

PROVIDENCE WOMEN'S COLLEGE CALICUT - 9



REPORT OF STUDY TOUR & FIELD TRIPS

Name.....RESHMI M.C......

I certify that this is the bonafide record of field work done by the
candidate.....RESHMI M.C......

with Reg.No. PWATSZ0017.....during the years..2019-2022

EXAMINERS

1. ~~Amal Jose~~ 13/5/22 Dr. Manjusha /h/

2. ~~Kanani~~ 12/5/22 Smrithi-k

STAFF IN CHARGE

Subha
Dr. Subha Babu Jayaprakash

HEAD OF DEPT.

Nishi Ann
DR. NISHI ANN
ASST. PROFESSOR & HEAD
DEPARTMENT OF ZOOLOGY
PROVIDENCE WOMEN'S COLLEGE
CALICUT - 673009



PROVIDENCE WOMEN'S COLLEGE CALICUT - 9



REPORT OF STUDY TOUR & FIELD TRIPS

Name... Shadha Fathima

I certify that this is the bonafide record of field work done by the
candidate... Shadha Fathima

with Reg.No... PWATSZ0018 during the years... 2019 - 2022

EXAMINERS

1. Dr. Mayra 12/5/22 Dr. Mayra

2. Smriti 12/15/22 Smriti

Subha
STAFF IN CHARGE

Dr. Subha Babu Jayaprakash

Dr. Nishi Ann
HEAD OF DEPT.

ASST. PROFESSOR & HEAD
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CALICUT - 673 009



PROVIDENCE WOMEN'S COLLEGE CALICUT - 9



REPORT OF STUDY TOUR & FIELD TRIPS

Name..... SHILPA J.P

I certify that this is the bonafide record of field work done by the
candidate..... SHILPA J.P

with Reg.No..... PWATSZ.0086 during the years..... 2019-2022

EXAMINERS

1.

Manjusha
12/5/22

Dr Manjusha KI

2.

Smrithi
12/5/22

Smrithi K

Sangeetha

Dr. SANGEETHA G KAIMAL
STAFF IN CHARGE
Department of Zoology
Providence Women's College
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Nishi Ann
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PROVIDENCE WOMEN'S COLLEGE
CALICUT - 9




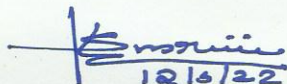
REPORT OF STUDY TOUR & FIELD TRIPS

Name..... SNEHA M K

I certify that this is the bonafide record of field work done by the
candidate..... SNEHA M K

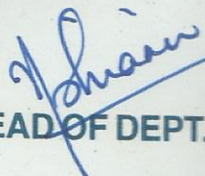
with Reg.No..... PWATSZ0004 during the years..... 2019-22

EXAMINERS

1.  Dr. Manjusha K.T.
2.  SMRITHI - K
12/10/22

Subha
STAFF IN CHARGE

Dr. Subha Babu Jayaprakash


HEAD OF DEPT.

PROVIDENCE WOMEN'S COLLEGE CALICUT - 9



REPORT OF STUDY TOUR & FIELD TRIPS

Name... SNEHA .V. M

I certify that this is the bonafide record of field work done by the
candidate... SNEHA - V . M

with Reg.No... PWATS20019 during the years... 2019 - 2022

EXAMINERS

1. [Signature] Dr. Manjusha K T

2. [Signature]
12/13/22



[Signature]
Dr. E. Julie
STAFF IN CHARGE
Assistant Professor
Department of Zoology
Providence Women's College
Calicut - 673 009

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PROVIDENCE WOMEN'S COLLEGE CALICUT - 9



REPORT OF STUDY TOUR & FIELD TRIPS

Name..... SONA SATHEESH . K

I certify that this is the bonafide record of field work done by the
candidate..... SONA SATHEESH . K

with Reg.No..... P.W.A.T.S.Z.O.O.05 ..during the years..... 2019 - 2022

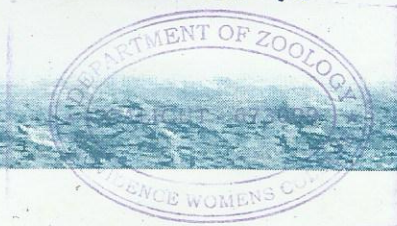
EXAMINERS

1. [Signature] 12-5-22 Dr. Manjusha. K.T.

2. [Signature] 12/5/22 SMRITHI . K

[Signature]
Dr. E. Julie
STAFF IN CHARGE
Department of Zoology
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Calicut - 673 009

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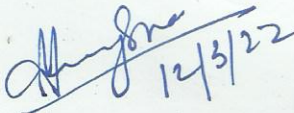
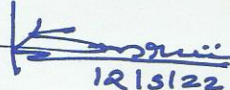
REPORT OF STUDY TOUR & FIELD TRIPS

Name..... SREELAKSHMI-A


I certify that this is the bonafide record of field work done by the
candidate..... SREELAKSHMI A

with Reg.No. PWATSZ0020 during the years..... 2019-22


EXAMINERS

1.  12/3/22
Dr Mayyusha KT.
2.  12/3/22
Smrithi K

STAFF IN CHARGE


Dr. Subha Babu Jayaprakash

HEAD OF DEPT.


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CALICUT - 9



PROVIDENCE WOMEN'S COLLEGE CALICUT - 9



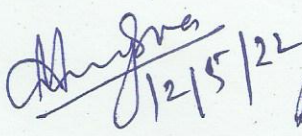

REPORT OF STUDY TOUR & FIELD TRIPS


Name..... T. POOJA.....

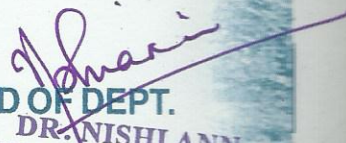
I certify that this is the bonafide record of field work done by the
candidate..... T. POOJA.....

with Reg.No..... PWATSZ.0031..... during the years... 2019-2022.....

EXAMINERS

1.  12/5/22
Dr. Manjusha K
2.  12/5/22
Smriti K


Dr. SANGETHA G. KAIMAL
STAFF IN CHARGE
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PROVIDENCE WOMEN'S COLLEGE CALICUT - 9



REPORT OF STUDY TOUR & FIELD TRIPS

Name..... AHIJA. RV

I certify that this is the bonafide record of field work done by the
candidate..... AHIJA. RV

with Reg.No. PINAZO.006 during the years 2019 - 2022 .

EXAMINERS

1. [Signature] 12/5/22 Dr. Mayrshankt.

2. [Signature] 12/5/22



Sangeetha
Dr. SANGEETHA G. KAIMAL
STAFF IN CHARGE
Department of Zoology
Providence Women's College
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[Signature]
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PROVIDENCE WOMEN'S COLLEGE CALICUT - 9



REPORT OF STUDY TOUR & FIELD TRIPS

Name AJANYA RAMAKRISHNAN

I certify that this is the bonafide record of field work done by the candidate AJANYA RAMAKRISHNAN

with Reg.No. PWAT/3.ZO.O.21 during the years 2019-22

EXAMINERS

1. [Signature] 12/5/22 Dr. Manjusha KT.

2. [Signature] 12/5/22 Smrithi K

Gangeetha
Dr. SANGEETHA G. KAIMAL
Assistant Professor
Department of Zoology
Providence Women's College
Mulaparamba P.O., Calicut - 9

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PROVIDENCE WOMEN'S COLLEGE
CALICUT - 9



REPORT OF STUDY TOUR & FIELD TRIPS

Name..... Anagha. k. k

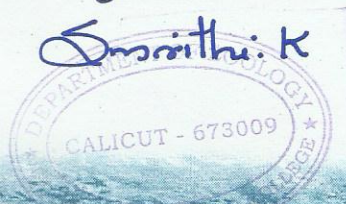
I certify that this is the bonafide record of field work done by the
candidate..... Anagha. k. k

with Reg.No. PWATS20022 during the years... 2019-2022

EXAMINERS

1. Mayyasha K T 12/5/22
Dr. Mayyasha. K. T.

2. Smsrithi. K
12/5/22



STAFF IN CHARGE

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PROVIDENCE WOMEN'S COLLEGE CALICUT - 9



REPORT OF STUDY TOUR & FIELD TRIPS

Name..... ANAGHA . R

I certify that this is the bonafide record of field work done by the
candidate..... ANAGHA . R

with Reg.No. PWATSZ0007 during the years 2019- 2022

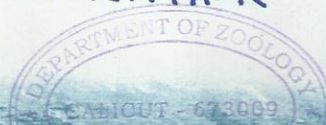
EXAMINERS

1. Manjusha 12/5/22 Dr. Manjusha. K.T.

2. Smrithi 12/5/22 SMRITHI. K

Sanjitha
Dr. SANGEETHA G. KAIMAL
Assistant Professor
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PROVIDENCE WOMEN'S COLLEGE CALICUT - 9



REPORT OF STUDY TOUR & FIELD TRIPS

Name..... ANASHAYA .K

I certify that this is the bonafide record of field work done by the
candidate..... ANASHAYA .K

with Reg.No..... PWATSZ0023 during the years..... 2019-2022

EXAMINERS

1. [Signature] 12/5/22 Dr. Manjusha.KT

2. [Signature] 12/16/22 Smaithi. K

[Signature]
Dr. E. Julie
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CALICUT - 673 009



PROVIDENCE WOMEN'S COLLEGE CALICUT - 9



REPORT OF STUDY TOUR & FIELD TRIPS

Name..... ANDREA DAIZ.K

I certify that this is the bonafide record of field work done by the
candidate..... ANDREA DAIZ.K

with Reg.No..... PWATSZ0024 during the years..... 2019-2022

EXAMINERS

1. [Signature] 12/5/22 Dr Manjusha KT

2. [Signature] 12/5/22 Sreethi. K

[Signature]

Dr. SANGEETHA G. KAIMAL
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CALICUT



PROVIDENCE WOMEN'S COLLEGE CALICUT - 9



REPORT OF STUDY TOUR & FIELD TRIPS

Name..... ANJANA M

I certify that this is the bonafide record of field work done by the
candidate..... ANJANA - M

with Reg.No. P.W.A.T.S.20008 during the years... 2019-2022

EXAMINERS

1. *Marysna*
12.5.22

Dr. Marysna KT

2. *Smrithi*
12/5/22

SMRITHI.K

Sangeetha
Dr. SANGEETHA G. KAIMAL
STAFF IN CHARGE
Department of Zoology
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Malaparamba P.O., Calicut - 9

Nishi Ann
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DR. NISHI ANN
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DEPARTMENT OF ZOOLOGY
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CALICUT - 673 009



PROVIDENCE WOMEN'S COLLEGE CALICUT - 9



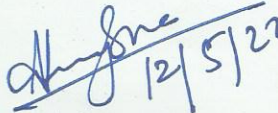
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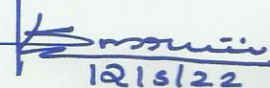
Name..... ANJANA . P.K

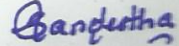
I certify that this is the bonafide record of field work done by the
candidate..... ANJANA . P.K

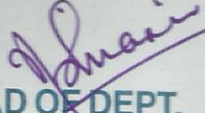
with Reg.No..... PWATSZO009 during the years..... 2019 - 22

EXAMINERS

1.  12/5/22 Dr Manjusha.K.T.

2.  12/5/22 SMRITHI.K


Dr. SANGEEETHA G KAIMAL
STAFF IN CHARGE
Department of Zoology
Providence Women's College
Malaparamba P.O., Calicut - 9


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DR. NISHI ANN
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PROVIDENCE WOMEN'S COLLEGE
CALICUT - 673 009



PROVIDENCE WOMEN'S COLLEGE CALICUT - 9




REPORT OF STUDY TOUR & FIELD TRIPS

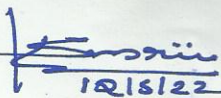
Name..... ANJITHA V

I certify that this is the bonafide record of field work done by the
candidate..... ANJITHA V

with Reg.No..... PWATSZ0010 during the years..... 2019 -2022

EXAMINERS

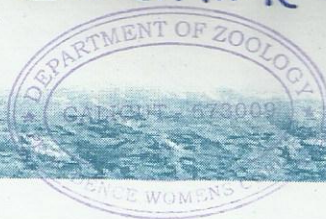
1.  12.5.22 Dr. Manjusha K T

2.  12/5/22 SMRITHI K


Dr. E. Julie
STAFF IN CHARGE
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CALICUT - 673 009



PROVIDENCE WOMEN'S COLLEGE CALICUT - 9



REPORT OF STUDY TOUR & FIELD TRIPS

Name.....ARSHITHA.P.R.....

I certify that this is the bonafide record of field work done by the
candidate.....ARSHITHA.P.R.....

with Reg.No.....PWATSZ0001.....during the years...2019 - 2022

EXAMINERS

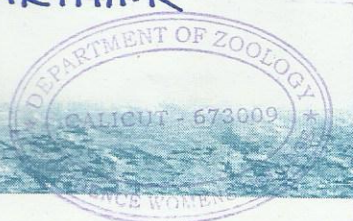
1. Dr. Manjusha K.T.

2. SMRITHI.K

Subha
STAFF IN CHARGE

Dr. Subha Babu Jayaprakash

N. N. Ann
HEAD OF DEPT.
DR. NASHI ANN
ASST. PROFESSOR & HEAD
DEPARTMENT OF ZOOLOGY
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CALICUT - 673 009



PROVIDENCE WOMEN'S COLLEGE CALICUT - 9



REPORT OF STUDY TOUR & FIELD TRIPS

Name..... ARYA SAJIL

I certify that this is the bonafide record of field work done by the
candidate..... ARYA SAJIL

with Reg.No..... PWATSZ0025 during the years..... 2019-22

EXAMINERS

1. [Signature] 12/5/22 Dr Manjusha KT
2. [Signature] 12/5/22 Smrithi.K

[Signature]
Dr. E. Julie
STAFF IN CHARGE
Department of Zoology
Providence Women's College
Calicut - 673 009

[Signature]
HEAD OF DEPT
PROFESSOR ANN
ASST. PROFESSOR & HEAD
DEPARTMENT OF ZOOLOGY
PROVIDENCE WOMEN'S COLLEGE
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PROVIDENCE WOMEN'S COLLEGE
CALICUT - 9



REPORT OF STUDY TOUR & FIELD TRIPS

Name.....ASHLA.N.....

I certify that this is the bonafide record of field work done by the
candidate.....ASHLA.N.....

with Reg.No.....PUNATSZOO26..... during the years.....2019-2022.....

EXAMINERS

1. [Signature] 12/5/22 Dr. Manjusha KT .

2. [Signature] Smrithi.K

[Signature]
Dr. SANGEETHA G. KAIMAL
STAFF IN CHARGE
Department of Zoology
Providence Women's College
Maluparamba P.O., Calicut - 9

[Signature]
HEAD OF DEPT.
DR. NISHI ANN
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DEPARTMENT OF ZOOLOGY
PROVIDENCE WOMEN'S COLLEGE
CALICUT - 673 009



PROVIDENCE WOMEN'S COLLEGE
CALICUT - 9



REPORT OF STUDY TOUR & FIELD TRIPS

Name..... ASMA SHIRIN - K

I certify that this is the bonafide record of field work done by the
candidate..... ASMA SHIRIN - K

with Reg.No... PWATS 20021 during the years... 2019-2022

EXAMINERS

1. [Signature] / 12/3/22 Dr. Manjusha. K T

2. [Signature] / 12/15/22 S. Smithi. K

[Signature]
Dr. E. Julie
STAFF IN CHARGE
Assistant Professor
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Providence Women's College
Calicut - 673 009

[Signature]
HEAD OF DEPT.

DR. NISHI ANN
ASST. PROFESSOR & HEAD
DEPARTMENT OF ZOOLOGY
PROVIDENCE WOMEN'S COLLEGE
CALICUT



PROVIDENCE WOMEN'S COLLEGE CALICUT - 9



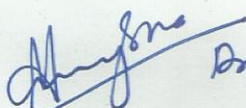
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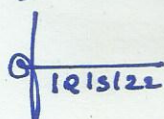
Name..... ATHULYA K

I certify that this is the bonafide record of field work done by the
candidate..... ATHULYA K

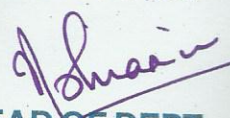
with Reg.No..... PWATSZ0002 during the years..... 2019 - 2022

EXAMINERS

1.  Dr. Manjusha K.T.

2.  SMRITHI K


Dr. F. Julie
STAFF IN CHARGE
Assistant Professor
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PROVIDENCE WOMEN'S COLLEGE CALICUT - 9



REPORT OF STUDY TOUR & FIELD TRIPS

Name.....AYISHA HANNA-CK.....

I certify that this is the bonafide record of field work done by the candidate...AYISHA HANNA-CK.....

with Reg.No.PWATSZOO.28.....during the years...2019-22.....

EXAMINERS

1. [Signature] / 12/3/22 Dr. Manjusha K T

2. [Signature] / 12/13/22 S. Smithi. K



[Signature]
Dr. Julie
STAFF IN CHARGE or
Department of Zoology
Providence Women's College
Calicut - 673 009

[Signature]
HEAD OF DEPT.
DR. NISHIANN
ASST. PROFESSOR & HEAD
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PROVIDENCE WOMEN'S COLLEGE CALICUT - 9



REPORT OF STUDY TOUR & FIELD TRIPS

Name... FATHIMA HIBA

I certify that this is the bonafide record of field work done by the
candidate... FATHIMA HIBA
with Reg.No... PWATSZ0029..... during the years... 2019-2022

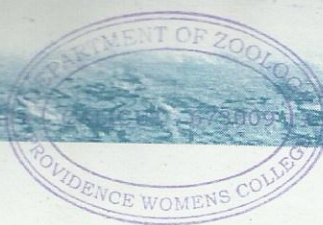
EXAMINERS

1. Mangalika 12/5/22 Dr. Mangalika. K.T.
2. Smithi 12/5/22 Smithi. K

[Signature]
Dr. F. Julie
STAFF IN CHARGE
Assistant Professor
Department of Zoology
Providence Women's College
Calicut - 673 009

[Signature]
HEAD OF DEPT.

DR. NISHI ANN
ASST. PROFESSOR & HEAD
DEPARTMENT OF ZOOLOGY
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CALICUT - 673 009



PROVIDENCE WOMEN'S COLLEGE CALICUT - 9



REPORT OF STUDY TOUR & FIELD TRIPS

Name..... Fidha sheela . K.P

I certify that this is the bonafide record of field work done by the
candidate..... Fidha sheela . K.P

with Reg.No..... PWATSZ0030 during the years..... 2019- 2022

EXAMINERS

1. [Signature] 12/5/22 Dr. Manjusha K

2. [Signature] 12/5/22 Smrithi . k

[Signature]
Dr. STAFFINCHARGEL
Assistant Professor
Department of Zoology
Providence Women's College
Malaparamba P.O., Calicut - 9

[Signature]
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DR. NISHI ANN
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DEPARTMENT OF ZOOLOGY
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PROVIDENCE WOMEN'S COLLEGE
CALICUT - 9



REPORT OF STUDY TOUR & FIELD TRIPS

Name... HARSHA . K . P

I certify that this is the bonafide record of field work done by the
candidate... HARSHA . K . P

with Reg.No. PWATSZ0011 during the years 2019 - 2022

EXAMINERS

1. Manjusha 12.5.22
Dr. Manjusha . K . T.

2. Smriti smriti . k
12/5/22

Subha
STAFF IN CHARGE

Dr. Subha Babu Jayaprakash

Nishi Ann
HEAD OF DEPT.

DR. NISHI ANN
ASST. PROFESSOR & HEAD
DEPARTMENT OF ZOOLOGY
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CALICUT - 9



PROVIDENCE WOMEN'S COLLEGE CALICUT - 9



REPORT OF STUDY TOUR & FIELD TRIPS

Name..... JILU JOSE

I certify that this is the bonafide record of field work done by the
candidate..... JILU JOSE

with Reg.No... PWATS20031 during the years... 2019-2022

EXAMINERS

1. [Signature]
12/5/22

Dr. Manjusha KT.

2. [Signature]
12/5/22

Smithi: k

[Signature]

Dr. SANGERTHA G. KADMAL
Assistant Professor
Department of Zoology
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REPORT OF STUDY TOUR & FIELD TRIPS

Name..... KEERTHANA SARATH

I certify that this is the bonafide record of field work done by the
candidate..... KEERTHANA SARATH

with Reg.No..... PWATSZO.003 during the years. 2019-22

EXAMINERS

1. Manjusha
12/5/22
Dr. Manjusha K T

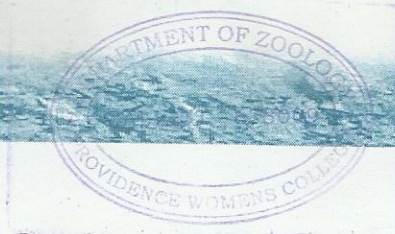
2. Smrithi K
12/6/22
SMRITHI K

STAFF IN CHARGE

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REPORT OF STUDY TOUR & FIELD TRIPS

Name... MARLIN THOMAS

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EXAMINERS

1. [Signature] 12/5/22 Dr. Mayyasha KT

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REPORT OF STUDY TOUR & FIELD TRIPS

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EXAMINERS

1. Dr. Manjusha KT 12/3/22

2. Smrithi K 12/3/22

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REPORT OF STUDY TOUR & FIELD TRIPS

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EXAMINERS

1. Dr. Mayushakti
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REPORT OF STUDY TOUR & FIELD TRIPS

Name..... NAJIHA THASNEEM N

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EXAMINERS

1. Mangalika
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Dr Mangalika

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REPORT OF STUDY TOUR & FIELD TRIPS

Name NAMITHA METILDA ROZARIO

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REPORT OF STUDY TOUR & FIELD TRIPS

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EXAMINERS

1.

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REPORT OF STUDY TOUR & FIELD TRIPS

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EXAMINERS

1. [Signature] / 12-5-22

Dr. Mangusha / 12/5

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Smrithi. K

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REPORT OF STUDY TOUR & FIELD TRIPS

Name... NEHILA PARVIN K.P

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candidate... NEHILA PARVIN K.P

with Reg.No... PWATSZ0015 during the years 2019 - 2022

EXAMINERS

1. [Signature] 12/5/22 Dr. Manjula K T

2. [Signature] 12/6/22 [Signature]

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REPORT OF STUDY TOUR & FIELD TRIPS

Name. NOURA KONDASAN PARAMBIL

I certify that this is the bonafide record of field work done by the candidate NOURA KONDASAN PARAMBIL with Reg.No. PW.A.T.S.20016 during the years... 2019-22

EXAMINERS

1. Manjusha KT 12/5/22 Dr Manjusha.KT.

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VISIT TO ZSI

On 13th November 2019 we students of IDC Zoology visited ZSI, Calicut. ZSI is a Western Ghats field Research center, founded on 1 July 1916 by Government of India Ministry of Environment, Forest and Climate Change, as premier Indian Organisation in Zoological research and studies to promote the survey, exploration and research of the country.

The Western Ghats Regional centre at Calicut Kerala, established in 1980, under the sixth five year plan of the Government of India, is one among the sixteen regional centres of the Zoological Survey of India, the internationally acclaimed taxonomic organization of the country.

Representative fauna of Western Ghats, pictorials and habitat cases, models are in display at the natural history museum of the center, for generating public awareness towards biodiversity conservation and for protecting the natural resources of Western Ghats.

Western Ghats is a mountain range stretch covers an area of 16000 km² parallel to the western coast of the Indian Peninsula, traversing states of Kerala, Karnataka, Tamil Nadu, Maharashtra, Goa, Gujarat. It is a UNESCO world Heritage Site and is one of the eight biodiversity hotspots in the world. It contains very large proportion of the country's flora and fauna, many of which are endemic to the region. A total of 39 areas in the Western Ghats including National parks, wild



life sanctuaries and reserve forests were designated as world heritage sites in 2012 - Twenty in Kerala, Ten in Karnataka, Six in Tamil Nadu and four in Maharashtra. According to UNESCO Western Ghats are older than Himalayas.

Western Ghats are home to thousands of animal species. The area has over 7402 species of flowering plants, 1814 species of non-flowering plants, 139 mammal species, 508 bird species, 227 reptile species, 119 amphibian species, 290 freshwater fish species and 6000 insect species. At least 325 globally threatened species occur in the Western Ghats. Threatened species are the Tiger, Leopard, lion-tailed Macaque, Nilgiri Tahr, Asian elephant, Nilgiri



VISIT TO RESEARCH LAB

On 19th February 2022 Department of Zoology conducted a study tour to Calicut University biotechnology Lab to know more about research equipments and techniques under the guidance of Ms. Vidhya.

It gave us insight on various research equipments and their uses, which include Micropipette for pipetting at micro level, vortex mixer for mixing the solution, magnetic mixer using magnetic capsule for mixing solution, shaker for incubating culture medium, Hot air oven for heating and preparation of culture medium, Freezer which is at -4°C , -20°C , -80°C for keeping culture medium & laboratory materials Laminar air flow cabinet to avoid contamination of culture media. It contains laminar air flow filter [Heppa filter] UV light, flame, Moisture incubator for incubating in the presence of moisture, PCR [Polymerase chain reaction machine] which gradient contain 96 wells PCR is used for amplification of DNA, Agarose gel electrophoresis is for identifying and separation of amplified DNA using comb, agarose gel, PCR buffer.

It was thought providing & interesting experience we gained new ideas and insight on research techniques and equipments, it make us closer to research knowledge for future study.

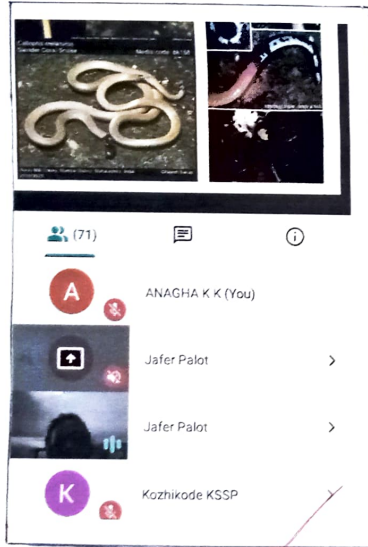
HOTSPOTS OF BIODIVERSITY - WESTERN GHATS

We got a wonderful session at ZSI, Calicut. We had the presence of an eminent personality, Suresham PM, Scientist, Regional Centre Zoological Survey of India. Sir gave us lot of information which was very helpful and filled with knowledge.

A talk by Dr. Suresham was held at ZSI on November 13 by 2:00pm addressing the ecological aspects of western ghats.

The western Ghats, on non-equatorial forest area older than the Himalayas is of global ecological importance. It is home to more than 325 endangered species of fish, flora and fauna. There are 39 rare species of mammals there.

The western Ghats, also known as the Sahyadri, is spread over 142 populated blocks in 44 districts of 6 States, including Kerala. The tragedy of the western Ghats, the biological resource of these States, lies in the lack of co-ordination of conservation measures due to the different political administrations. Gadgil report was summarised with including its critical approach developed during the releasing. Claiming it to be too environment friendly affecting livelihood and habitat of people. However if one could thoughtfully study the report and analyse. We come to the conclusion that Gadgil report is highly essential for the ongoing natural disasters.

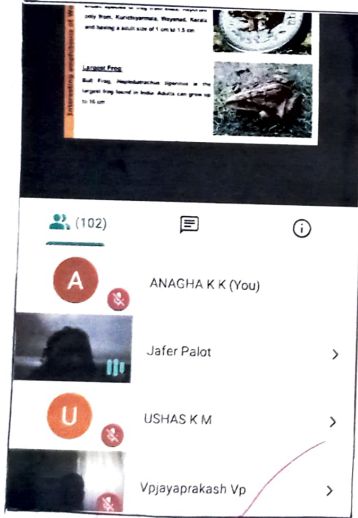


OUR WESTERN GHATS ENRICHED BIODIVERSITY

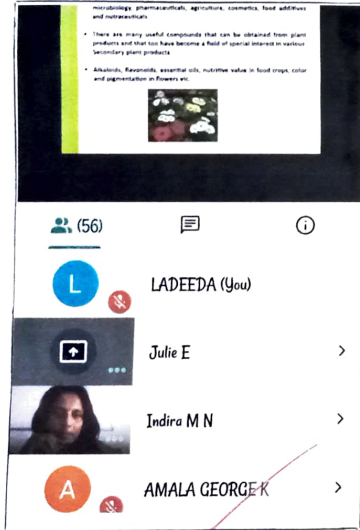
On 3rd October 2020 department of zoology in association with social forestry department, government of Kerala conducted a webinar on the topic "Our Western Ghats: enriched biodiversity". The session was led by Dr. Jafer Palot, Senior Scientist at Zoological Survey of India, Pune.

The western ghats include a diversity of ecosystem ranging from tropical wet evergreen forest to mount ain grasslands and containing numerous medicine plants and important genetic resources such as wild relatives. Western ghats is a mountain range that covers an area of 16000 kilometres square parallel to the western coast of the Indian peninsula. It is UNESCO world Heritage site and it is one of the eight biodiversity hotspot in the world.

Dr. Jafer Palot discussed about the importance of conservation of biodiversity in western ghats and also he introduced the enriched biodiversity of western ghats. He shared the images of newly discovered species such as purple frog and variety of amphibians and reptiles residing there. We come to know that amphibians of western ghats are diverse and unique with more than 80% of the 179 amphibians of western ghats are being endemic to rain forests and mountains. Western ghats have greater diversity and he shared the image of Microsalus, Rhauphorus, latcallis, Rhauphorus malabaricus, indiana etc. He shared the images of newly discovered species.



Like Purple frog which is new knowledge to us. He gave us a detailed description of Western ghats which is home to at least 325 globally threatened species, of these, there are about 229 plants species 32 mammals species 15 Avian species 43 amphibian species 5 reptilian species and one fish species.



MICROPROPAGATION TECHNIQUES AND APPLICATIONS

On 7th October 2020 Department of Zoology conducted a webinar on micropropagation techniques and application for students and techniques faculties.

The speaker of the session was Dr. Indira Manoj Assistant Professor in Botany, K. J. Somaiya Institute of Technology, Mumbai.

Micropropagation is the artificial process of producing plants vegetatively through tissue culture or cell culture. In this artificial process of propagation of plants are produced in vitro by asexual means of reproduction or by vegetative propagation. Plants can be produced both asexually i.e. via vegetative parts multiplication or sexually i.e. seed production.

The artificial process of producing plantlet involves five different methods.

- i) Meristem culture
- ii) Callus culture
- iii) Suspension culture
- iv) Embryo culture
- v) Proto plast culture

Dr. Indira explained the stages of micropropagation productively and they are:

Stage 0 - The initial stage of micropropagation which includes selection of explant.

Stage 1 - consist of culture initiation and establishment.

Stage II - Shoot multiplication

Stage III - Rooting of the shoot

Stage IV - Transfer of plants in the green house environment.

The talk by Dr. Indira was really informative and effective as the application of micropropagation became key aid to human

It was the best technique for the production of millions of clone in one year, It facilitates growth, storage and maintenance of large number of plant in small space. This method is useful for germplasm storage and protection of endangered species of plants to different countries.

The class by Nanaiah is very stimulating and enlightening session. This session helped to renewed enthusiasm in our subject and much helpful for our future research and studies.

PROBLEM

- Few taxonomists can even reliably identify a collection of ~1000 species
- How do we complete the task of identifying the remaining species, let alone recognizing them once they are identified?
- By others' estimates, there are approximately 10,000 active taxonomists globally

Solution: Create a genetic based identification system (DNA barcoding)

Participants:

- LADEEDA (You)
- Dinesh KP
- Dinesh KP
- DR. NISHI ANN SEQUEL...

DNA BARCODING

On 26th December 2020 Department of Zoology in association with Research and Development cell conducted a webinar on DNA barcoding as a tool for documenting the faunal diversity for the students and faculties.

DNA barcoding is a standardised approach for identifying plants and animals by using maximal sequence of DNA barcodes. DNA barcoding is a recent development in genetics and it is important because it provides much closer view of how the biological world actually look like.

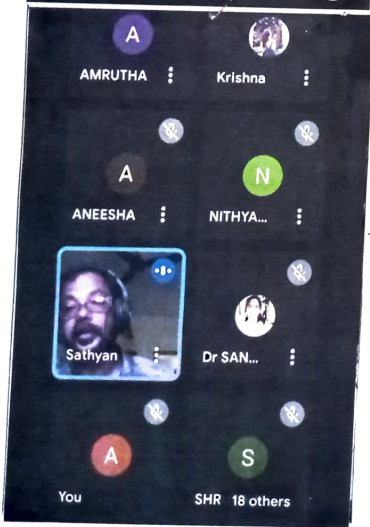
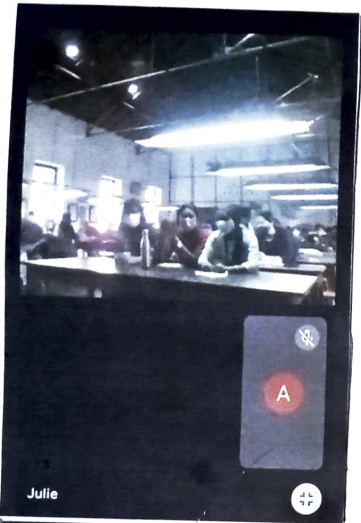
The talk was conducted by Dr. K.P. Dinesh Scientist-D at Zoological Survey of India Pune.

DNA barcoding is a method of species identification using a short section of DNA from a specific gene or genes. The premise of DNA barcoding is that, by comparison with a reference library of such DNA sections, an individual sequence can be used to uniquely identify an organism to species. Thus barcodes are sometimes used in an effort to identify unknown species, part of an organism or simply to catalogue as many taxa as possible. Or to compare with traditional taxonomy in an effort to determine species boundaries.

Application of DNA barcoding include identification of new species, safety assessment of food

Identification and assessment of Cryptic species, detection of alien species, linking egg and larval stages to adult species. The talk by Dr. K.P. Dinesh was really an informative session.

We gained precise information about DNA barcoding and application of DNA barcoding. A section of DNA from a butterfly is sequenced and matched thus the species is identified. It was very informative session so that we could get the opportunity to clear doubts regarding DNA barcoding and to make it more interesting.



BIRDS OF KERALA

On 6th October 2021 Department of Zoology conducted a webinar on Birds of Kerala in association with wildlife week celebration. The webinar was held at 1:30pm through Google meet. The program was inaugurated by Shri. Sural Kumar K. Assistant conservation of forests social forestry Extension Division, Kozhikode and the talk by Shri Sathyan Meppayur President MNHS.

Birds are a group of warm blooded vertebrates characterized by feathers, toothless beaked jaws, the laying of hard shelled eggs, high metabolic rate, a four chambered heart and a strong yet light weight skeleton. Birds live world wide and average in size from 5.5 cm Humming bird to 2.8m Ostrich. There are about ten thousand living species, more than half of the which are passerine or "perching birds".

Birds have wings whose development varies according to species. The only known groups without wings are the extinct Moa and elephant birds. Wings which evolved from forelimbs, gave birds the ability to fly although further evolution has led to the loss of flight in some birds including Rabbits, Penguins and diverse Island species. The digestive and respiratory systems of birds are also uniquely adapted for flight.

Birds are social, communicating with

with visual signals calls and songs. Birds produce offspring by laying eggs which are fertilized through sexual reproduction. Birds have extended period of parental care after hatching.

The state of Kerala has 567 species within its boundaries. Some of them such as Blue-winged Parakeet Malabar Grey Hornbill, Nilgiri wood pigeon etc. are endemic to Kerala. Common birds of Kerala include-

| SCIENTIFIC NAME | COMMON NAME |
|---------------------------------|--------------------------|
| <u>Pavo cristatus</u> | Indian peafowl |
| <u>Caprimulgus atripennis</u> | Jerdon's nightjar. |
| <u>Centropus sinensis</u> | Greenish coucal |
| <u>Eudynamis scolopacea</u> | Asian koel |
| <u>Cuculus canorus</u> | Common cuckoo |
| <u>Columba livia</u> | Rock pigeon |
| <u>Columba elphinstonii</u> | Nilgiri wood pigeon. |
| <u>Phoenicopterus roseus</u> | Greater flamingo. |
| <u>Otus bakkamoena</u> | Indian scops owl |
| <u>Asio flammeus</u> | Short-eared owl. |
| <u>Blachypodius procephalus</u> | Grey-headed bulbul. |
| <u>Pomatorhinus horsfieldii</u> | Indian Scimitar babbler. |





MILK AND MILK PRODUCTS

On 14th January, 2020 Department of Zoology conducted Program of milk and milk products by milma. The program was held at 10 Am on AV hall. The speaker of the session was Shri. K.C. James.

Milk and dairy products are an important part of a child's diet. They are a good source of energy and protein and contain a wide range of vitamins and minerals. They are rich in calcium which growing children young people need to build healthy bones and teeth.

Milk is a nutrient-rich liquid food produced by the mammary glands of mammals. It is the primary source of nutrition for young mammals before they are able to digest solid food. Lactation milk, which is called colostrum, contains antibodies that strengthen the immune system & thus reduces the risk of many diseases. Milk contains many other nutrients including protein and lactose. Consuming milk everyday makes our skin glowing and supple. It also aids in getting a good night's sleep - a bonus necessary in our stressful lives. Regular consumption of milk helps build muscles, reduce stress, better eyesight and even lowers the risk of developing high blood pressure and cholesterol. Milma is a state government cooperative under the ownership of ministry of cooperation Government of Kerala. It took over the production and milk marketing facilities under the Kerala livestock and milk marketing board.



They produce a wide range of milk products. It includes products such as pasteurized milk, skimmed milk, standardized milk, reconstituted milk, ultra-high temperature milk and fortified milk. Condensed milk is simply regular cow's milk with the water removed and significant amounts of sugar added to sweeten it, until the ratio of sugar to milk is close to 50/50. Sweetened condensed milk and condensed milk are now interchangeably used terms to describe the same product. Using sweetened condensed milk to boost calorie content may be more beneficial than using sugar alone since the phosphorus. Difference between toned milk and skimmed milk. Toned milk is not the same as skimmed milk. Toned milk contains 1.5% fat, while skimmed milk has no fat.

We have explained the stages of milk processing very well. There are steps of unloading and platform, test, weighing, quality check, pasteurization, packaging etc. He introduced us various milk products. Such as milk and milk, sambuam, milk ghee, cheese, peda, lassi, yogurt, ice creams etc. Also he let us to taste some of these products. We have explained about the pasteurisation and its step very clearly.

- Pasteurized milk that has been heated to a specified temperature and time to kill pathogens that may be found in the raw milk. Pathogens are microorganisms such as bacteria that make us sick. By law all milk sold to the public must be pasteurized and packaged in a licensed dairy plant. There is a general and urgent need for

Safety and quality.

- Pasteurization is a process in which certain packaged and non packaged foods are treated with mild heat, usually less than 100°C to eliminate pathogens and extend shelf life.
- The process safeguards foods by destroying or inactivating organisms that contribute to spoilage including vegetative bacteria but not bacterial spores.
- The process was named after the French Scientist Louis Pasteur whose research in the 1850s demonstrated that thermal processing would inactivate unwanted microorganisms in wine.
- Today, pasteurization is used widely in the dairy industry & other food processing industries to achieve food preservation and food safety.

It was a very informative and enlightening session. We got so much information about milk and dairy products & how it's been processed. After this session we are more aware about the importance of milk in a person's life.



HONEY AND HONEYBEE PRODUCTS

On 20th November 2019 Department of Zoology conducted a live session held by Dr. Raju on Apiculture. They gave us a short explanation on honeybees, its useful products made of it & a view on apiculture technique.

Sir introduced a brief explanation on honey bees. Honey bees are considered as the most beneficial insect to humans because of their ability to pollinate crops and the products they provide directly such as honey. Once in ancient times honey is used for treating several diseases and it is an antioxidant. Most bees have short insect bodies covered with hair and like all insects, six legs and three body parts: head, thorax and abdomen. A honey bee colony consist of three kinds of adult bees: workers, drones and queen. Workers are the smallest members of the colony. Honey bees are active during spring when they go for search of plants from which to collect pollen and nectar.

was having a huge collection of honey bee products. He showed us some of them to us like pollen grains, different flavours of honey, bee wax, honey gooseberry, and also showed us the bee hives.

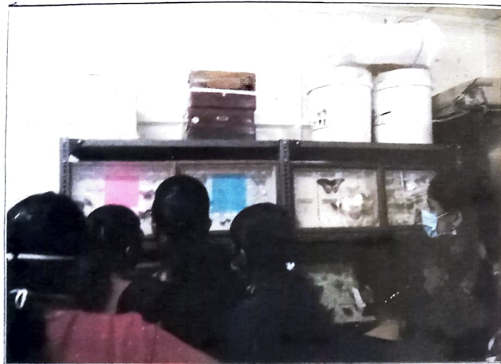
Consuming honey has a lot of benefits such as promote skin and wound healing suppress coughing on children.

Bee wax holds a lot of commercial significance. It is used in cosmetics and medical industry.



Each and every variety of honey comes with its own distinct. Sir gave us to taste a honey gooseberry which was new to us.

We gained information about Apiculture and uses of various products that are obtained through apiculture. It was a very interactive session. So that we could get the opportunity to clear doubts regarding Apiculture techniques and to make it more interesting.



VISIT TO ENTOMOLOGY MUSEUM

On 19 February 2022 we visited Entomology museum Department of Zoology Calicut University. There was a huge collection of various types of insects and we have a class about various Insect trapping methods instruments and precautions need for insect collections by Dr Sreejith Kamath, Assistant Curator Department of Zoology, Calicut University.

We observed,

- Pest of Paddy like *Nilaparvata lugens*, *Leptocorisa orizae*
- Pest of Sugarcane like *Chilo infuscatellus*, *Scirpophaga mvela*
- Pest of Tea like *Helopeltis antonii*, *Toxoptera auranti*
- Pest of coconut like *Coryctes rhinoceros*, *Opomyza aeneosella*

Also we observed many orders

Order Ephemeroptera

Order Odonata

Order Dictyoptera

Order Isoptera

Order Zoraptera

Order Plecoptera

Order Neuroptera

Order Chiloptera

Order Orthoptera

Order Embioptera

Order Mallophaga

Order Lepidoptera

Order Diptera



Order Siphonoptera

Order Neuroptera.

This was a collection of insects of medical importance like blow flies, bed bugs, house flies etc

There was a variety collection of butterflies and moths, like Common Mormon, Malabar banded peacock, many tailed oak blue, tailed ^{blue} grey, black sea, clipper etc.

These were collected and preserved by the students and class by Sreythi Sir was amazing and effective and highly useful to our study.



VISIT TO BOTANICAL GARDEN

On 19th February 2022 we the students of 3rd DC zoology visited Botanical Garden at Calicut University at 2pm along with our beloved teachers, ~~Madam~~ Dr Santhosh Nambi

A botanical garden is a garden dedicated to the collection, cultivation, preservation and display of an especially wide range of plants, which are typically labelled with their botanical names. It may contain specialist plant collections such as cacti and other succulent plants, herb gardens, plants from particular parts of the world and so on, it contain greenhouses, shadehouses, again with special collections such as tropical plants, alpine plants, or other exotic plants. Botanical gardens are often run by universities or other scientific research organizations and often have associated herbaria and research programmes in plant taxonomy.

It was a vast area consisting of many plants, shrubs, herbs, and trees. There were separate sections like succulent plants, ornamental plants medicinal plants. Many wide varieties of celosia flowers were seen. As field study is very essential in zoology we observed many trees like cannon ball tree (nagalingamaram). At the entrance on western side visitors were greeted by display of map and a pair of Kushnals.

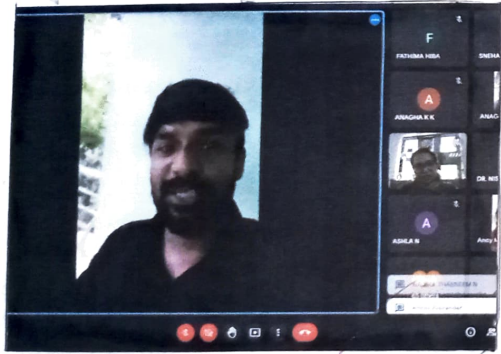
The garden is 19.5 acres with a shallow



begin by stepping streams, on Southern side where it slides down to a small transitory reservoir with diverse habitats and plants. There was a graceful plane pool and octagonal green house and avenues of Royal palm of oil palms. The 1 km long road from mess entrance on Western side touches greenhouses, ginger zones, Victoria pond, bamboo stand and luxuriant vegetation of myriads of trees and fragrance.

University has another 13.5 acres of land adjacent to garden for trees. This area on Southern part has an peaceful forest (Jungle path) It gives a feeling of tropical evergreen forest. There were many huge and woody trees. This trekking path consist of Palms, bananas and climbers offers visitors a feel of warmth while trekking through its narrow trail.

Our study tour was very interesting, students participated in a very well disciplined manner and cooperated well with teachers, guides and overall it was grand success. We realized that viewing the flora and fauna in its natural form was a great experience.

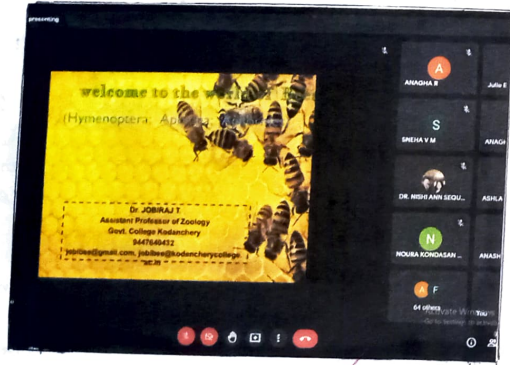


WORLD OF HONEYBEES

On 24th June 2021 department of zoology in association with eco club conducted a webinar held by Dr Jebin J T Assistant - Professor of Zoology, Government College Koderang, Calicut. He gave us valuable information about socialization of Honey bee.

Honeybees have always been the object of man's fascination. In view and wonder the highest order and the perfect harmony of their social life, their noble spirit of altruism, the unique mode of their communication through a language of gestures, dances, sounds, and scents, their extraordinary capacity and fitness for work, the marvellous architecture and geometrical accuracy of their waxen house, their interesting breeding and brood-rearing habits, their high economic importance and their ultimate association with the daily life of mankind have always attracted our minds and hearts.

He pointed about the different forms of Honeybees found in the beehive. They are workers, drone, queen. Workers are the smallest members of the colony, imperfectly developed and sterile females. So they are often called neuter. They have pollen basket, pollen brush, honey sac for collecting and storage of pollen grains and honey. Honeybee colonies only have a single queen and very bee in the colony is her daughter or son. Queens are lastly ecogog

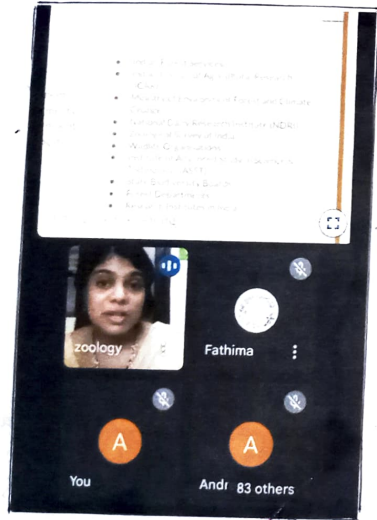


ized by their large abdomens and the retinue of workers, bees that follow her around. Queen primary duty is to lay eggs. It lays around 1500 eggs male bees are called drones they do not have stingers. The male's only job is to spread the genes of their colony. Apiculture is the commerce of domesticated species of honey bees in affairs for honey and wax. In India apiculture is now very popular.

Worker bees also have four pairs of wax glands located on the lower side of the last 4 exposed abdominal segments. The anterior portion of the sternite of each of these segments bears a pair of polished surface known as wax plates wax is released from wax glands as a fluid through 8th opening above the wax plates.

Royal jelly is a milky secretion produced by worker honey bees. It is typically contains about water protein sugar fats and vitamins salt and amino acids. They are highly nutritious and may have antioxidant & anti-inflammatory properties.

It was ~~very~~ ^{an} useful lesson & interesting too.



DUNG BEETLES AND ITS ECOLOGICAL SIGNIFICANCE

On 26th November 2021 Department of Zoology in association with research development cell conducted a talk on beetles and also on scope of zoology. The speaker of session was Sibha babu Jayaprakash Alumna of Department of Zoology Providence women's college.

Beetle are small black with yellow wings colour. Dung beetle life cycle has different stages of egg. First instar, second instar, 3rd instar, pupae, adult.

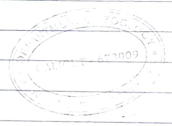
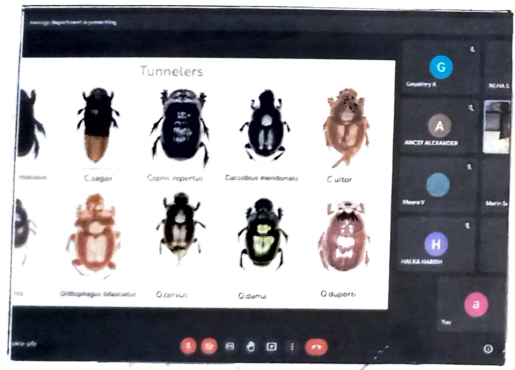
Dr. Shubha explained stages very clearly. The egg of beetle have smooth surface and soft. It has many instar. Larva has principle feeding stage in the life cycle. They feed on plants. Beetle larvae differ from chewing mouth parts. Larva pupate. From this pupa emerge. Pupa never have mandible appendages not attached to body.

The talk by Dr. Shubha was informative. Beetles help to remove the nutrients in the soil by removing dung. Dung eating vertebrate may have soil rollers. act as dispersed agent taking seeds to place for away. helping with forest regeneration. As they roll dig and tunnel then changes texture of soil particle, increasing porulation shifting & distributing microorganism.

Dr. Shubha also explained about scope of zoology in various field leading from indian forest service to

Talk by Dishuba was interesting. It helped to know more about beetle and scope of our subject.

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