

Behavioural Study of Birds in the Aquatic Aviary of Zoological Garden, Thiruvananthapuram, Kerala

Dissertation submitted to the University of Kerala in partial fulfillment of
requirements for the Degree of

Bachelor of Science in Zoology

By

Amal Dev Sudevan	-	25017126001
Amrutha. V	-	25017126002
Anu Krishnan. S	-	25017126003
Megha. S. Baiju	-	25017126009
Ananya. V	-	25017126020
Ajfa. I. F	-	25017126017
Gopika. G	-	25017126027
Neha Jose	-	25017126031
Shajina Sha.S.S	-	25017126034
Nithin. P	-	25017126045
Sreekutty. A.S	-	25017126047



Department of Zoology
St. Gregorios College
Kottarakkara-691531
Kerala State

March 2020




Dr. SUMAN ALEXANDER
PRINCIPAL
ST. GREGORIOS COLLEGE
KOTTARAKARA

CERTIFICATE

18th March 2020

This is to certify that the B. Sc (Zoology) final year project (2017-2020 batch) entitled "**Behavioral Study of Birds in the Aquatic Aviary of Zoological Garden, Thiruvananthapuram, Kerala**", guided by Mrs. Lincy Alex, Assistant Professor in Zoology, St. Gregorios College, Kottarakara was carried out under my supervision. The following students visited the Zoological Garden for the study purpose.

- 1) Amal Dev Sudevan
- 2) Amrutha. V
- 3) Anukrishnan. S
- 4) Megha. S. Baiju
- 5) Ajfa. I. F
- 6) Ananya. V
- 7) Gopika. G.
- 8) Neha Jose
- 9) Shajina Sha. S.S
- 10) Nithin. P
- 11) Sreekutty. A. S



Dr. SUNIL K. B.
PRINCIPAL
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KOTTARAKARA

INTRODUCTION

Zoological parks, aquaria, botanical parks are conservation-oriented bodies that increasingly contribute to the global conservation strategy embodied in the agreement on Biological Diversity. Zoological garden, whether private or open to the public, is a place where animals are exhibited. One of the most important concerns of the zoo is the appearance of the displayed animals. Zoos contribute to *ex situ* conservation by creating a living archive of a large variety of species living on this planet to ensure that none of the wild animals come to extinction in the case of habitat loss or a future catastrophe in their wild habitat. The goal of good zoos should always be captive management of sustainable populations. This is achieved through managed captive breeding or from preventing breeding. There are limited spaces available within zoos to hold animals, therefore it may be required that captive management programmes do not increase populations, but maintain them at stable levels or reduce them over time.

Education is one of the main roles of zoos today. Many people visit zoos worldwide each year (c.a. 600.000.000 annually). This means that the zoo community can reach a very large group of people and explain the importance of conservation. Zoos enable visitors to learn about our natural world and thereby respect nature in all its forms. Zoos have the unique ability to act for the conservation of wildlife through many avenues; most significantly through public education and the *ex situ* conservation by breeding of threatened species (WAZA, 2005; Dick and Gussett, 2010; Mascarelli, 2013). A zoo should make an effort to contribute to research.





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Plate I Aquatic Aviary of Zoological Gardens



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Plate II Guidance to Students in Zoological Garden



Suman Alexander
DR. SUMAN ALEXANDER
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Plate III Observation of Aquatic Aviary & its Premises



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Dr. SUMAN ALEXANDER
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RESULTS

During the study period, fifteen species of aquatic birds were found (Table, Plate IV). Both native and exotic species were present. The species observed were grey pelican, grey heron, oriental white ibis, oriental darter, painted stork, purple moorhen, rosy pelican, eastern great egret, black swan, crested duck, whistling teal, purple heron, adjutant stork, pond heron and night heron. Oriental white ibis were the dominant species. Painted storks were the second dominant group. Grey heron was the third group. This was followed by rosy pelican and grey pelican. There is only single in number in case of purple moorhen, eastern great egret and adjutant stork.

Table.1 Avian diversity and population in the aquatic aviary

Common name	Scientific name	Number
Grey pelican (Plate IV b)	<i>Pelecanus philippensis</i>	4
Grey heron (Plate IV e)	<i>Ardea cinerea</i>	13
Oriental white ibis (Plate IV i)	<i>Threskiornis melanocephalus</i>	35
Oriental darter (Plate IV d)	<i>Anhinga melanogaster</i>	9
Painted stork (Plate IV k)	<i>Mycteria leucocephala</i>	20
Purple moorhen (Plate IV c)	<i>Porphyrio porphyrio</i>	1
Rosy pelican (Plate IV a)	<i>Pelecanus onocrotalus</i>	5
Eastern great egret (Plate IV l)	<i>Ardea alba modesta</i>	1
Black swan (Plate IV f)	<i>Cygnus atratus</i>	3
Crested duck (Plate IV h)	<i>Lophonetta specularis</i>	2
Whistling teal (Plate IV g)	<i>Dendrocygna javanicus</i>	3
Purple heron (Plate IV j)	<i>Ardea purpurea</i>	2
Adjutant stork (Plate IV m)	<i>Leptoptilos javanicus</i>	1
Pond heron	<i>Ardeola gragij</i>	2
Night heron	<i>Nycticorax nycticorax</i>	2



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Plate IV Birds of Aquatic Aviary



a



b



c



d



e



f



g



h



i



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**Plate VI Behavioural responses of Birds
in Aquatic Aviary**



Swimming



Preening



Nesting, Flying, Territory creation



Walking

Parental caring



Foraging



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Plate V Feeding and Feeding Responses



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SUMMARY

Zoo, in terms of design, is a comprehensive entity made up of various disciplines. It is composed of spaces and elements beginning from the 'approach & parking area' to 'enclosures and service buildings' besides services like plumbing and electrical. Zoos are not only limited to exhibiting the animals but are places where visitors experience the natural habitat of the animals in terms of vegetation and enclosure enrichment. The zoo shall encourage research on the biology, behaviour, nutrition and veterinary aspects of animals in their collection. They shall also endeavor for creation or expertise on zoo architecture and landscape designing. The central theme of the zoo education programme is the linkage between the survival of various species and protection of their natural habitat. The enclosures which allow the animals to display natural behaviour are crucial to zoo education. Zoo shall, therefore, display animals in such enclosures only where the animals do not suffer physiological and psychological restraint.




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KOTTARAKARA



DEPARTMENT OF BOTANY

TOUR REPORT

YEAR 2017-2020

NAME.....SHOBHANA:S.....
CLASS NO: 20..... COURSE CODE BO1644.....
REG NO: 24517126015..... OF: Shobhana:s

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DEPARTMENT OF BOTANY TOUR REPORT

YEAR: 2019 - 2020

NAME: SHOBHANA S
CLASS NO: 20 COURSE CODE: BO1644
REG NO: 24517126015 OF: Shobhana S

Certified Bonafide Record of Practical work done in the Laboratory
by the Candidate Shobhana S with Reg No: 24517126015

Examiners: 1)

Valued



Professor in Charge

SHALAJ. R
Assistant Professor
Dept. of Botany
St. Gregorios College
Kottarakara

Head of the Department

DR. ARCHANA S. R
Assistant Professor & Head
Department of Botany
St. Gregorios College
Kottarakara

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30.06.2020

Dr. Deepa M S



St. Gregorios College, Kottarakara

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website : www.gregorioscollege.org

Fax : 0474 2650133, Ph : 0474 2650133, 2651972

DEPARTMENT OF CHEMISTRY

Sir

Date..28.06.2019

A group of Students, two teachers and a non teaching staff of the Department of Chemistry of our college under the guidance of Dr. Manu V Assistant Professor are on a study tour to visit various places in Wayand from 29/06/2019 to 02/07/2019.

Kindly provide necessary assistance, permission and concession in entrance fee at the visiting places.

Thanking you



Yours sincerely

Head of the Dept. of Chemistry
St. Gregorios College
Kottarakara

Dr. SUMAN ALEXANDER
PRINCIPAL
ST. GREGORIOS COLLEGE
KOTTARAKARA



DEPARTMENT OF CHEMISTRY
ST.GREGORIOS COLLEGE, KOTTARAKKARA

To,

Whom so ever it may concern .

Sir,

The following students of MSc Chemistry and the Accompanying Teachers of our institution are on a study tour from 29.06.2019 to 02.07.2019. Please allow them to visit your institute/place in the concession rate.

Nominal Roll

SL.No	Name of Student	AGE	SL.No	Name of Student	AGE
1	JEETHU THOMAS	22	14	LIJA THAMPI	21
2	GOPIKA G NAIR	23	15	MEENU S	21
3	LEKSHMI N	22	16	RAJALEKSHMI R	21
4	DIVYA MARIAM JOHN	22	17	LINTU KOSHY	21
5	APARNA RS	22	18	SHILPA SASI	21
6	JISHA JOY	22	19	SNEHA BABY	21
7	ASWATHY	22	20	SYAMA S	21
8	SANU KOSHY	22	21	VISHNU PRIYA V	21
9	VANDANA BABU	22	22	ANCY ACHANKUNJU	21
10	ANJU ANTONY		23	SREELEKSHMI M V	24
11	ABIAH ANN SARA	21	24	RENJITH RAMESH	21
12	ANILA KRISHNAN	21			
13	CHRISTY MARIYAM JOSHUA	21			

ACCOMPANYING TEACHERS: Dr.MANU V.9562214729

Dr.REMYA ARUN 9847180110



Suman Alexander
Dr. SUMAN ALEXANDER
 PRINCIPAL
 ST. GREGORIOS COLLEGE
 KOTTARAKKARA

Lekshmi R
Wildlife Warden

Office of the Wildlife Warden
Wildlife Division, Munnar
Email - ww-mnr.for@kerala.gov.in
enpmunnar@gmail.com
Ph: 04865-231587 (0)

E- 1554/17

Dated 22.09.2017

To

The Principal
St. Gregorios College
Kottarakara

Sir,

Sub: Allotment of Nature Camp - reg.

Ref: Your application dated. 21.06.2017

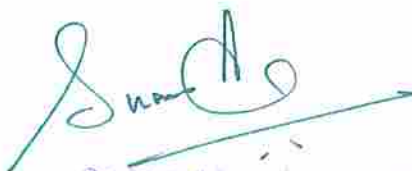
I would like to inform you that a Nature Awareness Programme is allotted to your esteemed institution at **Eravikulam National Park** according to the prevailing guidelines. The date allotted to your institution is from **6th to 8th October 2017**. The Camp participants are requested to reach Forest Dormitory, Munnar at **4 pm** on **06.10.2017** compulsory. The instruction to be followed while attending the programme is appended herewith. The participants should strictly adhere the instructions so as to achieve the goals set behind the programme. Any violation of the instruction may lead to the annulment of the Camp and the matter will be communicated to the Higher ups without further notice. Confirmation of the programme may please be intimated to this office immediately after the receipt of this letter. For further details please contact the Asst. Wildlife Warden. **The maximum number of participants including students, Teachers and other staff will be 40.**

Wishing you all the best and a fruitful academic programme.

Yours faithfully,

For Wildlife Warden
Munnar

Copy to: The Asst. Wildlife Warden, Eravikulam National Park for information.



Dr. SUMAN
PRINCIPAL
ST. GREGORIOS COLLEGE
KOTTARAKARA





Dr.S.K.Shankar MD
Principal Co-ordinator
Emeritus Professor, Neuropathology,
Officer In charge-Human Brain Museum

Dr.Anita Mahadevan MD
Co-ordinator
Addl. Professor, Neuropathology

Museum Visit Confirmation Letter

31st December 2018

To
Dr. J. Jean Jose,
Assistant Professor
Department of Zoology,
St. Gregorios College
Kottarakkara, Kollam (Dist.)
Kerala State, India

Dear Dr. J. Jean Jose,

Greetings from the Neuropathology Brain Museum, NIMHANS.

Thank you for showing interest in visiting the Neuropathology Brain Museum, NIMHANS-Bangalore. Your appointment for the proposed Neuropathology Brain museum visit is as follows:
Proposed Museum Visit Schedule:

Date: **Jan 4th, 2018 (Friday)**

Time: **Morning 10:00 AM to 12:30 Noon**

No. of Visitors: **40 (+ 3 lecturers/Support Staff)**

Course & Year: **BSc. Zoology**

General information:

- Please reach the venue 10 min before the scheduled time.
- Visitors are not permitted to use their cameras. Mobile phones shall remain in silent mode throughout the visit
- Entry to the Human Brain Museum is FREE
- If you are arriving by your own bus/vehicle, **Mr. Ravi** (Receptionist at Neurobiology Research Centre, NIMHANS-09880377488) shall assist you with the vehicle parking details once you reach the spot.

Your proposed Human Brain Museum visit shall include:

- **Touch & Feel the real Human Brain**- Live Neuroanatomy demonstrations
- **A journey through diseased brains**- Guided tour of Human Brain Museum by Human Brain Bank Faculties
- Students & accompanying teachers/staff are free to ask their doubts during the ongoing sessions or after the session with any of the faculties involved.
- Once the visit is completed, **Please send us your feedback**. Your opinion is very important to us. We appreciate your feedback and will use it to evaluate changes and make necessary improvements.

Address of the Human Brain Museum, NIMHANS:

Human Brain Museum (Neuropathology Brain Museum)

Neurobiology Research Centre (Ground Floor)

NIMHANS, Hosur Road, Bangalore.

Contact Number: 080- 2656 3357

S. Suman

S. Suman
DR. SUMAN A. IYER
PRINCIPAL
ST. GREGORIOS COLLEGE
KOTTARAKARA



Coordinator, Information and Publicity

[Quoted text hidden]

A. S. K. V. S. Sharma

Coordinator

Information and Publicity

CSIR-Central Food Technological Research Institute

Mysuru - 570020

Karnataka

Jean Jose <jeanlincy@gmail.com>
To: ASKVS Sharma <iandp@cftri.res.in>

Fri, Nov 9, 2018 at 10:15 PM

Dear Sir,

Thank you for the kind reply and permission. Students are all **B. Sc Zoology** final year. I will confirm the dates two days before the visit.

With warm regards

Have a nice day

Dr. J. Jean Jose

Assistant Professor

Department of Zoology

St. Gregorios College

Kottarakkara, Kollam (Dist.)


Kerala State, India

Tel. No. +91 9447696739

Email jeanlincy@gmail.com



[Quoted text hidden]


DR. SUMAN ALEXANDER
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KOTTARAKARA
KOTTARAKARA
KOTTARAKARA





LINCY ALEX <lincyjean@gmail.com>

Visit to Neuropathology Brain Museum for BSc (Zoology) Students-Reg

1 message

NEUROPATHOLOGY BRAIN MUSEUM <nimhansbrainmuseum@gmail.com>

Tue, Jan 30, 2018 at 3:36 PM

To: lincyjean@gmail.com

Cc: thomasgregorissac@gmail.com, "Dr. Anita Mahadevan" <mahadevananita@gmail.com>, "Dr. Hemalatha B.N" <hema.latha22@yahoo.com>, "Dr. Vani Santosh" <vani.santosh@gmail.com>, "Shwetha. S.D" <shwetha.sd@gmail.com>

Dear Prof Lincy Alex,

Greetings from the Neuropathology Brain Museum, NIMHANS

Thank you for your interest in visiting the **Neuropathology Brain Museum, NIMHANS**

In response to your e-mail date 29th Jan 2018, regarding the Museum visit for B.Sc (Zoology) students on 12th Feb 2018 (Monday), generally appointments for schools and colleges are given only on Tuesdays and Wednesdays. As an exception & as you have already planned the study tour and booked your tickets we will accommodate the students r **12th Feb 2018 (Monday)** as requested by you.

However henceforth prior intimation has to be taken for the booking the slot and date will be given to you as per availability.

The students are permitted to visit the Neuropathology Brain Museum on **12th Feb 2018 (Monday) at 10:00 AM to 11:30 AM.**

Regards

Dr.Hemalatha B.N, Ph.D
Junior Scientific Officer
Human Brain Museum
Department of Neuropathology
NIMHANS
C/O Dr. Anita Mahadevan,
Additional Professor
Department of Neuropathology
NIMHANS
Bangalore
Tel No. 080-26563357/080-26995786/080-26995137




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केन्द्रीय समुद्री मात्स्यिकी अनुसंधान संस्थान
(भारतीय कृषि अनुसंधान परिषद)

[कृषि अनुसंधान एवं शिक्षा विभाग, कृषि मंत्रालय, भारत सरकार]

Central Marine Fisheries Research Institute

(Indian Council of Agricultural Research)

[Department of Agricultural Research and Education, Ministry of Agriculture, Govt. of India]



पोस्ट बॉक्स सं. 1603, एरणाकुलम नोर्थ पी.ओ., कोच्ची - 682018, केरल, भारत

Post Box No. 1603, Ernakulam North P.O., Kochi - 682018, Kerala, India

Phone: 91 484 2394867/2391407 Fax: 91 484 2394909/2396685 Email: director@cmfri.org.in Web: www.cmfri.org.in

Dr. N. Aswathy,
Manager ATIC
CMFRI Kochi-18
Mob: 09496449609
F.No. 18 /2015-16/ATIC/SEETED

Date: 30/12/2015

To

Dr. Jean Jose J.
Asst. Professor (Zoology)
St. Gregorios College
Kottarakara, Kollam

Sir,

Ref: Your communication / enquiry No. - dated 29/12/2015

With reference to the communication cited above, I am directed to convey the permission of Director, CMFRI to visit your team to CMFRI on 04th January, 2016 at 10.30 hrs. Subject to the following conditions:-

1. The students will be charged an entrance fee @ Rs. 10/- per head and the faculties @ Rs. 20/- per head.
2. No videography/photography is permitted inside the campus.
3. On arrival of your team at CMFRI please report to the Reception counter.

You will be permitted to visit only the Marine Biodiversity Museum, Aquarium & Agricultural Technology Information Centre (ATIC). In case you are in need of any clarifications /information etc. please contact P.R. Abhilash (Contact No.9946445403) or KM. David (Contact No. 8089621635).

Thanking you,

Yours faithfully,

(Dr.N.Aswathy)



Dr. SUMAN ALEXANDER
PRINCIPAL
ST. GREGORIOS COLLEGE
KOTTARAKARA



W-1068/17

Date: 24.11.2018

To

St.Gregorios College,
Kottarakara

Sir,

Sub:- Conducting Nature Education Camp – Sanctioned – Reg.

Ref:- Your application dated 04/04/2018

As requested by you a Nature Education Camp is sanctioned for the students of your institution **from 17.12.2018- 18.12.2018** at **Hornbill Dormitory, Anappady**. The number of participants to the camp should be within 35. The participants should adhere to the rules and regulation of Department of Forest & Wildlife and the guidelines prescribed for Nature Education Camps. You are requested to inform your acceptance and travel plan in any of the following contact telephone numbers;

- | | | |
|---|---|-------------|
| (1) Smt.Minu.M | - | 09442981689 |
| (2) Sri.Vishnuvijayan | - | 09442961690 |
| (3) Forester, Information Centre,
Anappady | - | 09487011685 |

Encl: As above

Yours faithfully,

Deputy Director

Copy to:

- (1) The Forest Range Officer, Sungam for information and further necessary action.
- (2) Forest Information Centre, Anappady for information and further necessary act



Dr. SUMAN ALEXANDER
PRINCIPAL
ST. GREGORIOS COLLEGE
KOTTARAKARA

GOVERNMENT OF KERALA
DEPARTMENT OF FORESTS & WILDLIFE
PARAMBIKULAM TIGER RESERVE

**Rules and Guidelines to be followed by the participants
of Nature Education Camp**

1. Participants to the Nature Education Camp must report at Anappady/Parambikulam for registration on **17.12.2018** between 08.00 am and 09.00am.
2. The number of participants attending the Nature Education Camp should adhere to the prescribed limit only.
3. The participants should follow the timely instructions given by the concerned staff of the Department of Forests & Wildlife, Govt. of Kerala.
4. Any activity violating the Rules and Guidelines prescribed for Nature Education Camp and those pertaining to the Department of Forests & Wildlife will be treated seriously and consequently the Wildlife Warden or an officer entrusted by him in charge of the Nature Education Camp can wind up the camp at the instance itself.
5. No travel and transit will be allowed during odd hours (Dawn, Desk and Night)
6. Our mission is the successful conduct of Nature Education Camp with an objective to sensitize the participants to be active naturalists and we expect wholehearted co-operation from every participant.



Deputy Director,
Parambikulam TR




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St. Gregorios College, Kottarakara

Pulamon P.O., Kottarakara, Kerala State - 691531

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website : www.gregorioscollege.org

Fax : 0474 - 2650133, Ph : 0474 - 2650133, 2651972

PRINCIPAL

Date..15/01/2020

To

The Manager,

Punalur Warehouse,

Kollam District

Sub: Request for doing internship

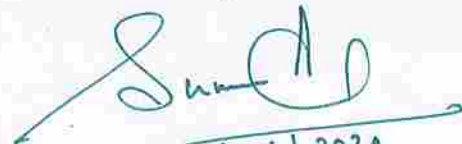
Respected Sir,

As a part of Kerala University M.Com syllabus the final year students are supposed to do an internship for a period of two weeks and submit a report to the university. Hence our students, Archana M R and Rukku Raj are requesting to conduct an internship in "Punalur Warehouse" So for the same, please permit them to conduct internship in your esteemed institution.

Thanking You

Yours faithfully




15/01/2020
Dr. SUMAN ALEXANDER
PRINCIPAL
ST. GREGORIOS COLLEGE
KOTTARAKARA