity on Nagamalai Hills, Madurai District, Tamil Nadu	Total of 21 species, comprising 11 orders, were identified such as Hymenoptera, Phasmatodea, Odonata, Accipitriformes, Lepidoptera, Rodentia, Squamata, Anura, Squamata, Passeriformes and Chrysopidae.	6	5
4	<b>Dr.K.RameshKumar &amp; Dr. T. Ramesh</b>	Diversity and Species Composition of Butterfly Fauna at Alagar Hills, Madurai, Tamil Nadu.	Total of 34 species of butterflies were observed, 73.6 % of the species were belonged to two families Nymphalidae and Pieridae. The <i>Pachliopta hector</i> , a scheduled-I species which is protected by Wildlife Protection Act was also documented.	5	6

## **Group - I**

### **Project Title**

**Biodiversity of Spiders (Arachnida: Araneae) in Alagar Hills, Dindigul District, Tamilnadu, India.**

**Name of the Mentors** Dr.M.Shunmugavelu&Dr.K.Kamatchi

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### **Abstract**

The species composition and distribution of spiders were investigated in the present study. The study area Alagar Hills, Dindigul District, Tamil Nadu, South India was selected to study the biodiversity of spiders (Fig. 1) Insect collecting net 30 cm diameter were used to collect the insect between 250 – 300 hours in the field. The spider species were identified and field records were maintained throughout the study period from February 2022 to May 2022. The mean temperature was 30°C and the relative humidity is (RH) 85%, the annual mean rainfall of 850mm. A periodical survey and a systematic study of spider were undertaken for a period of four months from February 2022 to May 2022. The spiders were observed and brought to laboratory for microscopic examination. Morphometry of carapace and abdomen was carried out. Altogether 184 specimens were documented from the study area during the period of March 2022 to May 2022. Totally ten spiders were identified up to species level. The spiders belong to 4 families of the order Araneae. The most frequently encountered species are *Leucauge bengalensis*. During the study 8 species of web building spiders and 2 species of non-web building spiders were observed. Temperature and humidity vs density of spiders were recorded. Considering the earlier publications on spider fauna, the present result show comparatively a greater number of species (10) and specimens (184) in the field as the Indian spider fauna is richer than the geographic regions. The habit, habitat, predatory behaviour, correlation between the environmental parameters and productivity of spiders have to be studied in future.

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## **Group II**

### **Title of the project**

# **ISOLATION AND IDENTIFICATION OF BACTERIA FROM TERMITES GUT OBTAINED FROM ALAGAR HILLS RESERVE FOREST, DINDIGUL DISTRICT, TAMIL NADU**

**Name of the Mentors: Dr. G. PONRAJ &Dr. S. SELVARAJ**

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### **Abstract**

Termites are social insects and categorized based on their living habitat as subterranean and drywood. They are one of the most abundant macro invertebrates and play an important role in ecology in tropical ecosystems. They are degrading cellulose because in the digestive tract there are symbiotic microorganisms such as bacteria and protozoa. In this study cellulolytic bacteria isolation and identification. Cellulose degrading bacteria from termites gut flora were isolated, screened and their identification was studied using nutrient agar. Four termite species were identified as *Cryptotermes* species by morphological characters and behavioural activities. The pure culture of isolated termites gut bacteria were obtained by streaking methods and bacterial growth curve was observed. Colour, shape, elevation, margin, size of the colonies, smooth texture, flat elevation and white colour with circular shape were observed. All the isolated bacterial strains were identified motile in nature by Hanging drop method. Based on the Gram staining techniques, strain-1, strain-2 and strain-4 were Gram positive bacteria with basil shaped because the colour formed after the addition of crystal violet is purple. Strain-3 is Gram negative with rod shaped because they are red colour after adding violet crystal. Each isolates were identified based on the biochemical test such as Methyl red (MR), Voges-Proskauer (VP), Catalase, Oxidase, Urease and Starch. Therefore, four isolated termites were identified in the genus of *Cryptotermes* species.

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### **Group III**

#### **Title of the project**

### **Faunal Diversity on Nagamalai Hills, Madurai District, Tamil Nadu**

**Name of the Mentors: Sri. R. Muthupandi and Dr. M. Pavunaj**

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#### **Abstract**

Biodiversity is the variety and variability of different life forms, including that of plants, animals, and microorganisms, as well as the genes they carry and the ecosystems they create make up what is known as biodiversity. A few components of biodiversity that are usually disregarded are endemism, genetic diversity (genetic variations within species), species diversity (the variety of species), ecosystem diversity (the variety of ecosystems), functional group diversity, and agro-biodiversity. The most reliable data on species diversity offers some proof of its potential size and dispersion. The Nagamalai Hills in Tamil Nadu's Madurai District were the location of the current study, survey, and status assessment of various fauna in April 2022. Between 7:00 and 12:00 in the morning and 16:00 and 19:00 in the evening, observations were made. A total of 21 species, comprising 11 orders, were spotted, photographed, and identified (Hymenoptera, Phasmatodea, Odonata, Accipitriformes, Lepidoptera, Rodentia, Squamata, Anura, Squamata, Passeriformes and Chrysopidae). Further studies to develop more effective conservation strategies, extensive research with more extensive inventorying and monitoring of the faunal diversity in the hill is required.

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## **Group-IV**

### **Project Title**

#### **Diversity and Species Composition of Butterfly Fauna at Alagar Hills, Madurai, Tamil Nadu.**

**Name of Mentors: Dr. K. Ramesh Kumar&Dr. T. Ramesh**

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### **Abstract**

Butterflies were sampled between March to May, 2022 using a modified version of the line-transect method. A permanent line transect was setup in the habitat of Alagar hills, which are 2000 m in length and five meter in either side, above and front of the observer were recorded for the butterfly species. The transect was slowly traversed at a uniform pace for 1 hours between 09.30 hr to 11.00 hr during good weather period, and sampling was done once a month. Total of 34 species of butterflies were observed present investigation at Alagar hills, they belonging into 27 genera and 4 families. Nymphalidae was the dominant family in terms of species richness followed by Pieridae. Interestingly 73.6 % of the species were belonged to two families Nymphalidae and Pieridae. The species such as *Euremahecabe*, *Anaphaeisaurota*, *Ariadne merione*, *Phalantaphalanta*, *Neptishylas*, *Junoniaiphita*, *Ceporanerissa* and *Catopsiliapomona* are very common during our survey. Species such as *Troidesminos*, *Papiliopolymnestor* and *Atrophaneuraaristolochiaea* are uncommon at Alagar hills. The *Pachliopta hector*, a scheduled-I species which is protected by Wildlife Protection Act was also documented. The 50% of butterfly species were encountered in the 12<sup>th</sup> sampling effort at 1300 m and accumulation rate increased till the end. These patterns indicated that, with increasing sampling effort there is more likelihood of adding new records of butterfly species at this area.

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