

## CURRICULUM VITAE

**DR. SUPRIYA N.T.**

<b><u>Official Address :</u></b> Assistant Professor and Head Department of Zoology Nehru Arts and Science College Kanhangad Padnekat Post Kasaragod 671314	<b><u>Residential address :</u></b> 'Varada' Near District Ayurveda Hospital Padnekat Post Neeleswaram Ksaragod 671314	<b><u>Permanent Address:</u></b> 'Keecheri' Vimalanagar Post Ozhakkodi Mananthavady Wayanad Kerala 670645
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### EDUCATIONAL QUALIFICATIONS

Course	University/Board	Year	Percentage
Ph. D.	Kannur University	2012	Highly commended
M. Sc. Zoology	Kannur University	2004	75.3
B.Sc. Zoology	Kannur University	2002	87.2

Title of Ph.D. work: **“Studies on hormonal regulation and storage physiology of growth and reproduction in Decapod Crustaceans”.**

Research guide : **Dr. K. Sudha, Professor, Department of Zoology, Central University of Kerala, Thejaswini Hills, Kasaragod, Kerala**

### RESEARCH AREA:

- Various aspects of Crustacean Physiology and Molecular endocrinology
- Diversity studies of freshwater Zooplankton
- Diversity and evolution of Scolecophidian Snakes

**RESEARCH GUIDESHIP:**

**Recognized as a research guide in Zoology under Kannur University as per the University order No. RD A3/12073/R.G/2019; Dated: 26.06.2019**

**DETAILS OF RESEARCH SCHOLARS:**

<b>Name and Address of the Research Scholar</b>	<b>Year and Mode of registration</b>	<b>Title of Research Work</b>
<b>1.REMYA MOHAN A.</b> Adukkadan House Edat Post, Payyannur Kannur - 670327	<b>2020, FULL -TIME RESEARCH SCHOLAR</b>	<b>Title: Studies on the Growth and Reproductive Physiology of the Ghost crab <i>Ocypode ceratophthalmus</i>, (Crustacea :Decapoda) (Pallas 1772)</b>
<b>2. SARANIYA PRADEEP</b> Assistant Professor Dept. of Zoology Nehru Arts and Science College, Kanhangad, Kasaragod	<b>2021, PART-TIME RESEARCH SCHOLAR</b>	<b>Title: A comparative study on diversity, abundance and seasonality of Cladocerans in two selected freshwater ecosystems of Neeleswaram, Kasaragod District, Kerala</b>
<b>3. ANOJA K. S.</b> Assistant Professor Dept. of Zoology Nehru Arts and Science College, Kanhangad, Kasaragod	<b>2021, PART-TIME RESEARCH SCHOLAR</b>	<b>Title: Diversity, abundance and seasonality of freshwater Rotifers in Theerthamkara lake system, Padnekad, Kasaragod District, Kerala</b>
<b>4. MIDHUNA R.</b> Kunnuparambil (House) Koomankadu Mathur Post Palakkad District Pin:678571 Kerala	<b>2022, FULL -TIME RESEARCH SCHOLAR</b>	<b>Title: “Diversity and Evolution of the Skeletal System of South Asian Scolecophidian Snakes”</b>

**RESEARCH ASSISTANCE FOR STUDENT’S PROJECTS:****For PG:**

<b>YEAR</b>	<b>Student</b>	<b>Topic</b>
<b>2021-22</b>	<b>Harshitha K V MSc Zoology, Department of</b>	<b>“A Comparative Study of Biochemical Resources in</b>

	Zoology, College, Kannur	Nirmalagiri Kuthuparamba,	Fishes Inhabiting Different Ecological Habitats”
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**For UG:**

YEAR	TOPIC
2021-22	“A Preliminary study on the Diversity of Ants in the Campus of Nehru Arts and Science College Kanhangad, Kasaragod”
2020-21	“Diversity studies and observation of life cycle in three species of butterflies from Kasaragod District of Kerala, India”
2019-20	“A Survey on the Insect Induced Galls in the Campus of Nehru Arts and Science College, Kanhangad, Kasaragod”
2018-19	“Analysis of the Body Fluids Using Foldscope and Compound Microscope”
2017-18	“A Comparative Analysis of Finger Print Patterns in Man in Relation with Tongue Rolling and Cleft Chin”
2016-17	“Study of total bird population in the paddy fields of Kasaragod District” “Study of total protein and total lipid content in the mussel <i>Perna viridis</i> cultured in the backwaters of Padne, Thekkekadu, Tasaragod, Kerala”
2015-16	“Study of total protein and total lipid content in the mussel <i>Perna viridis</i> cultured in the Backwaters of Padanna, Kasaragod, Kerala”
2014-15	“A survey of hymenopteran, heteropteran, lepidopteran and orthopteran insects in and around the campus”
2013-14	“Nutrient profiles of some fishes of north Malabar”

#### TEACHING EXPERIENCE (FOR PG AND UG CLASSES)

<u>Institution</u>	<u>Period of Employment</u>	<u>Nature of Employment</u>
Sree Narayana College, Kannur	July 2006 to March 2007	Contract basis

<b>Sree Narayana College, Kannur</b>	October 2007 to March 2008	Contract basis
<b>P. R. N. S. S. College, Mattannur, Kannur</b>	January- February 2013	Contract basis
<b>Department of Zoology, Kannur University Campus, Mananthavady, Wayanad, Kerala</b>	27th July to 5th October 2013	Contract basis
<b>Department of Zoology, Nehru Arts and Science College, Kanhangad, Kasaragod</b>	7 <sup>th</sup> October 2013 onwards	<b>Permanent</b>

### OTHER EXPERIENCES

1. Worked as **Project Co-ordinator at M. S. Swaminathan Research Foundation (MSSRF)**, Puthoorvayal Post, Kalpetta, Wayanad from April 2011 to February 2012 in **DNA Clubs, DBT funded project**.

### MAJOR POSITIONS HELD:

1. **Assistant Professor and HEAD, Department of Zoology**, Nehru Arts and Science College, Kanhangad from 01/04/2016 onwards
2. **NSS Programme Officer** from 20/10/2017 to 20/10/2020 (completed the Tenure of 3 years)
3. **Examination Chief Superintend** (03/02/2021 onwards)
4. **Science club co-ordinator** for the academic year 2017-18
5. **Standing Committee Member- College IQAC**
6. **Member, Institution Innovation Council**
7. **Member** - College council
8. **Member-** Women's cell
9. **Member-** Hostel Committee
10. **Member-** Admission Committee
11. **Member-** Fine-arts committee
12. **Member-** College Union Election Committee
13. **Director** – NASCian Anti-Narcotics Cell (NANC)
14. **Director-** Student's Quality Assurance Cell (SQAC)
15. **Member-** UGC PARAMARSH Scheme
16. **Member** - Library Advisory Committee
17. **Member** - NSS Advisory Committee

**PROGRAMMES ORGANIZED:**

<b>PRORAMME</b>	<b>FUNDING AGENCY</b>
'Endearing Green' online seminar series 2022-23	<b>DEPARTMENT FUND</b>
'Talk with a Scientist' 2022-23	<b>PTA</b>
'Nature Talks' online seminar series 2021-22	<b>DEPARTMENT FUND</b>
World Environment Day Observance-2021 (Online)	
'Follow Your Butterflies' Online Seminar Series 2020-21	
World Environment Day Observance-2020 (Online)	
National Science Day Observance-2020	<b>KSCSTE</b>
One day National Workshop on Taxonomy -2019	<b>PTA</b>
OmicsOmics'19-Two Day National Workshop on Bioinformatics	<b>KSCSTE</b>
National Science Day Observance- 2018	<b>DST-KSCSTE</b>
World Ozone Day Observance – 2018	<b>KSCSTE</b>
World Environment Day Observance-2018	<b>KSCSTE</b>
One Day Regional Level Seminar On Climate Change-2017	<b>KSCSTE</b>
World Environment Day Celebrations-2017	<b>KSCSTE</b>
Ozone Day Celebrations-2017	<b>KSCSTE</b>
Wetland Day Celebrations-2017	<b>KSCSTE</b>
AQUA'16 - Two Day National Workshop on Aquaculture-2016	<b>KSCSTE</b>

**PUBLICATIONS****Paper published in Peer reviewed Journal/ Books:**

**International:**

Nagathinkal T. **Supriya**, Kappalli Sudha, V. Krishnakumar, G. Anilkumar and E.S.Chang. **2017**. ‘Molt and reproduction enhancement together with hemolymph ecdysteroid elevation under eyestalk ablation in the female fiddler crab, *Uca triangularis* (Brachyura: Decapoda)’ Chinese Journal of Oceanology and Limnology 35(3), Pp. 645-657.

Sudha Kappalli, **N.T. Supriya**, V. Krishnakumar, G. Anilkumar and E.S. Chang. **2012**. Hemolymph Ecdysteroid Titers in a Brachyuran Crab (*Uca triangularis*) that Concomitantly Undergoes Molting and Reproduction. *Zoological Studies* 51(7): 966-976 (2012).

**National:**

Syama, V.P., **N.T. Supriya**, K. Sudha and G. Anilkumar. **2010**. Seasonal growth and reproduction in two brachyuran species inhabiting diverse ecosystems. In the book series, “Perspectives of Animal Ecology and Reproduction”, Vol. 6, Daya Publications, New Delhi.

**Paper presentations:**

1. **Supriya N. T., Syama V.P., Anilkumar G. and K. Sudha, 2016**. Influence of lunar rhythm on the programming of moult and reproduction in two brachyuran crabs inhabiting North Malabar Region, Kerala. **Paper presented** in National Conference on Perspectives and Prospects in Aquatic Research, held at Congunadu Arts and Science College, Coimbatore, TN on 26.02.2016, sponsored by UGC.
2. **Supriya N. T., K. Sudha and G. Anilkumar. 2013**. Influence of salinity on the programming of moult and reproduction in the Brachyuran crab, *Uca triangularis* in different seasons. **Paper presented** in “Biological Conference 2013”, held at The Department of Zoology, University of Calicut, Kerala, India during March 11-13, 2013.
3. **Supriya N. T., K. Sudha and G. Anilkumar. 2011**. Studies on growth and reproduction in a fiddler crab *Uca triangularis* (Crustacea: Decapoda). **Paper presented** in ‘National Conference on emerging trends in biological sciences (NCEBR’11)’, February 21-22, 2011. Department of Zoology, University of Madras, Chennai, India.
4. **Supriya N. T., K. Sudha and G. Anilkumar. 2009**. Effect of deeyestalking on moult and reproduction in the fiddler crab, *Uca triangularis*, during different seasons. **Paper**

**presented** in 20th All India Congress of Zoology & National Seminar on Bioresources and its Management for Food, Livelihood and Environmental Security and National Helminthological Congress held at CIFE, Mumbai during December 29 - 31, 2009.

**In International Proceedings:**

1. Sudha Kappalli, **N.T. Supriya**, G. Anilkumar. 2013. Elevated hemolymph ecdysteroid titer and accelerated molt and yolk deposition under eyestalk ablation in a brachyuran crab, *Uca triangularis*. Proceedings of the Thirteenth International Congress on Invertebrate Reproduction and Development (ICIRD-2013), July 14-19, 2013, Detroit, MI, USA.
2. Sudha Kappalli, **N. T. Supriya** and G. Anilkumar. 2011. Correlation between Lunar Rhythm and Spawning in Two Brachyuran Crabs. Proceedings of the International Symposium on Environmental Risk Assessment 2011 (ISERA 2011), Bharathiar University, Coimbatore, 17-19 October 2011.
3. K. Sudha, **N.T. Supriya**, V. Krishnakumar, G. Anilkumar and Janet Brown, 2010. "Ecdysteroid levels in three decapod species in relation to moult and reproduction: Comparative study". Proceedings of '7<sup>th</sup> International Crustacean Congress', June 2010, China.
4. Sudha K., **Supriya N.T.**, Krishnakumar V., Anilkumar G. and Chang E.S. 2009. "Serum ecdysteroid titre and synergistic programming of moulting and reproduction in a highly fecund brachyuran crab *Uca triangularis*:" Journal of Fisheries of China; Vol. 33. suppl. 6pp.

**National Proceedings:**

1. Sudha Kappalli, **N. T. Supriya** and G. Anilkumar. 2013. Variations in ecdysteroid titre in intermolt and premolt breeding populations of Brachyuran crab, *Uca triangularis*. Proceedings of "Biological Conference 2013", held at The Department of Zoology, University of Calicut, Kerala, India during March 11-13, 2013.
2. **Supriya N. T.**, K. Sudha and G. Anilkumar. 2009. Hepatopancreatic biochemical profile and its role in reproduction in a highly fecund crab *Uca triangularis*. Proceedings of the 97<sup>th</sup> Indian Science Congress held during January 3 to 7, 2010 at Thiruvananthapuram.

**Conferences/ Seminars attended:**

1. One-day Workshop on ‘SSR Preparation and SOP for DVV’ organized under UGC-PARAMARSH Scheme of Nehru Arts and Science College Kanhangad, at Chinmaya Arts and Science College, Chala, Kannur on 24<sup>th</sup> November 2022.
2. One day Workshop on ‘Institutional Preparedness for NEP 2020: A Perspective from Assessment and Accreditation’ organized under UGC-PARAMARSH Scheme at Nehru Arts and Science College Kanhangad, on 26<sup>th</sup> November 2022.
3. 5<sup>th</sup> Berchmans Erudite Lecture by Nobel Laureate Sir Richard John Roberst, (1993 Nobel Prize in Physiology or Medicine) conducted online on 14<sup>th</sup> December 2021 on the topic ‘Why you should love bacteria’.
4. Participated in the Experientia : Online Mentoring Series - Session on **Creative Writing Skills** organized by E-Sreedharan Centre for Life Skills Education, Central University of Kerala, Periyar, Kasaragod, Kerala on 07.08.2021.
5. State level webinar on National Service Scheme fund management in Public Fund Management System (PFMS), jointly organized by Sri. C. Achutha Menon Govt. College Thrissur and National Service Scheme, Thrissur District Coordination Committee, University of Calicut on 13<sup>th</sup> June 2020.
6. Virtual seminar on ‘Quality assurance in Online Teaching- Learning and Evaluation’ organized by Vellore Institute of Technology, Vellore, TN, India on 19<sup>th</sup> May 2020.
7. National webinar on ‘GUC Guidelines for Career Advancement of College Teachers’ on September 13, 2020, conducted by the IQAC, St. Peter’s College, Kolenchery
8. Two day Online orientation program on Disaster Management organized by Directorate of Students Services, Kannur University with the support of National Service Scheme, Department of Environmental Studies of Kannur University on 17<sup>th</sup> and 18<sup>th</sup>, August 2020
9. DBT Star College scheme sponsored National Webinar on ‘Animal Ethics in Research and prevention of cruelty to Animals One Welfare, One World’ organized by the Department of Zoology, Mar Athanasius College, Kothamangalam on 15<sup>th</sup> August 2020
10. **One day Workshop On E-Certifications and Report Cards Making on 5<sup>th</sup> December 2020, Conducted by Scrollwell strengthening Education, skill development platform**



11. International Webinar on “Bioinformatics: A data driven future in Biological Sciences” organized by Department of Biotechnology, Nehru Arts and Science College, Coimbatore on 28 May 2021.
12. Three day National Workshop on Gene Sequencing Techniques organized by Post Graduate Department of Zoology, Govt. Brenner College, Thalassery sponsored by Directorate of Collegiate Education, Govt. of Kerala on 9<sup>th</sup> -11<sup>th</sup> January 2020.
13. Two day residential training camp on Plastic free Campus, Waste management and Biodiversity conducted by Kannur University NSS cell to celebrate the 150<sup>th</sup> Birth Anniversary of Mahathma Gandhi and Golden Jubilee year of NSS at Don Bosco Arts and Science College, Angadikkadav, Kannur on 12<sup>th</sup> and 13<sup>th</sup> November 2019.
14. Two day National Seminar on *Insects and Environment* organized by Post Graduate Department of Zoology, Govt. Brenner College, Thalassery sponsored by Directorate of Collegiate Education, Govt. of Kerala on 7<sup>th</sup> and 8<sup>th</sup> November 2018.
15. Two day National Workshop on PCR and Gene sequencing held at the P. G. Department of Zoology, Government Brenner College, Thalassery on November 20-21, October 2017 sponsored by Directorate of Collegiate Education, Government of Kerala.
16. Three day National Seminar on “Uncertainty of Bioconservation” held at the P. G. Department of Zoology, Government Brenner College, Thalassery on November 23-25, 2017, sponsored by Directorate of Collegiate Education, Government of Kerala.
17. Two day National Seminar on Recent Trends in Biological Science and Research held at Department of Zoology, Government College Kasaragod, on 29 and 30 November 2017, sponsored by Directorate of Collegiate Education, Government of Kerala.
18. National Seminar on Water for all, Celebration of water day-2016 held at Central University of Kerala, Kasaragod on 22.03.2016
19. Two day national seminar on Climate Change- Challenges and Solutions held at the Department of Botany, Sponsored by KSCSTE from 22 to 23 February 2016
20. Workshop on Research Methodology conducted by Swashraya Bharath 2014 organized by Swadeshi Science Movement, Kerala on 17-10-2014
21. National Workshop on Statistical Software Used in data analysis conducted by department of statistics, NAS college Kanhangad on 16.10.2014

22. One day Workshop on Syllabus Restructuring held at Kannur University on 12-12-2013
23. Lecture Workshop on Molecular Endocrinology, held at Post Graduate Department of Zoology and Research Centre, Sree Narayana College, Kannur, sponsored by Indian Academy of Science, Bangalore during October 2006.
24. “Seminar on Biodiversity: Recent advances & Workshop on Research Project Proposals” held at Kannur University, Kerala, India on 3<sup>rd</sup> February, 2006.
25. 16<sup>th</sup> Congress of Zoology and National Symposium on Recent Advances in animal research with special emphasis to Invertebrates Dr. Babasaheb Ambedkar Marathwada University, Aurangabad, Maharashtra, October 2005.

**Details of Other Research Experiences:**

1. Survey of the insects inhabiting in Mananthavady Region, Wayanad District (B.Sc. level). During 2001-2002.
2. Studies on the Coffee pests in Wayanad and its Biological Control, Regional Coffee Research Institute, Chundale, Wayanad District (M. Sc. level) During 2003-2004

**EXTRA CURRICULAR ACTIVITIES:**

1. Served as a N. S. S. volunteer during 1999-2002 at Mary Matha Arts and Science College, Mananthavady, Wayanad. Participated in the 10 day camp (1999) and National Integration Camp (2001).
2. Kannur University Yogasana Team member for the period 2000-2001 and 2001-2002
3. Third place in the Kannur University Inter Collegiate Tournament in Yogasana held at Mary Matha Arts and Science College, Mananthavady, during the year 2000-2001.
4. Third place in the Individual championship in the Inter Collegiate Yogasana Competition held at Govt. College of Engg., Kannur, during the year 2001-2002.

**AS REVIEWER:**

1. Journal Name: Journal of Applied Biology & Biotechnology

Review Date : Feb 21, 2022

Article Title :GC-MS Determination of bioactive compounds of the freshwater edible snail *Bellamaya bengalensis*

2. Journal Name: Journal of Applied Biology & Biotechnology

Review Date : September 16, 2021

Journal Name: Journal of Applied Biology & Biotechnology

Article Title : Quercetin rescues mpp+ induced parkinsonian-like locomotor impairment in Zebrafish larvae [mns.no.: jabb-2021-07-424]

2. Journal Name: Journal of Applied Biology & Biotechnology

Review Date : August 31, 2021

Article Title : Bromalein improves the growth, biochemical and haematological profiles of the fingerlings of Nile Tilapia, *Oreochromis niloticus* [Mns.No.: JABB-2021-07-456]

### **AS RESOURCE PERSON:**

1. As a resource person for a talk ‘Covid-19 Pandemic: What we should know’, in the online Webinar series organized by Nehru Arts and Science College, Kanhangad in May 2020 under UGC-Paramarsh Scheme.
2. Participated and demonstrated the Lab Experiments in the - ‘Sastrapadam-2020’ – 3 days residential programme jointly organized by State Institute of Educational Technology (SIET), general education department, Govt. of Kerala and Kerala State Collegiate Education from 30/01/2020 to 01/02/2020 at Nehru Arts and Science College, Kanhangad, Kasaragod
3. Participated and delivered a class on “Basic concepts of Biology” in the talent hunt- ‘Sastrajalakam-2019’ – 3 days residential programme organized by the State Institute of Educational Technology (SIET), general education department, Govt. of Kerala from 08/11/2019 to 10/11/2019 at Nehru Arts and Science College, Kanhangad, Kasaragod
4. Participated and demonstrated the Lab Experiments in the talent hunt- ‘Sastrajalakam-2018’ – 3 days residential programme organized by the State Institute of Educational Technology (SIET), general education department, Govt. of Kerala from 08/11/2019 to 10/11/2019 at Nehru Arts and Science College, Kanhangad, Kasaragod

### **AS SUBJECT EXPERT:**

1. Served as subject expert for the Guest Lecture’s interview in Zoology held at Government College, Kasaragod on 23/09/2021.
2. Served as subject expert in the Kasaragod District level Students Biodiversity congress project presentation competition conducted by Kerala State Biodiversity Board on 15/01/2020 at Durga Higher Secondary School, Kanhangad, Kasaragod

3. Served as a subject expert for the selection of Research Assistant in the Indo-Russian joint project entitled 'Integrative study of parasitic crustacean copepods from coral communities of the Northwest Indian Ocean'. PI: Dr. Sudha K., Associate professor, Department of Zoology, CUK on 05/05/2019
4. Served as an external examiner for the conduct of Ph.D. Preliminary Qualifying Examination (PQE 2019) CV camp and Viva voce on 10.05.2019 at Department of Zoology, University of Calicut
5. Served as an external examiner for the conduct of Ph.D. Preliminary Qualifying Examination (PQE 2018) CV camp and Viva voce on 20.03.2018 at Department of Zoology, University of Calicut

#### TRAINING PROGRAMMES AND COURSES ATTENDED:

Name of the Course/ Training programme	Conducting agency and Place	Duration and date	Sponsoring Agency
Orientation course	Kannur University UGC-Academic staff college, Kannur University	28 days 12.10.2014 to 09.12.2014	UGC-HRDC
Refresher course	Kannur University KU Campus, Palayad	21 days 14.02.,2018 to 06.03.2018	UGC-HRDC
ETI Training for NSS Programme Officers	Empanelled Training Institute, Calicut University	7 days 15.11.2019 to 21.11.2019	Ministry of Youth affairs and sports, Govt. of India
Online Faculty Development Programme on "Online Education in Higher Education	Online mode	5 days 19.10.2020 to 23.10.2020.	Kerala State Higher Education Council in association with Educational Multimedia Research Centre, University of Calicut.

Institutions''			
Innovation Ambassador training (Foundation Level)	Online mode	30th June - 30th July 2021	MoE's Innovation Cell & AICTE
One week Faculty Development Program Teaching and Learning in Post Covid Era	Online mode	15th January to 21st January 2021	Guru Angad Dev Teaching Learning Centre, SGTB Khalsa College, University of Delhi under the Pandit Madan Mohan Malaviya National Mission on Teachers and Teaching (PMMMNTT) of Ministry of Education and St. Joseph's College (Autonomous), Irinjalakuda.

### TECHNIQUES KNOWN:

Histological/ histochemical/ biotechnological/ molecular/ radiation biology techniques such as

- Paraffin sectioning
- Differential staining
- Chromatography
- Nucleic acid isolation
- Electrophoresis
- Quantitation using UV/VIS Spectrophotometer
- Identification using markers
- Polymerase Chain Reaction (PCR)
- Southern blotting
- Hybridization [with non-isotopic (biotin) and isotopic (<sup>32</sup>P) labelled (DNA) probe]
- cDNA synthesis using reverse transcriptase
- Restriction digestion
- Different Chromatographic techniques
- Hormonal assays by Radio Immuno Assay (RIA) etc.

### PERSONAL PROFILE

Name : **SUPRIYA N.T.**  
Date of Birth : 30<sup>th</sup> May, 1982  
Gender and Marital status : Female, Married

Nationality : Indian  
 Religion and Caste : Hindu, Nair  
 Spouse : Dr. E. Govindaraj, Associate Professor, MES Engineering College, Kuttippuram ('Puthanveed', Kaniyambetta Post, Pongini, Wayand)  
**Permanent Address : 'Keecheri', Vimalanagar P.O., Mananthavady Wayanad – 670645**  
 Contact Address : 'Varada', Near Dist. Ayurveda Hospital, Padnekat Post, Neeleswaram, Kasaragod 671314  
 Office Address : Assistant Professor and Head, Department of Zoology Nehru Arts and Science College, Kanhangad, Padannakkad P. O., Kasaragod 671314  
 Mobile Number : 9446061418  
 e-mail id : [ntsupriya@gmail.com](mailto:ntsupriya@gmail.com)

#### REFERENCES:

Dr. Sudha K.  
 Professor  
 Department of Zoology  
 Central University of Kerala  
 Thejaswini Hills  
 Periyar, Kasaragod, Kerala, India

Dr. G. Anilkumar  
 Senior Professor  
 School of Biosciences and Technology  
 Vellore Institute of Technology  
 Vellore  
 TN, India