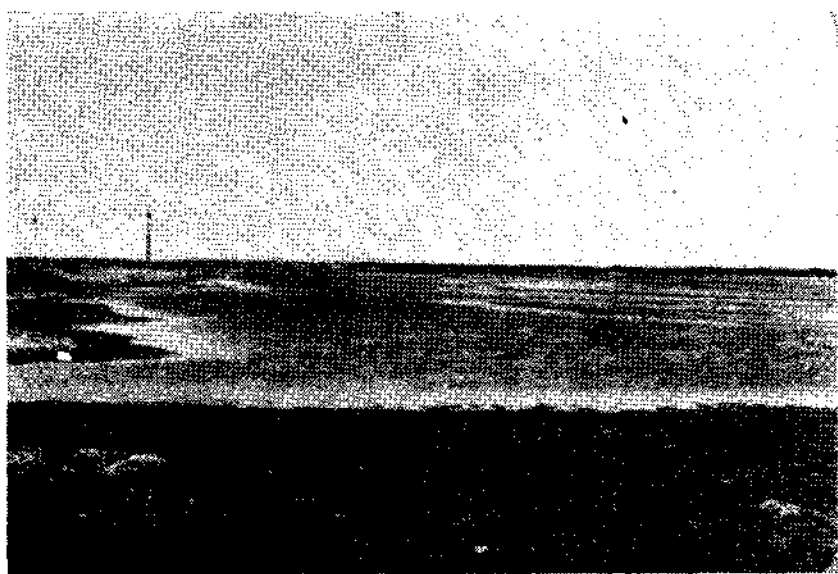




CMFRI newsletter

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Marine Pollution

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Central Marine Fisheries Research Institute is one of the prime fisheries organisations in India engaged in monitoring of marine pollution for past several years. The main objective has been to unravel the pollution and related environmental factors and their impact on marine living resources.

Keeping the environment clean is no doubt a costly proposition, however, our society can and must afford a clean, natural environment, both for our health and for enjoyment. We have developed the ability to modify our environment, we must now develop the will, the understanding and the ability to preserve it.

"Man inhabits two worlds. One is the natural world of plants and animals, of soils and airs and waters which preceded him by billions of years and of which he is a part. The other is the world of social institutions and artefacts he builds for himself, using his tools and engines, his science and his dreams to fashion an environment obedient to human purpose and direction".

In this opening para, Ward and Dubos in their book **ONLY ONE EARTH** have expressed their concern about the global perspective of pollution on human environment. Man is an animal with over three thousand million years of evolution behind him. Today the mode of technological development created by him is the result of interactions with other components of the world.

The marine pollution as precisely described by the Inter-go-

vernmental Oceanographic Commission (IOC) says, "Marine pollution is the introduction by man, directly or indirectly, of substances or energy into the marine environment including estuaries, resulting in such deleterious effects on living resources and to human health and hindrance to marine activities including fishing". It is worth considering more deeply some of the ideas when we say marine pollution.

Marine pollution research started 35 years ago with studies on radioactive wastes dumped into the sea. The first International Congress on the subject was held in USA in 1959. But the real magnitude of the problem was not and could not be appreciated at that time. It has only been 15-20 years since the German Research Society gave priority to the studies on marine pollution. Numerous publications describing research by the various maritime nations on marine pollution started appearing only after 1966.

The pollution of water did not appear to have been a serious problem until relatively recently. With high density settlement in the town and cities of coastal areas came the question of sewage disposal. Excrement had undoubtedly entered the rivers and streams in earlier

times but in small quantities. With the tremendous growth of industries rivers and oceans provided a means of dispersing waste products. Today the marine environment is contaminated by a wide range of pollutants including metals and toxic chemicals from industries, oil and pesticides from agriculture, radioactive waste, nutrients and pathogenic microorganisms from sewage and solid waste. These pollutants enter into the marine system through many ways. If problem of pollution becomes more acute in coming years, there can be a long term or permanent depletion of useful resources from such environment.

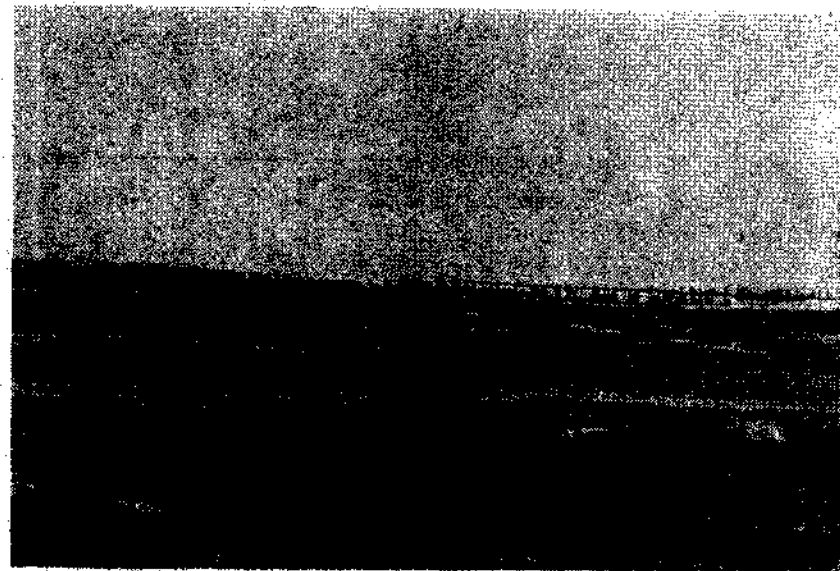
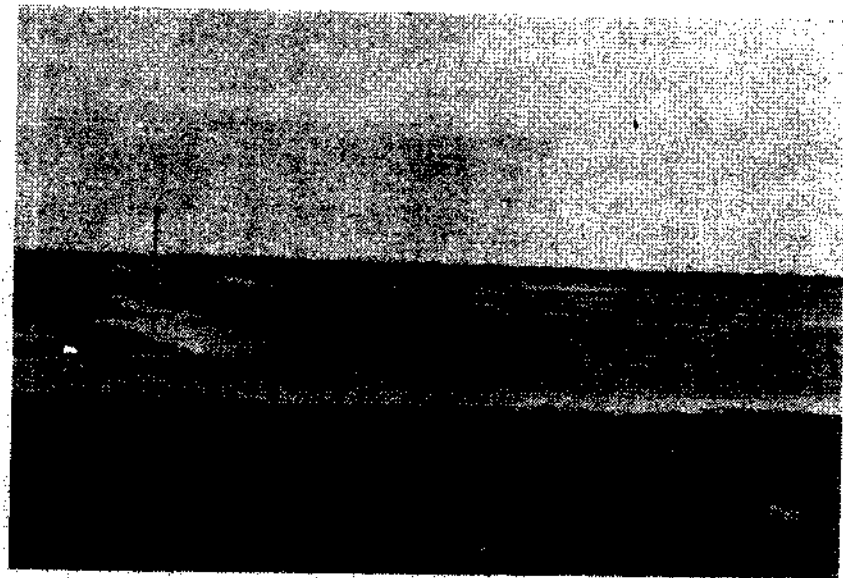
The impact of pollution is more pronounced in certain coastal and estuarine areas, large land-locked waters, confined bays and deep inlets where mixing of water with the sea outside is restricted. The pollutants which cause the greatest anxiety to us are those having high toxicity, persistence or bioaccumulation and the long term damage they may do to the environment. Heavy pollution sometimes may cause oxygen depletion in water bodies and create biologically unbalanced conditions. In such a situation organic substances which are resistant to biological breakdown such as organochlorine pestici-

des or toxic metallic residues such as cadmium, mercury and lead compounds may accumulate to levels in fish and shellfish which raise doubts about their fitness for human consumption. The most serious example so far has been of methyl mercury, formed from inorganic mercury compounds which caused death of people in Japan in 1959 due to minamata disease and rendered fish catches in the Baltic Bay unfit for human consumption.

The other major representatives of pollutants that are new to the environment and contribute to marine pollution are polycyclic hydrocarbons (PAH), chlorinated hydrocarbon pesticides such as DDT, aldrin, dieldrin and polychlorinated biphenyls (PCB).

Pollution of the marine environment by an active, vigorous and affluent society is inevitable. The marine environment has the capacity to dilute and disperse the waste products of the society. But this is not the only use to which the marine environment must be considered. Other major aspects such as food and seaweed resources, sport fisheries, commercial fisheries and other recreational uses should be given due importance. The effort must be to recognise the problems related to marine pollution and take steps to preserve, protect and respect the natural resources so that they can be used to meet the best interest of mankind.

Central Marine Fisheries Research Institute is one of the prime fisheries organisations in India engaged in monitoring of marine pollution for past several years. The main objective has been to investigate the pollution and related environmental fac-



*Photos: Polluted sea water near Tuticorin
— an example of industrial pollution*

tors and their impact on marine living resources. Monitoring of heavy metals in coastal waters and levels of these in marine organisms form an important component of the investigations. Studies have been carried out, earlier on the toxic effects of industrial effluents on planktonic algae, zooplankton and the effect of organochlorine compounds on growth, survival and re-

production of cultivable organisms.

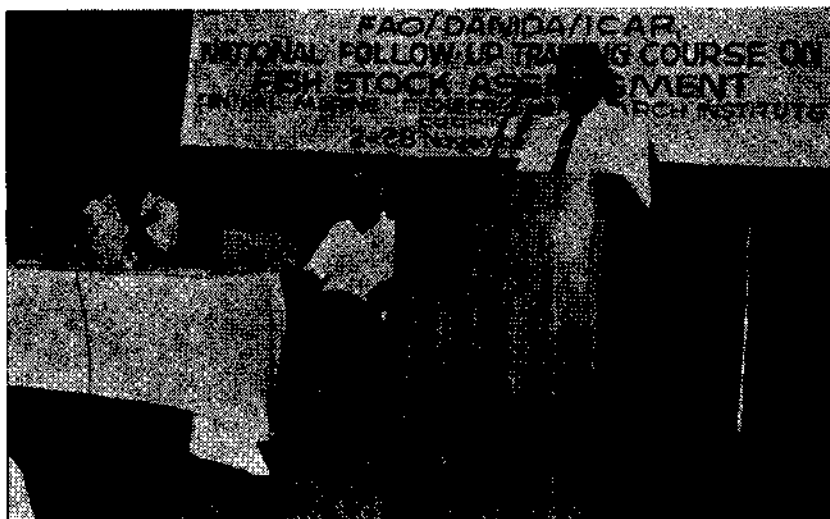
In this connection Dr. A.D. Diwan, Scientist at CMFRI was deputed to undergo training at the School of Fisheries, University of Washington, Seattle, USA for a period of six months under FAO fellowship programme of the CAS in Mariculture. His training envisaged to obtain first-hand knowledge and practi-

Follow-up Training in Fish Stock Assessment

As a follow-up of the FAO/DANIDA/ICAR — National Training programme held in November-December 1983, a course of 4-week duration was held at CMFRI, Cochin from 2-28 November. Out of the 25 Scientists who participated in the first course 12 were selected for the follow-up programme. These participants were from CMFRI, CIFT, CIFE, CIFRI and FSI. The main aim of the course was to analyse fish stock data available with the participants using the computer software developed by Mr Per Sparre of FAO. Mr Hans Lassen and Mr Hendric Gislason from DANIDA, Mr S. C. Venema from FAO and Dr K. Alagaraja from CMFRI guided the participants. Dr P. S. B. R. James, Director, CMFRI was the Course Director and Mr S. C. Venema was the Course Co-Director. Based on the results of the analysis of data research papers were prepared and discussion were held on these papers. The papers will be published by the FAO.

cal experience so as to enable planning, organising and executing the research programmes related to the practical problems of pollution studies in general and mariculture in particular. In advanced countries like USA the techniques that are developed to monitor various aspects of pollution and toxicological studies related to fisheries and aquaculture should be quite useful for the development of similar programmes in India.

Today much of our current concern over pollution problems



*Dr P.S.B.R. James, Director, speaking at the valedictory function
Seated are Dr C.T. Samuel, the chief guest on the
occasion and Shri S. C. Venema, Course co-ordinator*



Mr Venema explaining the use of computer software

centre on the possible toxic effects of chemical pollutants both on human health and on organisms. The assessment of risk and control of pollution of such chemicals require a truly interdisciplinary approach.

Central Marine Fisheries Research Institute is planning to develop a national ben-

thic surveillance programme to identify and monitor intensely polluted areas along east and west coast of India. The Institute is also planning to develop laboratory facilities to study the acute and chronic effects of various toxic compounds and also to conduct bio-assay tests.

KVK / TCC

Training course on Prawn Farming

The Trainer's Training Centre of CMFRI conducted a training course on prawn farming from 7-18 December for the benefit of the inservice personnel of the state department of fisheries and other agencies. In this programme eight officials from Gujarat, Karnataka, Tamil Nadu and West Bengal were trained in various aspects of shrimp farming in brackishwater.



A fifteen days training programme on scientific farming of prawn and finfishes was conducted for the benefit of 20 Harijan youths under the special component plan of the Kerala State Fisheries Department.



Four training courses of five days duration each were organized in which 32 farm-women and 10 farm-men participated.



The Local Management Committee Meeting of the KVK was held on 23 September under the Chairmanship of Dr P. S. B. R. James, Director, CMFRI.



Women trainees drying the fish wafers

Training programme in integrated aspects conducted upto Dec. 1988

Subject	Duration (days)	No. of courses	Farmers trained		
			Male	Female	Total
Fruit preservation	1	2	...	27	27
Vegetable cultivation	1	2	...	13	13
Coconut cultivation	1	1	8	...	8
Social forestry	1	1	6	...	6
Health & Hygiene	1	2	...	30	30
Post harvest technology in fisheries	1	1	...	13	13

CIFA Scientist trained in Pearl Culture

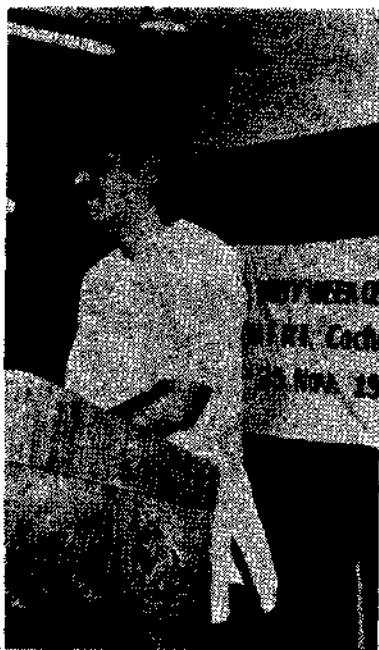
Dr K. Janaki Ram, Scientist S-2 of Central Institute of Freshwater Aquaculture, Kausalyaganaga was given training in the methods of pearl oyster culture during 17-25 December. This training was to enable him to evolve techniques for the culture of freshwater Lamelli-branch for the production of pearls.

Dolphins sighted along Orissa coast

A school of about 12 dolphins *Delphinus delphins* was sighted by the Scientists cruising on FORV *Sagar Sampada* along Orissa coast during a demersal fishery survey of the EEZ. Shri P. Nammalwar, Dr S. Lazarus and Shri G. Mohan Raj, report that the dolphins were black above and white below, had bulging foreheads and were following the fishes hauled up in trawl net.

National Unity Week

The National Unity Week was celebrated at CMFRI, Cochin during 19-25 November. The celebrations commenced with the taking of National integration pledge and included welfare of Minorities Day, Linguist Harmony and Cultural Unity Day, Weaker Section's Day, Women's Day and Conservation Day. The National Unity Week was also celebrated at different centres of CMFRI.



Shri C. Radhakrishnan, Malayalam writer and novelist addressing the staff members on Conservation Day



"Sare Jahanse Acha Hindustan Hamara.....", children of CMFRI staff in a tableau

Visitors

Cochin

Students from the following institutions visited the headquarters.

Department of Marine Biology, Karwar.

Department of Zoology, V. H. S. N. College, Virudunagar.

School of Marine Sciences, Cochin.

Saurashtra University, Rajkot.

Govt. College, Kasaragod.

Fisheries College, Ratnagiri.

Mandapam

Shri M. G. Venugopalan, Collector, Central Excise, Madurai.

Dr Helena Marsh, Chairman, Dugong Species Survival Commission.

Dr S. A. Hussian, Senior Scientist, Bombay National History Society.

Petition Committee of Tamil Nadu Legislative Assembly, Members of Legislative Assembly.

Veraval

Dr Kumar Sinha, Professor and Head, Aquaculture Division, CIFE, Bombay with 30 trainees.

Professor A. M. Siddiqi, Chairman, Biochemistry Faculty of Life Science, Aligarh Muslim University.

Dr A. N. Bos, Retd. Director of CIFT and advisor to the Aquacultural and Engineering Division, Indian Institute of Technology, Karagpur.

Calicut

St. Joseph's Convent School, Shimoga.

BEMUP School, Chombala.

Govt. L. P. School, Wynad.

Govt. High School, Marikunnu.

St. Teresa's Anglo Indian Girls High School, Cannanore

Tuticorin

Dr Gary Newkirk, Biology Department, Dalhousie University, Canda.

Good Gesture

The staff of the Veraval Research Centre provided fodder to the cattle living near the centre.

Kendriya Vidyalaya established

A new Kendriya Vidyalaya with Class I to V is established at the campus of Mandapam Regional Centre.

Engagements

Dr P. S. B. R. James, Director attended the following meetings.

Workshop on Agricultural Research and Education System in India organised by ICAR Review Committee at Hyderabad, 9-11 October.

ICAR Directors' Conference at New Delhi, 14-15 October.

Sixth Meeting of Steering Committee for Island Development Authority at New Delhi, 24 November.

Meeting convened by Director-General, ICAR on Draft Audit Report at New Delhi, 27 November.

Deliberation of the First Indian Fisheries Forum at University of Agricultural Sciences, Mangalore, 5-8 December.

Appointments

Smt. Reeta Mohapatra as Scientist S-1 at Mandapam Camp on inter-institutional transfer from I.I.H.R., Bangalore, 27 September.

Shri M. B. Xavier, S. S. Grade-I (Messenger) as Motor Driver at Cochin, 13 September.

Shri A. Rajan, S. S. Grade-I (Watchman) as Motor Driver at Mangalore, 26 November.

Shri B. K. Velukutty, S. S. Grade-I (Watchman) as Motor Driver at Calicut, 26 November.

Shri K. G. Baby, S. S. Grade-I (Fieldman) as Deckhand on adhoc basis at Cochin, 17 November.

Shri M. R. Bharathan, S. S. Grade-II (Lascar) as Deckhand on adhoc basis at Vizhinjam, 30 November.

Shri A. Sreenivasan, S. S. Grade I (Watchman) as Motor Driver at Bombay, 16 December.

Smt. E. Sasikala, Junior Clerk (Hindi Typist) as Hindi Translator at Cochin, 19 December.

Kumari Sreelatha as Training Assistant (T-4) at K.V.K., Narakkal, 14 December.

Shri K. C. Rajappan as S. S. Grade-I (Watchman) at T.T.C., Narakkal.

Shri C. Yohannan, Junior Stenographer as Stenographer at Cochin, 5 October.

Smt. N. Leela, S. S. Grade-II (Deftry) as S. S. Grade-III (Deftry) as Cochin, 5 October.

Transfers

Shri K. K. Soman, Motor Driver (T-1) from Calicut to Cochin.

Shri B. K. Velukutty, Motor Driver from Bombay to Calicut.

Retirements

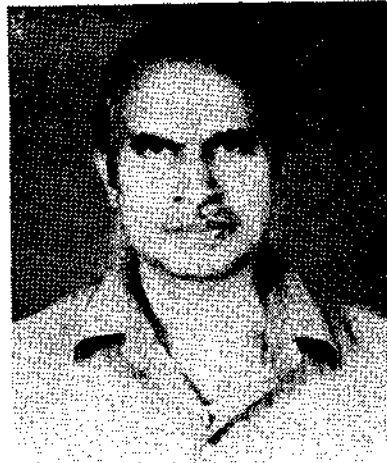
Shri K. Nagappan Nayar, Scientist S-3 retired on 31 December 1987 after a long service of 36 years at CMFRI. Shri Nayar was born in Neyyattinkara in Kerala in 1927. He graduated from the Presidency College, Madras in 1948 and took his M.Sc. degree from Madras University in 1951. His thesis was on the Amphipods of Madras coast. He joined CMFRI



Shri K. Nagappan Nayar

in 1952 as Research Assistant and from the beginning specialised in molluscan fisheries. Shri Nayar is one of the first among scientists to get trained in SCUBA diving during 1959-61 and his contribution in the field of underwater ecological studies has been a pioneering effort in the country. He has brought out 55 scientific publications, most of them relating to molluscan fisheries and culture. As an administrator, as a scientist and as an individual his contributions had been praise-worthy. Development of activities and facilities at Tuticorin Research Centre as the Officer-in-charge as well as Head of Molluscan Fisheries Division is the most significant among them.

Shri Nayar visited Japan, Italy, Spain and France on study tour. In February 1987 Shri Nayar got the assignment as Marine Biologist in the Pearl Oyster Project in Bahrain Centre of Studies and Research where he is continuing now.



Shri K. Gopalakrishnan Nair, Assistant who retired on 31 December.

Relief

Kumari Shanbhangi Rane, Junior Stenographer on resignation 28 December.

Weddings

Shri P. Jayasankar, Scientist at Mandapam married Kumari Reeta Mohapatra at Bangalore, 19 October.

Shri S. C. Shenoi, Junior Stenographer at Cochin married Kumari Maya at Cochin, 25 October.

Shri G. Subbaraman, Punch Card Operator married Kumari Chandrika at Rameswaram, 8 November.

Shri K. C. Pradeepkumar, Messenger at Calicut married Kumari Lekha at Cannanore, 28 September.

Ph.D. Degree Awarded

The following Senior Research Fellows have been awarded Ph.D degree in Mariculture by the Cochin University of Science and Technology.

Kumari Anuradha Krishnan for her studies on larval nutrition in the pearl oyster *Pinctada fucata* (Gould) under the guidance of Dr K. Alagaraswami.

Shri Subhash Chander for his studies on Ecophysiology of *Penaeus indicus* H. Milna Edwards in the grow-out system under the guidance for Dr A. D. Divan.

Kumari Elizabeth Joseph for her studies on histological and bio-chemical changes during spermatogenesis in *Mugil Cephalus* Linnaeus and related species under the guidance of Dr P. Vedavyasa Rao.

Shri C. Gopal, for his thesis entitled 'Nutritional studies on *Penaeus indicus* with reference to protein and vitamin requirements under the guidance of Dr R. Paul Raj.