



# ALAGAPPA UNIVERSITY

(A State University Established in 1985)  
Karaikudi - 630003, Tamil Nadu, India





DEPARTMENT OF OCEANOGRAPHY AND COASTAL AND



## Panel of Members-Broad Based Board of Studies

<p><b><u>Chairperson</u></b>  <b>Dr.C.Stella, Professor and Head,</b> Department of Oceanography and Coastal Area Studies, Alagappa University, Karaikudi. Teaching Experience: 28, Research experience: 40, Area of Research: Biodiversity, Ecology- EIA and Molluscan Taxonomy &amp; Biology.</p>	
<p><b><u>Foreign Experts</u></b>  <b>Dr.Nilmini Viswaprakash,</b> Assistant Professor for Anatomical Sciences, Cauburn Campus, nviswaprakash@auburn.vcom.edu, Teaching Experience –20 Year, Research Experience-25, Area of Research: Marine Biology.</p>	
<p><b><u>Indian Experts</u></b>  <b>Dr. C. Raghunathan,</b> Joint Director / Scientist-E, Zoological Survey of India. raghuks@rediffmail.com, Professional experience: Research – 25 Year, Area of Research: Marine Biology, Zoology and Ecology.</p>	
<p><b>Dr.Gulab Khedkar,</b> Director, Paul Hebert Centre for DNA Bar-coding and Biodiversity Studies, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad- India (MS). gdkhedkar@gmail.com, Teaching Experience – 20 Year, Research Experience- 27, Area of Research: Molecular genetics and genomics.</p>	
<p><b>Dr. T. T. Ajith Kumar. Nor,</b> Principal Scientist, ICAR–NBFGR, Peninsular and Marine Fish Genetic Resource Centre, Cochin, ttajith87@gmail.com. Professional experience: 24Years, Area of Research: Aquaculture for conservation and livelihood development.</p>	
<p><b>Dr. P. Madeswaran,</b> Scientist-G, Ministry of Earth Sciences, National Centre for Coastal Research. Work experience: 30Years, Area of Research: Coastal and Marine Area Management,</p>	
<p><b><u>Expert from Industry</u></b>  <b>Dr. M. Jaikumar</b> ,Field Scientist, Sea6 Energy Pvt ltd, Ccamp Lncubator, NCBS –TIFR, GKVK Post, Bellary road, Bangalore - 560065.</p>	
<p><b><u>Members</u></b>  <b>Dr.V. Sugumar,</b> Assistant Professor in Oceanography and Coastal Area Studies, Alagappa University, Karaikudi, Teaching Experience: 11 years, Research Experience: 15 years, Area of Research: Crustacean Biology, Marine Biomaterial.</p>	

<p><b>Dr.S. Paramasivam</b>, Assistant Professor in Oceanography and Coastal Area Studies, Alagappa University, Karaikudi, Teaching Experience: 11 years, Research Experience: 15 years, Area of Research: Marine Microbiology/Seafood safety.</p>	
<p><b><u>Alumni</u></b>  <b>Dr.V.Yoganandan</b>, Assistant Professor Department of Marine Science, Bharathidasan University, Tiruchirappalli – 620 024. yoganandan@bdu.ac.in, Teaching Experience: 10 Years: Research Experience: 15 Years. Area of Research: Paleoceanography/Paleoclimate, Climate change, Biogeochemistry, Climate change impact on Marine environment.</p>	

## **REGULATIONS AND SYLLABUS**

*[For the candidates admitted from the academic year 2019 onwards]*

### **1. Programme general objective**

The students in the Marine Biology program at the university will acquire specialized and deep knowledge, relevant to topics such as marine ecology, marine biology, biogeography, invasion biology, population genetics, biosystematics and general evolutionary themes based on the marine organisms.

### **2. Programme specific objectives**

1. To make students learn about the diverse groups of marine organisms, variety of ecosystems and habitats and current events in today's oceans such as overfishing, ocean acidification, restoration and marine protected areas.
2. The students gain knowledge on ecology and evolution, the marine environment, taxonomic classification of marine organisms, a survey of major marine ecosystems and marine conservation.
3. To increase awareness of anthropogenic impacts in the marine environment and potential solutions.

### **3. Programme Outcome**

The graduates of Marine Biology program will:

1. Explain key concepts and terminology in biology/ marine biology
2. Describe typical marine habitats and associated flora and fauna.
3. Understand interactions between marine organisms and the environment, and adaptations of marine organisms.
4. Understand the dynamics and structural processes in marine populations and communities

### **4. Eligibility for admission**

The Eligibility criteria for post graduate diploma in scuba diving, M.Sc., in Oceanography and Coastal Area Studies / Marine Biology/Zoology//Chemistry/Fishery Science/Earth Science//Microbiology/Biotechnology/Aquaculture.

### **5. Duration of Course**

The course shall consist of one academic years, divided into Two semesters.

### **6. Teaching Methods**

The classroom teaching would be through conventional lecture, use of OHP, PowerPoint presentation, novel innovative teaching ideas like television, smart board and computer-aided instructions. Periodic field visit enables the student for gathering the practical experience. Student seminars would be arranged to improve their communicative skills. In the safety measures instruction would be given for the safe handling of Scuba Equipments. The students shall be trained to handle advanced instrumental facilities and shall be allowed to do diving independently. The periodic test will be conducted for students to assess their knowledge.

### **7. Examinations**

The examinations shall be conducted separately for theory and practicals to assess the knowledge acquired during the study. There shall be two systems of examinations viz., internal and external examinations. The internal examinations shall be conducted as Continuous Internal Assessment tests I and

II (CIA Test I & II). The internal assessment shall comprise of maximum 25 marks for each subject. The following procedure shall be followed for awarding internal marks.

### Internal Assessment

#### Theory paper (Internal Assessment)

Average marks of two CIA test	15 marks
Seminar/group discussion/quiz	5 marks
Assignment/field trip report/case study report.	5 marks
<b>Total</b>	<b>25 marks</b>

#### Practical's (Internal Assessment)

CIA tests	20 marks
Attendance	5 marks
<b>Total</b>	<b>25 marks</b>

### External Examinations

The external examinations of theory and practicals shall be conducted for three hours duration to each paper at the end of each semester. The external examinations shall comprise of a maximum of 75 marks for each subject. The candidate failing in any subject will be permitted to appear for each failed subject in the subsequent examination. Practical examinations and demonstration of experiments shall be conducted at first, second, and third semester. At the end of the fourth semester, the project work viva-voce examination will be held based on the dissertation report submitted by the student. Two examiners (one internal and one external) will jointly conduct the viva-voce examination for evaluation.

### Scheme of External examination

#### Question paper pattern (Theory)

1. The question paper carries a maximum of 75 marks.
2. The question paper consists of three sections, namely Part-A, B, and C.
3. **Part-A** consists of 10 questions of 2 marks each ( $10 \times 2 = 20$  marks) with no choice. The candidate should answer all questions.
4. **Part-B** consists of 5 either or choice questions. Each question carries 5 marks ( $5 \times 5 = 25$  marks).
5. **Part-C** consists of 5 questions. Each question carries 10 marks. The candidate should answer any three questions ( $10 \times 3 = 30$  marks).

#### Question paper pattern (Practical) (Maximum 75 marks)

- |                          |          |
|--------------------------|----------|
| 1. Major Practical       | 15 Marks |
| 2. Minor Practical       | 10 Marks |
| 3. Experimental setup    | 5 Marks  |
| 4. Spotters              | 25 Marks |
| 5. Viva-voce             | 10 Marks |
| 6. Practical Record Note | 10 Marks |

**Total** **75 Marks**

## 8. Passing minimum

- a) For Internal and External Examination, Passing Minimum shall be of 50% (Fifty Percentage) of the maximum marks prescribed for the paper.
- b) In the aggregate (External + Internal), the passing minimum shall be of 50% for each Paper/Practical/Project and Viva-voce.
- c) Grading shall be based on overall marks obtained (internal + external).

## 9. Dissertation Work (Maximum Marks: 100)

The duration of the Dissertation Work shall be a minimum of three months in the fourth semester.

### a) Plan of work

The candidate shall undergo Dissertation Work during the fourth semester. The candidate should prepare a scheme of work for the dissertation and should get approval from the guide. The candidate, after completing the dissertation work, shall be allowed to submit to the university at the end of the fourth semester. If the candidate is desirous of availing the facility from other universities/laboratory, they will be permitted only after getting approval from the guide. In such a case, the candidate shall acknowledge the same in their dissertation.

### b) No. of copies of dissertation

The candidate should prepare three copies of the dissertation and submit the same for the evaluation of examiners. After evaluation, one copy will be retained in the department library, and the student shall hold one copy.

### c) Format to be followed for dissertation

The format /certificate for dissertation to be followed by the student are given below

- Title page
- Certificate
- Acknowledgment
- Content as follows:

Chapter No	Title	Page No
1	Introduction	
2	Materials and Methods	
3	Results	
4	Discussion	
5	Summary	
6	References	

**d) Format of the title page**

**Title of Dissertation**

Dissertation submitted in partial fulfilment of the requirement for post graduate diploma in scuba diving to the Alagappa University, Karaikudi -630003.

By

(Student Name)

(Register Number)

University Logo

**Department of Oceanography and Coastal Area Studies**

**Alagappa University**

*(A State University Accredited with "A+" grade by NAAC (CGPA: 3.64) in the Third Cycle and Graded as Category-I University by MHRD-UGC, 2019: QS ASIA Rank-216, QS BRICS Rank-104, QS India Rank-20)*

Karaikudi - 630003

(Year)

**Format of certificate**

**Certificate**

This is to certify that the dissertation entitled \_\_\_\_\_ submitted in partial fulfillment for the requirement of post graduate diploma in Department of Oceanography and Coastal Area Studies to the Alagappa University, Karaikudi is a bonafide record of research work done by Mr./Mrs \_\_\_\_\_ under my supervision and guidance and that no part of the dissertation has been submitted for the award of degree, diploma, fellowship or other similar titles or prizes and that the work has not been published in part or in full in any scientific journal or magazines.

**e) Dissertation evaluation**

Dissertation Work	:	50 Marks
Internal Assessment	:	25 Marks
Viva -voce	:	25 Marks
<b>Total</b>	<b>:</b>	<b>100 Marks</b>

**10. Maximum duration for completion of the course**

The maximum period for completion of post graduate diploma in scuba diving shall not exceed two semesters.

**12. Commencement of regulation**

These regulations shall come into effect from the academic year 2019-2020.

**13. Industrial visit/Internship/Field/Institutional visit**

Students have to undertake an industrial / Internship/Field/ institutional visit/educational tour and have to submit a report for evaluation (Satisfactory / Not Satisfactory).

**14. Classification of the successful candidate**

A candidate who secured not less than 60% of the aggregate marks in the whole examination shall be declared to have passed the examination in First class. All other successful candidates shall be declared to have passed in the Second class. Candidate who obtains 76% of marks in the aggregate shall be deemed to have passed the examination in first class with distinction provide they should have passed all the examination at the first appearance.

Candidates who passed all the examinations prescribed for the course in the first instance and within two academic years from the year of admission to the course are alone eligible for university ranking.

A candidate is deemed to have secured the first rank provided if he/she should have passed all the papers in the first attempt itself and should have secured the highest Cumulative grade point average (CGPA).

Each student should have taken 30 credits to complete the course. Each paper carries 5/4 /3 credits with 50% marks in the university examination and 50% marks in CIA.

<b>Raw score</b>	<b>Letter Grade</b>	<b>Description</b>	<b>Grade point</b>
91 and above	S	First Class-Exemplary	9.01-10
76-90	D	First Class-Distinction	7.51-9.00
61-75	A	First Class	6.01-7.50
56-60	B	Second Class	5.51-6.00
50-55	C	Second Class	5.00-5.50
Below 50	RA	Re-appear	-
I - inadequate attendance; W-withdrawal from the course			



**SCHOOL OF MARINE SCIENCES  
DEPARTMENT OF OCEANOGRAPHY AND COASTAL AREA STUDIES**

**POST GRADUATE DIPLOMA IN SCUBA DIVING  
(ADD ON COURSE)**

**COURSE CREDIT STRUCTURE**

S. No	Sub Code	Name	Credits	Hours	Marks		
					Internal	External	Total
<b>SEMESTER -I</b>							
1.	465101	Marine Biodiversity - Theory	4	4	25	75	100
2	465102	Marine Biodiversity - Practical	3	6	25	75	100
<b>SEMESTER -II</b>							
1	465201	Scuba Diving Equipment and Communication	4	4	25	75	100
2	465202	Science of Scuba diving - Theory	4	4	25	75	100
3	465203	Scuba Diving Equipment and Communication and Science of scuba diving - Practical	5	10	25	75	100
5	465999	Project Work & Viva-Voce	10	20	50	150	200
<b>Total</b>			<b>30</b>	<b>48</b>	<b>175</b>	<b>600</b>	<b>800</b>

## POST GRADUATE DIPLOMA IN SCUBA DIVING

<b>SEMESTER I</b>			
<b>Course Code: 465101</b>	<b>MARINE BIODIVERSITY</b>	<b>Credits:4</b>	<b>Hours:4</b>
<b>Objectives</b>	<ul style="list-style-type: none"> <li>➤ To understand the marine biodiversity and its importance.</li> <li>➤ To make students survey biodiversity along the coast and other coastal areas and marine environment.</li> </ul>		
<b>Unit -I</b>	Gulf of Mannar - Bioresource - Biodiversity and its importance, biodiversity assessment techniques, threats to Marine Biodiversity - Over -exploitation, Physical alteration, Pollution, alien species.		
<b>Unit-II</b>	Protected Areas - Endangered Species - Conflicts and Management solutions, Implications for Resource Management, marine policies.		
<b>Unit-III</b>	Marine animal Representatives from each Phylum: Invertebrates and vertebrates their distribution and adaptations.		
<b>Unit-IV</b>	Coastal biological diversity: Genetic and systematic diversity Species: concept, richness and evenness, threatened and vulnerable - Species inventory - Ecological interaction of species diversity.		
<b>Unit -V</b>	Coastal ecosystem management - Seagrass ecosystem - Coral reef ecosystem - Mangrove ecosystem - Island ecosystem.		
<b>Text Books and Reference Books</b>			
Albers, B., Brag, D., Lewis, J., Raff, M., Robers, K., and Watson, J.D. (1994). <i>Molecular Biology of Cell: Garland Publishing Inc.</i>			
De Robertis, E.D.F., and De Robertis, E.M.F. (1981). <i>Cells and Molecular Biology</i> . Saunder International Edition.			
Freifelder, D. (1987). <i>Molecular Biology</i> . Jones and Bartlett Publishers Inc.			
Lewin, B. (1994). <i>Genes (V)</i> . New York: Oxford University Press, Oxford.			
Malacinski, G. M.,& Freifelder, D. (1998). <i>Essentials of Molecular Biology</i> . Jones and Bartlett Publishers.			
Sir John Kendrew. (1994). <i>The Encyclopedia of Molecular Biology</i> . Blackwell Sciences Ltd.			
<b>Outcome</b>	<ul style="list-style-type: none"> <li>➤ Students able to identify threats to biodiversity and environment in particular coastal &amp; marine areas.</li> <li>➤ They can take initiative to conserve and restore the biodiversity in the project areas.</li> </ul>		

<b>SEMESTER I</b>				
<b>Course Code: 465101</b>		<b>MARINE BIODIVERSITY- PRACTICALS</b>	<b>Credits:3</b>	<b>Hours:6</b>
<b>1</b>	Biodiversity / life forms estimation for invertebrates and vertebrates using Quadrate and LIT methods.			
<b>2</b>	Biodiversity assessment techniques.			
<b>3</b>	Seagrass ecosystem - Coral reef ecosystem - Mangrove ecosystem - Island ecosystem.			
<b>4</b>	Species inventory.			

<b>SEMESTER - II</b>			
<b>Course Code:465201</b>	<b>SCUBA DIVING EQUIPMENTS AND COMMUNICATION</b>	<b>Credits:4</b>	<b>Hours:4</b>
<b>Objectives</b>	<ul style="list-style-type: none"> <li>➤ Scuba diving is perhaps the best way to explore the fantastic underwater world, getting up close with the wonders and the secrets of this marine universe, with its breath taking colorful and diverse inhabitants.</li> <li>➤ Students are trained to dive in open sea independently with the guidance of instructors.</li> </ul>		
<b>Unit -I</b>	Basic Equipment setup. Tank Direction, BCD attachment, 0-Ring Checks. Regulator Direction, Tank Valve and Air Tap, Releasing the Air Safely, Check the Pressure and Equipment Functions.		
<b>Unit-II</b>	Donning the Gear, Buddy Checking. Begin with Reuses and Friend (BWRAP). Accessories Use and Function. Correct Attachment. Reel Use, Computer Use and Programming. Mask De-Fogging. Fins/Boots/Wetsuit Choice, Checking the Air Quality, Storing Gear. Ready to Dive. Equipment Dismantling and Storage.		
<b>Unit-III</b>	Underwater Signs and Communication OK, Problem, Current, Up, Down. Come up to my Level. Come down to my Level. Look here. Watch me. Air pressure Checks. Buddies Together, Danger, This Level. Safety Stop, Fish Signs.		
<b>Unit-IV</b>	Navigation techniques. Straight Line Navigation, Fin Stroke Estimations. Reciprocal Navigation, Time Use for Navigation. Natural Elements and their Use.		
<b>Unit -V</b>	Skills Demonstrations, Mask Clearing. Regulator Recovery, Buoyancy Control Device (BCD) Use. 5 Point Ascents and Descents, Releases and Buckles. Alternate Air Source Use.		
<b>Text Books and Reference Books:</b>			
<p>Gates C.E. (1979). <i>Line Transect and related issues</i>. In: Cornack R.M., G.P. Patil and D.S. Robson, (eds.). <i>Sampling Biological Populations</i>. International Co-operative Publishing House, Fairland, Maryland.</p> <p>GCRMN. (2000). <i>Global Coral Reef Monitoring Network (GCRMN) South Asia Training Workshop in Survey, Design, Data Analysis and Report Writing</i>. ICMAM Project Directorate, Chennai.</p> <p>PADI. (1988). <i>PADI Under Water Diver Manual – The fun and adventure of learning to SCUBA dive</i>. 1988 International PADI Inc., PADI (Professional Association of Diving Instructors). Santa Ana, California, USA.</p>			
<b>Outcome</b>	<ul style="list-style-type: none"> <li>➤ Students get fundamental idea on diving equipment used by divers like underwater breathing apparatus, such as scuba equipment.</li> <li>➤ They can apply this technique to survey marine resources and conserve marine life and also for recreation purpose.</li> </ul>		

Course Code: 465202	SCIENCE OF SCUBA DIVING	Credits:4	Hours:4
<b>Objectives</b>	<ul style="list-style-type: none"> <li>➤ To make the students gain knowledge on the environment, the equipment, behavior of the individual diver and performance of the dive team.</li> <li>➤ The basic diver training entails the learning of skills required for the safe conduct of activities in an underwater environment, and includes procedures and skills for the use of diving equipment, safety, emergency self-help and rescue procedures, dive planning, and use of dive tables or a personal decompression computer</li> </ul>		
<b>Unit -I</b>	Health in Diving, Fitness and Conditioning, Physical Demands. Rest and Recuperation. Cardiovascular System and Heart Health. Sickness. Medications. Physical Examinations. Balanced Diet.		
<b>Unit-II</b>	Navigation Slates, Surface Marker Buoys Enriched Air Application Surface Floats, Dive Flags and their Meaning, Oxygen Use, Torches, Collection Bags Log Books, Spares Kit.		
<b>Unit-III</b>	Hazards and dangers: Injuries due to changes in air pressure Decompression sickness- Nitrogen narcosis- Oxygen toxicity - Recording and Maintaining - log book – Nitrogen, oxygen level – Navigation - Equipment maintenance.		
<b>Unit-IV</b>	Open Water Overview - Boat diving Decent Lines - Safety Stops, Buddy System - Depth Limits (12M and 18M) - Adapting to the Daily Conditions - Finning and Neutral Buoyancy diving Skills.		
<b>Unit -V</b>	SCUBA and Rescue - First aid - emergency - Specialty Diver courses.		
<p><b>Text Books and Reference Books</b></p> <p>De Vantier, L. M. (1986). <i>Studies on the Assessment of Coral reef ecosystems</i>. In: Brown, B.E, <i>Human Induced Damage to Coral Reefs</i>. UNESCO Reports in Marine Sciences. 40: 99-111.</p> <p>English S., Wilkinson, C., &amp; Baker, V. (1997). <i>Survey Manual for Tropical Resources (2<sup>nd</sup> ed)</i>. Australian Institute of Marine Sciences, Townsville, Australia.</p> <p>PADI. (1988). <i>PADI Under Water Diver Manual – The fun and adventure of learning to SCUBA dive</i>. International PADI Inc., PADI (Professional Association of Diving Instructors), Santa Ana, California, USA.</p>			
<b>Outcome</b>	<ul style="list-style-type: none"> <li>➤ They gain knowledge and understanding of the basic principles and the skills and procedures for the use of scuba equipment.</li> <li>➤ The students become professional divers involved with underwater environments, such as underwater photographers or underwater videographers, who document the underwater world or scientific diving.</li> </ul>		

<b>SEMESTER – II - PRACTICALS</b>			
<b>Course Code: 465203</b>	<b>SCUBA DIVING EQUIPMENTS AND COMMUNICATION AND SCIENCE OF SCUBA DIVING</b>	<b>Credits:5</b>	<b>Hours:10</b>
<b>1</b>	Skill Development: Swimming, Snorkelling & Skin Diving – Introduction to SCUBA		
<b>2</b>	Basic Gears and Skills in SCUBA - Data Collection, Recording and Processing - Basic Monitoring methods.		
<b>3</b>	Field Studies: Develop skills on data collection and recording.		
<b>4</b>	Training on survey methods for marine resource assessment- Statistical Application on marine resource monitoring studies.		
<b>5</b>	Exploration of new species using SCUBA Diving Techniques and UW ROV Learn about Underwater water photography and Videography.		

## CURRICULUM VITAE

Name : **Dr.C.Stella**  
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### Educational qualification:

Course	Board/University	Subject	Division/Grade
Ph. D	Annamalai University	Marine Biology	Highly Commended
M.Phil.	Annamalai University	Marine Biology	First Class
M.Sc.,	Annamalai University	Marine Biology	First Class
B.Sc.,	Annamalai University	Marine Biology	First Class

### Professional experience:

Teaching Experience: 20 years

Research Experience: 25 years

### Honours and Awards:

1. Received Cash award for Novel Idea Scheme, Central Electrochemical Research Institute, Karaikudi 1996 – DST, CSIR, and CECRI.
2. Received Second Prize for Young Scientist Award for best paper presentation competition, CSIR Foundation day celebrations on 26.9.1997, CECRI, Karaikudi
3. Received Best Research Advisor Award in Marine science, 7-8<sup>th</sup> Feb 2013.
4. Received Distinguished Faculty Award for the Contribution and Achievement in the Field of Marine Biology- 9<sup>th</sup> July 2016.

### Recent publications:

- P De los Ríos, M Kalaiarasi, P Paul, C Lathasumathi, C Stella(2019), Crustaceana Monthly variations in crustacean zooplankton abundances in SundarapandianPattinam and Manamelkudi in the Palk Strait, India (9-10° N, Arabian Sea). 92 (3), 295-306.
- P De los Ríos, L Kanagu, C Lathasumathi, C Stella(2019) Age and growth of two populations of Puginacochlidium (Gastropoda: Melongenidae), from Thondi coast-Palk Bay in Tamil Nadu-South East coast of India.. Brazilian Journal of Biology.
- P De los Ríos, L Kanagu, C Lathasumathi, C Stella(2019). Age and growth of two populations of Puginacochlidium (Gastropoda: Melongenidae) from Thondi coast-Palk Bay on the Tamil Nadu-Southeast India coast. Brazilian Journal of Biology
- MariadossKalaiarasi, andChelladurai Stella (2017), Zooplankton in Arabian Sea, India. *Sustainability Agri, Food and Environmental Research* 4(4), 1-12.
- MariadossKalaiarasi, Chelladurai Stella. (2017). Key for Microzooplankton Species found in SundarapandianPattinam and Manamelkudi, Tamil Nadu, India (9-10° N, Arabian Sea). *Sustainability Agri, Food and Environmental Research* 4(4), 2017: 45-49.
- ChokkalingamLathasumathi, Patricio De Los Ríos Escalante,,MariadossKalaiarasi&Chelladurai Stella\* (2017). Seasonal variation of community composition of zooplankton in the Palk strait, (9-10 °N, Arabian sea, India). *Bulletin de la Société Royale des Sciences de Liège*, Vol.86, articles, 2017, p.78 - 87.

Total Citations : 682  
h-index : 15  
i10 index : 31

## CURRICULUM VITAE

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### Educational qualification:

Course	Board/University	Subject	Year	Division/Grade
Ph. D	Auburn University	Anatomy and Physiology	2006	Highly Commended
M.Sc.,	Annamalai University	Marine Biology	1990	First Class
B.Sc.,	Madras University	Zoology	1988	First Class

### Professional experience:

Teaching Experience: 19 years

Research Experience: 17 years

### Honours and Awards:

1. Presidential Graduate Fellowship at Auburn University 2001-2005
2. People's Choice Poster Award at Phi Zeta Honor Society Research Forum 2005
3. Outstanding International Graduate Student Award at Auburn University 2005
4. Marshal representing the Veterinary medical school, Auburn University at graduation 2006

### Recent publications:

- Kuppurangan, G., Karuppasamy, B., Nagarajan, K., Sekar, R. K., **Viswaprakash, N.**, & Ramasamy, T. (2016) Biogenic synthesis and spectroscopic characterization of silver nanoparticles using leaf extract of *Indoneesiellaechioides*: in vitro assessment on antioxidant, antimicrobial and cytotoxicity potential *Applied Nanoscience* 6: 973.
- Karuppiyah, P., Venkatasamy, V., **Viswaprakash, N.**, & Ramasamy, T. (2015) A statistical approach on optimization of exopolymeric substance production by *Halomonas* sp. S19 and its emulsification activity *Bioresources. Bioprocessing* 2: 48.
- **Viswaprakash, N.**, Vaithianathan, T., Viswaprakash, A., Judd, R., Parameshwaran, K. & Suppiramaniam, V. (2015) Insulin treatment restores glutamate ( $\alpha$ -amino-3-hydroxy-5-methyl-4-isoxazolepropionic acid) receptor function in the hippocampus of diabetic rats. *Journal of Neuroscience Research*, 93: 1442-1450.
- Geetha, T., Zheng, C., **Vishwaprakash, N.**, Broderick, T. L., & Babu, J. R. (2012) Sequestosome 1/p62, a Scaffolding Protein, Is a Newly Identified Partner of IRS-1 Protein. *The Journal of Biological Chemistry*, 287(35), 29672–29678.
- **Viswaprakash, N.**, Josephson E. M, Dennis J. C, Yilma S., Morrison E. E, Vodyanoy V. J. (2010) Odorant Response Kinetics from Cultured Mouse Olfactory Epithelium at Different Ages in vitro. *Cells Tissues Organs*; 192:361-373.
- **Viswaprakash, N.**, Dennis, J. C., Globa, L., Pustovyy, O., Josephson, E. M., Kanju, P., Morrison, E. E., Vodyanoy V. J. (2009) Enhancement of Odorant-Induced Responses in Olfactory Receptor Neurons by Zinc Nanoparticles. *Chemical Senses*, Volume 34, Issue 7, Pages 547–557.



## CURRICULUM VITAE

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### Educational qualification:

Course	Board/University	Subject	Year	Division/Grade
Ph. D	Annamalai University	Marine Biology	1997	Awarded
M.Sc.	Annamalai University	Marine Biology and Oceanography	1990	First Class
B.Sc.	Aditanar College, Madurai Kamaraj University	Zoology	1988	First Class

### Professional experience:

Research Experience: 25 years

### Honours and Awards:

- Received 'HIGH PERFORMANCE SCIENTIST OF ZSI – 2011' AWARD conferred by ZSI, HQs, Kolkata on 26th January 2012.
- Received 'HIGH PERFORMANCE SCIENTIST OF ZSI – 2012' AWARD conferred by ZSI, HQs, Kolkata on 26th January 2013.
- Received a 'CERTIFICATE OF APPRECIATION' from Central Agricultural Research Institute (CARI), ICAR, Port Blair on 23rd June 2013 for the meritorious services
- Received a 'CERTIFICATE OF APPRECIATION' from Central Island Agricultural Research Institute (CIARI), ICAR, Port Blair on 23rd June 2014 for the constant support and cooperation for strengthening research, extension and development activities of the institute.
- Received an award 'FELLOW OF ANDAMAN SCIENCE ASSOCIATION' conferred by Andaman Science Association, Port Blair on 17th April 2015.

### Recent publications:

- Dixit, S., Ragunathan, C. and Chandra, K., 2017. New records of sea slugs (Heterobranchia: Opisthobranchia) from India. *Proceedings of the International Academy of Ecology and Environmental Sciences*, 7(3): 47
- Rajeshkumar, S., Ragunathan, C. and Chandra, K., 2016. Additional records of Odonata from Andaman & Nicobar Islands, India. *Biosystematica*, 10(1&2): 39-46.
- Dixit, S., Ragunathan, C. and Chandra, K., 2017. Two new Pseudoceros (Polycladida: Pseudocerotidae) and a Prostheceraeus (Polycladida: Euryleptidae) from Andaman and Nicobar Islands, India. *Zootaxa*, 4269(4): 495-512.
- Mondal, J., Ragunathan, C. and Venkataraman, K., 2017. New records of Aplousobranch ascidians to Indian waters from Andaman Islands. *Threatened Taxa*, 9(2): 9874-9880.

- TamalMondal, Raghunathan, C. and Venkataraman, K., 2016. Diversity of Scleractinian Corals in Great Nicobar Island, Andaman and Nicobar Islands, India. Proc. Zool. Soc., 69(2): 205-2016. DOI 10.1007/s12595-015-0145-8.

## CURRICULUM VITAE

Name :Dr. G. Khedkar  
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Academic qualification: Ph.D.

### Professional experience:

Teaching Experience: 20 years

Research Experience: 27 years

**Area of Research:** Molecular genetics and genomics.

### Recent publications:

1. VikramKhilare, Anita Tiknaik, Bharathi Prakash, BalasahebUghade, Ganesh Korhale, Dinesh Nalage, Nadeem Ahmed, ChandraprakashKhedkar, GulabKhedkar (2019). Multiple tests on saffron find new adulterant materials and reveal that Ist grade saffron is rare in the market. Food chemistry 272, 635-642.
2. Anita Tiknaik, Amol Kalyankar, Mahesh Shingare, Rahul Suryawanshi, Bharathi Prakash, Tejswini A Sontakke, Dinesh Nalage, RaveendranathanpillaiSanil, GulabKhedkar (2019). Refutation of media reports on introduction of the red bellied piranha and potential impacts on aquatic biodiversity in India.Mitochondrial DNA Part A 30 (4), 643-650.
3. B Prakash, I Karunasagar, I Karunasagar, GD Khedkar(2019).Denture wearers show more diversity of lactobacillus spp. Thanklebsiella spp. Compared to non-denture wearers. International Journal of Scientific Research 8 (10).
4. G Khedkar, C Khedkar, B Prakash, A Khedkar, D Haymer (2019) DNA barcode-based identification of a suspected tiger skin: A case to resolve mimicry. Forensic Science International: Reports 1, 1000272019.
5. S Abhyankar, K Khobragade, G Khanwelkar, ATiknaik, G Khedkar (2019). Evidence for a species complex in Indialonaganapati (Chydoridae). Mitochondrial DNA Part A 30 (3), 457-4652019.
6. BR Ughade, VC Khilare, DM Sangale, GA Korhale, P Ingle, AE Tathe, R Patil, GD Khedkar (2019). A definitive method for distinguishing cultivated onion from its weedy mimic, Asphodelusfistulosus, at multiple developmental stages. Weed Research 59 (1), 39-482019.
7. B Prakash, GD Khedkar, SP Akshay RPatil, GD Khedkar I(2019).Newer Aspects of Diagnosis and Treatment of Human Fungal Infection. nt. J. Curr. Microbiol. App. Sci 8 (6), 1873-1876.
8. V IswaryaDeepti, S Kandula, GD Khedkar (2019). DNA barcoding of five species of groupers (Pisces: Serranidae) off Visakhapatnam, central eastern coast of India. Mitochondrial DNA Part A 29 (5), 659-663.
9. Nadeem Ahmed, DeepaliSangale, Anita Tiknaik, Bharathi Prakash, RaitujaHange, RavindranathanpillaiSanil, Sajid Khan, GulabKhedkar (2019). Authentication of origin of meat species processed under various Indian culinary procedures using DNA barcoding. Food control 90, 259-265.

Total Citations	:	302
h-index	:	11
i10 index	:	13

## CURRICULUM VITAE

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**Educational qualification:** M. Sc., Ph. D., in Marine Biology

**Professional experience:**24 years

**Current area of Research:**Aquaculture for conservation and livelihooddevelopment.

**Expertise:**Livelihood development to costal & island community.

### Honours and Awards:

- Best Researcher- Annamalai University 2008 – 2009.
- INSA Fellow – 2009.
- K. Chidambaram memorial annual award for the contribution to marine ornamental fish breeding – 2011.
- Prof. M. Aruchami award for the contribution to aquaculture, Clownfish - Kongu Nadu Arts and Science college, Bharathiar University, Coimbatore – 2016.
- Member - Expert committees on Invasive Alien Species and Normally Traded Commodities, N. B. A. 2017 – 2019.

### Recent publications:

- J. Balamurugan, T. T. Ajith Kumar, S. Prakash, B. Meenakumari, C. Balasundaram, R. Harikrishnan. 2016. Clove extract: A potential source for stress free transport of fish, *Aquaculture*, 454: 171-175.
- Prakash, S., T. T. Ajith Kumar, R. Bauer, M. Thiel and T. Subramoniam. 2016. Reproductive morphology and mating behavior in the coral reef shrimp *Rhynchocinetesdurbanensis* Gordon, 1936 (Decapoda: Caridea: Rhynchocinetidae) in India. *Journal of Marine Biological Association, UK*, 96(6): 1331-1440.
- Prakash, S., T. T. Ajith Kumar, T. Subramoniam. 2016. New records of marine ornamental shrimps (Decapoda: Stenopodidea and Caridea) from the Gulf of Mannar, Tamil Nadu, India. *Check List*, 12(6): 1-6.
- Prakash, S., T. T. Ajith Kumar, R. Raghavan, A. Rhyne, M. F. Tlusty and T. Subramoniam. 2017. Marine aquarium trade in India: Challenges and opportunity for conservation and policy. *Marine Policy*, 77: 120-129.
- Marudhupandi, T., T. T. Ajith Kumar, S. Prakash, J. Balamurugan and N. B. Dhayanithi. 2017. *Vibrio parahaemolyticus* a causative bacterium for tail rot disease in ornamental fish, *Amphiprionsebae. Aquaculture reports*, 8: 39-44.

Books : 10

Book Chapters: 25

Popular articles : 30

## CURRICULUM VITAE

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### Educational qualification:

Course	Board/University	Subject	Year	Division/Grade
<b>Ph. D</b>	Annamalai University	Marine Biology and Oceanography	2015	Highly Commended
<b>M.Phil.</b>	Annamalai University	Marine Biology and Oceanography	1986	First Class
<b>M.Sc.,</b>	Annamalai University	Marine Biology and Oceanography	1984	First Class

### Employment Records:

1. Scientist G, Coordination of Seawater Quality Monitoring (SWQM), National Centre for Coastal Research (NCCR), Ministry of Earth Sciences, Government of India, 2018- till today
2. Scientist-F, Coordination of Seawater Quality Monitoring (SWQM) Programme – National Centre for Coastal Research (NCCR), Ministry of Earth Sciences, Government of India, 2014-18
3. Director & Scientist-F, Coordination and Implementation of R&D programme towards conservation and management of marine living resources in Indian Exclusive Economic Zone (EEZ) including maintenance and management of Fishery and Oceanographic Research Vessel (FORV) - SagarSampada. Also represented India in Commission for Conservation of Antarctic Marine Living Resources (CCAMLR), Centre for Marine Living Resources and Ecology (CMLRE), Ministry of Earth Sciences, Kochi, 2013-14
4. Scientist-F, Coordination of research programmes on (i) Integrated Coastal and Marine Area Management (ICMAM); (ii) Coastal Ocean Monitoring and Prediction System (COMAPS); (iii) Marine Living Resources (MLR); and (iv) Development of potential Drugs from Ocean (Drugs from Sea). In addition to the above, coordination of international programmes on (i) South Asia Cooperative Environment Programme (SACEP), Colombo, Srilanka; and (ii) Commission for Conservation of Antarctic Marine Living Resources (CCAMLR), Hobart, Australia. Ministry of Earth Sciences, New Delhi, 2008- 2009

### Major Programs & Achievements:

- Seawater Quality Programme (SWQM) / Coastal Ocean Monitoring and Prediction System.
- Marine Research and Development Fund (MRDF)
- Marine Manpower Development Programme (MMDP)
- Assessment of Marine Living Resources in Indian EEZ (MLR)
- Development of potential Drugs from Ocean (Drugs from Sea)
- Outreach programme – seminar, symposia and conference
- National Ocean Information System (NOIS)

### Publications:

- 5 publications in national and international referred journals.

- A status report on, “Seawater quality at selected locations along Indian coast has been released based on the data collected under COMAPS / SWQM programme on the occasion of celebration of Foundation Day of Ministry of Earth Sciences on 27th July, 2018 in New Delhi.

## CURRICULUM VITAE

Name : **Dr. M.Jaikumar**  
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### Educational qualification:

Course	Board/University	Subject	Year	Division/Grade
Ph. D	Andhra University, Visakhapatnam	Marine Biology	2009	Highly Commended
M.Sc.,	Alagappa University	Marine Biology	2002	First Class
B.Sc.,	University of Madras	Microbiology	2000	First Class

### Professional experience:

At present working as a Field Scientist in Sea 6 Energy, Pvt Ltd Bangalore Located in GKVK Campus, DBT - CCAMP Incubator, NCBS –TIFR, Bengaluru. from (August 2015 to till date); Main responsibilities: Field observation on marine studies and developing technologies that allow us to grow seaweed in rougher ocean waters and fisheries.

Worked as a Project Scientist in the division of Ecotoxicology at ICMAM, Ministry of Earth Sciences, Government of India from (November 2012 to July 2015); Main responsibilities: Development of marine water quality criteria for heavy metals by conducting bioassay experiments.

Worked as a Scientist at Aquaculture Foundation of India, Chennai from (February 2010 to November 2012); Main responsibilities: Transfer of knowledge on new fishing technologies to the fishermen population of Tamil Nadu, empowerment of fisherwomen by training them on seaweed cultivation at Palk Bay and Mandapam, Tamil Nadu.

Senior Project Assistant at Institute for Ocean Management, Anna University, Chennai from (May 2002 to March 2003); Main responsibilities: Digitizing of CRZ Maps.

### Recent publications:

- P. Karthikeyan, D. Mohan, M. Jaikumar (2015). Growth Inhibition Effect of Organophosphate Pesticide, Monocrotophos on Marine Diatoms. Indian Journal of Geo-Marine Sciences 44(10):516-1520.
- M. Jaikumar, C. Suresh Kumar, Robin. RS, P. Karthikeyan, A. Nagarjuna (2013). Milkfish culture: Alternative revenue for Mandapamfisherfolk, Palk Bay, southeast coast of India. International Journal of Fisheries and Aquaculture Sciences 3(1): 31-43.
- P. Karthikeyan, K. Manimaran, P. Sampathkumar, M. Jaikumar, RS. Robin, C. Saravana Kumar, C. Suresh Kumar (2013). In vitro antioxidant activity of marine diatoms. Journal of Environmental Science, Toxicology and Food Technology 5(2): 32-37.
- C. Sureshkumar, M. Jaikumar, RS. Robin, P. Karthikeyan, C. Saravana Kumar (2013). Heavy metal concentration of seawater and marine organisms in Ennore creek, southeast coast of India. The Journal of Toxicology and Health 103: 192-201.
- Robin RS, Vishnu Vardhan Kanuri, Pradipta R. Muduli, M.Jaikumar, P. Karthikeyan, C. Suresh Kumar, C. Saravana Kumar (2013). Influence of coastal and backwaters coupling on sustenance of high nutrients and organic production along the southeast Arabian Sea. Marine Science, 3(3): 79-90.
-



## CURRICULUM VITAE



Name : **Dr. V.SUGUMAR**  
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### Educational qualification:

Course	Board/University	Subject	Year	Division/Grade
Ph. D	University of Madras	Zoology	2005	Highly Commended
M.Phil.	University of Madras	Zoology	2001	First Class (Outstanding)
M.Sc.	University of Madras	Zoology	2000	First Class
B.Sc.	University of Madras	Zoology	1998	First Class

### Professional experience:

Teaching Experience: 11 years

Research Experience: 14 years

### Honours and Awards:

1. Recipient of **Dr. (Mrs) Sudha Varadharajan Memorial Endowment Gold Medal** from Thiru. Surjit Singh Barnala, Governor of Tamil Nadu, for the “**Best Thesis 2005**”.
2. **Awarded Research Fellowship** – Department of Ocean Development, Government of India.
3. **Awarded DST – FAST TRACK for Young Scientist**, Government of India.

### Recent publications:

- Paneerselvam, R., Anandhan, N., Sivakumar, G., Ganesan, K.P., Marimuthu, T and **Sugumar, V. (2019)**. Role of annealing temperatures on mechanical, optical, electrical and magnetic properties of nanohydroxyapatite biomaterial. *Journal of Nanoscience and Nanotechnology* [American Scientific Publishers, USA], 19: 4366-4376.
- Beema Mahin, M. I., Saravanan, R. and **Sugumar, V. (2018)**. Isolation, identification and characterization of the bioluminescent bacteria isolated from the blue swimmer crab *Portunus pelagicus* along Thondi Coast and virulence studies at high temperatures. *Microbial Pathogenesis* [Elsevier, USA], 117: 232-236.
- Saravanan, R. and **Sugumar, V. (2018)**. Heavy metal stress induced hyperglycemia in blue swimmer crab, *Portunus pelagicus*. *Acta Oceanologica Sinica* [Springer, USA], 37 (5); 1-7.

Total Citations	:	136
h-index	:	8
i10 index	:	7

## CURRICULUM VITAE

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### Educational qualification:

Course	Board/University	Subject	Year	Division/Grade
B. Sc.	Barathidasan University	Zoology	1994	First Class
M. Sc.	Annamalai University	Coastal Aquaculture	1996	First Class
Ph.D	Annamalai University	Marine Biology	2003	By thesis

**Professional experience:**Teaching experience: 11 years; Research experience: 17 years

**Honours and Awards:**DST-SERB Young Scientist award : 2012

### Recent publications:

- Rosemary, T.; Arulkumar, A.; **Paramasivam, S.**; Mondragon-Portocarrero, A.; Miranda, J.M. **2019**. Biochemical, Micronutrient and Physicochemical Properties of the Dried Red Seaweeds *Gracilaria edulis* and *Gracilariacorticata*. *Molecules*. 24, 2225. (doi:10.3390/molecules24122225). **Impact Factor: 3.060**.
- Arulkumar, A., P. Nigariga, S. Paramasivam and R. Rajaram. **2019**. Metals accumulation in edible marine algae collected from Thondi coast of Palk Bay, Southeastern India. *Chemosphere*. 221:856-862. (doi.org/10.1016/j.chemosphere.2019.01.007). ISSN: 0045-6535, **IF: 5.108**.
- Arulkumar A, Paramasivam S, Rameshthangam P, Paramithiotis S. **2019**. Evaluation of psychrophilic, mesophilic, histamine forming bacteria and biogenic amine content in the muscle of mud spiny lobster, *Panuliruspolyphagus* (HERBST, 1793) during ice storage. *J. Food Saf.* 39 (1):e12582 (doi.org/10.1111/jfs.12582). **IF: 1.665**.
- Arulkumar, A., Paramasivam, S. & Miranda, J.M. **2018**. Combined Effect of Icing Medium and Red Alga *Gracilariaverrucosa* on Shelf Life Extension of Indian Mackerel (*Rastrelligerkanagurta*). *Food Bioprocess Technol.* (doi.org/10.1007/s11947-018-2154-x). pp 1-12. ISSN :1935-5149. **IF- 3.032**.
- AbimannanArulkumar, Thomas Rosemary, SadayanParamasivam&RamaswamyBabuRajendran. **2018**. Phytochemical composition, *in vitro* antioxidant, antibacterial potential and GC-MS analysis of red seaweeds (*Gracilariacorticata*and *Gracilaria edulis*) from Palk Bay, India. *Journal of Biocatalysis and Agricultural Biotechnology*. (doi.org/10.1016/j.bcab.2018.05.008). 15:63-71. ISSN:1878-8181.
- AbimannanArulkumar, AlagusundaramBalamurugan, SadayanParamasivam, PalanivelRameshthangam& Spiros Paramithiotis. **2017**. Physicochemical and Microbiological Changes During Drying of Wolf Herring (*Chirocentrusdorab*) and Coastal Trevally (*Carangoidescoeruleopinnatus*), *Journal of Aquatic Food Product Technology*, 26:8, 929-939, (doi: 10.1080/10498850.2017.1362683). **IF: 0.682**.
- AbimannanArulkumar, SadayanParamasivam, PalanivelRameshthangam and Mohamed A Rabie. **2017**. Changes on biogenic, volatile amines and microbial quality of the blue swimmer crab (*Portunuspelagicus*) muscle during storage. *Journal of Food Science and Technology*. (doi: 10.1007/s13197-017-2694-5). 54 (8), 2503-2511. **IF- 1.797**.
- AbimannanArulkumar, SadayanParamasivam and RajendiranRajaram. **2017**.Toxic heavy metals in commercially important food fishes collected from Palk Bay, Southeastern India. *Marine Pollution Bulletin*. (doi: 10.1016/j.marpolbul.2017.03.045). 119, 454–459. **IF: 3.782**.
- AbimannanArulkumar, KaliyanRamachandiran, SadayanParamasivam, PalanivelRameshthangam, Jose Manuel Miranda. **2017**. Effects of turmeric (*Curcuma longa*) on shelf life extension and biogenic amine control of cuttlefish (*Sepiabrevimana*) during chilled storage. *CyTA-Journal of Food*. (doi: 10.1080/19476337.2017.1296495). 15 (3): 441-447. **IF: 1.371**
- AbimannanArulkumar, Gunasekaran Karthik, SadayanParamasivam and Mohamed A Rabie. **2017**. Histamine levels in Indian Fish via Enzymatic, TLC and HPLC methods during storage. *Journal of Food Measurement and Characterization*.(doi:10.1007/s11694-016-9395-z). 11 (1):281-289. ISSN-2193-4126. **IF: 1.415**.

<b>Cumulative Impact Factor</b>	<b>:</b>	<b>21.912</b>
<b>Total Citations</b>	<b>:</b>	<b>221</b>
<b>h-index:</b>		<b>6</b>
<b>i10 index</b>	<b>:</b>	<b>4</b>

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Academic qualification: Ph.D.

### Professional experience:

Teaching Experience: 08 years

Research Experience: 08 years

### Membership in Professional and Academic Bodies:

- Life Member: Indian Science Congress
- Life Member: PAGES (Past Global Changes) Society , Switzerland
- Asia Oceania Geosciences Society, Singapore
- Member of Board of Studies for M.Sc.Marine Science programme
- Department Research Committee member For Ph.D. programme

### Recent publications:

A. Sivachandiran, **V. Yoganandan**, K. Selvaraj (2018) Benthic foraminiferal faunal record indicated Paleoclimatic variation in the Southeastern Arabian Sea for 14,430 years B.P. Journal of Coastal Sciences. V. 5, pp 37-45.

K. Selvaraj, J. Pandiyan, **V. Yoganandan**, G. Agoramoorthy (2016). India contemplates climate change concerns after floods ravaged the coastal city of Chennai. Ocean & Coastal Management V. 129, pp 10-14.

A. Sivachandiran, **V. Yoganandan**, K. Selvaraj (2016) Microfossils Records of Decadal Climate Variability from the Southeastern Arabian Sea” International workshop on “Connecting Paleo and Modern Oceanographic Data to Understand AMOC over Decades to Centuries” held at boulder, Colorado, USA, During May 23- 25, 2016.

A. Sivachandran**V. Yoganandan** and K. Selvaraj, (2015) A High Resolution Planktonic Foraminifer Records of Indian Summer Monsoon Variability from Southeastern Arabian Sea. Proceeding volume of the CLIVAR-ICTP workshop on Decadal Climate Variability and Predictability held at Trieste, Italy during 16-24 November 2015.

Total Citations	:	84
h-index	:	05
i10 index	:	04