



# National Consultation on Strengthening Sea Farming and Marine Biodiversity Research in CMFRI



Mandapam Regional Centre of CMFRI: 18-19 April 2009



Fig. 1 : Welcome address by Dr.G.Syda Rao, Director, CMFRI



Fig. 2: Introductory remarks by Dr.S.Ayyappan, DDG ( Fy.), ICAR



Fig. 3 : Brainstorming session in progress



Fig. 4: Deliberations during the National Consultation



Fig. 5: ICAR Fishery Institutes Directors discussing with Dr.P.Krishniah, IAS, Chairman and other senior officials of NFDB

## Speakers



Fig. 6: Dr. S.A.H. Abidi



Fig. 7: Dr. S.N. Dwivedi



Fig. 8: Dr.P.V. Dehadrai ( right)



Fig. 9: Dr. K. Gopakumar



Fig. 10 : Dr. S.D. Tripathi



Fig. 11: Prof.(Dr.) T.J. Pandian (right)







Speakers Cont'd.....



Fig.12 : Prof.(Dr.) K.V.Devaraj



Fig.13 : Dr.M.V.Gupta



Fig.14 : Prof.(Dr.) P.S.B.R.James



Fig.15 : Prof.Ravindranath, Prof.(Dr.) K.V.Devaraj &amp; Dr.K.Venkataraman



Fig.16 :Dr.P.S.B.R.James, Dr.V.N.Pillai



Fig.17 : Prof.(Dr.)N.R.Menon



Fig.18 : Dr.A.G.Ponniah &amp; Dr.R.Paulraj



Fig.19 :Dr.V.S.R.Moorthy &amp; Dr.P.Paul



Fig.20 : Dr.Dileep Kumar



Fig.21 : Dr.W.S.Lakra



Fig.22 :

Fig.23 : Dr.M.Devaraj (Standing)



Fig.24 : Dr.B.Meena



Fig.25 : Dr.Usha Goswami



Fig.26:Dr.Sudakara Rao&amp;Prof.V.Ravindranath



Fig.27: Dr.M.D.Zingde



Fig.28: Dr.S.A.Adhikari &amp; Mr.Mariapuram C.Sreekumar

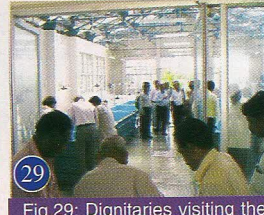


Fig.29: Dignitaries visiting the new marine hatchery complex



Fig.30: Dignitaries at the ornamental fish hatchery



Fig.31: Dignitaries visiting the finfish hatchery

In recent years, considerable research attention is being focused internationally on marine biodiversity and mariculture, mainly due to the increasing concerns on the health of the ecosystem and also due to the need for enhancing sea food production through sustainable sea farming. It is well

understood that biological inventurisation, scientific management of marine resources, both living and nonliving, is vital to the sustenance of the ecosystem, especially in the present context of pollution and climate change. Understanding both biogeographic zones and ecosystem dynamics in all respective zones, extent and type of existing exploitations, their impacts, bioremediation and restoration, regulation and legislation for the

protection and sustainable utilisation of all marine resources are the important thrust areas of marine biodiversity research.

The present marine capture fisheries scenario is characterised by declining yields from the inshore waters and increasing conflicts among different stakeholders, whereas the growing demand for fish in the domestic and export markets indicates good prospects for large scale coastal aquaculture. These prospects still remain underutilised so far, except for marine shrimps. Eventhough India ranks second in aquaculture among the





Asian countries, the production is chiefly from inland sector. Globally, mariculture contributes 36.0 % of the total aquaculture production and 33.6 % of its value. In India, till date, mariculture activities are confined only to coastal brackishwater aquaculture, chiefly shrimp culture. In spite of the growing demand for both domestic and export markets, hardly 10% of the potential cultivable area is presently used for aquaculture and hence it is evident that the development and expansion of coastal aquaculture has immense potential to enhance the coastal economy. A focused research and development thrust, technological innovations, demonstrations and extension programmes with proper care for protecting and maintaining the existing biodiversity, along with proper legislations and policy formulations can only pave the way for India to emerge as one of the major mariculture production countries of the world in the near future.

The Central Marine Fisheries Research Institute (CMFRI) has done pioneering research in the country on taxonomical, biological and ecological studies on coral reefs, mangroves, seaweeds, sea grasses, sponges, gorgonids, polychaetes, crustaceans, molluscs, echinoderms and finfishes. The contributions still remain as the major milestones of knowledge in these areas. The Headquarters of CMFRI was located at Mandapam Camp till 1971. The beginnings of the major contributions on marine biodiversity, environment, capture fisheries and mariculture were made from this base Gulf of Mannar, Palk Bay and the adjoining seas. It is well understood that the Gulf of Mannar is endowed with rich biodiversity in diverse ecosystems such as coral reefs, rocky shores, mud flats, mangrove forests, sea weed stretches and sea grass beds. The initial studies in sea farming such as pen culture of high value fin fishes, marine pearl production and sea weed culture were also accomplished from this area. In this background, it was felt that focusing research on marine biodiversity and sea farming at Mandapam Regional Centre of CMFRI would be of much significance in the coming years.

In this background, a National Consultation and Brainstorming session on Marine Biodiversity Management and Mariculture was held at the Mandapam Regional Centre of Central Marine Fisheries Research Institute (CMFRI) during 18-19 April 2009 with a view to developing strategies for standardising and popularising sea farming technologies and prioritising areas for marine biodiversity research. The idea was to look into the possibilities of improving the infrastructural facilities and strengthening the research activities on Mariculture and Biodiversity at Mandapam Regional Centre. The consultation was chaired by Dr. S. Ayyappan, Deputy Director General (Fisheries), ICAR and presided over by Dr. G. Syda Rao, Director, Central Marine Fisheries Research Institute, Kochi. The event was attended by about 50 eminent scientists in the field of fisheries and mariculture who included Dr. S.N. Dwivedi, Dr. S.A.H. Abidi, Prof. (Dr.) K.V. Devaraj, Prof. (Dr.) T.J. Pandian, Dr. M. V. Gupta and Dr. S.D. Tripathi, Members from Planning Commission, ICAR Governing Body, Ministry of Earth Science (Govt. of India); Coastal Aquaculture Authority of India, National Biodiversity Authority, Directors and Scientists of ICAR Fisheries Research Institutes such as CIBA, CIFT, CIBA, NBFGR and DCFR; former Directors, QRT and RAC members of CMFRI, Professors, Scientists and Research Scholars.

Dr. G. Syda Rao, Director, CMFRI welcomed the participants. As part of the welcome address, he opined that the suggestions of the participating scientists would lead to the formation of a roadmap for the overall development of mariculture technologies and marine biodiversity management of the country as well as for the strengthening of the Mandapam Regional Centre into a Centre of excellence in the near future. Dr. S. Ayyappan, Deputy Director General (Fisheries), ICAR, in his presentation, highlighting the relevance of the National Consultation, pointed out the need for prioritising the research on mariculture as well as in providing opportunities for the students to carry out research at the Mandapam Centre. He also pointed out the need for

identifying potential funding agencies and explore the possibilities of linkages for the Centre with other national and international institutions to carry out quality research. Mandapam would be developed as the core facility for mariculture and the technologies developed at the Centre would be applied in other research centres of CMFRI, he added. Dr. G. Gopakumar, Scientist-in-Charge, Mandapam Regional Centre presented an overview of the history and development of the Centre and outlined the achievements and recent developmental activities including commissioning of hatcheries for finfish, crustaceans, ornamental species; open sea cage culture and improvements of living facilities for scientists and the other staff in the campus. He also highlighted the future research needs of the Centre including impact of *Kappaphycus* farming, monitoring and rehabilitation of corals and research on endangered animals. This was followed by the presentation and group discussions by the experts in the field.

### Recommendations

The following recommendations emerged out of the brainstorming session:

- 1) Enhancement of the capacity of the Centre by taking research students and visiting scientists in the field of Mariculture, Marine Biodiversity and Marine Biotechnology and with the active involvement of retired scientists especially in the field of marine biodiversity;
- 2) New hostel facilities for students and visiting scientists need to be developed at Mandapam Centre;
- 3) Guidelines for collaborative research programme with foreign scientists at Mandapam Centre to be developed;
- 4) Prioritisation of the species to undertake seed production and culture and development and maintenance of good quality broodstock of the species selected;
- 5) Laboratories with modern equipments to strengthen research activities on mariculture and marine





biodiversity conservation would have to be developed at Mandapam;

6) Strengthening of biodiversity research programmes in collaboration with GoMBRT and research organisations under the Ministry of Environment and Forests;

7) A research vessel is needed to collect data on capture fisheries, oceanographic parameters and biodiversity research;

8) Students and researchers in SCUBA diving and snorkeling for undertaking underwater survey and research have to be trained;

9) Cage culture of high-value finfishes and lobsters;

10) For capacity building in the recent developments in mariculture, marine biodiversity and marine biotechnology scientists may be trained in national and international research organisations;

11) Regional collaboration to be strengthened by exchange of information and technologies by NACA (Network of Aquaculture Centres in Asia-Pacific);

12) Expertise in taxonomy to be built-up linking it with DNA barcoding and ecological research;

13) Utilisation of information generated by CMFRI on biodiversity for evolving policies to be promoted; and

14) As it has the potential, the Centre needs to be upgraded as Centre of Excellence in Marine Biodiversity and Mariculture.

The consultation concluded with a vote of thanks by Dr. G. Gopakumar, Scientist-in-charge of Mandapam Centre of CMFRI.

#### Sl. No.

#### List of Main Participants

1. Dr. S. Ayyappan - DDG (Fisheries), ICAR, New Delhi
2. Dr. S. N. Dwivedi - Former Additional Secretary, Department of Ocean Development, Govt. of India
3. Dr. P.V. Dehadrai - Former DDG (Fisheries), ICAR, New Delhi
4. Dr. K. Gopakumar - Former DDG (Fisheries) ICAR, New Delhi
5. Dr. S. D. Tripathi - Former Director, CIFE, Mumbai & Chairman, RAC, CMFRI
6. Dr. K.V. Devaraj - Former VC, UAS, Bangalore.
7. Dr. M.V. Gupta - World Food Prize Laureate and former Asst. Director General, World Fish Centre, Penang
8. Dr. S.A.H. Abidi - Chairman, QRT, CMFRI
9. Prof. T.J. Pandian - Former National Professor & Member, ICAR Governing Body
10. Dr. P. Krishnaiah - IAS, Chief Executive, NFDB, Hyderabad.
11. Dr. P.S.R.B. James - Former Director, CMFRI
12. Dr. V. N. Pillai - Former Director, CMFRI
13. Dr. M. Devaraj - Former Director, CMFRI
14. Dr. V. Ravindranath - Member QRT & former Director, CMLRE, Kochi
15. Prof. (Dr.) N.R. Menon - Former Dean, School of Marine Sciences, CUSAT, Kochi
16. Dr. R. Paul Raj - Member Secretary, Coastal Aquaculture Authority of India, Chennai.
17. Dr. K. Venkataraman - Member Secretary, NBA, Chennai
18. Dr. P. Paul Pandi - Deputy Adviser, Planning Commission, New Delhi.
19. Dr. Dilip Kumar - Director, CIFE, Mumbai
20. Dr. G. Syda Rao - Director, CMFRI, Kochi
21. Dr. W.S. Lakra - Director, NBFGR, Lucknow
22. Dr. B. Meenakumari - Director, CIFT, Kochi
23. Dr. Ambekar E. Eknath - Director, CIFA, Bhubaneswar
24. Dr. P.C. Mahanta - Director, DCFR, Bhimtal
25. Dr. A. G. Ponniah - Director, CIBA, Chennai.
26. Dr. V.S.R. Murty - Former Head, DFD, CMFRI & Member, RAC, CMFRI
27. Dr. Usha Goswami - Member, RAC, CMFRI
28. Dr. S. A. Adhikari - Member, RAC, CMFRI
29. Dr. Mahish D. Zingde - Member, QRT, CMFRI
30. Dr. M.A. Upare - Member, QRT, CMFRI
31. Mr. Mariapuram C. Sreekumar - Member, QRT, CMFRI
32. Dr. E. Vivekanandan - Principal Scientist & Head, DFD, CMFRI, Kochi
33. Dr. E.V. Radhakrishnan - Principal Scientist & Head, CFD, CMFRI, Kochi
34. Dr. G. Gopakumar - SIC, Mandapam RC of CMFRI & Head, Mariculture Division
35. Dr. Mary K. Manisseri - Principal Scientist & Head, MBD, CMFRI, Kochi
36. Dr. A. Gopalakrishnan - Principal Scientist & SIC, NBFGR Cochin Unit
37. Dr. Prem Kumar - Senior Scientist, DCFR, Bhimtal
38. National Fisheries Development Board Hyderabad.
- i) Dr. C. Vasudevappa
- ii) Dr. C.K. Murthy,
- iii) Dr. Anand S. Upadhyay,
- iv) Dr. E.V. Gopi Nath Sai
- v) Dr. A. Tiburtius
- vi) Dr. R. Jayakumar,

### Development of Marine Fisheries, Infrastructure and Post Harvest Operations during Eleventh Five-Year Plan

The Cabinet Committee on Economic Affairs has approved the proposal of the Department of Animal Husbandry, Dairying and Fisheries for continuation of the Centrally sponsored Scheme on "Development of Marine Fisheries, Infrastructure and Post Harvest Operations" in the 11th Plan with an outlay of Rs. 746 crore. The scheme envisages empowering traditional fishermen through motorisation of their craft, assisting small scale mechanised sector by subsidising excise duty on fuel, and the system of improving safety of fishers out at sea, introduction of intermediate craft of

improved design, to put in place a vessel monitoring system, promoting fuel efficient and environment friendly fishing practices, management of marine fisheries, setting up infrastructure such as fishing harbours, fish landing centres including assistance for dredging of existing fishing harbours and fish landing centres and strengthening of post-harvest infrastructure.

Under the component of Development of Marine Fisheries, it is envisaged to (i) motorise traditional craft, progressively (ii) provide benefits of HSD rebate to 17,000

small mechanised boats annually, (iii) introduce 65 intermediate craft, (iv) supply about 5,550 LPG kits to small boats, and (v) supply about 500 safety LPG kits to the fishermen. On infrastructure front, 10 new fishing harbours, 30 fish landing centres and repair and renovation of 15 existing fishing harbours and fish landing centres would be taken up. Under the Post Harvest component, 4 central fish markets, 36 fish preservation & processing facilities such as cold storage and ice plants etc., 45 fish retail outlets and 30 transportation facilities would be created.