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CIFT SCIENTISTS BAG K. CHIDAMBARAM MEMORIAL AWARD FOR 2005

Dr. T. K. Srinivasa Gopal, Principal Scientist, Dr. C. N. Ravi Sankar, Senior Scientist and Smt. J. Bindu, Scientist has bagged the prestigious K. Chidambaram Memorial award of the Fisheries Technocrats Forum for the year 2005. This award was given for the best research contribution in development of value-added fishery products. Dr. T. Subramoniam, Emeritus Professor distributed the award at a function held on 14-5-2005 in the library hall of Directorate of Fisheries, Chennai.

CONCEPTS OF SMALL-SCALE AGRICULTURE AND INTEGRATED AQUACULTURE SYSTEMS

Since small-scale farmers predominate the population of developing countries, the major food security concept is to increase the production of food by this group. In establishing successful integrated aquaculture systems, the basic strategy relates to the application of the waste products from one system as fertilizer and/or supplementary feed to optimize the production in another system, thereby greatly increasing the total output. An important benefit of integrated aquaculture is that inputs to the various subsystems would come within the farm or locality. It is well known that fish is an efficient converter of low grade feeds into high level animal protein. Thus, the bottom-line effect of the system is production of high-value and nutritious source of food through a minimum of effort and external inputs. Further, the systems are highly flexible because of the possibility of utilizing a wide range of fertilizing and supplementary feed substances. An appreciable range of levels of management, from extensive to highly intensive, would also be feasible. At the end of the day, the farmer would derive complete satisfaction from the low external input and flexibility in the level of management. However, the success of integrated aquaculture systems would depend on a broad and balanced approach. All the subsystems would have to develop in concert. Efforts to give more emphasis on one element alone may eventually fail.

Management strategies required for operating efficient integrated aquaculture should take into consideration the entire system. To begin with, the natural foods produced in the water should be evaluated. Then the nutritional needs of the species used for culture may be ascertained. Based on such basic data, it would be possible to calculate the additional feed requirements and thereby determine the composition of each group of animals considered to form the integrated system. The feed control programme will have to be based on regular monitoring of the standing crop. The inputs planned should always take into consideration the limits of pond production as well as chemical and biological stability of the water system in order to achieve optimum flow of energy and supply of nutrients. Application of additional nutritional inputs should be related to the needs of the fish and implications for the entire system. Further, the

added inputs should be closely related to the intensity of the system. Thus, in extensive operations the fish production will be dependent on light and carbon dioxide for autotrophic growth. In intensive culture, major portion of the nutritional needs must be obtained from contributions made by other animals and/or plants. Semi-intensive systems would have to be more closely monitored, because all factors relating to natural productivity, species-specific feeding intensity, water-specific concentration of growth-limiting nutrients and standing crop fluctuations. Appropriate computer software on this subject would be a useful tool for efficient integrated fish farming.

This article is dedicated to late Dr. T. V. R. Pillay, who played a decisive role in world's aquaculture development.

Dr. V. GOPALAKRISHNAN

TSUNAMI – REHABILITATION

The coastal fishermen population affected by Tsunami has been rehabilated slowly. Various Self Help Groups (SHG) of women's in Chennai change their life style with modern techniques. In Srinivasapuram, the SHG women prepared 70 kg of crisp salted dryfish within 4 hours. It was possible with the help of the solar drier. German Leprosy & TB Relief association of India encourages the people in SHG by training them to use these solar driers and also they setup at a cost of Rs. 1.85 lakhs. The Tamil Nadu Energy Development Corporation has given 30% subsidy for the project. They also planned to install these driers at 30 coastal villages along Tamil Nadu.

K. N. KRISHNAMURTHY

JAPAN'S WHALE MEAL

The whale meal is delicious in Japan. The maximum whales killed by the Japanese were more than that of their consumer's need. 1035 tonnes of whale meats hit the Japan market in 2005. However the International Whaling Commission banned commercial whaling in 1986 but it approves limited whaling for research purposes during 1987. According to them, the increase in the whale hunting positively correlated with the growth of the whales.

K. N. KRISHNAMURTHY

INCREASE IN DEMAND OF FRESHWATER CRABS

The freshwater crabs draw equal significance as much of marine crabs. The crabs living in the ponds and paddy fields are consumed by the people of villages, rural and suburban areas. These crabs have medicinal value which was believed from the earlier days. They have the tendency to cure severe cold, asthma and even bronchitis. The habitat of the crabs was mostly cultivable lands. Now the entire scenario has changed. The farm lands have been modified to decorate domestic areas and industries. The habitat destruction limits the diversity of the crab population. However, the heavy rain in recent days increased the broodstock of the crabs and the occurrence of these crabs has increased. Rain water favors the growth of these crabs. The excess crabs were marketed at Rs. 10 per dozen.

K. N. KRISHNAMURTHY

INCREASED CRAB MEAT EXPORT

The marine crab species are widely diverse and prefer various habitats. The change in the marine environment has an impact on the abundance of the species. All the species are ecologically significant and some are ecological indicators. Based on the nutrition value, the marine species are sorted and consumed. The fishes are the major consumable group considered world-wide followed by the crustaceans. The recent changes in the marine and coastal areas of

the Indian coast particularly in the Tamil Nadu coast witnessed a decline in the fish catches. Hence, the fish workers of Kodiakarai and Arkattuthurai now concentrate more on the crab fishery. The edible marine crabs were found abundant between March and October every year. The maximum exploited species was *Portunus pelagicus, P. sanguinolentus* and *Scylla serrata*. The capture rate is 2-3 tonnes per day. They are caught alive using modern crafts and gears by the local fishing people and boiled. The flesh and carapace separated from the boiled crabs. The flesh is transported to Tuticorin where the sophisticated processing units are operated. There the product is well processed and packed in tins. These tinned crab meat is exported to the countries like, U. S., Taiwan, Japan, China and other demanding countries. However, the fishermen seek help from the Government for their social improvement. The loan facility with subsidy will surely improve the quality of the tinned crab meat.

K. N. KRISHNAMURTHY

COASTAL LIFE SHOWING INDICATORS OF STRESS

The coastal ecosystem includes saline, brackish and freshwaters as well as coast lines and adjacent lands. The coastal zone is rich in resources including shells, shell-fish, fish, corals, seaweeds, salts and minerals. We are seeing a tremendous increase in the flush of nutrients (Nitrogen and Phosphorous) into coastal waters. The capacity of the ocean to absorb these compounds was though to be infinite, but now this is not true.Pollution is the suspected culprit especially sewage related nitrogen and phosphorus that in excess amounts can trigger freakish changes in algae and plankton growth. Pollution is changing the make-up of the inshore waters. Some potential impacts of pollution in coastal habitats are poor water quality, such as dissolved metal contaminants, higher pH levels and anoxic and hypoxic conditions. Increased level of Phosperous and Pottasium in soil sediments, and have been observed high load of microbial contamination due to disposal of sewage in Royapuram fishing harbour. Higher values of sulphates, alkalinity and specific conductivity indicated considerable pollution load in this area. Oil spilling is another source of pollution in this zone. All the above parameters indicate the need for rehabilitation of disturbed habitats as well as adaptation of preventive measures at Royapuram fish landing center. Also there is need to educate the fisherman not to use the coast for disposal of sewage and land based activities.

DR. P. GANDHEESHWARI

THE LIVING FOSSIL - COELACANTH

A monster fish weighing 60 kg was hauled along the Tanzanian village located on the edge of the Indian Ocean. The Coelacanths evolved 400 million years ago and were believed to have gone the way of the Dinosaurs. During 1938, it was first caught along the coast of South Africa. The morphology and anatomy of the fish are interesting. They had no backbones but an oil filled notochord with stubby fins was present. They had double tail and each fish birth to 26 young ones at a time. The gestation period is 14 months and the life cycle is 80 years. During 2004, a couple of Coelacanths were caught and another 19 were netted subsequently. All these weighed between 25 and 80 kg. The deep sea trawlers disturbed the habitats of these species and made them migrate towards coastal shallow waters. The Tanzanian government has been requested to minimize the operation of the trawlers and to conserve these living fossils.

K. N. KRISHNAMURTHY

CORAL CRABS

The coral crabs are most significant for their ecological values. However they were non consumable but having interesting physiological and biological functions. Some of the crabs like

Demania spp. and *Actaea* spp. are considered as poisonous. Their usual habitat is coral reefs. The brachyuran crabs are commensals on the coral reefs. Crabs like *Trapezia* spp., *Tetralia* spp and *Quadrella* spp. are abundant only on the live coral and they feed on the coral mucus. The occurrence of these crabs indicates the presence of live corals. Indicator crabs are quite common among the Indian coral habitats. A recent study in their biology and ecology makes a way for a new field in marine carcinological studies. So far 235 species of the marine brachyuran crabs have been reported from the coral reefs of Gulf of Mannar. The brachyuran crabs in other coral reef areas of India have yet to be accounted. There is an equal need for the conservation of these brachyuran crabs along with the coral reefs of India.

A. GOKUL

REMOTE SENSING IN RELATION TO FISHERIES

The remote sensing technology, using various sensors with improved various spatial and temporal measurement capabilities-coupled with micro computer technology provide new opportunities in investigating the marine environment. Satellites have demonstrated that the ocean surface features of temperature, ocean colour, winds, waves, sea-ice etc. which can be measured quantitatively. Two oceanographic parameters namely, ocean colour and sea surface temperature have been widely used for studies on marine / coastal eco-systems. The ocean colour gives an indication about the chlorophyll present in the free floating plants and phytoplankton which throws lights on standing stock of green biomass. Temperature on the other hand, tells about the favourable environmental conditions for fish aggregations. For an example, an attempt was made to study the ocean colour in relation to prevailing ecosystems off Rameshwaram coasts. The coast around Rameshwaram Island possesses an unique marine resources such as corals, sea weed, sea grass, pearl and chank beds apart from variety of fish species. The study on ocean colour mapping of the area was done using Landsat Mss and TM data by digital image processing. It was found that three distinct water classes could be identified in relation to three different ecosystems prevailing in the study area. The location of seaweeds, sea grass beds and fish population could be identified. The application of remote sensing to commercial marine fishery forecasting has been taken up by the Dept. of Ocean Development. Short-term forecasting for commercial pelagic marine fisheries has been implemented by NRSA all along the Indian coast. Sea surface Temperature (SST) information is generated using NOAA- AVHARR data and is used in identifying thermal fronts, eddies and upwelling regions. These areas of potential Fishing zones (PFZ) are mapped and information is disseminated to fishermen through fax.

P. PITCHAIAH

BIODIVERSITY IN INDIAN SHRIMPS, LOBSTERS AND BRACHYURAN CRABS

The recent study on the compilation of published information on taxonomical studies of Indian penaeid shrimps, lobsters and brachyuran crabs has shown a greater diversity of several species. The salient findings are:

Penaeid shrimps
No. of families : 5
No. of genera : 23
No. of species : 84

Lobsters
No. of families : 7
No. of genera : 19
No. of species : 34

Brachyuran crabs
No. of families : 32
No. of genera : 255
No. of species : 837

This is the first attempt to compile taxonomical records published from 1834 to 1997. However, the largest group was brachyuran crabs (837 species), followed by shrimps (84 species) and lobsters (34 species).

M. KATHIRVEL, P. THIRUMILU AND A. GOKUL