New Horizons of Aquatic Ecosystems - Towards Sustainable Development

Date
24th July 2020

Convener
Dr. K. Ramaneswari
Principal, University College of Science & Technology
Adikavi Nannaya University
Rajamahendravaram

Organized by

DEPARTMENTS OF ZOOLOGY AND AQUACULTURE

Introduction:

Aquatic ecosystems conservation is at the heart of sustainable development. At one level, it is inspired by deep ecology that considers all life forms as having value in themselves, thus advocating for the democracy of all life. Human societies are very dependent on aquatic ecosystems for their various needs. As much as communities live in harmony with ecosystems, it gets regenerated and in the process provides the community with resources required by them for their livelihood. This dependency leads to an understanding of human communities and nature as being part of the same living, breathing ecosystem.

The Aquatic ecosystems are one of the most endangered ecosystems in the world resulting in the decline of aquatic biodiversity. Monitoring and the assessment of aquatic ecosystems are necessary to protect and conserve the aquatic ecosystems. Sustainable Development Goal 6 (SDG6 related to clean water and sanitation) and 15 (SDG15 related to terrestrial and freshwater systems) of the United Nations. However, many other SDGs are dependent on freshwater, such as food (e.g., SDG2) and climate-related SDGs.

The new horizons are essential towards the sustainable development and management of water resources to realize the clean water and freshwater ecosystems-related goals of the United Nations. This webinar presents an overview of different methods for the New Horizons of Aquatic Ecosystems - Towards sustainable Development to monitoring and assessment of Aquatic ecosystems. Organisms are one of the indicators used to determine ecosystem health and integrity. They are an important tool for detecting the changes in the ecosystems.

The aquatic ecosystems consist of interactive elements such as climate, geological structure and water. To obtain a holistic picture of aquatic ecosystems status these elements must be integrated and evaluated as a whole. In this connection, new horizons of aquatic ecosystems are necessary to find a balance between ecosystem uses. Based on these elements, we provide an innovative concept for integrated monitoring and assessment.

Objectives of the Program:

The objective of this webinar is to planning, implementing and monitoring Aquatic Ecosystems activities, to effectively manage the aquatic ecosystems in order to reach Sustainable Development in this Sustainable Development era.

Organizers:

Convener

Dr. K. Ramaneswari
Principal, University College of Science & Technology
Adikavi Nannaya University

Co-Conveners

Dr. K. Satish Kumar
Asst. Professor, Dept. of Zoology
Adikavi Nannaya University

Dr. D. Sridhar
Asst. Professor, Dept. of Aquaculture
Adikavi Nannaya University

Resource persons:

Keynote Speaker

Dr. S. Ayyappan
Hon'ble Chancellor, Central
Agricultural University, Imphal
Chairman, Karnataka Science & Technology Academy

Speakers

Dr. VVSS. Sarma
Senior Principal Scientist,
NIO, Visakhapatnam

Dr. T. Ganesh
Asst. Professor,
Pondicherry University
Puducherry

Brief Bio-data of Resource Persons:

Prof. S. Ayyappan

Born in Alakere, Karnataka, India on 10 December 1955. Educated at National High School, Bangalore, 1967-70; National College, Bangalore, 1971; College of Fisheries, Mangalore, UAS, Bangalore, 1971-77; Ph.D. 1988.

Chancellor, Central Agricultural University, Imphal, 2018 to date.

Scientist, Central Inland Fish. Res. Inst., Barrackpore, 1978-84; Senior Scientist & Principal Scientist, 1984-95, and Director, Central Institute of Freshwater Aquaculture, Bhubaneswar, 1996-2000; Director, Central Institute of Fisheries Education, Mumbai, 2000-2002; Deputy Director General (Fisheries), Indian Council of Agricultural Research, New Delhi, 2002-09; Secretary to Government of India, Department of Agricultural Research & Education (DARE) and Director General, Indian Council of Agricultural Research (ICAR), New Delhi, 2010-2016; NABARD Chair

Professor, 2016-2019; Chief Executive, National Fisheries Development Board, 2006-08; Chairman, APAARI, 2011-12; Vice-Chairman/Member of Governing Boards of WFC, ICRISAT, CIP, IRRI, ICARDA for 2-6 years.

Awards/Honours: D.Sc. (h.c) from 15 Universities; Zahoor Qasim Gold Medal, 1996-97; Special ICAR Award, 1997; ICAR Award for Team Research for 1997-98; ZSI Gold Medal, 1998; ICAR Award for Team Research, 1997-98; V.G. Jhingran Gold Medal, 2002; H.P.C. Shetty Award for Excellence in Fisheries Research and Development, Asian Fisheries Society, Indian Branch, 2002; S.R. Bhargava Medal, 2003; and S.L. Hora Gold Medal, 2003; Gold Medal of ASET, 2009; Gold Medal Zoological Society of India, 2009; Lifetime Achievement Award, Indian Society of Agricultural Biochemists, 2010; SOFTI Award, CIFT, Kochi, 2009; Dr. P. Sheel Memorial Award, National Academy of Sciences, Allahabad, 2010; Padma Shree Prof. N. Balakrishnan Nair Environmental Excellence Award, 2010; Karuna Award-2011; Fellowship and Lifetime Achievement Award, Society of Extension Education, 2011; Dr. B.P. Pal Memorial Award, ISCA, 2012; Platinum Jubilee Award in Agriculture & Forestry, ISCA, 2013; Karnataka Rajyotsava Award, 2013; AMI Lifetime Award, 2013; Dr. Y. Nayudamma Award, 2014; Dr. J.C. Bose Memorial Award, 2014; Dr. Amrik Singh Cheema Award, 2014; G.M. Modi Award for Innovative Science & Technology, 2014; Shri O.P. Bhasin Award, 2015; Dr. V. Kurien Memorial Award, 2016; Sir M. Visveswaraya Memorial Award, KSCST, 2017.

Fellow: National Academy of Sciences, India; Society of Nature Conservators, India; Inland Fisheries Society of India; Zoological Society of India; Association of Aquaculturists; Society of Biosciences; ISEP Science Academy; Academy of Environmental Biology; Academy of Environmental Biological Society of India; National Institute of Ecology; National Academy of Biological Sciences.

Research Areas: Fisheries, freshwater aquaculture, aquatic microbiology

Address: 106, Sankalp Basant, #40 & 41, Akka Mahadevi Road, Industrial Suburb, Mysuru South, Mysuru 570008, Karnataka; [Tel: Cell: 9582898989; Email: sayyappan1955@gmail.com]

President 1 Jan, 2014 to 31 Dec, 2016; Vice-President 1 Jan, 2010 to 31 Dec, 2012; Secretary 1 Jan, 2003 to 31 Dec, 2005; Member Executive Council 1 Jan, 2002 to 31 Dec, 2002; Recognition Award 2001-2002; Dr. B.P. Pal Memorial Award 2009-2010

Dr. VVSS Sarma

Senior Principal Scientist at CSIR-National Institute of Oceanography
Professor at Academy of Scientific and Innovative Research (AcSIR)
Professional experience

2012-present- Senior Principal Scientist, National Institute of Oceanography, Visakhapatnam
2008-2012 – Principal Scientist, National Institute of Oceanography, Visakhapatnam
2007-2008 – Senior Scientist, National Institute of Oceanography, Visakhapatnam.
2004-2007 – Research Scientist, Japan Science and Technology Agency, Japan
2002-2004 - Researcher by Japan Society for Promotion of Sciences (JSPS)
2001-2002- Visiting Professor by Center of Excellence, Nagoya University, Japan
1999-2000- Post-doctorate at CEREGE, Aix-en Provence, France
1998-1999 - Extended Senior Research Fellow at NIO, Goa, India
1997-1998 - Post-doctorate, CEREGE, Aix-en Provence, France

Research Interests

Biogeochemical cycles of material in the ocean and atmosphere
Stable isotopes in the marine environment
Air-sea interactions
Oceanographic time-series studies
Linkages between oceanic biogeochemical variability and modes of climate variability
Chemical and biological sensor technologies
Impact of aerosols on marine ecosystem

Awards/ Honors/ fellowships

Fellow of Indian Academy of Science, 2015
Hidaka outstanding publication award 2012
ISCA-Young Scientist Award –by Indian Science Congress, 2000
START Young Scientist Award –by American Geophysical Union, 2000
Member of National Academy of Science (NASI) (2012)
Visiting Professor, Nagoya University, Japan (2017)
Visiting Professor, Universite of Pierre et Marie Curie (UPMC), Paris, France (2015)
Visiting Professor - Nagoya University, Japan (2008)
Researcher – Japan Society for Promotion of Science, Japan (2002-2004).
Visiting Professor - Center of Excellence, Japan (2001)
Post doctorate – by Ministry of Education, France (2000)
Post doctorate – by Ministry of Foreign Affairs, France (1997-1998)

Member/Resource person

Editor, Environmental Science and Pollution Research, Springer.
Research Advisory Committee member of Integrated Coastal and Marine Area Management (ICMAM), Ministry of Earth Science (Since 2017).
Member of Scientific Steering Committee (SSC) of International SOLAS (since 2015)
SOLAS National Representative from India (since 2015)
Member of IGBP-WCRP National Committee, Indian National Science Academy
Resource person for UNESCO, IOC, RECAAP, NSF, INSA etc.
Member for International Time-series programs
Member for International Ocean Acidification committee
Chair person for SOCAT group of IOC, UNESCO
Expert member for National Science Foundation (NSF), USA funding agency
Expert member for reviewing projects funded by for Ministry of Earth Science

Human Resources:

No. of PhD's completed: Total 19 PhD were awarded to the students registered at Andhra University, Adikavi Nannaya University, Sorbonne University, Paris, Academy of Scientific and Innovative Research (AcSIR).

Ongoing Projects

1. Nutrient transfers through ground water in India (NUNDERGROUND) – Funded by Indo French Centre for the promotion of Advanced Research (IFCPAR)
2. Ocean Acidification in the Indian Ocean – In collaboration with NOAA, USA,
3. Coupled physical processes in the Bay of Bengal and monsoon air-sea interactions – Funded by Ministry of Earth Sciences
4. Evaluation of cyclonic and anticyclonic eddies on carbon sequestration and oxygen minimum zone in the Bay of Bengal – Funded by Ministry of Earth Sciences
5. Sea Water Quality Monitoring along the east coast of India _ Ministry of Earth Sciences.
6. Impact of coastal pollutants on ecosystem in the east coast of India – National Centre for Coastal Research, MoES.

Number of publications: 178: Total Citations: 4984: h-index: 35

1. Name: Dr. T. GANESH
2. Designation: Assistant Professor
3. Department: Ocean Studies & Marine Biology
4. University: Pondicherry University
5. Educational Background: M.Sc., M. Phil., Ph.D.
6. Specialisation: Marine Biology: Marine EIA, Taxonomy & Ecology of Benthic Invertebrates
7. Courses Taught: Taxonomy of Marine organisms, Invertebrates, Marine Ecology, Cell Biology, Marine EIA, Biostatistics
8. Research Gate: **RG Score: 20.66 ; h-index: 5 Scopus h-index: 5**
9. Google Scholar: **Citations: 196; h-index: 7 ; i10 index: 7**

10. Academic records:

Degree	MM/YYYY	School/College/ University	% of marks & Division	Subjects taken	Remarks, if any
Ph.D.	07/2004	Department of Zoology, Andhra University, Visakhapatnam.	By Thesis	Marine Biology	Benthic Ecology
M.Phil.	04/1998	Centre for Advanced Studies in Marine Biology, Annamalai University, Tamil Nadu.	68.75%; First Class	Marine Biology	Aquaculture Biochemistry
M.Sc.	04/1996	Bharathidasan University Tiruchirappalli, Tamil Nadu.	73.69% First Class Second Rank	Zoology	Specialzn: Estuarine Biology
B.Sc.	04/1994	Madurai Kamaraj University, Madurai, Tamilnadu	79.95% First Class Second Rank	Zoology Allied: Botany, Chemistry	--

11. Employment Records:

Designation	**Name of Institution**	**Period**		**Nature of work and level of responsibilities**
		From	**To**	
Assistant Professor	Pondicherry University	06/09/2010	Till-date	Teaching M.Sc. students and research Guide for Ph.D. scholars

Project Scientist-I	National Institute of Ocean Technology, Ministry of Earth Sciences	30th October 2009	31st August 2010	Coastal Ocean Monitoring and Prediction System
Project Scientist	CMLRE, Ministry of Earth Sciences, Kochi	14th July 2008	28th October 2009	Cataloguing Marine Benthos, database on benthic organisms in the Indian EEZ
Lecturer	TSR & TBK PG College, (Affiliated to Andhra University) Visakhapatnam	11th June 2007	11 July 2008	Teaching M.Sc. students of Microbiology, Zoology, Biochemistry, research work, EIA Consultancy services

12. Ph.D. Guidance:

Enrolled: 3; Degree Awarded: 4; Thesis Submitted: 1; Synopsis submitted: 1

Key Research Publications: (Last 5 years Total 25)

13. Awards:

- Best Poster presentation award National Seminar on Innovative technologies for conservation and Sustainable Utilization of Island Biodiversity, Central Agricultural Research Institute, Port Blair December 2012.
- Best Teacher Award for the academic year 2010-11, 2013-14, 2014-15, 2015-16, 2017- 18 and 2019-20 by the Pondicherry University, Puducherry.

Flyer:

DEPARTMENTS OF ZOOLOGY AND AQUACULTURE

ADIKAVI NANNAYA UNIVERSITY, Rajahmahendravaram, AP.

Invite you
To
One Day National Webinar
On

Date & Time
24th July 2020
@ 10.00 a.m.
to 1.00 p.m.

New Horizons of Aquatic Ecosystems - Towards Sustainable Development

Chief Patron

Prof. Mokka Jagannadha Rao
Hon' ble Vice Chancellor
Adikavi Nannaya University

Keynote Speaker

Dr. S. Ayyappan
Hon'ble Chancellor, Central Agricultural University, Imphal
Chairman, Karnataka Science & Technology Academy

Patrons

Prof. B. Ganga Rao
Registrar,
Adikavi Nannaya University

Prof. Y. Srinivasa Rao
Dean; Faculty of Sciences
Adikavi Nannaya University

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Dr. D. Sridhar
Asst. Professor, Dept of Aquaculture
Adikavi Nannaya University

E Certificate will be provided to all the participants upon submitting feedback form

Phone: 7093008472
Email: principal.ucst@aknu.edu.in

Registration: Click here for FREE registration

https://forms.gle/Xdjvape5ij7g2vQn9

Technical Assistance
Mr. M. Srinivasa Rao, Webmaster
Mr. M. Raghavalu, Jr. Assistant
Adikavi Nannaya University

Lecture I Details

Dr. S. Ayyappan sir gave his talk on Fisheries & Aquaculture: Towards 2030(Post Covid 19) sir mainly focused on food production potential, millennium developmental goals, sustainable developmental goals and how the covid hits on industry and GDP, global food systems, asian perspective, Indian agriculture wholesome approach. In his talk he mentioned the following. The future of food and farming 2050s its not just the food grain but lot of horticulture, livestock and fisheries and agro forestry are the good hope sectors. Annual fish production in India is 13.7 mt (65% from inland and 80% from culture, over 7% of the global fish production, growth rate is over 10%, 47000 crore exports,second largest aquaculture producer after china. Global per capita human consumption of fish is 20.2 kg but in in India it is 12 kg, it indicates there is a lot of scope to increase the production. Aquatic food production systems are becoming so important lot of concerns about degradation but fortunately still our recourses can be utilized in a sustainable manner in the coming years. After covid we should learn about co existence and live and let live concept must be adopt. Knowing diversity is very important for us we are having 2508 species of fish documented from fresh, brakish and marine, 291 exotic species, 2934 crustaceans, 5070 molluscans, 844 seaweeds. Fortunately different fish species declared as state fish like *Hilsa, Magur, Murrels* etc, they are having breeding programmes. India having nine costal states and major ilands Andaman & Nicobar and Lakshadweep these are very potential fish areas and also having number of fisheries policies. Lot of potentials not only for aquaculture students but also IT students, law school students, geology, environment having so much of scope. It will also useful in data management, data recourses and water laws. Reservoir fisheries are multy stake holder area, aquatic bio security and quarantine in aquaculture is very essential. We are struggling hard to bring literacy to bio security and quarantine but today nature has started from last 4 months, now everybody has interested in the corona era even common man knows what quarantine is. Now the approach should be in the direction of artificial ocean fertilization, high value compounds, low volume and high value species, integrated water management, fish as a health food, aqua tourism and aqua parks, aquarin reforms for the overall development. Pradhana mantri matsya sampada yojana(PMMSY) focusing on deep sea fishing, climate change is becoming a very important topic for study for research, extinction, community, participation and so on. There are number of alternatives for livelihood, integrated modern coastal fishing villages- blue villages, from waste lands to wealth lands. Every institution must start incubation centre for aquaculture and costal disaster management because Andhra Pradesh is the leading and potential state in the concern field.

Lecture II Details

Dr. VVSS. Sarma sir gave his talk on Sciece for sustainable development of ecosystem – A translational research R&D activity

Sir talk main aim is to conduct some basic science, application of science for human kind. Realizing the expectation of common man and translating the research out come to public interest also human impact on aquatic ecosystems, settling up real time information to reach to the public. Scientific needs of fishermen in India, about 7million people depending on coastal line for their livelihood, location and catching fish is always a challenging task to fishermen, a reliable and timely advisory on the potential zones of fish aggregation of fish will benefit the fishing community to reduce the time and effort, thus improve the profitability and socioeconomic status, identification of potential fish zones (PFZs) through remote sensing. Estuaries are very small zones having 50 to 60 km long and 2 to 3 km of width but they have a nursery grounds for many of the ocean fishes mainly one of the important fishery *hilsa* spent

most the important life time in freshwater zone, maintain the health of estuary environment is very important for coastal fishery. Discharge major operator, high discharge period estuary is more turbid lot of nutrients. There is a beautiful relationship between discharge, turbidity, nutrients and phytoplankton. Rain fall variability is controlled by the large atmospheric condition. National river linking project (NRLP) likely impact on the Indian estuarine system, concept is based on the assumptions that surplus water in some rivers can be diverted to deficit rivers by creating a network of canals to interconnect the rivers. The decrease in discharging into estuary enhances the stability of water column, which leads to seasonal hypoxia, depletion in diversity of plankton, damage to nursery grounds of coastal species, high trace gasses emission to atmosphere , now they are working towards developing a model to suggest the minimum discharges required to maintain diversity of plankton in the estuary. Marine ecosystems are observed to be under stress from ocean warming, acidification and sea level rise as well as coastal livelihoods. Reduction in biodiversity and negative consequences on lower level tropic food webs and transfer of energy to higher tropic levels. Unique physical environment and ecosystem exists in the canyons, they are good source for living and non living recourses it can utilize for different applications without disturbing the ecosystem is a big challenge. There is an alarming situation of high drowning cases in vizag beaches. At present work is going on rib currents also marine ocean system along Indian coast (MOSAIC) establish real time interdisciplinary observing systems for Indian coastal waters understanding the costal areas they set new programme which is going to be started now for this 21 M USD sponsored by the ministry of earth sciences. Now they are going to put lot of sensors along the Indian coast and the information of this directly available to the public on this portal, the portal is being setup in INCOIS. Anybody can able to see the information related to sea level, temperature, pH, rib currents, harmful algal blooms etc.

Lecture III Details:

Dr. T. Ganesh sir gave his lecture on Marine benthic polychaetes potential live feed in Aquaculture.

Globally 11765 valid species of polychaetes are exist. Mainly sir focused on diversity, morphology and economic importance. They serve as food for bottom feeding fin and shell fishes, used as balt organisms in fish angling industry, Eunice viridis consume as food. These are used as an indicator species for pollution related or in EIA studies, provide correct balance of PUFA which are very much essential for maturation and egg production of shrimp brood stocks. Polycheates feed on detritus in mangroves and other coastal habitats and there by maintaining the detritus load and more importantly the ecological balance. Collecting wild polychaetes should be avoided because it is very serious concern, mass culture of polychaetes for commercial uses a preferable. Many biotechnological works on polychaetes have been attempted e.g. fields of biochemistry and medicine. It is clear there are a number of knowledge gaps in our understanding and ability to manage benthic biota as a fisheries resources with a high level of confidence, without the taxonomic information available, species specific management decisions and regulations regarding imports and exports are difficult. Furthermore very little is known about the reproductive biology of some commercially important species, including the frequency of breeding and the age of maturity. It is very useful for the upcoming researchers to fill these gaps and also useful for the aquaculture industry growth

This platform may provide the knowledge on various aspects of mangrove ecosystems. Around 500 participants attended to this webinar. These presentations inspired the participants especially the students who were motivated to develop interest on environmental studies. The

convener, Dr. K.Ramaneswari, Co conveners, Dr.K.Satish, Dr.D.Sridhar and the organizers from the Departments of Life sciences kindly acknowledge the Honorable Vice Chancellor, Prof. M. Jagannadha Rao for the continuous encouragement and logistic support to organize the webinar and making the event a grand success.

Outcome of the Event

Participants are very satisfied with the elaborated and very informative lecturers and this webinar gave a clear-cut idea about fishery recourses in India and importance of marine and estuarine environment and use of polychaetes in aquaculture. This webinar inculcate the interest in researchers in the concerned fields.

Feedback Report

e-Certificate

Photo Gallery with captions and Paper clippings