



**Dr. SEETHAL LAL. S**

**ASSISTANT PROFESSOR, Department of Zoology, S N College,  
Punalur, Kollam**

**Assistant professor, Department of Zoology, S N College for Women, Kollam**

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QUALIFICATION: M.Sc, M.Ed, Ph.D

DATE OF JOINING: 20-12-2018

EXPERIENCE IN YEARS : 5 Year

AREA OF SPECIALIZATION: Environmental Science, Ecology, Aquatic Biology And Fisheries, Zoology

### **ADMINISTRATIVE DISTINCTION**

- Capacity building in IT for girl- resource person
- Member, Biodiversity club
- Member, Community health activity
- Member, Gandhian Study centre
- Member, Nature club
- Mentor, SSP
- Remedial coaching
- Class tutorship

### **UGC ORIENTATION/REFRESHER COURSE ATTENDED**

- Attended a **4-Week Induction / Orientation Programme** for "Faculty in Universities/Colleges/Institutes of Higher Education" from June 04 - July 01, 2020.
- Participated in six day online faculty development programme on **Latest trends and challenges in IT Industry** from 15.06.2020 to 20.06.2020 organised by RMD Engineering College.
- Participated in Faculty Development Programme from 2020-06-15 to 2020-06-21 on R organized by Chouksey Engineering College with course material provided by Spoken Tutorial Project, IIT Bombay.

- Participated in five day Faculty Development Programme **Research Trends in Image Processing** from 2020-06-15 to 2020-06-21 on R organized by department of electronics and communication Engineering, Gates institute of technology, Andra Pradesh.
- Participated in two day Faculty Development Programme **Research methodology** from 1.06.2020 to 2.06.2020 on R organized by Jeppier Institute of technology.

## MEMBERSHIP IN ORGANIZATION

- **Life member of IJRES Journal**
- **Membership in SNEF**

## DETAILS OF PATENTS/ BOOK

Sl. No	Title with page Nos.	Type of Book & Author-ship	Publisher & ISSN/ ISBN No.	Whether peer reviewed	Authors
1.	Vattakkayal , An Inherent Treasure of Ashtamudi Lake	<b>International</b> Text book for reference	ISBN:978-613-9-83074-9	yes	<b>Dr. Seethal lal S</b>
2	<i>Blue Economy: Fostering Sustainable Development and Profitable Resource Utilization, 22-23 August 2017</i>	<b>National</b> Seminar proceedings of Dept. Of zoology	ISBN:978-93-85752-56-8	Yes	Dr. akhila antony Thomas, Dr. Mary Teresa P Miranda, Dr. sherly Williams and <b>Dr. Seethal lal S</b>
3	Proceedings of the International Conference on Innovations and Sustainable Research in Environment and Life Sciences, August 7 <sup>th</sup> -9 <sup>th</sup> , 2018	Proceedings of the <b>International</b> Conference	ISBN 978-81-89152-06-2	yes	Dr. Antony Akhila Thomas., Dr. Sarlin P J., <b>Dr. Seethal Lal S</b> Dr. Vijayasre. A. S, Dr. Sreelekshmy S. G

## PUBLICATIONS IN JOURNALS

Sl. No	Title	Journal Name	ISSN/ISBN No	Page No	Vol	Authors
1	Comparison of Proximate and Mineral analysis of Pila Scutata (Mousson, 1848) With Sardinella Longiceps and Rastrelliger Kanagurta	<i>Eur. Chem. Bull. 2023, 12</i> (Special Issue 5),	ISSN 2063-5346	1. 560 – 570. 2.	5	Seethal Lal S, Mumthas Yahiya1, Latha C, Arathi M & Navya S5
2	Fish faunal diversity of Vattakkayal, a part of Ashtamudi Lake, Kollam District, Kerala, South India	<i>International Journal of Scientific and Engineering Research</i>	ISSN 2229-5518	12	4	<b>Seethal lal, S.,</b> Jaya D.S & Sherly Williams, E.
3	Biodiversity Status of fishes from Vattakkayal, a part of Ashtamudi Lake, Kollam District, Kerala, South India	<i>International Journal of Scientific and Research publication</i>	ISSN 2250-3153.	12	3	<b>Seethal lal, S.,</b> Jaya D.S & Sherly Williams, E.
4	Evaluation of Heavy metal contamination in Water, Sediment	<i>International Journal of Recent Engineering</i>	ISSN: 2349-7157	10-15	14	<b>Seethal lal, S.,</b> Jaya D.S & Sherly Williams, E.

	and Fish ( <i>Mystus gulio</i> ) from Vattakkayal, a part of Ashtamudi Lake, South India	<i>Science (IJRES)</i>				
5	Ecological Degradation of Vattakkayal, a Part of Ashtamudi Lake, Kollam District, Kerala, South India	<i>International Journal of Recent Engineering Science (IJRES),</i>	ISSN: 2349-7157	6-11	15	<b>Seethal Ial, S.,</b> Jaya D.S & Sherly Williams, E.
6	Icthyofaunal diversity of Vattakkayal, a part of Ashtamudi Lake, Kollam District, Kerala, South India	<i>Journal of Aquatic biology and fisheries</i>		620-626	2	<b>Seethal Ial, S.,</b> Jaya D.S & Sherly Williams, E.
7	Comparative Study On Water Quality and growth rate of a Culture Fish ( <i>Oreochromis mossambicus</i> ) with reference to filter efficiency	<i>Journal of Basic And Applied Biology.</i>	ISSN no 0973-8207	197	7 (3)	<b>Seethal Lal, S,</b> Vishnu Nair, M S., Lakshmi priya, V., Remya, M., Razeena karim, L., & Sherly Williams, E
8	Response of liver and gills of <i>Mystus</i>	<i>Journal of toxicology</i>	ISSN 2006-9820	120-124	6(8)	Sherly Williams,E

	gulio to the heavy metal pollutants and metacercarian infection	and environmental health science				<b>Beena . V.S., Seethal Lal, S, &amp;Razeena karim, L.,</b>
9	Sexual Dimorphism in <i>Mystus Gulio</i> (Hamilton-Buchanan)	International Journal of Science and Research (IJSR)	2319-7064	1789-1791	5 (11)	<b>Seethal Lal S., Sherly Williams E</b>
10	Reproductive Biology of Estuarine Catfish, <i>Mystus Gulio</i> (Hamilton-Buchanan)	International Journal of Science and Research (IJSR)	2319-7064	1792-1794	5 (11)	<b>Seethal lal, S., Jaya D.S &amp; Sherly Williams, E.</b>
11	Feeding Biology Analysis as a Preliminary Step for the Cultivation of <i>Mystus Gulio</i> (Hamilton-Buchanan)	International Journal of Science and Research (IJSR)	2319-7064	1716-1718	5 (11)	<b>Seethal Lal S., Sherly Williams E</b>
12	Studies on the Microbiology of Vattakkayal, a part of Ashtamudi Lake, South India	<i>International Journal of Recent Engineering Science (IJRES)</i>	2349-7157	21-23	29	<b>Seethal lal, S., Jaya D.S &amp; Sherly Williams, E.</b>
13	Accumulation of Heavy metals in the Sediment of	International Journal of Research in	2277-7729	1-4	7(1)	<b>Seethal lal, S., Jaya D.S &amp;</b>

	Vattakkayal, a part of Ashtamudi Lake, South India	Fisheries and Aquaculture				Sherly Williams, E.
14	Assessment of pollution status of Vattakkayal, a part of Ashtamudi Lake- Ramsar site in Kerala( India) using multivariate statistical analysis	Journal of environmental Science and engineering	0367-827	109-116	58(2)	<b>Seethal lal, S.,</b> Jaya D.S & Sherly Williams, E

## PAPER PRESENTATIONS

### a) Published Papers in International Seminar Proceedings

Sl. No	Title	Seminar	Page No	Authors
1	Vermicomposting of green organic wastes using Perionyx Excavates: A case study of a green campus	"International Conference on Environmental Pollution and Health: Governance for a Sustainable Future ( ICEGSF 2023 )" 22 - 24th November 2023.	<b>22</b>	Seethal Lal S <sup>1</sup> , Mumthas Yahiya <sup>2</sup> , Dirishma Nedi D <sup>3</sup> , Jayalekshmi J <sup>4</sup> , Poojalekshmi R <sup>5</sup> , Amina M <sup>6</sup> , Arathy S <sup>7</sup> , Deeja C S <sup>8</sup> , Gayathri R <sup>9</sup> , Nithya M L <sup>10</sup> , Swetha P <sup>11</sup> , Meenakshy B S <sup>12</sup> ,
2	Comparison of Sedimentological parameters along the Kollam Canal in relation to microbial Content- A Case study	"International Conference on Environmental Pollution and Health: Governance for a Sustainable Future ( ICEGSF 2023 )" 22 - 24th November 2023.	<b>24</b>	Mumthas Yahiya, Rohini Krishna & Seethal Lal S

3	Icthyofaunal diversity of Vattakkayal, a part of Ashtamudi Lake, Kollam District, Kerala, South India	<b>International Seminar</b> on Ecosystem Conservation, Climate Change and Sustainable Development (ECOCASD 2013)	620	<b>Seethal lal, S.,</b> Jaya D.S & Sherly Williams, E.
4	Comparative Study On Water Quality and growth rate of a Culture Fish ( <i>Oreochromis mossambicus</i> ) with reference to filter efficiency	<i>International seminar on advances in Aquaculture Technologies (ISSAT-2013)</i>	36	<b>Seethal Lal, S,</b> Vishnu Nair, M S., Lakshmi priya, V., Remya, M., Razeena karim, L., & Sherly Williams, E
5	Microbial content analysis of Vattakkayal, a part of Ashtamudi Lake, South India	<b>Cobia</b>	57-69	<b>Seethal lal, S.,</b> Jaya D.S & Sherly Williams, E.
6	LENGTH-WEIGHT RELATIONSHIP AND GROWTH CONDITION OF <i>MYSTUS GULIO</i> (HAM.) IN DIFFERENT MONTHS AND SEXES	Proceedings of the International Conference on Innovations and Sustainable Research in Environment and Life Sciences, August 7 <sup>th</sup> -9 <sup>th</sup> , 2018	<b>185</b>	<b>Seethal lal, S</b>
7	WE ARE NOT READY TO REPRODUCE IN A POLLUTED ENVIRONMENT- <i>MYSTUS GULIO</i>	Proceedings of the International Conference on Innovations and Sustainable Research in Environment and Life Sciences, August 7 <sup>th</sup> -9 <sup>th</sup> , 2018	<b>186</b>	<b>Seethal Lal. S.,</b> Jaya D.S. and Sherly Williams E

8	TRACE METAL ACCUMULATION ANALYSIS IN CRAB, <i>Portunus sanguinolentus</i> FROM ARABIAN SEA.	Proceedings of the International Conference on Innovations and Sustainable Research in Environment and Life Sciences, August 7 <sup>th</sup> -9 <sup>th</sup> , 2018	176	Seethal Lal S and DhanyaRaj
9	AN INVESTIGATION ON THE HEAVY METAL ACCUMULATION IN <i>Peneaus indicus</i> IN ASHTAMUDI LAKE	Proceedings of the International Conference on Innovations and Sustainable Research in Environment and Life Sciences, August 7 <sup>th</sup> -9 <sup>th</sup> , 2018	177	Seethal Lal S and Betsy. M. Miranda
10	EVALUVATION OF THE TRACE METAL CONCENTRATION IN <i>Oxyurichthys tentacularis</i> FROM ASHTAMUDI LAKE	Proceedings of the International Conference on Innovations and Sustainable Research in Environment and Life Sciences, August 7 <sup>th</sup> -9 <sup>th</sup> , 2018	178	Seethal Lal S and Betsy. M. Miranda
11	AN ANALYSIS ON THE HEAVY METAL ACCUMULATION IN WATER AND CRAB, <i>Scylla serrata</i> FROM ASHTAMUDI LAKE, RAMSAR SITE, SOUTH INDIA.	Proceedings of the International Conference on Innovations and Sustainable Research in Environment and Life Sciences, August 7 <sup>th</sup> -9 <sup>th</sup> , 2018	173	Seethal Lal S and Dhanya Raj

10	AN ANALYSIS ON THE HAEMOGLOBIN LEVEL IN COLLEGE STUDENTS: A DESCRIPTIVE CORRELATIONAL STUDY	Proceedings of the International Conference on Innovations and Sustainable Research in Environment and Life Sciences, August 7 <sup>th</sup> -9 <sup>th</sup> , 2018	130	Seethal Lal S, Sruthi S Babu, Teena Terry, Thazlin Enayath, Veena M. A.,  Vidhya R., Vismaya S. Akhila R. C
11	MORPHOMETRIC ANALYSIS OF <i>Etroplus maculatus</i>	Proceedings of the International Conference on Innovations and Sustainable Research in Environment and Life Sciences, August 7 <sup>th</sup> -9 <sup>th</sup> , 2018	133	Dr. Seethal Lal S

**b) Published Papers in National Seminar Proceedings**

Sl. No	Title	Seminar	Page No	Authors
1	An Investigation on heavy metal pollution in the water and fish species ' <i>Mystus gulio</i> ' in Vattakkayal, a part of Ashtamudi Lake in South India	"Kerala Environment Congress, organized by Centre for Environment and Development, Thiruvananthapuram on 22 and 23 August 2014 at Kochi	152	Seethal Lal, S., Jaya D.S & Sherly Williams, E.

2	Evaluation of Heavy Metal Content In <i>Mystus Gulio</i> of Lake Vattakayal, Kollam District, Kerala	Solid Waste Management:Emerging Trends and Challenges (SWMETAC-2015)	149	<b>Seethal lal, S.,</b> Jaya D.S & Sherly Williams, E.
3	Gut Content Analysis of <i>Hypselobarbus Kurali</i> as a first step of Captive Breeding.	<i>National Seminar On Emerging Trends in Indain Aquaculture,, 1(1), (2013),</i>	61	<b>Seethal Lal, S,</b> Vishnu Nair, M.S., Sherly Williams, E., & Razeena Karim, L.
4	Environmental Influence on the Piscian distribution of Vattakkayal, A Part of Astamudi Estuary along the Southwest coast of India	UGC National Seminar on Biodiversity Conservation treats and Challenges, organized by Department of Zoology, University college Thiruvananthapuram on 18-19 August 2015		<b>Seethal lal, S.,</b> Jaya D.S & Sherly Williams, E.
5	New Record of Senga Species (Cestods: Pseudophillidea) infection in <i>Hypselobarbus Kurali</i> From the western Ghats of Kerala, India	<i>National Seminar On Emerging Trends in Indain Aquaculture. 1(1), (2013),</i>	100	<b>Seethal Lal, S,</b> Vishnu Nair, M.S., Sherly Williams, E., &Razeena Karim, L
6	Transportation Of Fishes Belonging To Genus <i>Puntius</i> - An Assessment Of Fish Mortality	<i>National Seminar On Emerging Trends in Indain Aquaculture. 1(1), (2013),</i>		<b>Seethal Lal, S,</b> Vishnu Nair, M.S., Sherly Williams, E., &Razeena Karim, L

7	Scientific Assessment of Skipped Spawning Behaviour of <i>Mystus Gulio</i> in a Polluted Environment – A Case Study	29 <sup>th</sup> Kerala Science Congress 2017	618	<b>Seethal lal, S.,</b> Jaya D.S & Sherly Williams, E
8	An absolute appraisal on the effect of water pollution on the fish diversity of vattakayal, a part of ashtamudi lake, south india	<i>Blue Economy: Fostering Sustainable Development and Profitable Resource Utilization 22-23 August 2017</i>	182-190	<b>Seethal lal, S.,</b> Jaya D.S & Sherly Williams, E
9	Food and feeding analysis for the artificial rearing of <i>mystus gulio</i> (hamilton-buchanan)	<i>Blue Economy: Fostering Sustainable Development and Profitable Resource Utilization 22-23 August 2017</i>	190-194	<b>Seethal lal, S.,</b> Jaya D.S & Sherly Williams, E
10	Quality analysis of <i>octopus membranaceus</i> , <i>sepia pharaonis</i> and <i>loligo duvauceli</i> from neendakara coast, kollam, kerala	<i>Blue Economy: Fostering Sustainable Development and Profitable Resource Utilization 22-23 August 2017</i>	195-199	<b>Seethal lal, S.,</b> Jaya D.S & Sherly Williams, E
11	Studies on the Microbiology of Ashtamudi Lake, South India	<i>Blue Economy: Fostering Sustainable Development and Profitable Resource Utilization 22-23 August 2017</i>	3	<b>Seethal lal, S</b>
12	An analysis on the suitability of fish culture in Vattakkayal, a part of Ashtamudy Lake, South India	<i>Blue Economy: Fostering Sustainable Development and Profitable Resource</i>	16	<b>Seethal lal, S</b>

		<i>Utilization 22-23 August 2017</i>		
13	Morphometric analysis of <i>Mystus Gulio</i> (Hamilton-Buchanan)	<i>Blue Economy: Fostering Sustainable Development and Profitable Resource Utilization 22-23 August 2017</i>	17	<b>Seethal lal, S.,</b> Jaya D.S & Sherly Williams, E
14	An investigation on Trace Metal Pollution in Vattakkayal, A part of Ashtamudi Lake In South India	<i>Blue Economy: Fostering Sustainable Development and Profitable Resource Utilization 22-23 August 2017</i>	17	<b>Seethal lal, S.,</b> Jaya D.S & Sherly Williams, E

### c) Papers presented in National Workshops

Sl.No	Title	Seminar	Page No	Authors
1	An Investigation on heavy metal pollution in the water and fish species ' <i>Mystus gulio</i> ' in Vattakkayal, a part of Ashtamudi Lake in South India	"Kerala Environment Condress, organized by Centre for Environment and Development, Thiruvananthapuram on 22 and 23 August 2014 at Kochi	152	<b>Seethal lal, S.,</b> Jaya D.S & Sherly Williams, E.

### d) Papers presented in International Symposium

Sl. No	Title	Symposium	Page No	Authors
1.	Impact Assessment of Pollution on the Fishery Potential of Vattakayal a part of Ashtamudi Lake, South India	Special International symposium on climate change and aquatic ecosystem	206	Seethal lal, S., Jaya D.S & Sherly Williams, E.

### E ) Papers presented in National Symposium

Sl. No	Title	Symposium	Page No	Authors
1.	Sediment nutrient charecteristics and heavy metal content in Vattakayal a part of Ashtamudi Estuarine System in Kerala, India	ANASAT 2015	71-72	Seethal lal, S., Jaya D.S & Sherly Williams, E.

## **PARTICIPATION IN SEMINARS/ CONFERENCES/ WORKSHOPS**

### **SEMINARS/ CONFERENCES**

- Participated in the “**National Seminar on Water Resource Management :Present uses , Status, Conservation and Cooperation**”, held on 22 March 2012 in the department of Environmental Sciences, University of Kerala, Kariavattom, Thiruvananthapuram.
- Participated in the seminar on “**Sustainable Management of Fresh Water Resources**” conducted as a part of ‘World Water Day’ celebrations organized by

Environmental Sciences, held on 22 March 2012 in the Department of Environmental Sciences, University of Kerala, Kariavattom, Thiruvananthapuram.

- Participated in the “**National Seminar on Emerging Trends in Indian Aquaculture(ETIA-2013)**” held on 21<sup>st</sup>-23<sup>rd</sup> March 2013 in the Department of Aquatic Biology, University of Kerala, Kariavattom, Thiruvananthapuram.
- Participated in the “**National Seminar on Challenges in Biodiversity Conservation in the context of Climate change**” held on 28<sup>th</sup>-29<sup>th</sup> May 2013 in the Department of Zoology, University of Kerala, Kariavattom, Thiruvananthapuram.
- Participated in the “**Seminar on Climate change and Food security**” conducted as a part of ‘World Environment Day’ celebrations organized by Environmental Sciences, held on 5<sup>th</sup>, June 2012 in the Department of Environmental Sciences, University of Kerala, Kariavattom, Thiruvananthapuram.
- Participated and presented a paper in the “**International Seminar on Ecosystem Conservation, Climate Change and Sustainable Development (ECOCASD 2013)**” held on 3<sup>rd</sup>-5<sup>th</sup> October 2013 organised by the Department of Aquatic Biology & DoENVS, University of Kerala, Kariavattom, Thiruvananthapuram.
- Participated and presented a paper in the “**Kerala Environmental Congress**” held on 22<sup>nd</sup>-23<sup>rd</sup> August 2014 organised by the Centre for Environment and Development, Thiruvananthapuram at Kochi.
- Participated in Seminar conducted as a part of ‘**World Environment Day**’ celebration organized by Environmental Sciences, held on 5<sup>th</sup> June 2014 in the Department of Environmental Sciences, University of Kerala, Kariavattom, Thiruvananthapuram.
- Participated in the “**National Seminar on Water Resource Management :Present uses, Status, Conservation and Cooperation**”, held on 20-22 March 2013 in the department of zoology, Bishop moor college, Mavelikkara.
- Participated in the “**R. Sanker birth centenary seminar series**”, held on 30 September 2008 in the department of Zoology, Sree Narayana college for Womens, Kollam.
- Participated in National Seminar on Biotechnology “**Biodreams-2006**” organized by the department of Zoology, Sree Narayana college for Womens, Kollam. held on 24 February 2006.
- Participated in the “**Biotechnology for a clean environment**”, held on 15-16 October 2008 in the department of Zoology, Sree Narayana College, Kollam.

- Participated in Seminar conducted as a part of ‘**World water Day**’ celebration organized by Environmental Sciences, held on 23<sup>th</sup> march 2015 in the Department of Environmental Sciences, University of Kerala, Kariavattom, Thiruvananthapuram.
- Participated in State level Seminar on **Energy Conservation and Management** organized by Environmental Sciences, held on 15<sup>th</sup> 16<sup>th</sup> December 2014 in the Department of Environmental Sciences, University of Kerala, Kariavattom, Thiruvananthapuram.
- Participated in State level Seminar on *Blue Economy: Fostering Sustainable Development and Profitable Resource Utilization 22-23 August 2017* organized by Dept of Zoology, Fatima Mata national College, Kollam.

## PARTICIPATION IN WEBINARS

- Participated in the “e-DARSHAN Webinar Lecture Series-2020” on “**Evolution of SARS CoV2 : Learning to Survive with It**” organized by Department of Zoology & IQAC, on 28th May 2020.
- Participated in the “e-DARSHAN Webinar Lecture Series-2020” on “**Exercise and Immunity**” organized by Department of Physical Education & IQAC, on 29th May 2020.
- Participated in the International webinar on **writing proposals for funding agencies: Project design and project proposals** organised by dept. of commerce, Rathinam College of Arts and Science, Coimbatore on 29 th May 2020
- Participated in the “e-DARSHAN Webinar Lecture Series-2020” on “**Indian Farm Sector in Times of Covid-19 : Some Reflections**” organized by Department of Economics & IQAC, on 30th May 2020.
- Participated in the “**COVID 19 - THE WAY FORWARD** ” Jointly organised by P.G and Research Department of Zoology & internal Quality Assurance Cell (IQAC) on 29th MAY 2020
- Participated in the “e-DARSHAN Webinar Lecture Series-2020: **International Webinar on Raman Spectroscopy**” organized by Department of Physics & IQAC, on 1st June 2020.
- Participated in the “**Epimutations and Epialleles-Adding to the Biodiversity**” conducted on 27-05-2020 organised by IQAC in association with Department of Botany, Fatma Mata National College Kollam

- Participated in the International Webinar on the **Evolving field of Oncology and Career transition** organised by the PG and Research department of zoology , Fatma Mata National College Kollam , Kerala in Collaboration with Zoology Alumni association of Fatima (ZAAF )on 28.05. 2020
- Participated in the National Webinar on **Plant diversity of India : Status and Trends** organised by the Department of Botany in association IQAC of Sree Narayana College , Sivagiri on 5/6/2020 as part of National Environment Day Celebrations, 2020
- Participated in the one day National webinar on **Impact of Covid 19 pandemic on Indian Economy** held at Padmasri Vikhe Patil Collge of Arts , science and Commerce, Pravaranagar, Dist. Ahmednagar-413713, on 2020
- Participated in the National Webinar on **Soft Skills** organised by Government Degree College, Ichapuram, Srikakulam district, Andhra Pradesh on 7th June, 2020.
- Participated in the webinar titled **VOYO (Voice of Youth for Oceans)** organized by the Department of Aquatic Biology & Fisheries, University of Kerala on 8th June 2020.
- Participated in the International Webinar entitled "**Futuristic approach towards the mental and physical health of students during covid-19**" held on June 10, 2020.
- Participated in the one day National webinar on ‘**CURRENT TRENDS IN BIOLOGY**’ on 16 th June 2020, jointly organised by Department of Botany and IQAC, Dr. Annasaheb G D Bendale Mahila Mahavidyalaya, Jalgaon.
- Participated in the webinar on Dream Big organised by PG & Research Department of Zoology, V.O.Chidambaram College on 06.06.2020.
- Participated in the webinar Lecture on the topic “ **Application of revolutionary biochip array technology in forencic toxicology** delivered by Mr.Anil Padmanabhan , international business manager, Randox Technology, United Kingdom, on 30 th May 2020 at 11 am to 12.30 pm IST and the session was presided by Shri Jayakumaran nair, Chif Chemical Examiner to Government , Chemical examiners laboratory , Thiruvananthapuram, Kerala, India.
- Participated in the International Webinar on “**Alternative therapy for oral diseases: Exploring newer Possibilities**”. Organized by Department of Botany, Sree Narayana College for Women, Kollam on 24<sup>th</sup> July 2020 in association with IQAC.

- Participated in the International Webinar on ‘**Data Visualisation: How to communicate research effectively**’, organised by the Department Of Economics, Sree Narayana College for Women, Kollam on 24th July, 2020.
- Participated in the International Webinar on “**Manodharma Sangeetham**” Organized by Department of Music in association with IQAC, Sree Narayana College for Women, Kollam on 27th July 2020.
- Participated in the International Webinar on “**Indian Modernity And Culture : A Gender Perspective**” organised by Department of Hindi, Sree Narayana College for Women, Kollam on 27th JULY 2020.
- Participated in the International Webinar on “**Autoimmunity and Antimicrobial Response Factors**” organised by the Department of Biochemistry and Industrial Microbiology in association with IQAC, Sree Narayana College for Women, Kollam on 27th July 2020.
- Participated in the International Webinar “**Applications of Graph Theory in Science and Technology**” on 24<sup>th</sup> July 2020 organized by the Department of Mathematics, Sree Narayana College for Women, Kollam, Kerala.
- Participated in the International Webinar on “**Online teaching and language learning**” organised by Department of Malayalam, Sree Narayana College for Women, Kollam on 29th JULY 2020.
- Participated in the International Webinar “**Are Our Forests Real? Conservations vs. Conversions**” on 22nd July 2020 organized by the Department of Geography, Sree Narayana College for Women, Kollam, Kerala
- . Participated in the webinar on “**SAAC: PERSPECTIVES ON ASSESSMENT AND ACCREDITATION PROCESS**” organised by Internal Quality Assurance Cell in association with Kerala State Higher Education Council on 07th August 2020.
- Participated in the National Webinar on “**Verboten spaces, Muffled Voices: Contemplating Marginality of Defying Heroines in Early South Indian Folklore**” Organised by the Department of History, Sree Narayana College for Women, Kollam on 12th August 2020.
- Participated in the International Rivers Day 2020 Webinar on “**Vegetative Measures of River Bank Stabilization**” organized by Social Forestry Extension Unit, Kollam and

Department of Botany, Sree Narayana College for Women, Kollam on 28th September 2020.

## WORKSHOPS ATTENDED

- Participated in the Workshop on “**Biotechnology in industry–Achievements, Potentials and Challenges**” held at CEPCI, Kollam, organized by Cashew Export Promotion Council of India , Kollam on 18<sup>th</sup> -20<sup>th</sup> February 2013.
- Participated in the Workshop on “**Fundamentals and applications of Biostatistics**” held at CEPCI, Kollam, organized by Cashew Export Promotion Council of India, Kollam and SN College Kollam on 18<sup>th</sup> -19<sup>th</sup> August 2014.
- Participated in the Workshop on “ **Biostatistics for Research(Basic Principles and Advanced Tools**” held at CEPCI, Kollam, organized by Cashew Export Promotion Council of India , Kollam on 19<sup>th</sup> -21<sup>st</sup> March 2015.
- Participated in the Workshop on “ **Biogeochemistry**” held on 27-28 March 2014 in the department of Environmental Sciences, University of Kerala, Kariavattom, Thiruvananthapuram.

## RESEARCH OUTPUT

### A) MEDIA REPORTS REGARDING PH. D WORK

**Three News reports** were come in Mathrubhumi News Paper regarding the inventions and findings of my Ph. D work.. First two reports descrbed the grave situation of the lake and its consequences. On the basis of this Kerala Government Sanctioned **50 Lakh** rupees for the renovation of Vattakkayal, a part of Ashtamudi lake, South India (My **Study area**). That was the outcome of my Ph. D work.





# പൂക്കാട്ടിൽ തോടിന് പുതിയ ചീപ്പ് പണിയാൻ 50 ലക്ഷം അനുവദിച്ചു

കൊല്ലം: മരുത്തടയിലെ പൂക്കാട്ടിൽ തോടിന് പുതിയ ചീപ്പ് നിർമ്മിക്കാനും തോടിന്റെ വശങ്ങൾ കെട്ടി സംരക്ഷിക്കാനുമായി 50 ലക്ഷം രൂപ അനുവദിച്ചു. വട്ടക്കായൽ സ്ഥിതി ചെയ്യുന്ന ചവറ മണ്ണെലത്തിലെ എ.എൽ.എ.യായ മന്ത്രി ഷിബു ബേബിജോണിന്റെ ആസ്തിവികസനഫണ്ടിൽനിന്നാണ് തുക അനുവദിച്ചു ഉത്തരവായത്.

ചീപ്പ് പൂതുകിപ്പണിയുന്നതിനുവേണ്ടി നാട്ടുകാർ വട്ടക്കായൽ വികസനസംരക്ഷണസമിതിയുടെ നേതൃത്വത്തിൽ ഏറ്റെടുത്തിട്ടുള്ള ആവശ്യപ്പെടുന്നുണ്ട്.

കായൽജലം മലിനീകരിക്കപ്പെട്ടതിന്റെ ഫലമായി മാസങ്ങൾക്കുമുമ്പ് കായലിൽ മത്സ്യങ്ങൾ ചത്തുപൊങ്ങിയിരുന്നു. ചീപ്പ് പൂതുകിപ്പണിയുന്നതോടെ കായലിനെ മലിനീകരണത്തിൽനിന്ന് ഒറ്റ പരിധിവരെ സംരക്ഷിക്കാൻ കഴിയും.

മരുത്തടയിലെ ശുദ്ധജലതടാകമായിരുന്ന വട്ടക്കായൽ കട്ടക്കൽക്കായലിലൂടെ പൂക്കാട്ടിൽത്തോടുവഴി ഉപ്പുവെള്ളവും മലിനജലവും

കയറി മലിനീകരിക്കപ്പെട്ടു. വട്ടക്കായലിനെയും കട്ടക്കൽക്കായലിനെയും തമ്മിൽ പൂക്കാട്ടിൽത്തോട് ബന്ധിപ്പിക്കുന്നു. കട്ടക്കൽക്കായലിൽനിന്ന് മലിനജലം വട്ടക്കായലിൽ കയറുന്നത് തടയാനാണ് ഏകദേശം 25 വർഷം മുമ്പ് പൂക്കാട്ടിൽത്തോടിൽ ചീപ്പ് പണിതത്. ചീപ്പ് തകർന്നിട്ട് 15 വർഷത്തിലേറെയായി. ചീപ്പ് തുരച്ചുവെടുത്ത് തകർന്നതോടെ അഷ്ടമുടിയിൽനിന്നും കടലിൽനിന്നും കട്ടക്കൽക്കായലിലൂടെ മലിനജലം കയറുകയായിരുന്നു. ഇതിനിടെ കായൽസംരക്ഷണത്തിനുവേണ്ടി ചില പദ്ധതികൾ ആവിഷ്കരിച്ചെങ്കിലും അതൊന്നും നടപ്പായില്ല.

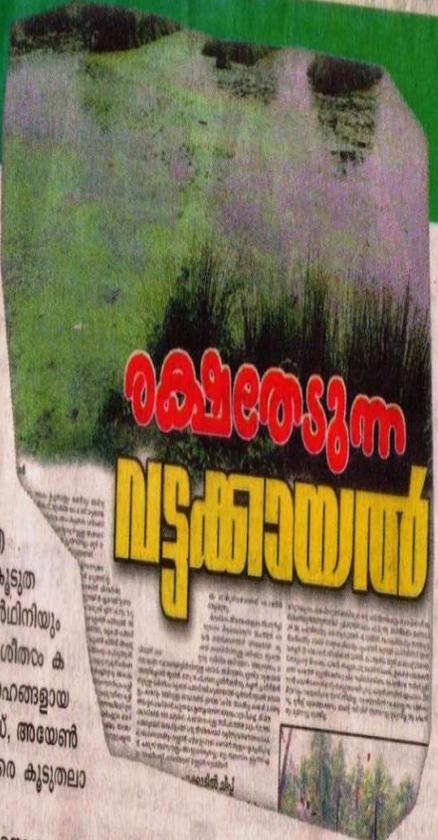
മലിനജലം കയറി തീരത്തെ കൃഷിനശിക്കുകയും കിണറുകളിൽ മലിനജലം നിറയുകയും ചെയ്തുകൊടുക്കുന്ന രോഗങ്ങൾ വർധിക്കുകയും ചെയ്തതോടെ പ്രദേശവാസികൾ ചേർന്ന് താൽകാലികമായി ചീപ്പ് നിർമ്മിച്ചതായി വട്ടക്കായൽ വികസനസമിതിക്ക് നേതൃത്വം വഹിക്കുന്ന ലതാഗൻ മരുത്തടി പറയുന്നു.

ഇപ്പോൾ വട്ടക്കായലിലേക്ക് മലിനജലം കയ

റുന്നില്ല. എന്നാൽ വെള്ളം കൂടുമ്പോൾ അത് തകരുമോ എന്ന പേടി നിലനിൽക്കുന്നുണ്ട്. കായലിലേക്ക് മാലിന്യങ്ങൾ തള്ളുന്നത് തടയാനുള്ള ബോധവൽകരണം നടത്തേണ്ടതുണ്ട്. കായൽജലത്തിൽ കാത്സ്യം, മഗ്നീഷ്യം, സോഡിയം, പൊട്ടാസ്യം, എനിവയുടെ അളവ് വളരെ കൂടുതലാണെന്ന് ഗവേഷക വിദ്യാർഥിനിയും പ്രദേശവാസിയുമായ എസ്.ശീതലം കണ്ടെത്തിയിരുന്നു. ഘനലോഹങ്ങളായ കാഡ്മിയം, ക്രോമിയം, ലെഡ്, അയേൺ എന്നിവയുടെ അളവും വളരെ കൂടുതലാണ്.

അതിനാൽ കായലിലെ ജൈവസമ്പത്ത് നശിച്ചുകൊണ്ടിരിക്കുകയാണ്. കായലിലേക്ക് മാലിന്യങ്ങൾ തള്ളുന്നതും കർശനമായി തടഞ്ഞുകൊണ്ട് മാത്രമേ കായലിനെ രക്ഷിക്കാൻ കഴിയൂ.

**രക്ഷിക്കുന്ന വട്ടക്കായൽ**



വട്ടക്കായൽ മലിനീകരണത്തെക്കുറിച്ച് മാതൃഭൂമി 2014 ഡിസംബർ മുനിന്റെ നഗരത്തിൽ വാർത്ത പ്രസിദ്ധീകരിച്ചിരുന്നു.

# വട്ടക്കായലിലെ മത്സ്യം ദക്ഷ്യയോഗമല്ലെന്ന് പഠന റിപ്പോർട്ട്

കൊല്ലം തെങ്ങടി വട്ടക്കായലിൽ ഇലോറ്റുള്ള മത്സ്യം കഴിക്കുന്നവർ സൂക്ഷിക്കുക. കാൻസർ അടക്കമുള്ള ഗുരുതരരോഗങ്ങൾക്ക് സാധ്യതയുണ്ടെന്ന് ഇതുസംബന്ധിച്ച പഠനങ്ങൾ സൂചിപ്പിക്കുന്നു. അനിരന്തിതമായ മലിനീകരണം മൂലം ഇല്ലാതായിരിക്കാണിരിക്കുന്ന വട്ടക്കായലിലെ അപൂർവ്വ മത്സ്യസമ്പത്തിനെ സംബന്ധിച്ച് ഡോ. ശീതൾ ഭാജ് നടത്തിയ ഗവേഷണത്തിലാണ് ഇക്കാര്യം കണ്ടെത്തിയത്.

വട്ടക്കായലിൽ നിന്ന് പിടിച്ചെടുത്ത പതിശൊയനത്ത് വിഭേയമാക്കിയ ചോൾ ഘനലോഹങ്ങളായ കാഡ്മിയം, ക്രോമിയം, ഡെഡ്, അയൺ, കോൾക് എന്നിവയുടെ സാന്നിദ്ധ്യം കണ്ടെത്തിയിരുന്നു. മത്സ്യത്തിന്റെ ഭാഗം, ചിറക്, മുട്ട, ചെങ്കിളി, കറുപ്പ്, അണ്ഡാശയം എന്നീ ഭാഗങ്ങളിൽ അടിച്ചെടുത്ത നിലയിലായിരുന്നു ഇത് കഴിക്കുന്ന മത്സ്യന്റെ ശരീരത്തിലും ഘനലോഹങ്ങളുടെ സാന്നിദ്ധ്യം ക്രമാതീതമായി വർദ്ധിച്ചു തുടരുന്ന രോഗങ്ങൾക്ക് ഇടയാക്കുന്നു. മത്സ്യങ്ങളുടെ പ്രത്യേക



ഡോ. ശീതൾഭാജ്

രണ ശേഷിയും തകരാറിലാകും. സമീപത്തെ വ്യവസായശാലകളിൽ നിന്നും വീടുകളിൽ നിന്നും പുറത്തുള്ള മലിനമണ്ണാണ് ലോഹസാന്നിദ്ധ്യം വർദ്ധിപ്പിച്ചത്. ഇവ അടിച്ചെടുക്കിയ ചെങ്കിളി കക്കിപ്പന്നത്തിനാണ് മത്സ്യങ്ങളുടെ ശരീരത്തിലെത്തുന്നത്.

വട്ടക്കായലിൽ നേരത്തെ അൻപതിലധികം ഇനങ്ങളിലുള്ള മത്സ്യങ്ങൾ ഉണ്ടായിരുന്നു. ഇപ്പോൾ അവശേഷിക്കുന്ന 22 ഇനങ്ങളും വംശനാശ ഭീഷണിയിലാണ്. പുണന്തൻ, കോട്ടി, ചെറുപുളാൻ, നന്തൽ, കിളി, മുരഞ്ഞാകൃതി തുട



**KAUMUDI FOLLOW UP**

ങ്ങിയ ഇനങ്ങൾ ഇനി അധികമാംബലിക്കില്ല. കായൽ ജലത്തിൽ കാത്സ്യം, മഗ്നീഷ്യം, സോഡിയം, പൊട്ടാസ്യം എന്നിവയുടെ സാന്നിദ്ധ്യം വർദ്ധിച്ചുകാറിനും ഉയരുന്ന തുടരാക്ടിന്റെ സാന്നിദ്ധ്യം കറുത്തു നന്നുമാണ് മത്സ്യ സമ്പത്ത് ഇല്ലാതാകാൻ കാരണം.

ജൈവമാലിന്യ സംസ്കരണ പദ്ധതികളിലൂടെയും അത്യാധുനിക ശുചീകരണ പദ്ധതികളിലൂടെയും ഒരു പരിധിവരെ കായലിന്റെ പഴയ ജൈവവ്യവസ്ഥ വീണ്ടെടുക്കാമെന്നും ശീതൾഭാജ് ചൂണ്ടിക്കാട്ടുന്നു. പാത്തമകാതകോരളമിലെ ഗസ്റ്റ് അദ്ധ്യാപികയായ ശീതൾ മതത്തടി സ്വദേശിനിയാണ്.

