



MPEDA

Newsletter

VOL. VIII NO. 10 JANUARY 2021

**India's Export Prospects in EU
Bright, Says Mr. Jiro Takeuchi**

**Prospects of Chinese Market
and Impact of COVID-19**



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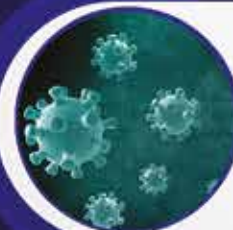
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CONFIDENT OF INCREASING
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25 Years of perfecting the science of aquaculture to help you dream bigger.

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K. S. Srinivas IAS
Chairman

Friends,

The cumulative exports during April to January for the year 2020-21 indicates 20% decline in the quantity exported and 17% decline in the export value in terms of US\$. This indicates that markets are yet to come out of the adverse effects created by the Covid pandemic. In addition, the additional import checks that have been introduced due to Covid-19 have delayed cargo clearance at the ports and have resulted in delayed pay outs to the exporters. All these have had a synergistic adverse effect on the trade orders affecting the cargo movement not only to China, but to other markets also.

In our continued efforts to support the export sector, MPEDA has organized 3 webinars as primary buyer seller meets during January 2021 jointly with the Embassies of India in Kuwait and Brussels as well as with the Consulate General of India in New York. These virtual meets were participated by 450 exporters and 132 importers. In addition, MPEDA has organized another virtual buyer seller meet in association with FICCI, Kerala involving exporters from Maldives and Indian seafood exporters from India.

On this year's Republic Day of India, MPEDA has dedicated to the aqua farmers yet another service by extending end to end digitization platform for the Pre Harvest Test certificates offered by its ELISA labs for screening of antibiotic residues in farmed shrimps. The digital platform will help the farmer to generate a sample request from his own premise and he can also receive the PHT certificate to his e-mail ID, or by logging in on to the Pre Harvest Test certification online system. MPEDA will be shortly launching a mobile app version of the same.

I am also glad to announce a scheme by MPEDA wherein the Scheduled Caste and Scheduled Tribe farmers who are holding water spread area of less than 1 hectare will be extended financial assistance on the Pre Harvest Testing fee they remit to certify their shrimps as antibiotic free. 75% to the basic testing fee will be reimbursed to the farmers under the scheme. I am sure that this scheme will be of much benefit to the small scale farmers who are having limited farm area, and will encourage them to come forward for testing their shrimps for antibiotic residues. Armed with a PHT certificate, they will be able to bargain for a better price from the exporters besides ensuring traceability of the harvest. I am sure that such moves will help the farmers to understand the need for quality and traceability, and will help to elevate themselves as responsible suppliers to the export value chain.

Thank you,

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On the Platter



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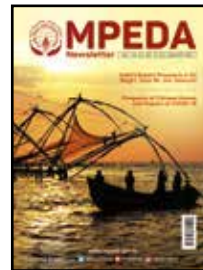
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Introduction to the Code of Conduct for Responsible Fisheries

FAO SERIES: Part -1

NATURE, SCOPE, OBJECTIVES & GENERAL PRINCIPLES OF THE CODE

BACKGROUND

The Committee on Fisheries (COFI), a subsidiary body of the Food and Agriculture Organization (FAO) Council, at its 19th session in March 1991 called for the development of new concepts which would lead to responsible, sustained fisheries.

Subsequently, the International Conference on Responsible Fishing, held in 1992 in Cancún (Mexico) further requested FAO to prepare an International Code of Conduct to address these concerns. The outcome of this Conference, particularly the Declaration of Cancún, was an important contribution to the 1992 United Nations Conference on Environment and Development (UNCED), in particular its Agenda 21.

Subsequently, the United Nations Conference on Straddling Fish Stocks and Highly Migratory Fish Stocks was convened, to which FAO provided important technical back-up. In November 1993, the Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas was adopted at the 27th Session of the FAO Conference.

Noting these and other important developments in world fisheries, the FAO Governing Bodies recommended the formulation of a global Code of Conduct for Responsible Fisheries (CCRF) which would be consistent with these instruments and, in a non-mandatory manner, establish principles and standards applicable to the conservation, management and development of all fisheries. The Code, which was unanimously adopted on 31 October 1995 by the FAO Conference, provides a necessary framework for national and international efforts to ensure sustainable exploitation of aquatic living resources in harmony with the environment.

FAO, in accordance with its mandate, is fully committed to assisting Member States, particularly developing countries, in the efficient implementation of the Code of Conduct for Responsible Fisheries and will report to the United Nations community on the progress achieved and further action required.

INTRODUCTION

Fisheries, including aquaculture, provide a vital source of food, employment, recreation, trade and economic wellbeing for people throughout the world, both for present and future generations and should therefore be conducted in a responsible manner. This Code sets out principles and international standards of behaviour for responsible practices with a view to ensuring the effective conservation, management and development of living aquatic resources, with due respect for the ecosystem and biodiversity.

The Code recognises the nutritional, economic, social, environmental and cultural importance of fisheries, and the interests of all those concerned with the fishery sector. The Code takes into account the biological characteristics of the resources and their environment and the interests of consumers and other users. States and all those involved in fisheries are encouraged to apply the Code and give effect to it.

NATURE AND SCOPE

This Code is voluntary. However, certain parts of it are based on relevant rules of international law, including those reflected in the United Nations Convention on the Law of the Sea of 10 December 1982. The Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas, 1993 also forms an integral part of the Code.

The Code is global in scope, and is directed toward members and non-members of FAO, fishing entities, subregional, regional and global organizations, whether governmental or non-governmental, and all persons concerned with the conservation of fishery resources and management and development of fisheries.

The Code provides principles and standards applicable to the conservation, management and development of all fisheries. It also covers the capture, processing and trade of fish and fishery products, fishing operations, aquaculture, fisheries research and the integration of fisheries into coastal area management.

In this Code, the reference to States includes the European Community in matters within its competence, and the term fisheries apply equally to capture fisheries and aquaculture.

OBJECTIVES OF THE CODE

1. Establish principles, in accordance with the relevant rules of international law, for responsible fishing and fisheries activities, taking into account all their relevant biological, technological, economic, social, environmental and commercial aspects;
2. Establish principles and criteria for the elaboration and implementation of national policies for responsible conservation of fisheries resources and fisheries management and development;
3. Serve as an instrument of reference to help States to establish or to improve the legal and institutional framework required for the exercise of responsible fisheries and in the formulation and implementation of appropriate measures;
4. Provide guidance which may be used where appropriate in the formulation and implementation of international agreements and other legal instruments, both binding and voluntary;

5. Facilitate and promote technical, financial and other cooperation in conservation of fisheries resources and fisheries management and development;

6. Promote the contribution of fisheries to food security and food quality, giving priority to the nutritional needs of local communities;

7. Promote protection of living aquatic resources and their environments and coastal areas;

8. Promote the trade of fish and fishery products in conformity with relevant international rules and avoid the use of measures that constitute hidden barriers to such trade;

9. Promote research on fisheries as well as on associated ecosystems and relevant environmental factors; and

10. Provide standards of conduct for all persons involved in the fisheries sector.

GENERAL PRINCIPLES

States and users of living aquatic resources should conserve aquatic ecosystems.

Fisheries management should promote the maintenance of the quality, diversity and availability of fishery resources in sufficient quantities for present and future generations in the context of food security, poverty alleviation and sustainable development.

States should prevent overfishing and excess fishing capacity and should implement management measures to ensure that fishing effort is commensurate with the productive capacity of the fishery resources and their sustainable utilization. States should take measures to rehabilitate populations as far as possible and when appropriate.

Conservation and management decisions for fisheries should be based on the best scientific evidence available, also taking into account traditional knowledge of the resources and their habitat, as well as relevant environmental, economic and social factors.

States should assign priority to undertake research and data collection in order to improve scientific and technical knowledge of fisheries including their interaction with the ecosystem. In recognizing the transboundary nature of many aquatic ecosystems, States should encourage bilateral and multilateral

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cooperation in research, as appropriate. States and sub regional and regional fisheries management organizations should apply a precautionary approach widely to conservation, management and exploitation of living aquatic resources in order to protect them and preserve the aquatic environment, taking account of the best scientific evidence available.

Selective and environmentally safe fishing gear and practices should be further developed and applied, to the extent practicable, in order to maintain biodiversity and to conserve the population structure and aquatic ecosystems and protect fish quality.

The harvesting, handling, processing and distribution of fish and fishery products should be carried out in a manner which will maintain the nutritional value, quality and safety of the products, reduce waste and minimize negative impacts on the environment.

All critical fisheries habitats in marine and freshwater ecosystems, such as wetlands, mangroves, reefs, lagoons, nursery and spawning areas, should be protected and rehabilitated as far as possible and where necessary.

States should ensure that their fisheries interests, including the need for conservation of the resources, are taken into account in the multiple uses of the coastal zone and are integrated into coastal area management, planning and development.

States should ensure compliance with and enforcement of conservation and management measures and establish effective mechanisms, as appropriate, to monitor and control the activities of fishing vessels and fishing support vessels.

States authorizing fishing and fishing support vessels to fly their flags should exercise effective control over those vessels and should also ensure that vessels flying their flags fulfil their obligations concerning the collection and provision of data relating to their fishing activities.

States should cooperate at sub regional, regional and global levels through fisheries management organizations, other international agreements or other arrangements to promote conservation and management, ensure responsible fishing and ensure effective conservation and protection of living aquatic resources throughout their range of distribution, taking into account the need for compatible measures in areas within and beyond national jurisdiction.

States should ensure that decision making processes are transparent and achieve timely solutions to urgent matters. States should facilitate consultation and the effective participation of industry, fishworkers, environmental and other interested organizations in decision making with respect to the development of laws and policies related to fisheries management, development, international lending and aid.

International trade in fish and fishery products should be conducted in accordance with the principles, rights and obligations established in the World Trade Organization (WTO) Agreement and other relevant international agreements.

States should ensure that their policies, programmes and practices related to trade in fish and fishery products do not result in obstacles to this trade, environmental degradation or negative social, including nutritional impacts.

States should cooperate to prevent disputes and should be resolved in a timely, peaceful and cooperative manner.

States should promote awareness of responsible fisheries through education and training to fishers and fish farmers along with involving them in the policy formulation and implementation process.

States should ensure that fishing facilities and equipment as well as all fisheries activities allow for safe, healthy and fair working and living conditions and meet internationally agreed standards adopted by relevant international organizations.

Recognizing the contributions of artisanal and small-scale fisheries to employment, income and food security, States should appropriately protect the rights of fishers and fishworkers engaged in subsistence, small-scale and artisanal fisheries, to a secure and just livelihood, as well as preferential access, to traditional fishing grounds and resources in the waters under their national jurisdiction.

States should consider aquaculture, including culture-based fisheries, as a means to promote diversification of income and diet.

To be continued in next issue

(CCRF: FISHERIES MANAGEMENT, FISHING OPERATIONS & FISHERIES RESEARCH)

Courtesy: www.fao.org



Deepening India's Trade Ties with Italy in Seafood Sector

A virtual meeting between ASSOITTICA and SEAI discussed the joint activities to be undertaken for improving seafood trade

The European Union (EU) is an important market destination for Indian fish and fishery products. Among the European nations, Italy is one of the biggest markets for India, especially for squids and cuttlefish.

On 5th November 2020, Assoittica Italia, the national association of seafood companies in Italy, and the Seafood Exporters Association of India (SEAI) signed an MoU. In order to discuss the joint activities to be carried out by both the parties as per the MoU, a virtual meeting was organized under the Chairmanship of H. E. Dr Neena Malhotra, Ambassador of India to Italy on 17th December 2020.

Representing MPEDA, Dr. T R Gibinkumar, Deputy Director (Statistics, Market Promotion), attended the meeting.

Leading exporters and officials from the seafood industry took part in the meeting. Attendees include:

- Jagdish V. Fofandi, Deepmala Marine Exports, National President SEAI.
- Giuseppe Palma, Secretary General ASSOITTICA, Italia
- Alex K Ninan, Baby Marine International, SEAI Regional President, Kerala
- George K. Ninan, Baby Marine Sarass, SEAI Regional President Karnataka
- Dr. Kamlesh Mishra, Abba Kaba Overseas Pvt. Ltd, SEAI Regional President Odisha
- Piyush K. Fofandi, Kalpataru Exports, SEAI Regional President Gujarat
- Anwar Hashim, Abad Fisheries Pvt. Ltd., Kochi, Kerala

Elias Sait, Secretary General, SEAI

▪ S Ramakrishnan, Secretary, SEAI

▪ I A Siddiqui, Dy Commissioner (Fisheries), MoFAHD

▪ Dr. T R Gibinkumar, Deputy Director, MPEDA

Welcoming the gathering Dr. Neena Malhotra, highlighted the need for cooperation between Italian and Indian seafood sectors. She said that the EU FTA negotiations started way back in 2007 and are likely to take some more time to conclude. Dr. Malhotra inquired how Assoittica can help to improve seafood trade between India and Italy. She also noted that a trade event - 'India in Italy' - is planned in 2021 and seafood festival will be a major part of it. Mr. Jagdish V. Fofandi noted that the meeting was organized to discuss the joint activities that need to be carried out subsequent to the MoU.

Speaking at the meeting, Mr. Elias Sait, Secretary-General SEAI spoke on the issues faced by Indian seafood exporters while trading with the European Union. He also requested the support of Assoittica in pursuing matters with the EU.

Exporters Need to Guarantee Quality

Mr. Giuseppe Palma said Assoittica will coordinate with Italian exporters to arrange a Virtual Buyer Seller Meet (VBSM). While requesting details regarding the status of duties and progress in FTA with the EU, he also sought a guarantee on the quality and quantity of seafood from Indian exporters.

According to him, there exists a kind of aversion among Italian consumers to the products from oriental regions. However, he said, the association has started to promote seafood cuisines in association with Italian

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chefs while stressing on the health benefits of seafood.

Mr. Palma also advised Indian exporters to create similar campaigns to highlight the health and nutritional aspects of seafood and spices in India. He assured the help from Assoittica in identifying suitable buyers for Indian exporters and also promised to work to extend the scope of MoU with other seafood importer associations in Europe.

Mr. Anwar Hashim from Abad Fisheries Pvt limited, Kochi stressed on the need of a nodal point in Italy

for easy business between Italian and Indian seafood traders. Mr. Alex Ninan, Baby Marine International raised the issue of not being able to find the right buyers for Indian cephalopods and that the communications with real buyers are being hindered by agents.

Dr. T R Gibinkumar informed the readiness of MPEDA for conducting VBSM in the second half of January 2021. He also informed the participants about the video released by MPEDA on COVID-19 guidelines.



India must tap China's growing demand for value-added seafood products

Webinar by Austin Wang from Qingdao Bachuan Ocean Food Co.Ltd
on 15 September 2020

Topic: Prospects of Chinese Market of seafood and the impact of COVID-19

China's love for seafood is well-known. A quick look at the statistics will tell us how important the Chinese market is for the Indian seafood industry.

China was the second largest importer of Indian seafood in 2019-2020, and imported seafood worth USD 1.3 billion from India during this period.

In terms of quantity, it is the largest market for India. China imported 329,000 tons of seafood from India last fiscal. China is the largest single-country market in the world.

Meanwhile, China has stepped up inspection and testing, which has resulted in export rejections and delisting of exporters.

The COVID-19 pandemic has changed the Chinese market too along with the consumer behaviour and their food habits. This has created a lot of uncertainty for

MPEDA WEBINAR on
Prospects of Chinese Market
and the impact of COVID-19

15.09.2020
11:00 Hrs IST

Mr. Austin Wang,
Qingdao Bachuan
Ocean Food Co. Ltd.

mpeda.gov.in

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exporters. In order to address this, MPEDA organized a webinar for stakeholders of Indian seafood industry. This webinar was led by Mr. Austin Wang from Qingdao Bachuan Ocean Food Co. Ltd on the prospects of Chinese seafood market and the impact of COVID-19.

Explaining the current consumption trend among the Chinese consumers, Mr. Wang said post-COVID, people are hesitant to buy imported seafood. They have turned to local seafood and meat products. As a result of this, the price of seafood products has come down by around 35-45 percent compared to the previous year. The sales volume is only 20-25 percent.

However, there is some positive trend in the shrimp segment, according to Mr. Wang. For Vannamei Shrimp there is some demand for the HLSD (head-less, shell-on) variety. Still, the demand is marred by cheaper products from Ecuador and more HOSO (head-on, shell-on) stock in China.

Demand Pick-up in Retail

Retail and online sales are picking up fast in China. Supermarkets are witnessing increased demand for fresh (thawed) and frozen seafood. However, the growth is not yet visible for imported seafood products due to apprehensions about safety.

Mr. Wang pointed out that Chinese consumers prefer to buy packages of 400g or 800g packages. This essentially means, exporters have to opt for small packaging in the future to increase product acceptance.

According to him, there is a visible improvement in demand for value-added seafood products. Also, for raw products, the Customs Tax is higher than value-added products.

At the Port

Due to stringent inspections at ports, importers need to wait for 2-3 weeks to get clearance. From every container, 27 samples will be taken for testing. The exporter must be prepared to face this unusually long waiting time. In the wake of the pandemic and extensive testing procedures, it is very important to disinfect the box, container and package before loading.

Providing a copy of original documents early will help speed up pre-clearance from the Customs. If the consignment has some new items which are not in the import list of the Customs, it is better to submit an application again. Using Latin name (generic name) of the imported species is always good for getting clearance, he added.



India's export prospects in EU bright, says Mr. Jiro Takeuchi

In a webinar hosted by MPEDA, German market expert Mr Jiro Takeuchi addressed the queries raised by exporters

The European Union is, undoubtedly, an important seafood export market for India, accounting for 13 percent of the country's total marine exports both in terms of value and quantity. Germany, the largest economy in the EU, holds huge trade potential for Indian seafood. Keeping this in mind, MPEDA organized a webinar on the EU seafood market with special focus on Germany on 15th December 2020 to help Indian exporters draw more insights about the trends and consumer preferences in that part of the world.

The webinar was presented by Mr. Jiro Takeuchi,

Director, BONMEA GmbH Finest Foods, Germany. During the session, he addressed 30 queries from exporters, ranging from consumer food patterns and post-COVID trends to certification requirements and distribution channels in Germany.

Excerpts from the webinar:

Q: Which are the main seafood products preferred in Germany?

The most popular seafood in Germany is Alaska pollock. This is followed by Salmon, Tuna, Herring,

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Shrimp and Trout. Though Germany is a price-sensitive market and the salmon and shrimp fall into the same price category, the demand for shrimp is less than that of salmon. This is because Germans find salmon easier to cook than shrimp.

Q: Will there be demand for Vannamee Shrimp in the coming months in Germany, especially products such as PD (Peeled Deveined) and PUD (Peeled Undeveined)?

Currently, the shrimp PD and PUD market in Germany is weak due to COVID-19. Food services (like restaurants) are not going to recover so fast. But retail sales of shrimp, especially cooked shrimp, is growing fast. The proportion of demand for cooked shrimp is 70 percent and for raw, it is 30 percent.

Q: What are the three actions India needs to take to increase its market share in Germany from 0.48% to 5% in the next three years?

India has a very bright future in the EU. For a country to improve market share, first it should have a substantial volume. India already has volume. The second thing needed for trade in Germany is certifications on food safety assurance, which opens the door to consumer

confidence. Third, the country needs to carry out market promotions since German consumers are not very familiar with Indian seafood. India can introduce them to various recipes, especially shrimp curries.

Q: What are the main products Germany imports from India and how do you find the overall preference for Indian seafood among the buyers and seafood consumers in Germany?

German market accepts frozen shrimp. That is a very good potential. Ready-to-cook products may find more takers in Germany than raw products.

Q: What is the share of consumption of cephalopods?

Cephalopods are in demand only in some ethnic markets and its share is very negligible.

Q: What is the share of reprocessing of seafood in Germany?

Germany is the biggest seafood processing country in Europe. They import from countries like China, the US, Poland etc and re-process them for sale domestically. Seafood processing in Germany is completely automated and hence, the price is cheaper than the imported value-added products.

Q: What is the expected impact of impending Brexit on the German frozen seafood market?

Germany and its trade will not be affected much by the exit of the UK from the European Union.

Q: The sale of convenience products for home consumption through retail and e-commerce platforms shows an increasing trend in most of the markets. What should an exporting company do to market its products through an e-commerce platform? What are the major e-commerce platforms for food in Europe?

In Europe, e-commerce in the food sector is not as developed as in China or the USA. Instead, supermarkets are dominating this segment in the EU. Supermarkets have very developed online order and home delivery systems in place, which is now being widely used by the consumers there.

Q: What is the price trend after the COVID epidemic? Is there any new development in the market with regard to imports, post-COVID?

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Due to COVID-19, the cost is going to go up mainly owing to the increase in cost of logistics. Regarding market development post-COVID, consumers have become more conscious about health and since seafood is associated with health, there is an increase in seafood consumption. Germany used to import seafood from China before. Now, things have changed. Whatever was good before is not good anymore. So, there are a lot of opportunities opening up. Whoever is quick to act, will benefit.

Q: Do you expect any chance of a screening system for COVID-19 in the seafood segment to come up in any of the markets?

Apart from China, I would say no. The US is also not really doing it. Also, the decision is more political than trade-related.

Q: What is the change in the consumer preference for seafood post -COVID in terms of product type, packaging style and species?

There is a huge demand for small-sized salad shrimp in Germany and Denmark. But the stringent microbiological standard is a challenge. German consumers always go after products with convenient packaging and would prefer ready-to-eat and ready-to-cook products to raw ones.

Q: There is a trend of people moving away from red meat to choose healthier food items like seafood. If this is true, what is the expected growth in import of seafood? In such a case, what will be the demand for Indian tuna and related products?

Meat is produced in Germany. Tuna needs to be imported. It will be difficult for the food service sector to replace meat with tuna. However, tuna has made its way to the retail market. The younger generation are more health conscious and if the tuna products, especially the canned ones, they will buy if the products come with MSC label.

Q: What is the share of MSC/ASC certified seafood in Germany and the main distribution channel for the same? Has there been any change in the consumption / demand trend of such certified food, if yes then what is the reason? What is the price difference between the normal seafood and certified seafood? What are the major MSC/ASC certified seafood items in German

market? Is the Friend of Sea (FoS) certification popular in Europe?

Around 90 percent of the salmon sold through retail is ASC and 60 percent of the tuna would be MSC certified. For German consumers, certification is important. They expect maximum value for their money with certification. MSC and ASC are the biggest sustainable brand labels in Europe. It is the label that sells itself. The German people take sustainability very seriously. Also, they don't like to spend much on food. As far as FoS is concerned, it is not very popular in Germany.

Q: What are the major distribution channels for seafood at present (post-COVID) and which are the leading seafood selling outlets?

Post-COVID, the major distribution channel is retail, mainly supermarkets. Edeka, Kaufland, Aldi and Rewe are the major supermarket chains in Germany.

Q: Which are the leading brands in the seafood sector in German domestic market and the type of products they offer? What is the consumer response to the new/ innovative products launched in the market?

Deutsche See is the market leader in seafood. Also, there is COSTA, which is a premium brand. Deutsche See buys the raw products, reprocess, and repack. They are into both retail and processing business.

Q: Is there any special glazing requirement for the products imported to Germany?

Most of the imports from India goes to the wholesale food service sector where there is a 20% glazing requirement for some products.

Q: Why is Germany not really interested in importing fish from India?

Usually, the cost is high for imported seafood. As I mentioned earlier, Germans do not like to spend much on food. The market for fish like Tilapia can be revived if marketed properly.

Q: Most of the time, the exporters are facing problems regarding testing in European nations. The tests of samples drawn at port takes many days which forces the buyer/consignee to pay a lot of demurrage and

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detention along with port charges, which eventually falls on to the packer for the extra free days. They do have to pay extra freight charges in order to get free time from the shipping line. In this regard, exporters are requesting to check if anything can be done on this issue, as it could save time and money?

Exporters cannot do much in this regard. It is a matter that should be resolved between the governments.

Q: Which are the peak seasons for seafood in Germany? Is there any seafood delicacy associated with local tradition/festival?

There are many local traditions and festivals in Germany. The traditional gathering in the month of May, however, serves local food or local catch. The festivities during Spring, they eat Herring. There are other famous festivals like Cologne Carnival and Oktoberfest. The only time they try exotic food is Christmas. Then, there is the Berlin Film Festival when people from different parts of the world gather.

Q: What is the market size of fish and seafood in Germany? What are the key campaigns and/or legislation driving fresh food sales now?

It is difficult to say because it is a reprocessing country. We have 83 million people here and the per capita consumption is 13-14 kg. That's how we calculate what is consumed. One of the biggest fish consuming countries is South Korea where per capita consumption is 60 kg. In Europe, Portugal is a major seafood consumer nation. Germany is not much of a seafood-consuming country.

Q: Germany is having higher per capita consumption expenditure when compared globally. Is it true that the sales have adversely been affected by a variation of factors, including a change in dietary preferences?

Traditionally, for Germans seafood means fish. However, the younger generation want to try new things. They travel and eat different food. There is a change in food habits among health conscious younger generation and they have included seafood in their diet.

Q: What are the most common distribution channels for fish and seafood products?

Retail and food service.

Q: It appears that Crustaceans as well as molluscs

and cephalopods gained better performances in consumption than fish in the recent past. Is it because of the greater diversity of seafood products offered through retail channels that has encouraged consumers to purchase products that are less common? Do you expect that the trend will continue?

Yes. There is an increase in number. But not much. There is growth. Younger people are more open to experiment with new food.

Q: Is it true that the pricing level for fish and seafood in the country is low due to the dominant position of the discounters in the retail food sector?

In the Scandinavian countries and Germany, though they are rich, they don't spend much on food. This consumer behaviour is behind the growth of the discounted market. They are taking the largest share of retail sales.

Q: We understand that there is a strong segment of upscale food products. Younger and affluent consumers tend to purchase quality instead of looking for the best prices. With the ongoing trends for sustainable, healthy food, and new protein sources, do you think the future market for the fish and seafood sector in Germany are promising? Will this apply both for the low price and upscale market?

Organic is clean, clean from chemicals and other harmful materials. They are very expensive products. Consumers in the age group of 30-40 are consuming organic food. Still, certification is required. Sustainability should not be a choice; it should be a responsibility.

Q: Whether products that comes with MSC logo fetches better and premium price for the products in retail markets? What is the price difference and what are the products commonly marketed?

There is not much price difference. Certification is the minimum requirement, but it does not necessarily fetch you a premium price. You need certification just to enter the market and to gain consumer confidence. Many of the products are repacked in Germany to ensure compliance with microbiological standards.

Q: One of the strategies adopted by importers to boost sales is to make marketing campaigns which give a positive influence on retail consumption by educating German consumers on the health benefits, as well as,

MARKETING NEWS

providing instructions on how to cook various fish and seafood meals in a tasty and efficient manner. Is this applicable for all products?

The importer does not really influence end-consumers so much. But the retailers can. The retailer has to know if there is enough volume with the importer., whether it is safe and is sustainable. With these three things fulfilled, the retailers can influence the consumers to buy the product.

Q: What are the import requirements for seafood brought into the EU/Germany from approved countries and establishments?

Germany follows EU regulations for imports. Germans are very strict about documentation. If the species names are not correct, they will block the consignment.

Q: Which are the value added shrimp, cephalopod and fish products commonly marketed in Germany? In your opinion, what would be the market entry strategies to be adopted to enter into German market for value added products?

German consumers eat mainly marinated seafood. Breaded fish, Surimi breaded shrimp, Sushi etc are some of the sought-after seafood items in the country. There is no major marketing strategy for winning the confidence of German consumers other than obtaining proper certification, maintaining quality and optimum pricing.

Q: What are the major brands of seafood products in Germany? Understand that these major brands offer products in the 'shelf table fish and seafood' category. What is the share of major brands in the market? What is the share of private labels in the German fish and seafood sector in 2019? Whether Indian exporters can buy a brand?

Dishes like burrito fall into the category. They are cheaper and very common. In order to be profitable in this segment, one needs to go for mass production. As far as buying a brand is concerned, it is not a very good idea for Indian seafood firms to invest in Germany. Instead, they should consider investment in countries such as in the Middle East.





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MPEDA organises Virtual Buyer Seller Meets

Buyer Seller Meets are essential tools to penetrate into a new market or to expand the market share in an existing market. The interaction between the buyers and sellers during the meeting helps to gain valuable market insights, a clear understanding on the market requirements and further negotiations on the pricing of the product. This insight helps the exporters to align their facilities and production as per the market requirements.

The Marine Products Export Development Authority (MPEDA) used to facilitate Buyer Seller Meets by organizing participation of India in International Fairs and initiating Trade Delegations. To ensure that the Buyer Seller interaction is not interrupted in this Pandemic period, MPEDA launched a series of Virtual Buyer Seller Meets consisting of Primary Virtual Buyer Seller Meet (PVBSM) and Secondary Virtual Buyer Seller Meet (SVBSM).

PVBSM is usually conducted on a webinar mode where there is usually one Buyer interacting with a group of exporters from India. The buyer enlightens the Indian exporters on the market Scenario, requirements, general trends in seafood consumption in the country, major items of demand and other immediate requirements. All the queries of the Indian exporters

are placed before the resource person (usually a buyer), which are answered to the satisfaction of the participants.

SVBSM is where the actual one to one interaction between the buyer and the seller takes place. The participating exporters in each SVBSM are restricted to 15, considering the time constraints and there is no restriction in the number of importers. Each exporter will be given a slot to individually present their profile, facilities, products and certifications to the group of importers with an opportunity to also interact with the importers. MPEDA organizes SVBSM with the help of the Indian Mission in each country, who are usually responsible for mobilizing the importers and importers association to the Virtual event. At the end of the event, MPEDA hands over the presentations and contact details of Indian exporters to the Indian Mission for circulation to all participants. The contact details of the importers are also shared with participated exporters, to enable further detailed discussion before culminating into Business.

A list of SVBSMs conducted by MPEDA during the Pandemic period, along with the number of importers and exporters who participated in each event is appended below.

| Sl.No. | Date of the event | Focus country | Importers/ Officials | Exporters |
|--------|-------------------|------------------|----------------------|-----------|
| 1 | 26.06.2020 | <i>Singapore</i> | 26 | 15 |
| 2 | 29.09.2020 | <i>Spain</i> | 16 | 15 |
| 3 | 18.11.2020 | <i>China</i> | 15 | 15 |
| 4 | 22.12.2020 | <i>China</i> | 15 | 12 |
| 5 | 06.01. 2021 | <i>Kuwait</i> | 12 | 17 |
| 6 | 15.01. 2021 | <i>Maldives</i> | 7 | 14 |
| 7 | 21.01. 2021 | <i>Spain/USA</i> | 2 | 13 |
| Total | | | 93 | 101 |

Discussions are in place with the Indian Missions in all major and prospective seafood markets in the world, exploring the possibility of organizing more Secondary Virtual Buyer Seller Meets.

Outcome: Apart from the expected growth in Seafood Exports from India, through the SVBSM, we have been able to attract more buyers for Indian seafood by providing first-hand knowledge to major buyers and buyer associations on the resources and infrastructure facility available in India.



Gujarat Records Highest Marine Fish Landings in November, December

NETFISH maintains a database of marine fish landings at around 100 major harbour/landing centres across nine maritime states of India to facilitate the Catch Certification process of MPEDA. The details of boat arrivals and the various fishery items being landed by the fishing vessels are collected and uploaded on MPEDA's Catch Certificate website on a daily basis by Harbour Data Collectors. This report highlights the species-wise, harbour-wise and state-wise trend of marine landings in November 2020, based on the data obtained from 97 harbours.

ESTIMATIONS ON FISH LANDINGS NOVEMBER 2020

The landing of marine fishery items recorded from the 97 selected harbours during November 2020 totalled 111304.89 tons, of which the major contributor was the pelagic finfish resources with a share of 48% (53050.13 tons).

Demersal finfishes contributed 29369.76 tons (26%) to the total catch, 13273.73 tons (12%) by crustaceans, 15601.23 tons (14%) by molluscs and a small quantity of 10.05 tons by miscellaneous items (Fig.1).

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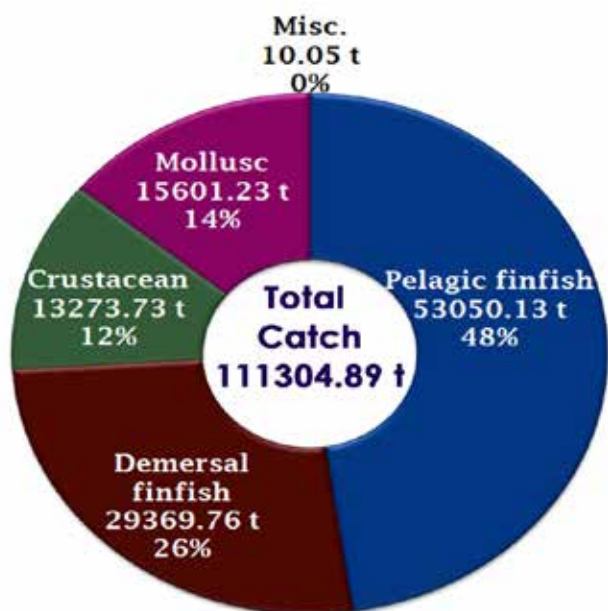


Fig. 1. Major fishery items landed during October 2020

| Sl. No. | Common name | Scientific name | Quantity in tons |
|---------|--------------------|-------------------------------|------------------|
| 1 | Ribbon fish | <i>Lepturacathus savala</i> | 8765.53 |
| 2 | Indian mackerel | <i>Rastrelliger kanagurta</i> | 7699.95 |
| 3 | Indian scad | <i>Decapterus russelli</i> | 6143.84 |
| 4 | Squid | <i>Loligo duvauceli</i> | 4661.71 |
| 5 | Pharaoh cuttlefish | <i>Sepia pharaonis</i> | 4186.73 |

Table 1. Major fish species landed during November 2020

Considering various fishery items landed, in general, the top five contributors during the period were Scads, shrimps, Ribbon fishes, Squids and Indian mackerel which together formed 42% of the total catch (Fig. 2).

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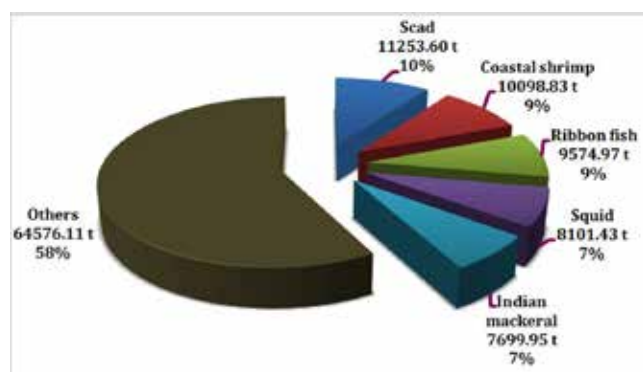


Fig. 2. Major fishery items landed during November 2020

Table 2 presents the quantity-wise catch of various categories of fishery items recorded during November 2020. Among the pelagic finfish resources, Scads, Ribbon fishes and Indian mackerel were the major contributors whereas among demersal finfishes, the major contributors were Croakers, Japanese Threadfin breams and Catfishes. The Crustacean catch mostly comprised various species of shrimps, among which the highest contributor was the *Karikkadi* shrimp. Squid was the major molluscan variety landed during the period.

Table 2. Category-wise landing of various fishery items during November 2020

| Fishery item | Quantity | % of total catch |
|--------------------------|----------|------------------|
| Pelagic Finfishes | | |
| Scads | 11253.60 | 10.11 |
| Ribbon Fishes | 9574.97 | 8.60 |
| Indian Mackerel | 7699.95 | 6.92 |
| Tunas | 4352.87 | 3.91 |
| Lesser Sardines | 4335.49 | 3.90 |
| Anchovies | 3905.84 | 3.51 |
| Bombay Duck | 3569.95 | 3.21 |
| Seer Fishes | 1704.25 | 1.53 |
| Shads | 1227.80 | 1.10 |
| Trevallies | 1043.75 | 0.94 |
| White Fish | 1015.12 | 0.91 |
| Mahi Mahi | 841.84 | 0.76 |
| Barracudas | 725.18 | 0.65 |
| Herrings | 294.80 | 0.26 |
| Indian Salmon | 233.50 | 0.21 |

| | | |
|-------------------|----------|-------|
| Queenfishes | 227.12 | 0.20 |
| Sail Fishes | 221.61 | 0.20 |
| Mulletts | 180.35 | 0.16 |
| Marlins | 142.74 | 0.13 |
| Sword Fish | 124.79 | 0.11 |
| Needlefishes | 114.87 | 0.10 |
| Cobia | 109.13 | 0.10 |
| Flying fish | 52.32 | 0.05 |
| Halfbeaks | 22.06 | 0.02 |
| Silver Biddies | 21.53 | 0.02 |
| Sillago | 13.72 | 0.01 |
| Indian Threadfish | 12.31 | 0.01 |
| Sea Bass | 12.16 | 0.01 |
| Milk Fish | 6.66 | 0.01 |
| Pompano | 5.14 | 0.00 |
| Sickle Fish | 3.20 | 0.00 |
| Spade Fish | 0.80 | 0.00 |
| Wahoo | 0.63 | 0.00 |
| Whiting | 0.10 | 0.00 |
| Total | 53050.13 | 47.66 |

Demersal Finfishes

| | | |
|---------------------------|---------|------|
| Croaker | 6988.75 | 6.28 |
| Japanese Threadfins Bream | 3929.44 | 3.53 |
| Catfish | 2926.74 | 2.63 |
| Lizard Fish | 2719.14 | 2.44 |
| Reef Cod | 2498.17 | 2.24 |
| Pomfret | 2398.38 | 2.15 |
| Triggerfish | 1977.68 | 1.78 |
| Bullseye | 1456.21 | 1.31 |
| Sole Fish | 1122.51 | 1.01 |
| Threadfins Bream | 722.68 | 0.65 |
| Moon Fish | 461.15 | 0.41 |
| Goatfish | 328.09 | 0.29 |
| Shark | 289.56 | 0.26 |
| Pony Fish | 274.25 | 0.25 |
| Snapper | 251.14 | 0.23 |
| Unicorn Leatherjacket | 226.67 | 0.20 |
| Rays | 216.27 | 0.19 |
| Eel | 189.80 | 0.17 |
| Rabbit Fish | 120.71 | 0.11 |
| Emperor Bream | 60.82 | 0.05 |
| Flat Head | 49.46 | 0.04 |
| Indian Threadfin | 40.36 | 0.04 |

FOCUS AREA

| | | |
|--------------------|-----------|--------|
| Flat Fish | 36.39 | 0.03 |
| Sea Bream | 31.81 | 0.03 |
| Perch | 26.87 | 0.02 |
| Grunts | 12.62 | 0.01 |
| Parrot Fish | 6.42 | 0.01 |
| Grouper | 5.37 | 0.00 |
| Surgeonfish | 2.02 | 0.00 |
| Drift Fishes | 0.30 | 0.00 |
| Total | 29369.76 | 26.39 |
| Crustaceans | | |
| Shrimp | 10098.83 | 9.07 |
| Deep-sea Shrimp | 2160.16 | 1.94 |
| Sea Crab | 971.78 | 0.87 |
| Lobster | 39.24 | 0.04 |
| Mud Crab | 3.73 | 0.00 |
| Total Crustacean | 13273.73 | 11.93 |
| Molluscs | | |
| Squid | 8101.43 | 7.28 |
| Cuttlefish | 6805.17 | 6.11 |
| Octopus | 667.03 | 0.60 |
| Baigai | 27.60 | 0.02 |
| Total Molluscs | 15601.23 | 14.02 |
| Misc. | | |
| Pearl Spot | 6.80 | 0.01 |
| Tilapia | 3.25 | 0.00 |
| Total | 10.05 | 0.01 |
| Grand Total | 111304.89 | 100.00 |

Harbour-wise landings

The total fish catch reported from each of the selected harbours during the month are given in Table 3. Of the 97 harbours, the Veraval harbour in Gujarat recorded the maximum fish landing, to the tune of 11163.09 tons (10%).

It was followed by the New Ferry Wharf harbour in Maharashtra with 9641.99 tons (9%) and the Mangalore harbour in Karnataka with 7040.34 tons (6%). The least quantity of marine fish catch was reported from Kottaipattinam harbour in Tamil Nadu (3.36 tons).

Table 3. Harbour-wise catch quantity & boat arrivals reported during November 2020

| Sl. No. | State | Harbour | Catch Landings (tons) | Boat Arrivals (nos.) |
|---------|--------------------------|-------------------|-----------------------|----------------------|
| 1 | West Bengal | Petuaghat Deshpri | 3084.46 | 939 |
| 2 | | Digha Sankarpur | 2396.76 | 842 |
| 3 | | Namkhana | 1994.15 | 496 |
| 4 | | Kakdwip | 1056.25 | 522 |
| 5 | | Soula | 902.15 | 301 |
| 6 | | Raidighi | 891.96 | 303 |
| 7 | | Fraser Ganj | 859.79 | 414 |
| 8 | Odisha | Paradeep | 1783.09 | 709 |
| 9 | | Balramgadi | 895.89 | 401 |
| 10 | | Dhamara | 779.75 | 293 |
| 11 | | Bahabalpur | 544.07 | 170 |
| 12 | | Balugaon | 151.50 | 541 |
| 13 | Andhra Pradesh | Visakhapatnam | 1897.31 | 585 |
| 14 | | Nizampatnam | 675.69 | 180 |
| 15 | | Kakinada | 484.85 | 248 |
| 16 | | Machilipatnam | 349.79 | 155 |
| 17 | | Pudimadaka | 176.25 | 321 |
| 18 | | Vodarevu | 167.92 | 237 |
| 19 | Tamil Nadu & Pondicherry | Karaikal | 921.76 | 287 |
| 20 | | Yanam | 186.63 | 120 |
| 21 | | Pondicherry | 116.85 | 100 |
| 22 | | Chennai | 2008.66 | 429 |
| 23 | | Nagapattinam | 1448.39 | 429 |
| 24 | | Thengaipattinam | 878.58 | 418 |
| 25 | | Colachel | 800.45 | 514 |
| 26 | | Tharuvaikulam | 752.35 | 261 |
| 27 | | Cuddalore | 123.26 | 207 |
| 28 | | Pazhayar | 109.64 | 232 |
| 29 | | Chinnamuttom | 98.20 | 260 |
| 30 | | Poompuhar | 87.15 | 286 |
| 31 | | Tuticorin | 71.89 | 199 |

FOCUS AREA

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|----|--------|--------------------|---------|-----|
| 32 | Kerala | Mudasalodi | 52.20 | 161 |
| 33 | | Rameswaram | 47.54 | 112 |
| 34 | | Mandapam | 30.16 | 150 |
| 35 | | Mallipatnam | 16.53 | 161 |
| 36 | | Pulicat | 15.56 | 306 |
| 37 | | Jagathapathinam | 10.88 | 113 |
| 38 | | Kodiyakarai | 9.85 | 184 |
| 39 | | Kottaipatnam | 3.36 | 31 |
| 40 | Kerala | Munambam | 3338.36 | 982 |
| 41 | | Beypore | 1816.19 | 469 |
| 42 | | Sakthikulangara | 1415.78 | 835 |
| 43 | | Thoppumpady Cochin | 1245.43 | 488 |
| 44 | | Kayamkulam | 1072.26 | 403 |
| 45 | | Neendakara | 836.04 | 760 |
| 46 | | Vypin | 754.23 | 183 |
| 47 | | Chellanam | 326.13 | 392 |
| 48 | | Puthiyappa | 289.95 | 139 |
| 49 | | Koyilandi | 246.38 | 183 |
| 50 | | Cheruvathur | 158.56 | 266 |
| 51 | | Azheekkal | 141.50 | 218 |
| 52 | | Mopla Bay | 133.09 | 261 |
| 53 | | Ponnani | 117.46 | 182 |
| 54 | | Thottappally | 112.96 | 338 |
| 55 | | Thangassery | 95.68 | 201 |
| 56 | | Vaadi | 56.51 | 230 |
| 57 | | Chettuva | 48.21 | 64 |
| 58 | | Munakkadavu | 31.70 | 81 |
| 59 | | Vizhinjam | 25.22 | 370 |

| | | | | |
|----|-------------|--------------------|----------|------|
| 60 | Karnataka | Mangalore | 7040.34 | 1145 |
| 61 | | Malpe | 6198.85 | 1239 |
| 62 | | Honnavar | 2413.42 | 449 |
| 63 | | Karwar | 1638.60 | 427 |
| 64 | | Amdalli | 1307.09 | 242 |
| 65 | | Bhatkal | 929.25 | 407 |
| 66 | | Tadri | 590.17 | 181 |
| 67 | | Gangolli | 541.69 | 488 |
| 68 | | Belekeri | 164.14 | 112 |
| 69 | Goa | Malim | 1425.61 | 376 |
| 70 | | Cutbona | 1046.54 | 204 |
| 71 | | Vasco | 380.21 | 193 |
| 72 | | Chapora | 20.36 | 82 |
| 73 | Maharashtra | New Ferry Wharf | 9641.99 | 1215 |
| 74 | | Sasoon Dock | 3872.64 | 507 |
| 75 | | Ratnagiri | 2518.24 | 660 |
| 76 | | Harne | 1700.49 | 1387 |
| 77 | | Arnala | 1475.55 | 637 |
| 78 | | Alibagh Koliwada | 793.75 | 744 |
| 79 | | Uttan | 596.47 | 217 |
| 80 | | Versova | 397.94 | 239 |
| 81 | | Sakharinate | 352.90 | 344 |
| 82 | Gujarat | Vasai | 218.86 | 208 |
| 83 | | Satpati | 211.55 | 295 |
| 84 | | Onni Bhatti Dabhol | 199.16 | 452 |
| 85 | | Dahanu | 182.45 | 543 |
| 86 | | Malvan | 134.44 | 441 |
| 87 | | Taramumbai Devgad | 81.48 | 501 |
| 88 | Gujarat | Veraval | 11163.09 | 2692 |
| 89 | | Porbandar | 4831.34 | 1232 |
| 90 | | Mangrol | 3934.68 | 2371 |
| 91 | | Vanakbara | 2574.48 | 1351 |

FOCUS AREA

| | | | | |
|----|--|----------|---------|-----|
| 92 | | Jafrabad | 1716.02 | 473 |
| 93 | | Okha | 447.06 | 142 |
| 94 | | Kotada | 420.72 | 188 |
| 95 | | Ghoghla | 392.28 | 187 |
| 96 | | DIU | 375.30 | 141 |
| 97 | | Chorwad | 232.66 | 673 |

State-wise landings

The state of Gujarat recorded the highest marine landings during the month, which was to the tune of 26087.63 tons (23%) (Fig. 3). Maharashtra in the second position had contributed 22377.90 tons (20%) and it was followed by Karnataka with a total landing of 20823.55 tons (19%). The state which reported least landing during the period was Goa, with a contribution of 2872.72 tons (3%).

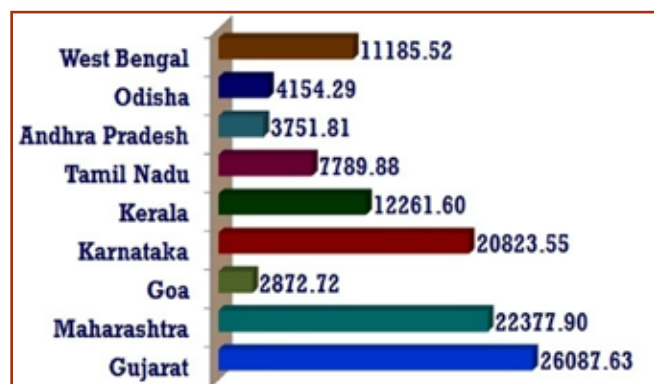


Fig. 3. State-wise Fish landings (in tons) during November 2020

Estimations on boat arrivals

A total of 43047 nos. of boat arrivals were recorded in November 2020 from the 97 harbours. State-wise figures for the month (fig. 4) shows that the highest number of boat arrivals had occurred in Gujarat and then followed by Maharashtra and Kerala. The harbour-wise details of boat arrivals are enlisted in the table 3. The highest recording was from Veraval harbour in Gujarat (2692 nos.), followed by Mangrol harbour with 2371 numbers of boat arrivals and Harne harbour with 1387 boats. The Kottaipattinam harbour in Tamil Nadu is the last in the list with only 31 nos. of boat arrivals.

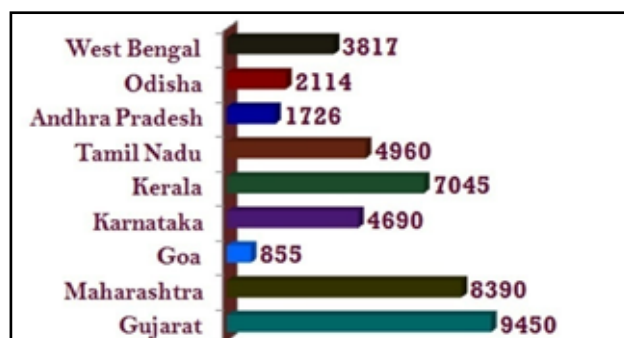


Fig. 4. State-wise Boat Arrivals (nos.) during November 2020

Summary

During November 2020, a total of 111304.89 tons of landings of marine fishery resources and 43047 nos. of boat arrivals were reported from 97 major fish landing sites of India. Pelagic finfishes were the major contributors to the landings and Scads were the most landed fishery item for the month. Gujarat had recorded the maximum landing during the period and the Veraval harbour in the state reported the highest fish landings as well as boat arrivals.

ESTIMATIONS ON FISH LANDINGS DECEMBER 2020

The landing of marine fishery items recorded from the 97 selected harbours during December 2020 totalled 97319.21 tons, of which the major contributor was pelagic finfish resources with a share of 47% (45634.36 tons). Demersal finfishes contributed 27121.03 tons (28%) to the total catch, 11038.84 tons (11%) by Crustaceans, 13432.67 tons (14%) by Molluscs and a meagre quantity of 92.31 tons by miscellaneous items (Fig.1).

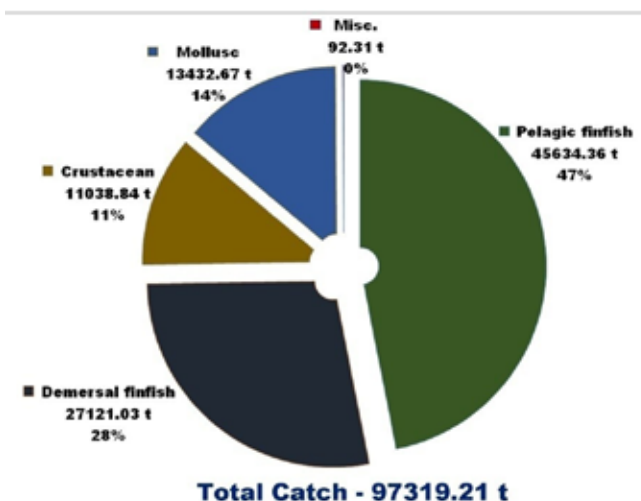


Fig.1. Catch composition of marine landings recorded in December 2020

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The total catch comprised about 276 species of fishery items, among which the major five contributors were *Rastrelliger kanagurta* (Indian mackerel), *Lepturacanthus* Spp (Ribbon fish), *Loligo duvauceli* (Squid), *Sepia pharaonis* (Pharaoh cuttlefish) and *Johnius* Spp (Croaker) (Table 1).

Table 1. Major fish species landed during December 2020

| Sl. No. | Common name | Scientific name | Quantity in tons |
|---------|--------------------|-------------------------------|------------------|
| 1 | Indian mackerel | <i>Rastrelliger kanagurta</i> | 9627.23 |
| 2 | Ribbon fish | <i>Lepturacanthus</i> Spp | 4060.81 |
| 3 | Squid | <i>Loligo duvauceli</i> | 3782.10 |
| 4 | Pharaoh cuttlefish | <i>Sepia pharaonis</i> | 3647.61 |
| 5 | Croaker | <i>Johnius</i> Spp | 3384.28 |

Considering various fishery items landed, in general, the top five contributors during the period were Indian Mackerel, shrimps, Croakers, Ribbon fishes and Squids which together formed 40% of the total catch (Fig. 2).

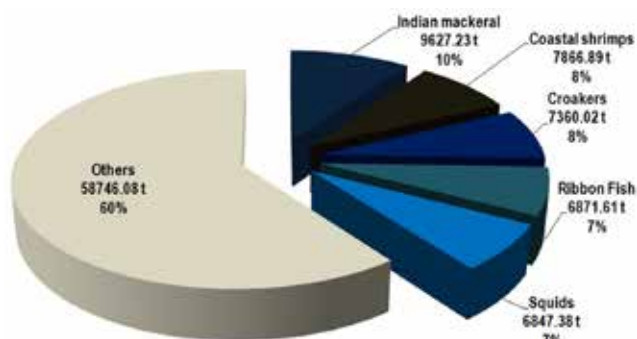


Fig. 2. Major fishery items landed during December 2020

Table 2 presents the quantity-wise catch of various categories of fishery items recorded during December 2020. Among the Pelagic finfish resources, Indian mackerel, Ribbon fish and Scads were the major contributors whereas among demersal finfishes, the major contributors were Croakers, Japanese Threadfin breams and Reef cods. More than 70% of the Crustacean catch comprised various species of shrimps, among which the highest contributor (25%) was the Karikkadi shrimp. Squid was the major molluscan variety landed during the period. A remarkable quantity of Jelly fish landing was observed during the second half of the

month, majority of which was at Sakthikulangara harbour in Kerala.

Table 2. Category-wise landing of various fishery items during December 2020

| Fishery item | Quantity in tons | % of total catch |
|---------------------------|------------------|------------------|
| Pelagic Finfishes | | |
| Indian mackerel | 9627.23 | 9.89 |
| Ribbon fish | 6871.61 | 7.06 |
| Scads | 5229.05 | 5.37 |
| Tunas | 4798.22 | 4.93 |
| Lesser Sardines | 4321.11 | 4.44 |
| Anchovies | 3096.37 | 3.18 |
| Bombay duck | 2967.77 | 3.05 |
| Seerfish | 1579.04 | 1.62 |
| Shads | 1369.43 | 1.41 |
| Indian oil sardine | 1263.07 | 1.30 |
| Mackerels | 811.60 | 0.83 |
| Dolphin fish | 749.05 | 0.77 |
| Barracudas | 558.01 | 0.57 |
| Trevally | 477.18 | 0.49 |
| Queenfish | 296.59 | 0.30 |
| Herrings | 270.51 | 0.28 |
| Sail fish | 267.22 | 0.27 |
| Mulletts | 222.96 | 0.23 |
| Indian Salmon | 199.68 | 0.21 |
| Sword fish | 174.87 | 0.18 |
| Needlefish | 127.27 | 0.13 |
| Marlins | 123.10 | 0.13 |
| Cobia | 116.06 | 0.12 |
| Flying fish | 85.30 | 0.09 |
| Halfbeaks | 10.93 | 0.01 |
| Seabass | 10.45 | 0.01 |
| Pompano | 5.44 | 0.01 |
| Milk fish | 4.72 | 0.00 |
| Wahoo | 0.58 | 0.00 |
| Total | 45634.36 | 46.89 |
| Demersal finfish | | |
| Croakers | 7360.02 | 7.56 |
| Japanese Threadfins bream | 3240.08 | 3.33 |

FOCUS AREA

| | | |
|-------------------|----------|-------|
| Reef cods | 2856.15 | 2.93 |
| Catfishes | 2469.38 | 2.54 |
| Lizard Fish | 2192.59 | 2.25 |
| Pomfrets | 1733.90 | 1.78 |
| Sole fishes | 1267.69 | 1.30 |
| Bulls eye | 971.82 | 1.00 |
| Threadfins Breams | 745.87 | 0.77 |
| Triggerfish | 604.66 | 0.62 |
| Leatherjacket | 578.59 | 0.59 |
| Moon Fish | 532.34 | 0.55 |
| Goat fishes | 471.22 | 0.48 |
| Ponyfishes | 374.32 | 0.38 |
| Shark | 277.59 | 0.29 |
| Eels | 240.92 | 0.25 |
| Rabbit Fish | 188.14 | 0.19 |
| White fish | 178.60 | 0.18 |
| Flat head | 175.44 | 0.18 |
| Snappers | 170.29 | 0.17 |
| Rays | 166.04 | 0.17 |
| Threadfins | 96.43 | 0.10 |
| Emperor Breams | 55.53 | 0.06 |
| Silverbellies | 53.43 | 0.05 |
| Perches | 21.23 | 0.02 |
| Halibut | 20.14 | 0.02 |
| Whiting | 15.60 | 0.02 |
| Sweet Lip | 14.52 | 0.01 |
| Sea Breams | 13.83 | 0.01 |
| Surgeonfish | 10.61 | 0.01 |
| Grouper | 8.54 | 0.01 |
| Sickle Fish | 4.98 | 0.01 |
| Parrot fish | 3.94 | 0.00 |
| Grunts | 3.85 | 0.00 |
| Spade Fish | 1.45 | 0.00 |
| Jobfish | 0.99 | 0.00 |
| Mudskipper | 0.30 | 0.00 |
| Total | 27121.03 | 27.87 |
| Crustaceans | | |
| shrimp | 7866.89 | 8.08 |
| Deep sea shrimp | 2166.68 | 2.23 |
| Sea carb | 955.75 | 0.98 |
| Lobsters | 37.87 | 0.04 |

| | | |
|--------------------|-----------------|---------------|
| Mud crab | 11.65 | 0.01 |
| Total Crustaceans | 11038.84 | 11.34 |
| Molluscs | | |
| Squid | 6847.38 | 7.04 |
| Cuttlefish | 5943.55 | 6.11 |
| Octopus | 588.37 | 0.60 |
| Baigai | 53.38 | 0.05 |
| Total Molluscs | 13432.67 | 13.80 |
| Miscellaneous | | |
| Jellyfish | 83.25 | 0.09 |
| Pearl Spot | 7.43 | 0.01 |
| Moon Jellyfish | 1.42 | 0.00 |
| Tilapia | 0.21 | 0.00 |
| Total | 92.31 | 0.09 |
| Grand Total | 97319.21 | 100.00 |

Harbour-wise landings

The total fish catch reported from each of the selected harbours during the month are given in Table 3. Of the 97 harbours, the New Ferry Wharf harbour in Maharashtra recorded the maximum fish landing, which was to the tune of 10353.98 tons (11%) and it was followed by the Veraval harbour in Gujarat with 9083.70 tons (9%) and the Porbandar harbour in Gujarat with 6589.58 tons (7%). The least quantity of marine fish catch was reported from Kottaipattinam harbour in Tamil Nadu (8.36 tons).

| Sl. No. | State | Harbour | Catch Landings (tons) | Boat Arrivals (nos.) |
|---------|-------------|--------------------|-----------------------|----------------------|
| 1 | West Bengal | Petuaghat Deshpran | 2748.00 | 841 |
| 2 | | Digha Sankarpur | 1904.25 | 743 |
| 3 | | Namkhana | 1499.52 | 430 |
| 4 | | Raidighi | 1031.60 | 325 |
| 5 | | Fraser Ganj | 799.92 | 400 |
| 6 | | Kakdwip | 661.96 | 394 |
| 7 | | Soula | 652.31 | 234 |
| 8 | | Balramgadi | 1012.41 | 391 |
| 9 | | Paradeep | 919.33 | 323 |

FOCUS AREA

| | | | | |
|----|-------------------------|-----------------|---------|-----|
| 10 | Odisha | Dhamara | 682.66 | 238 |
| 11 | | Bahabalpur | 561.96 | 179 |
| 12 | | Balugaon | 150.19 | 581 |
| 13 | Andhra Pradesh | Visakhapatnam | 1624.27 | 572 |
| 14 | | Nizampatnam | 641.06 | 167 |
| 15 | | Kakinada | 510.03 | 277 |
| 16 | | Machilipatnam | 314.49 | 152 |
| 17 | | Vodarevu | 290.09 | 287 |
| 18 | | Yanam | 227.15 | 185 |
| 19 | | Pudimadaka | 206.91 | 302 |
| 20 | Tamil Nadu & Puducherry | Chennai | 2926.07 | 630 |
| 21 | | Nagapattinam | 1248.87 | 435 |
| 22 | | Karaikal | 783.90 | 258 |
| 23 | | Colachel | 429.30 | 203 |
| 24 | | Thengaipattinam | 399.39 | 345 |
| 25 | | Tharuvaikulam | 390.74 | 183 |
| 26 | | Pondicherry | 256.28 | 182 |
| 27 | | Pazhayar | 181.02 | 317 |
| 28 | | Cuddalore | 150.52 | 431 |
| 29 | | Tuticorin | 101.40 | 275 |
| 30 | | Poompuhar | 87.39 | 350 |
| 31 | | Mudasalodi | 87.05 | 238 |
| 32 | | Chinnamuttom | 85.50 | 316 |
| 33 | | Mandapam | 35.21 | 155 |
| 34 | | Kodiyakarai | 31.15 | 286 |
| 35 | | Rameswaram | 28.07 | 99 |
| 36 | | Mallipatnam | 26.12 | 189 |
| 37 | | Pulicat | 24.63 | 511 |

| | | | | |
|----|-----------|--------------------|---------|------|
| 38 | | Jagathapathinam | 12.73 | 118 |
| 39 | | Kottaipatnam | 8.36 | 81 |
| 40 | Kerala | Thoppumpady Cochin | 2426.35 | 488 |
| 41 | | Sakthikulangara | 1596.29 | 1109 |
| 42 | | Munambam | 1055.73 | 736 |
| 43 | | Beypore | 1032.17 | 372 |
| 44 | | Neendakara | 764.47 | 557 |
| 45 | | Kayamkulam | 390.21 | 283 |
| 46 | | Vypin | 257.66 | 141 |
| 47 | | Puthiyappa | 249.76 | 123 |
| 48 | | Azheekkal | 235.71 | 267 |
| 49 | | Chellanam | 225.77 | 499 |
| 50 | | Koyilandi | 175.96 | 176 |
| 51 | | Cheruvathur | 117.92 | 280 |
| 52 | | Mopla Bay | 101.71 | 287 |
| 53 | | Thottappally | 96.82 | 267 |
| 54 | | Thangassery | 64.54 | 172 |
| 55 | | Ponnani | 57.40 | 152 |
| 56 | | Munakkadavu | 50.33 | 159 |
| 57 | | Vizhinjam | 41.30 | 394 |
| 58 | | Vaadi | 30.37 | 268 |
| 59 | | Chettuva | 24.27 | 64 |
| 60 | Karnataka | Mangalore | 5690.04 | 1218 |
| 61 | | Malpe | 3628.66 | 1100 |
| 62 | | Karwar | 689.52 | 370 |
| 63 | | Honnavar | 645.32 | 200 |
| 64 | | Gangolli | 410.64 | 504 |

FOCUS AREA

| | | | | |
|----|-------------|--------------------|----------|------|
| 65 | | Bhatkal | 335.16 | 303 |
| 66 | | Amdalli | 301.16 | 182 |
| 67 | | Tadri | 238.77 | 168 |
| 68 | | Belekeri | 173.43 | 121 |
| 69 | Goa | Malim | 1926.08 | 406 |
| 70 | | Cutbona | 907.57 | 261 |
| 71 | | Vasco | 404.76 | 246 |
| 72 | | Chapora | 17.92 | 123 |
| 73 | Maharashtra | New Ferry Wharf | 10353.98 | 1243 |
| 74 | | Ratnagiri | 3189.18 | 757 |
| 75 | | Sasoon Dock | 2111.78 | 591 |
| 76 | | Harne | 1261.15 | 1259 |
| 77 | | Arnala | 920.37 | 245 |
| 78 | | Sakharinate | 716.25 | 308 |
| 79 | | Uttan | 531.20 | 181 |
| 80 | | Satpati | 454.10 | 325 |
| 81 | | Alibagh Koliwada | 384.74 | 483 |
| 82 | | Versova | 221.39 | 218 |
| 83 | | Onni Bhatti Dabhol | 163.56 | 386 |
| 84 | | Vasai | 158.96 | 122 |
| 85 | | Dahanu | 133.58 | 425 |
| 86 | | Malvan | 112.96 | 428 |
| 87 | | Taramumbai Devgad | 92.47 | 440 |
| 88 | Gujarat | Veraval | 9083.70 | 2856 |
| 89 | | Porbandar | 6589.58 | 1975 |
| 90 | | Okha | 3890.92 | 1432 |
| 91 | | Mangrol | 3337.68 | 2356 |

| | | | | |
|----|--|-----------|---------|------|
| 92 | | Vanakbara | 3202.98 | 1364 |
| 93 | | Jafrabad | 1658.59 | 489 |
| 94 | | Kotada | 337.98 | 132 |
| 95 | | Chorwad | 291.58 | 792 |
| 96 | | Ghoghla | 13.20 | 7 |
| 97 | | DIU | 11.80 | 6 |

State-wise landings

The state of Gujarat recorded the highest marine landings during the month, to the tune of 28418.03 tons (29%) (Fig. 3). Maharashtra in the second position had contributed 20805.67 tons (21%) and it was followed by Karnataka with a total landing of 12112.70 tons (12%). The state which reported least landing during the period was Goa, with a contribution of 3256.33 tons (3%).

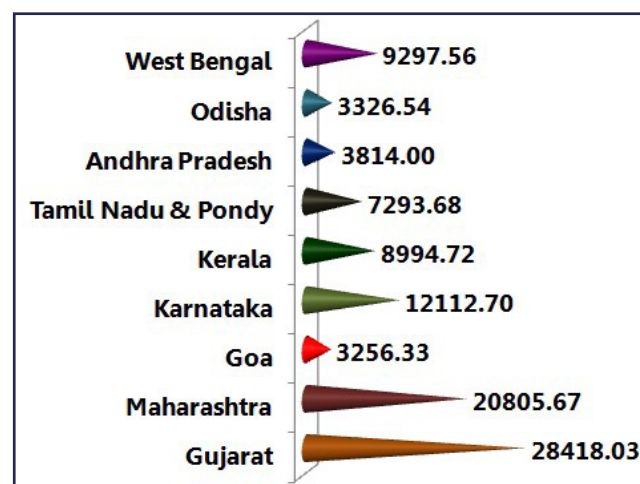


Fig.3. State-wise fish landings (in tons) during December 2020

Estimations on boat arrivals

A total of 43439 nos. of boat arrivals were recorded in December 2020 from the 97 harbours. State-wise figures for the month (fig. 4) shows that the highest number of boat arrivals occurred in Gujarat, followed by Maharashtra and Kerala.

The harbour-wise details of boat arrivals are enlisted in the table 3. The highest recording was from Veraval harbour in Gujarat (2856 nos.) and it was followed by Mangrol harbour with 2356 numbers of boat arrivals and Porbandar harbour with 1975 boats. The Diu harbour in Gujarat is the last in the list with only 6 nos. of boat arrivals.

FOCUS AREA

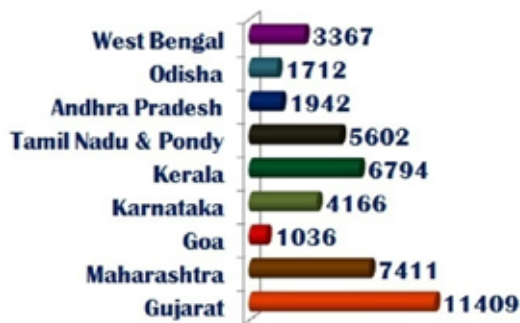


Fig. 4. State-wise boat arrivals (nos.) during December 2020

Summary

In December 2020, a total of 97319.21 tons of landings of marine fishery resources and 43439 nos. of boat arrivals were reported from 97 major fish landing sites of India.

Pelagic finfishes were the major contributors to the landings and Indian mackerel was the most landed fishery item for the month. Gujarat had recorded the maximum landing during the period and the Veraval harbour in the state reported the highest fish landings as well as boat arrivals.



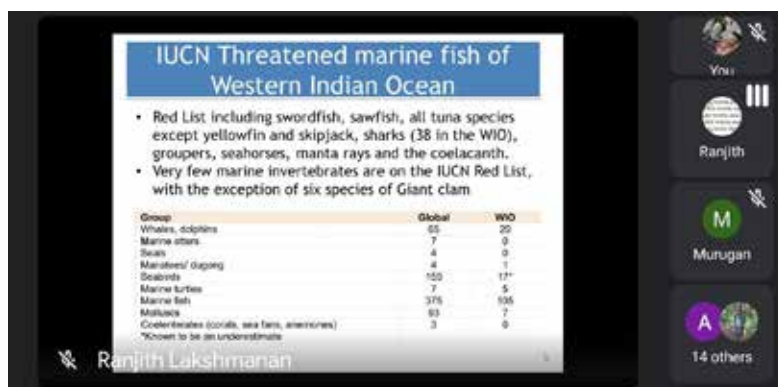
Spreading Awareness on Conservation & Identification of Vulnerable Marine Species

MPEDA's Sub-Regional Division in Tuticorin organized an online capacity building training programme on conservation and identification of vulnerable & endangered species as per the IUCN and CITES lists on 26th November 2020.

Mrs. Anju, Assistant Director, SRD Tuticorin, MPEDA, welcomed the participants to the webinar, which was attended by 19 exporters.

Dr. Ranjith Lakshmanan, Scientist, CMFRI, Tuticorin gave a detailed presentation on marine conservation, IUCN & CITES listed species pertaining to the marine sector. Listing out the endangered, vulnerable or extinct species under CITES/Wildlife Act and IUCN, he explained the penal action for trade/procurement of banned marine species.

He also shared the links to the websites with information on the listing of marine species under various categories. The queries raised by the exporters were clarified and the meeting concluded with a vote of thanks by Mrs. Anju, Assistant Director, MPEDA.



NETFISH-MPEDA Organizes Training and Awareness Programmes in Kolkata

Training programme on sea safety and navigation and a virtual meeting on bycatch of marine mammals were held in December

NETFISH, a registered society under MPEDA, regularly conducts training and awareness programmes for fishers. It also collects data on fish landings through its Harbour Data Collectors (HDCs). In December, NETFISH-MPEDA, Kolkata conducted a training programme on sea safety and navigation for fishers and a virtual meeting on the survey of bycatch of marine mammals.

Capacity building training programme

A capacity building training programme on 'Sea Safety & Navigation' was organized at Kakdwip, South 24 Parganas, for fishers on 12th December 2020. The programme was sponsored by ICAR-CIFT under SCSP programme. Forty-nine participants including boat owners, skippers, boat drivers, and HDCs attended the training session. During the programme, the State Coordinator explained the COVID-19 guidelines to be followed for fishing vessels, fishing harbours, transportation of fishes etc. The participants were also briefed on various lifesaving equipment, navigation and communication devices used in the fishing vessels

for safety at sea. Guidelines for fishermen, Rules of the Road (international regulations for preventing collisions at sea • traffic), uses of navigational lights etc were discussed at the programme. Participants were distributed certificates.

Virtual Meeting

NETFISH-MPEDA, Kolkata, organized a virtual meeting on 8th December 2020 on the survey of Bycatch of Marine Mammals & Marine Turtles. Fourteen participants including HDCs from West Bengal and Odisha attended the meeting. Atanu Ray, State Coordinator, West Bengal, Dr. Joice V Thomas, Chief Executive, Kochi and Dr. Afsal, Research Assistant, Kochi also attended the virtual event. Addressing the meeting, Dr. Joice V Thomas explained about the impact of the US Marine Protection Act on India's exports and the significance of the survey of bycatch. The HDCs informed the meeting that they had already started discussions with the fishers about various aspects of the survey and that they will start the survey without much delay.



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SC/ST training programme on BMPs and diversification for sustainable aquaculture

MPEDA organized a five-day training programme on Better Management Practices (BMPs) and diversification for sustainable aquaculture from 15 to 19 December 2020 at Pallamkurru village, Katrenikona Mandal, East Godavari District. Sixteen shrimp farmers participated in the training programme, which was organized for members from SC/ST. The training programme was inaugurated by Mr. S. Nageswara Rao, leading shrimp farmer at Pallamkurru, East Godavari District.

Welcoming the farmers to the programme, Dr. K. Gopal Anand, Assistant Director, SRD - Bhimavaram, MPEDA briefed them on the objectives of the programme, the role of MPEDA, and shrimp exports from Andhra Pradesh and India. He gave details about the status of shrimp culture before and after the invasion of WSSV. He also touched upon topics like economic importance of shrimp culture in Andhra Pradesh, daily data record maintenance (farm record maintenance, feed consumption register, input register, monitoring details, harvest details) and any other registers to be maintained as per certification programme, AMR, diversification in aquaculture (GIFT, seabass, pompano and mud crab culture technologies), procedure for farm enrollment, NRCP. On the second day of the training programme,

Mr. K. Ramanjaneyulu, JTO, MPEDA explained about biosecurity in *L.vannamei* farming, pH and D.O fluctuations in aquaculture, a comparative

study in shrimp farming growth monitoring and stock assessment and prevention and control of shrimp diseases (common shrimp diseases, its symptoms and prevention, other non-pathogenic diseases, how to avoid stress to the growing shrimp). Mr. N. Srinivasa Rao, Deputy Director, Amalapuram, Dept of Fisheries explained the importance of seed selection, PCR Test and Registration of shrimp farms. On the third day, Mr. S. Durga Rao, Field Supervisor, MPEDA, SRD (AQ), Bhimavaram led a session on feed management, water quality management, disease management and good management practices in aquaculture. The fourth day, farmers were given training on BMP's and biosecurity in aquaculture, various types of diseases, post-harvest handling and marketing by Mr. K. Ramanjaneyulu, Junior Technical Officer.

On the final day of the training programme, Dr. Pau Biak Lun, AD (EP), Bhimavaram, led a session on harvest, marketing and challenges in shrimp farming (how to market the shrimp and what are the various factors to be considered before planning the harvest), importance of PHT test and its procedure, as well as export rejection and temporary suspension of Indian shrimp import by foreign countries. Mr. P. Koteswara Rao, Principal, SIFT talked about banned antibiotics in aquaculture, NRCP programme and *L.vannamei* farming in winter season. Following the technical sessions, group discussion and tests were held. Certificates and stipends were distributed to trainees by Mr. Koteswara Rao. Mr. Ramanjaneyulu proposed the vote of thanks.



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*Add a Splash
of Colour to
Your Aquarium*



V. K. Dey

V K Dey has over three decades of experience in diverse sectors of seafood industry in Asia-Pacific region. He was the Deputy Director of MPEDA and then associated with INFOFISH, Malaysia. As part of INFOFISH, he was involved in several studies related to seafood industry in the Asia-Pacific region and beyond, including setting up of Aqua-technology Park for ornamental fish. MPEDA has published Living Jewels, a collection of his articles on ornamental fish.

Originating from the common carp (*Cyprinus carpio*) through mutation, the koi carp is considered to be the most popular and attractive fish among the garden pond keepers and hobbyists. Though colour mutations from the black common carp are said to be developed only about two centuries back, the most beautiful koi varieties seen today were established during the beginning of the last century. The best koi carp are being cultured in colder temperate or sub-temperate countries. Of these, koi carp from Japan assume significance. Very recently, Israel has also emerged as the largest koi producer catering to the markets in Europe and USA. Since Israel is closer to Europe, the reduced stress of transport and competitive prices make Israel koi dearer to European customers. Still Japanese breeders produced some very attractive koi in the world. Some of the Japanese koi varieties measuring as long as 32 inches, fetch prices as high as US\$ 15000!

There are more than hundred varieties of koi available in the market, with distinct colour patterns and markings ranging from red, yellow, black, green and orange. Among them, kokaku (white koi with red markings) is the most common variety. The koi is a voracious feeder like common carp and often over-eats. Once tamed, it will even take food from your hand. It would be better to feed koi with properly balanced commercially available feed, which has the right amount of nutrients, protein, fat and vitamins. Certain feeds will enhance their colour; feed formulations containing carotene or Spirulina enhance red pigmentation. Koi should not be fed during severe winter when temperature is below 10°C, as food may not be digested. Easily assimilated food like wheat germ is recommended during this period while in spring and summer high protein food can be given.

The general problem in the garden pond is algal bloom. Though it is not harmful to koi as it eats the algae, during summer months the algae use up the oxygen in the pond, hence there is a possibility of oxygen

depletion in the pond environment. Thus, it is advisable to eliminate the algal bloom to a certain extent by using a better filtration system.

Sexing is difficult in juvenile koi of less than 10 inches length. In general, female koi have a plump body and smaller pectoral fins while the body of the male is more or less streamlined and torpedo shaped. During the breeding season males will develop tubercles on the head and pectoral fins. During early summer koi will spawn naturally if they are matured enough and the ideal water temperature is about 20°C. However, if good quality seeds are required, it is suggested to choose the brooders, and keep them in a separate pond at a ratio of 2 – 3 males to one female and feed them with good quality food. Eggs are preferably treated with mild fungicide and the water aerated profusely during this period. After 2 – 4 days, the eggs will hatch and the ideal temperature at this stage is 22°C. Care should be taken to remove parental stock after hatching of the eggs. The newly hatched fry will stick to the sides of the pond for 2 – 3 days and then start to swim freely. When they start feeding, newly hatched brine shrimp (*Artemia*) are ideal for feeding, followed by special fry feed after a week. Do not overfeed the fry and check the water quality periodically, as they are susceptible to high ammonia levels.

The common diseases among the koi are white spot on the skin, gills and fins caused by the protozoan, *Ichthyophthirius multifiliis*, crustacean parasitic infections caused by *Lernaea*, *Argulus*, *Ergasilus*; bacterial infections like fin rot, cotton wool disease, bacterial dropsy etc. and viral infections like carp pox. The most commonest fungal infection among koi is caused by *Saprolegnia*. Treating disease is often difficult as we do not always know what is the exact causative organism and it is not very easy to make a correct diagnosis. Treatment for koi diseases is unsophisticated although there are medicines available in the market.



MPEDA launches India's First Aquafarmers' Call Centre in Vijayawada

Farmers are requested to make use of Toll-Free Number
1800-425-4648 for clearing their doubts



MPEDA AQUAFARMERS CALL CENTRE

MPEDA has set up India's first Aquafarmers' Call Centre in Vijayawada, Andhra Pradesh. The multilingual call centre will address their technical issues and impart knowledge about efficient farming methods by domain experts round the clock.

Inaugurating the call centre through video conference on 15th December 2020, Mr. K.S. Srinivas, IAS, Chairman, MPEDA, highlighted the importance of a call centre in Andhra Pradesh which contributes more than 60% to the export basket.

Andhra Pradesh, being the aquaculture hub of India,

has more than 52,000 shrimp farms with a water-spread area of above 75,000 Ha. India has produced 7,47,111 MT shrimp of *L. vannamei* and *P. monodon* in 2019, of which more than 68% came from Andhra Pradesh. He said the call centre with experienced technical experts will surely address the technical difficulties faced by the farmers.

Recalling his experience at the Ministry of Agriculture and establishment of the Kisan Call Centre which answered the calls throughout India in all languages, he said that the new system in MPEDA will benefit small farmers. "Aquaculture is not an easy task. Farmers

AQUACULTURE SCENE

will have several doubts and can be cleared through the call centre. It can ensure quality and BMPs in the aquaculture sector. This is in addition to the support extended by MPEDA's field offices," he said.

He urged all farmers to remember the Toll Free Number 1800-425-4648 which has Interactive Voice Response System (IVRS) facility and make use of it.

The Call Centre is presently more useful to the farmers of Andhra as it is set up in Vijayawada, which will address the technical issues in English, Telugu and Hindi. The calls in other languages can be redirected to the concerned field offices of the states. Presently 3 calls can be simultaneously attended and there is provision to expand it to 24 extensions to answer simultaneously.

In his welcome address, Dr. Karthikeyan, Director, MPEDA said that MPEDA is supporting export-oriented aquaculture and NaCSA is extending technical assistance and conducting training programmes to small and marginal farmers. Small-scale aquaculture farmers are not getting proper guidance and technical support during the culture period. Inexperienced

consultants and feed/input suppliers are dominating the aquaculture sector and this result in farmers using random medicines in aquaculture leading to crop failures and quality issues. He said that the MPEDA took the initiative for establishing a call centre to assist farmers of Andhra Pradesh to deal with the day-to-day farming activities and issues encountered by the aqua farmers and to provide useful information. Mr. Kanna Babu, Commissioner of Fisheries, Government of Andhra Pradesh, in his address thanked the MPEDA Chairman for establishing the call center for supporting small-scale farmers.

Speaking on the occasion, Mr. U. Jogi Ananda Varma, Authority Member, MPEDA, said the call centre will be a great leap forward in addressing the issues faced by the farmers. Mr. Bala Subramanian V., General Secretary, Prawn Farmers Federation of India also attended the inauguration.

Delivering the vote of thanks, Mr. K. Sivarajan, Deputy Director, MPEDA, Vijayawada, spoke about the Covid-19 related issues faced by the sector and the coordinated efforts taken by MPEDA and the Fisheries Department to address it.



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Training on Sustainable Shrimp Farming and Aquaculture of Diversified Species in Maharashtra

The Regional Division of the Marine Products Export Development Authority (MPEDA) in Panvel organized two separate training programmes on 'Sustainable shrimp farming and aquaculture of diversified species in Panvel and Nashik'.

Training programme in Panvel

The three-day training programme at Panvel from 2nd November to 4th November 2020 was attended by 17 people.

The programme was inaugurated by Mr. Razak Ali, Deputy Director, RD Panvel. On the first day, he delivered a lecture on site selection and farm construction. This was followed by a training session on infrastructure requirement for aquaculture and the importance of enrollment of farms by Mr. Naresh Tambada, Assistant Director, RD Panvel. Mr. Atul Raosaheb Sathe, Field Supervisor, RD Panvel, delivered a lecture on pre-stocking management and pond preparation.

Mr. Mangesh Mohan Gawde, Field Supervisor, RD Panvel made a presentation on selection & screening of PLs, stocking and nursery rearing – options & management. Besides, Mr. Pandit Chavan, fish farmer from Nira, Pune District, shared his experience in GIFT Tilapia farming in ponds and explained stocking of Tilapia, nursery & grow-out procedures. Dr. Sashikant Meshram, Associate Professor, College of Fisheries, Ratnagiri explained the importance of Biofloc, development and maintenance of biofloc systems and how to maintain water quality in a biofloc tank.

On the second day of the training programme, farm visits were arranged for trainees to Vannamei shrimp farm of Mr. Shyam Chudhari at Vadhav – Bhal village in Raigad District, Tilapia fish farm of Mr. Rajendra Zemse at Washi Village, Nursery of Mr. Pravin Patil at Charai village in Raigad District.

Mr. Atul Raosaheb Sathe, Field Supervisor, RD Panvel, coordinated the visits and explained farm design and culture. He accompanied the trainees to the farms of tilapia, pangasius and seabass at Washi Village in Raigad District.

On the final day of the programme, Mr. Subray Pavar, Assistant Director, RD Panvel led a session on live/chilled fish/shrimp export-oriented handling center and scope of exportable species in aquaculture. Mr. Atul Raosaheb Sathe delivered a lecture on feed management in shrimp & fish culture. Mr. Mangesh Mohan Gawde, Field Supervisor, gave a presentation on water quality management in shrimp & fish culture and seabass farming. Later Dr. Vivek Vartak, Scientist, Khar Land Research Station, Panvel delivered a lecture on 'Pangasius farming in ponds and cages'. Mr. Dinesh Dhope, Assistant Fisheries Development Officer, Alibag, District Raigad, Department of Fisheries Maharashtra, explained the role of Department of Fisheries in Development of Aquaculture.

This was followed by group discussion and Q&A session. Vote of thanks was proposed by Mr. Atul Raosaheb Sathe.



Mr. Subray Pavar, Assistant Director, RD, Panvel giving lecture



Dr. Meshram, Associate Professor, College of Fisheries, Ratnagiri giving lecture

AQUACULTURE SCENE

Training programme in Nashik

Regional Division, Panvel organized a five-day training programme on sustainable shrimp farming & aquaculture of diversified species and value addition in seafood from 24 to 28 November 2020 for SC/ST beneficiaries at Matoshri Nagar, Nashik in Nashik District. The programme was inaugurated by Mr. Tushar Kekan, Training Coordinator, Government Poultry Farm, Nashik, Mr. Vinod Lahare, Assistant Fisheries Development Officer (AFDO) Nashik, Mr. Naresh Tambada, Assistant Director, MPEDA RD Panvel. Mr. Tushar Kekan thanked MPEDA for the initiative. Fifteen candidates attended the programme.

On the first day of the training session, Mr. Naresh Tambada explained about the criteria for site selection and design of ponds for aquaculture. In the afternoon session, Mr. Vinod Lahare led a session on pre-stocking management, seed selection and importance of acclimatization in aquaculture. This was followed by a session by Mr. Mangesh Gawde, Field Supervisor, on the importance of water quality management, various feed management techniques and sampling procedures and importance in feed management. He also trained the participants on calculation of daily feed.

On the second day, Mr. Pandit Chavan, a farmer from Nira, shared his experience regarding GIFT Tilapia farming. In a session that followed, Mr. Mangesh Gawde explained about seabass farming – grow-out, harvesting and marketing. Later, Mr. Vishal Singh

shared his experience and the technical know-how about *Pangasius* Biofloc culture.

The third day of the training programme started with a field visit to Lahvit village near Deolali Camp area in Nashik District, where one of MPEDA's February 2020 batch trainees started fish culture on 1 ha. leased land. On the fourth day, a demonstration of value-added products was organized for women family members of the trainees. In the session, two SHG members (Mrs. Vajaiyant Patil and Mrs. Urmila Patil) from Morbe village Palghar district, Maharashtra, demonstrated preparation of fish cutlet, prawn pickle and jawla chutney. On the final day, Mr. Mangesh Gawde explained about the scope of ornamental fish farming and future prospects of the business. Mr. Vinod Lahare gave the details about the Pradhan Mantri Matsya Sampada Yojana (PMMSY) and the procedure for obtaining Tilapia farming license. In the afternoon session, Mr. Razak Ali, Deputy Director, MPEDA RD Panvel, explained the role of MPEDA in enhancing fish and marine exports.

Addressing the valedictory session, Mr. Mahesh Devare, Regional Deputy Commissioner of Fisheries, Konkan Region, Maharashtra, briefed the trainees on the opportunities in the aquaculture sector and how they can access details regarding various State Fisheries Financial assistance schemes. Certificates and stipends were distributed by Mr. Mahesh Devare, Mr. Razak Ali and Mr. Tushar Kekan and Mr. Lahare.

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General training program on BMPs in aquaculture

MPEDA's Sub-Regional Division of Bhimavaram organized a three-day general training programme from 3rd to 5th December 2020 at Dharmapuram Agraharam Village, Akividu Mandal, West Godavari District of Andhra Pradesh.

The main objective of the training programme was to create awareness among farmers on the Better Management Practices (BMPs) for sustainable aquaculture, issues related to diseases and pond management, diversification & export-oriented aquaculture, farm enrolment, relevance of NRCP sampling and problems arise due the use of banned antibiotics. Fifteen farmers attended the training programme.

The following officials delivered lectures on various topics in the training program:

1. Mr. Hakkim V. I, Deputy Director, MPEDA, Sub Regional Division, Bhimavaram
2. Mr. Veerabhadra Rao, Scientist, Fisheries Research Station, Mr. Venkateswara Veterinary University, Undi, Bhimavaram, West Godavari District
3. Dr. K. Gopal Anand, Assistant Director, MPEDA, Sub Regional Division, Bhimavaram
4. Mr. B. Narasimha Rao, Assistant Director (Retd), MPEDA
5. Mr. V. Satyanarayana, Fisheries Development Officer (FDO), Dept. of Fisheries, Akiveedu, West Godavari District
6. Mr. S. Durga Rao, Junior Technical Officer, MPEDA, Sub Regional Division, Bhimavaram
7. Mr. K. Manga Rao, Fisheries Development Officer (FDO), Dept. of Fisheries, Kalla, West Godavari District

Welcoming the farmers, Dr. K. Gopal Anand briefed them on the objective of the programme. He gave a presentation on antibiotic issues in aquaculture and rejection of consignment from the EU and the US, SIMP and its implications on aquaculture export and the importance of the farm enrolment programme of the MPEDA. He asked the farmers to purchase seed from registered hatcheries. Dr. Gopal Anand also explained the procedure for forming aqua farmers' societies and the role of NaCSA towards implementing BMPS in the society. He also provided details about the financial



Inauguration of the program



Mr. Hakkim V. I, Deputy Director, MPEDA, delivering a lecture



Mr. Veerabhadra Rao, Scientist, Fisheries Research Station, Mr. Venkateswara Veterinary University, delivering a lecture

AQUACULTURE SCENE



View of the Trainees/Farmers



Certificates & Stipend Distribution by the Deputy Director

support for the society and the benefits of registering in the Fish Exchange Portal of the MPEDA. He concluded the session with a request for assistance from the Fisheries Department for farm enrollment, specifically for the PHT certificate. Mr. V. Satyanarayana briefed the participants on the activities of the taskforce committee and inspection of aqua shops in West Godavari district for controlling the sale of banned antibiotics.

Mr. B. Narasimha Rao delivered a lecture on diversification in aquaculture, identification and selection of good fish varieties suitable for the culture in the area, activities of the societies like RGCA and the role of RGCA in seed production of the commercially viable species, trainings being conducted by them in various farming and seed production technologies etc.

Mr. K. Manga Rao delivered a lecture on the PMMSY & central government-sponsored schemes being implemented by the state fisheries department. He also explained about various programs being implemented for the benefit of the fisheries and aquaculture sectors in the state by the department. On the final day of the training programme, Mr. Hakkim V. I. explained about use of banned antibiotics in aquaculture and resultant market situations rejections in the US and the EU.

Pointing at the recent export rejection from China due to presence of WSSV/IHHNV, he requested farmers to stock seeds purchased only from authorized hatcheries and to follow good farm management practices so as to avoid the rejection from the Chinese markets. He also emphasizes on the need for farm enrollment with MPEDA as traceability is required for their farm produce being purchased by the exporters.

Mr. S. Durga Rao talked about record keeping and maintenance in the farm, pond preparation, biosecurity measures, water culture, seed selection, water quality management, feeding management and disease management in *L.vannamei* culture. He also explained about GIFT Tilapia culture practices and availability of all male GIFT Tilapia seeds at RGCA in Manikonda. He has cited the example of demonstration projects being undertaken by farmers through MPEDA assistance to build confidence among them to take up tilapia culture.

Need for Diversification in Aquaculture: An Awareness Programme for Farmers of Bhavli Village

MPEDA's Regional Division in Panvel conducted an awareness programme on the need for diversification in aquaculture for fish farmers in Bhavli Taluka of Igatpuri District in Nashik. Eleven participants took part in the programme conducted on 18th December 2020.

They were briefed on the need for diversification in aquaculture, potential species for diversification in freshwater aquaculture and importance of license for Tilapia farming. Officials who led the awareness programme urged the farmers to undertake diversification to increase production and income.



Training on aquaculture diversification through fresh water farming

Considering the immense potential of freshwater resources in Belagavi district of Karnataka, MPEDA Regional Division, Mangalore organized a five-day training programme for farmers from 23rd to 27th November 2020. Fifteen SC farmers from Kotabagi village attended the training held at ICAR-BIRDS-Krishi Vigyan Kendra, Tukkanatti in Belagavi.

Belagavi district is bestowed with 8 rivers, 3 reservoirs, more than 500 natural tanks and thousands of farm ponds which gives greater scope to adapt different technologies and advanced fish farming techniques. Kotabagi village is a landlocked fishing hamlet in the district and the people there are mainly engaged in reservoir and open water fishing. The training was conducted with an aim to improve the quality fish production from the state. The programme mainly focused on imparting scientific knowledge on fish farming, with special emphasis on open water cage farming.

Inaugurating the programme, Mr. R. M. Patil, former Minister of Karnataka & Chairman, ICAR-BIRDS-Krishi Vigyan Kendra, Tukkanatti, appreciated MPEDA for conducting the training programmes for farmers even at the remotest places. He urged the trainees to take advantage of the training and start their own business in fish/prawn farming in a scientific way.

Mr. Shripad Kulakarni, Deputy Director of Fisheries, Belagavi presented various schemes available for the benefit of fishers from the Department of Fisheries for capture as well as culture fisheries. In his presidential address, Dr. Ganesh K, Assistant Director, RD Mangalore, said GIFT and seabass are the two excellent species suitable for open water as well as reservoir farming in Belagavi district other than common carps and scampi.

Dr. Adarsh H.S., Fisheries Scientist, KVK promised all possible support from KVK for improving the lives of fish farmers and stakeholders with the support of MPEDA.

AQUACULTURE SCENE

During the five-day Programme, MPEDA officials and resource persons explained about various topics related to aquaculture diversification. Dr. Vishnudas R. Gunaga, JTO, MPEDA provided detailed information on site and species selection, pond preparation, water quality, feed & disease management, harvesting etc. Dr. Adarsh delivered a lecture on the different R&D activities initiated by KVK to support aqua farmers in the district. Mr. Sanjeev Arakeri, Assistant Director, Dept. of Fisheries, Chikodi, Belagavi district led an interactive session on prospects of reservoir cage farming. Dr. D.C. Chougala, Senior Scientist and Head of KVK, Tukkanatti expressed his views on fisheries enterprise and requested farmers to tap the enormous potential in Belagavi district.

On the fourth day of the training programme, a field trip was organised for the trainees to reservoirs/water bodies located at Kotabagi and nearby villages along with MPEDA and KVK officials. During the visit, the officials briefed them on how the water bodies can be utilised for aquaculture diversification. Mr. R. M. Pati distributed the certificates to the trainees. Dr. Vishnudas delivered the vote of thanks.



Mr. Shripad Kulakarni, Deputy Director of Fisheries, Belagavi interacting with the farmers



Trainees with KVK, Fisheries department and MPEDA officials



Mr. R.M.Patil, Chairman, ICAR-BIRDS-KrishiVigyan Kendra, Tukkanatti inaugurating the training programme



Mr. Sanjeev Arakeri, Assistant Director, Dept. of Fisheries, Chikodi,



Participants and other officials during the inaugural function of the training programme



Dr. D.C. Chougala, Senior Scientist and Head of Krishi Vigyan Kendra during his felicitation address

Antimicrobial resistance in aquaculture and its impact on public health

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Introduction:

According to the United Nations – Department of Economic and Social Affairs, the global population will reach 9.8 billion by 2050. Therefore, it is decisive to provide sufficient and safe food to a burgeoning global population in the context of increasing demand and competition for natural assets and climate. In the developing world, Aquaculture appears to be one of the best solutions to address food security problems. Aquaculture is one of the fast-growing food sectors contributing quality protein to low and middle-income Asian countries.

Like every coin has two sides, aquaculture has both advantages and disadvantages. With the rapid increase in aquaculture production, there is also an increase in concern regarding the quality and safety of aquaculture products. As in other sectors of animal production, Aquaculture also uses semi-intensive and intensive practices leading to higher stocking densities and resulting in the risk of contagious diseases. Descendant to contagious disease there is also an increase in the use of chemical disinfectants and antimicrobials for prophylactic and therapeutic purposes. Thus, proper guidance and rightful regulations are mandatory to skip imprudent use of substances that show adverse effects on consumer health. The managerial framework regarding the use of antimicrobials is limited, alters among countries, and little to no imposition of laws in many of the major aquaculture producing countries.

Antimicrobials are defined as chemicals that kill or inhibit the growth of microorganisms and include antibiotics, antivirals, antifungal, and antiprotozoal substances. Antimicrobials are mainly used in aquaculture for prophylactic and therapeutic needs. The antimicrobials used in aquaculture are developed for their use in veterinary medicine and human medicine. This traverse and uncontrolled use of these antimicrobials lead to antimicrobial resistance.

Why Antimicrobials are used in Aquaculture:

In countries where aquaculture is the major source of income and employment antimicrobials are commonly used to prevent and treat harmful pathogens. In those countries where no preventive measures are adopted, antimicrobials are used as a primary prophylactic agent. In countries, where there are no stringent laws on the use of antimicrobials, these antimicrobials are readily available with differing quality.

In many countries' aquaculture, farmers do not have proper accessibility to professionals or disease diagnosis. This situation imposes pressure on farmers to seek advice from pharmaceutical shop owners, neighbouring farmers, and vendors to treat infection populations.

The consequences of these practices are immense and pessimistic because due to ill advice farmers use antimicrobials on their own leading to the persistence of antimicrobials in the aquatic environment. It is practically impossible to treat animals individually in aquaculture. Therefore, antimicrobials are typically administered with feed or through water resulting in treating both infected and uninfected individuals (Metaphylactic).

How Antimicrobial resistance is developed:

According to WHO Antimicrobial resistance (AMR) occurs when microorganisms like bacteria, fungi, viruses, parasites change over time and no longer respond to chemicals to agents intended to kill them.

That change over is called resistance and may be natural or acquired. The microorganisms that are resistant to antimicrobials are termed as superbugs.

Natural:

Natural resistance is noticed due to the lack of an enzyme or target site affected by the antimicrobial used. This resistance is not a problem due to the availability of other drugs.

Acquired:

In this type due to continuous exposure, improper use of antimicrobial microorganisms develops resistance and becomes unresponsive to that particular antimicrobial agent. Microorganisms develop resistance due to a change in their DNA. Such changes are due to

i) Mutation

ii) Horizontal gene transfer

Mutation: Mutation is the alteration in genetic structure that occurs spontaneously. In cultured environments/hatcheries, few mutant resistant bacteria may be present. When antimicrobials are applied to cultured pond/hatcheries sensitive microorganisms are destroyed and resistant mutants will expand their population freely.

Horizontal gene transfer: Extrachromosomal material called plasmid is present in the cytoplasm of many bacteria. These plasmids contain R factors (Genes coding for resistance). These genes coding for resistance are transmitted to other microorganisms and diffuse resistance. Transfer of genetic material may be carried by the following methods:

Transduction: Transduction is the process in which bacteriophage transfers plasmid material (DNA) from one microorganism to another microorganism. Transduction does not require any physical contact between donor and receiver.

Transformation: Transformation is the uptake of a short fragment of resistant DNA by naturally transferrable microorganism through bacteriophages

Conjugation: Unlike transduction in this method physical contact is established through sex pilus or bridge. Resistant genes transfer through physical contact.

Resistance adapted by microorganism is expressed in the following ways:

1) Bacteria produce enzymes that inactivate the drug used against them, e.g. β -lactamase by staphylococcus,

aminoglycoside by *E. coli*

2) Dwindled accumulation of the drug in the microorganism, e.g. Gram-positive and Gram-negative bacteria develop resistance towards tetracyclines.

3) Alteration of target sites for the drug used, e.g. binding sites for aminoglycosides on the ribosomes are altered.

4) Modification of metabolic pathways

Horizontal gene transfer mechanism

Cross-resistance:

Resistance acquired by microorganisms not as a result of direct exposure but by exposure to related class/group of antimicrobials, e.g. resistance to one tetracycline means resistance to all other tetracyclines

AMR pattern arising from Aquaculture:

The uncontrolled use of antimicrobials as growth promoters and to treat infectious diseases in aquaculture leads to the persistence of antimicrobials in the aquatic environment since antimicrobials are administered through feed or water. The uneaten feed and feces excreted by cultured animals retain antimicrobials reckoning on the biodegradability, intake concentration, physical and chemical characteristics. These persistent antimicrobials and fluctuating antibiotic environments induce selective pressure on the aquatic microbial diversity to adapt and develop resistance against them through various mechanisms like horizontal gene transfer (transduction, transformation, and conjugation) and cross-resistance. This situation leads to reshaping of aquatic biodiversity by replacing antimicrobial sensitive microorganisms with an antimicrobial-resistant microorganism or forces the sensitive bacteria to undergo mutation and develop resistance. The greater disadvantage of selection pressure is that after attaining resistance, antimicrobial-resistant determinants will remain in the environment even in the absence of the particular antimicrobial. Other than aquaculture, runoff waste of antimicrobial treated plants and animals, entry of animal feed, land-based runoff, household discharges, hospitals, and effluents from pharmaceutical industries are responsible for the discharge of antimicrobials into the aquatic environment. Among all, household discharges are the major contributors. Therefore, due to this aquatic environment are considered as genetic reactors or hotspots of AMR genes.

Drivers of antimicrobial resistance related to the use of antimicrobials in aquaculture. (L. Santos, F. Ramos / International Journal of Antimicrobial

Agents 52 (2018) 135–143)

Impact on human health:

One of the routes of AMR dissemination to humans is aquaculture systems as there is a chance of human contact with resistant bacteria present in the farm environment. In aquaculture human exposure levels to AMR microorganisms tend to be high as farm workers regularly work through water used in the culture system for feeding, treating infecting animals, application of fertilizers, harvesting and most of them live in and near farm surroundings. Another route of AMR gene dissemination is through the livestock reared in the farm premises. Most of the antimicrobials used in aquaculture are borrowed from human medicine and veterinary medicine.

In addition to this, the pathogens commonly found in aquaculture ponds/hatcheries are zoonotic and affect humans. *Aeromonas hydrophila*, *Mycobacterium marinum*, *Streptococcus iniae*, *Vibrio vulnificus*, and *Photobacterium damsela* are regular fish pathogens that infect farmers/workers employed in aquaculture and foodborne diseases involve mainly *Listeria monocytogenes*, *Aeromonas*, and *Clostridium* spp.

Besides the liability to infection, these bacteria develop AMR and spread resistance to other human pathogens. In addition to these 50 percent of ARGs (Antimicrobial-resistant genes) identified in fish, pathogens are similar to those found in human pathogens.

So, microorganisms in an aquatic system or clinical background or livestock rearing have the same ARGs. The denouement of AMR in bacteria causing human infections include

- 1) Treatment failures and increased harshness of infection due to antimicrobial resistance.
- 2) Imbalance of intestinal microflora.
- 3) Antimicrobial residues show toxicological effects on human internal organs.
- 4) Drug allergies

These are major public health hazards that need immediate action regarding antimicrobial resistance.

Antimicrobial resistance determinants found in fish pathogens and other marine and freshwater bacteria shared with human pathogens (Santos, L., & Ramos, F. (2018)).

| Antibiotic resistance gene/plasmid | Antimicrobial class | Gene recipient (fish pathogen/marine and freshwater bacteria) |
|-------------------------------------|---------------------|---|
| aadA | Aminoglycoside | <i>Escherichia coli</i> |
| aadA | Aminoglycosides | <i>E. coli</i> |
| cmIA | Chloramphenicol | <i>E. coli</i> |
| floR | Florfenicol | <i>Pseudoalteromonas</i> sp., <i>Shewanella</i> sp., <i>Cobetia</i> sp., <i>Marinobacter</i> sp., <i>Halomonas</i> sp |
| floR | Florfenicol | <i>Yersinia ruckeri</i> ; <i>Photobacterium damsela</i> |
| floR | Florfenicol | <i>Edwardsiella ictalurid</i> |
| mef(C)I mph(G) | Macrolide | <i>P. damsela</i> subsp. <i>Damsela</i> |
| mcr-1 | Polymyxin | <i>Shewanella algae</i> MARS 14 |
| qnrA | Quinolone | <i>S. algae</i> |
| aac(6 _)-Ib-cr | Quinolone | <i>Sporosarcina</i> sp., <i>Rhodococcus</i> sp., <i>Kytococcus</i> sp., <i>Erythrobacter</i> sp. |
| qnrA I qnrB I qnrS I aac(6 _)-1b | Quinolone | <i>Marinobacter</i> sp., <i>Microbacterium</i> sp., <i>Rhodococcus</i> sp., <i>Actinobacterium</i> sp., <i>Cellulophaga</i> sp., <i>Flavobacteriaceae</i> , <i>Erythrobacter</i> sp., <i>Tsukamurella</i> sp., <i>Dietzia</i> sp., <i>Microbacter</i> sp. |
| qnrA | Quinolone | <i>S. algae</i> |
| aac(6 _)-Ib-cr | Quinolone | <i>Sporosarcina</i> sp.; <i>Rhodococcus</i> sp.; <i>Kytococcus</i> sp.; <i>Erythrobacter</i> sp. |
| qnrVC4 | Quinolone | <i>Aeromonas punctata</i> |
| qnrS2 | Quinolone | <i>A. punctata</i> subsp. <i>Punctata</i> ; <i>Alloteuthis media</i> |

AQUACULTURE SCENE

| | | |
|---|-----------------|---|
| ICEVspPor2 I ICEValPor1 | Rifampicin | <i>Vibrio splendidus</i> ; <i>V. alginolyticus</i> ; <i>Shewanella haliotis</i> ; <i>Erythrobacter nigricans</i> |
| sul1 I sul2 I sul3 | Sulfonamides | <i>E. coli</i> |
| sul1 | Sulfonamides | <i>Y. ruckeri</i> ; <i>P. Damselae</i> |
| tetA | Tetracycline | <i>E. coli</i> |
| tetB I tetD | Tetracycline | <i>E. coli</i> |
| tetA I tetB I tetK I tetM | Tetracycline | <i>Pseudoalteromonas</i> sp., <i>Shewanella</i> sp., <i>Psychrobacter</i> sp., <i>Cobetia</i> sp., <i>North Sea bacterium H7</i> , <i>Vibrio</i> sp., <i>Pseudomonas</i> sp. |
| tetC I tetD I tetE | Tetracycline | <i>Y. ruckeri</i> ; <i>P. Damselae</i> |
| tetB I tetY I tetD | Tetracycline | <i>Photobacterium</i> sp., <i>Vibrio</i> sp., <i>Alteromonas</i> sp., |
| tetB I tet(34) I tet(H) I tet(35) I tet(L) | Tetracycline | <i>Brevundimonas vesicularis</i> , <i>Pseudomonas</i> sp., <i>Serratia</i> sp. <i>Moraxella</i> sp., <i>Acinetobacter</i> sp., <i>Stenotrophomonas</i> sp., <i>Morganella</i> sp. |
| blaTEM-52 I blaSHV-12 | β -Lactam | <i>E. coli</i> |
| blaTEM | β -Lactam | <i>E. coli</i> |
| blaCMY-2 | β -Lactam | <i>E. ictaluri</i> |
| Plasmid pAB5S9b a | Several | <i>Aeromonas salmonicida</i> |
| Plasmid pSN254b b | Several | <i>A. salmonicida</i> |
| Plasmid pSN254 c | Several | <i>A. salmonicida</i> |

Management measures and alternative strategies:

- As per the recommendations of FAO and WHO it is mandatory to set up regulatory bodies at the national and international level to monitor sales, usage of antimicrobials.
- Regulating bodies should be framed for prudent use of antimicrobials and monitoring of antimicrobial use and antimicrobial resistance.
- All countries should frame policies and set up regulatory systems to counter the incidence of antimicrobial residues in aquaculture products, both for the national and international markets
- It is mandatory to make the culture system disease-free through following prophylactic steps like vaccination, probiotics, biosecurity, application of immunostimulants to minimise the use of antimicrobials to treat infections.
- Antibiotic residues are removed by relevant adsorption methods, filtration, biological processes, sedimentation, and flocculation.
- Thorough research should be carried to study antibiotic-resistant genes and their mechanism of transfer in aquaculture and the aquatic environment.
- Conduction awareness campaigns regarding the overuse of antibiotics and its hazard.

Conclusion:

It is important to figure out environmental hotspots for genetic exchange of AMR genes such as aquaculture systems and find out how they might transfer to clinically relevant strains because AMR in the environment represents a worldwide health impasse, with an estimate of 700,000 AMR deaths attributed annually and estimated to rise to 10 million deaths per year in 2050. Moreover, by 2050 AMR could charge \$100 trillion in lost economic output. To overcome the above problems effective culture operations, best management practices, prophylactic measures are followed to prevent the entry of pathogens and incidence of disease, and thereby the use of antimicrobials is decreased.

AQUACULTURE SCENE

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MPEDA offices audit processing units to monitor compliance with COVID-19 guidelines

Officials from the Regional Divisions of MPEDA in Bhimavaram and Kolkata carried out inspections at seafood processing plants in their respective regions to ensure that the COVID-19 guidelines laid down by the MPEDA are strictly adhered to by the plants. Officials at MPEDA's Regional Division Kolkata inspected M/s. Kasturi Aqua Private Limited, M/s. Basu International (Unit-I), M/s. Contai Marine Fish Export Pvt. Ltd., M/s. KNC Agro Limited, M/s. Milsha Sea Product Unit No. II, M/s. Sarveshwari Exports Pvt. Ltd., M/s. Bay Seafood Pvt. Ltd., M/s. Calcutta Seafoods Pvt. Ltd., M/s. Jana Brothers Seafoods LLP, M/s. Magnum Export, M/s. Sahada Exports, M/s. Seafoods LLP, M/s. Siddeswari Enterprise and M/s. Sreeragam Exports Pvt. Ltd. during November – December 2020.

During the visit, it was found that the above units were well-informed about the guidelines and have been implementing the same at their facilities and also during all operations. Staff are sensitized on the guidelines by the supervising team, who ensured that the staff are following the protocols. NETFISH-MPEDA, Kolkata organised training programmes during November -

December 2020. Two training programmes were held at M/s. Elque & Co. and M/s. Calcutta Seafoods Pvt. Ltd. on 24th & 27th November 2020 respectively on hygiene & sanitation, fish processing technology and COVID-19 guidelines. Forty participants comprising the Manager, Technologist, Supervisors and Processing workers attended each programme.

Two similar training programmes were conducted at M/s. Magnum Export and M/s. Milsha Agro Exports Pvt. Ltd. on 11th and 15th December 2020. A total of 34 participants comprising Technologist, Purchase & Production Supervisors and processing workers attended in the programme held at M/s. Milsha Agro Exports Pvt. Ltd. and 37 participants attended the training programme at M/s. Magnum Export. Officials at MPEDA Sub-Regional Division, Bhimavaram, visited the seafood centres in their respective regions. During the visit, it was observed that the guidelines on social distancing, sanitation and material handling are being strictly followed by all the officials, office staff, farmers, processors, stakeholders etc.



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NETFISH observes Swachhata Pakhwada 2020

In accordance with the directives of the Ministry of Commerce & Industry, Government of India, NETFISH observed the Swachhata Pakhwada 2020 from 1 to 15 November 2020. NETFISH, an extended arm of MPEDA in the marine capture fisheries sector, organized 11 harbour clean-up programmes along the coastal states of India as part of the campaign.

The programmes were aimed at generating awareness among the fishing community and the general public about the importance of hygiene at fish landing sites and the need to conserve ocean from plastic pollution.

This year, special emphasis was given to create awareness about the importance of following COVID-19 safety protocols at work. All the programmes were organized by pursuing the COVID-19 precautions and protocols.

Masks, sanitizer, gloves, caps, t-shirts, cleaning materials etc. were provided by NETFISH while conducting the programmes. The details of the programmes conducted in each state are enlisted in the table below and in the subsequent sections

| Sl.No: | State/Region | Date | Venue | Types of Activities carried out | No: of participants |
|--------|------------------|--|---|---|---------------------|
| 1 | West Bengal | 12 th November 2020 | Deshapran fishing harbour | Harbour Clean-up | 57 |
| 2 | Odisha | 6 th & 14 th November 2020 | Bahabalpur & Balramgadi landing centres | Awareness class & Landing centre Clean-up | 36 & 30 |
| 3 | Andhra Pradesh | 10 th November 2020 | Visakhapatnam fishing harbour | Awareness meeting, rally & harbour cleanup | 70 |
| 4 | Tamil Nadu North | 12 th November 2020 | Nagapattinam fishing harbour | Harbour Clean-up & Distribution of leaflets | 50 |
| 5 | Tamil Nadu South | 12 th November 2020 | Theresapuram Fish landing centre | Landing centre Clean-up | 60 |
| 6 | Kerala South | 11 th November 2020 | Thottappally fishing harbour | Harbour cleanup | 40 |
| 7 | Kerala North | 10 th November 2020 | Ponnani fishing harbour | Harbour cleanup | 50 |
| 8 | Karnataka | 11 th November 2020 | Gangolli fishing harbour | Harbour cleanup | 120 |
| 9 | Maharashtra | 12 th November 2020 | Sakharakshi landing centre | Landing centre Clean-up | 40 |
| 10 | Gujarat | 9 th November 2020 | Veraval fishing harbour | Harbour cleanup | 80 |

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WEST BENGAL: The Harbour clean-up programme at Deshapran fishing harbour held on 12th November 2020 was attended by about 57 participants including officials of Junput Coastal Police Station, Civic Volunteers, Special Officer of Deshapran Fishing Harbour, harbour officials, boat owners, skippers, fishermen, net menders, ice loaders and harbour cleaning staffs etc. Mr. Shyamal Chakraborty, Officer in Charge of Junput Coastal Police Station inaugurated the event. An awareness class on plastic waste management system, importance of personal hygiene and sanitation, COVID-19 guidelines, Marine Mammals Protection Act, etc. was also arranged for the participants.



Clean-up at Deshapran Harbour



Participants of the clean-up programme at Deshapran harbour

ODISHA: Two harbour clean-up programmes were conducted in Odisha to mark the Swachhta Pakhwada 2020. The first event was on 6th November 2020 at Bahabulpur landing centre, Balasore in which around 36 participants including State Fisheries officials, Trawler Association members, ice crusher owners and

staff, net menders, traders, fishing crew and auctioneers actively took part. The participants were divided into 5 groups and collected large quantities of solid waste from the harbour area which were disposed of safely.



Giving awareness messages to fishers at Bahabulpur landing centres



Participants of the clean-up programme at Bahabulpur

Another harbour clean-up programme was organized at Balaramgadi Fish landing centre, Balasore on 14th November 2020. The event started with awareness classes to the fishers on the impact of single use plastics on marine ecosystems and the importance of sanitation & hygiene in fishing boats & landing centers. The awareness class was followed by mass clean-up by around 30 participants including officials from state fisheries department, NGO members, stakeholders, Trawler Association members, fishing crew, workers etc.



Fishers cleaning the premises of Balaramgadi landing centre

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A view of the Balaramgadi landing centre surroundings after the clean-up programme

ANDHRA PRADESH: A harbour clean-up programme was organized at Visakhapatnam harbour on 10th November 2020 in association with Greater Visakhapatnam Municipal Corporation (GVMC), Department of Fisheries, DFYWA NGO, major Fishermen Associations, fishermen and stakeholders. A rally was conducted from the Dept of Fisheries office to the fish auction area in the harbour, which was followed by a cleanliness drive.



Rally conducted at Visakhapatnam



Cleaning Vizag harbour during the Swachhta Pakhwada event

TAMIL NADU: In Northern Tamil Nadu, a harbour clean-up was organized at Nagapattinam fishing harbour on 12th November 2020 by involving around 50 participants from the state fisheries and fishermen community. NETFISH awareness notice on Hygienic handling and conservation of marine resources were distributed among the participants.



Distributing bit notices at Nagapattinam



Giving awareness to fishers on clean harbour

In Southern Tamil Nadu, a clean-up programme was organized at Theresapuram Fish landing centre on 12th November 2020 to mark Swachhta Pakhwada 2020. Mrs. Anju, Assistant Director, MPEDA, Tuticorin inaugurated the programme. About 60 participants including officials from MPEDA, State Fisheries Department and fishers from Tuticorin took part in the cleanliness drive.



Cleaning using JCB at Theresapuram LC

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Cleaning the auction hall area by the fishers

On the World Fisheries Day (21st November), mass cleaning was carried out at Mudasaloodai and Annankovil Fish Landing Centres in Cuddalore district of Tamil Nadu. The aim of this programme was to sensitize the fishing communities of the region on the importance of maintaining cleanliness at harbours and beaches and also on COVID-19 protocols. Around 100 people participated.

Mr. Kathavarayan, Deputy Director of Fisheries, Mr. Velmurugan, Assistant Director of Fisheries, Dr. R. Balasubramanian, State Coordinator, NETFISH-MPEDA, fishermen association members and agents participated in the cleaning programme. Notices describing hygienic handling and conservation of marine resources were handed over to the fishers.

KERALA: On 11th November 2020, a harbour clean-up programme was organized at Thottappally fishing harbour. The programme was inaugurated by Mr. Mohit, Sub Inspector, Coastal Police Station in a function presided over by CE, NETFISH. The fishers were briefed on COVID-19 guidelines. Around 40 participants jointly collected waste materials from the harbour premises.



State Coordinator NETFISH addressing the stakeholders at Thottappally



Harbour cleanup activity at Thottappally

Another harbour clean-up programme was conducted at Ponnani fishing harbour in Kerala on 10th November 2020, which was inaugurated by Mr. Atheeq P., Councilor, Ponnani Municipality. Representatives from Coastal police, boat owners and harbour workers were present on the occasion. During the programme, large quantities of abandoned wire ropes were removed from the harbour premises along with solid waste materials, paper, polythene, plastic bottles etc..



Inauguration of the clean-up event at Ponnani



Clearing bushes and removing wastes from Ponnani harbour

KARNATAKA & GOA: NETFISH in association with CARES NGO conducted a clean-up event at Gangolli fishing harbour on 11th November 2020. Mr. B M Sukumar Shetty, Honorable MLA, Byndoor constituency, inaugurated the clean-up programme. Zilla Panchayat members of Gangolli, President of Gangolli Village Panchayath, officials from Department of Fisheries, Coastal Security Police, Boat Association leaders, fisher union members, Fish Merchants' Association members, Fishermen Co-operative Society Association members, etc. were present on the

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occasion. A demonstration on how to clean the fishing harbour and auction hall was arranged with the help of fishers. This followed extensive cleaning of the harbour premises by more than 100 volunteers and 20 workers.



MLA of Gangolli inaugurating the cleanup programme



Group photo with volunteers with waste collected from Gangolli

MAHARASHTRA: On 12th November, a Swachhta Pakhwada campaign was conducted at Sakharakshi landing centre, Raigad district in association with Nehru Yuva Kendra and Rural Young Foundation, Alibag. The event started with an awareness message by Dr. Dipti Patil, BDO Panchayat Samiti Alibag on the importance of hygiene and sanitation in day to day life on the background of COVID-19 pandemic. Additional BDO, Sarpanch and Deputy Sarpanch of Sakharakshi Gram Panchayat and around 30 volunteers from Nehru Yuva Kendra and Rural Young Foundation were also present on the occasion. Cleaning activity started from Sakharakshi Society, then moved to Sakjarakshi landing center and ended at nearby beach area whereby around 3 tons of debris which includes plastic sheets, water bottles, thermocol, puff material used for insulation, fishing nets, tyres, tin cans, plastic glass, paper and cartons, etc. were collected which were later disposed of safely.



Volunteers cleaning up the Sakharakshi landing centre



The team involved in cleaning the Sakharakshi landing centre

GUJARAT: The harbour clean-up programme conducted at Veraval fishing harbour on 9th November 2020 was inaugurated by Mr. Tushar Purohit, Assistant Director, Dept. of Fisheries, Veraval. President of Veraval Sanyukat Machhimar Boat Association, President of Bhidaya Koli Samaj Boat Association, President of Bhiday Kharva Samaj Boat Association, Councilor of Bhidaya plot, Veraval Patan Sanyukt Nagarpalika, students of College of Fisheries, NGO etc. were present on the occasion. Around 1000-1500 Kg of solid waste was collected from the harbour premises. The boat association members engaged 14 labours also to clean the road, drainage and surroundings of the auction market hall. The boat association members continued the cleaning activity for the next three days and cleaned the nearby places around the harbour by engaging laborers and fishermen of their community at their own expense.



Clean-up at Veraval harbour



Cleaning the auction hall at Veraval during Swachhta Pakhwada event

NETFISH campaign on COVID-19 safety protocols in seafood sector

In the prevailing COVID-19 situation, a better understanding of the protocols to be followed at work places is very important to contain the spread of the virus. MPEDA had released a booklet about the COVID-19 safety protocols in the seafood sector and provided online training to its field officers.

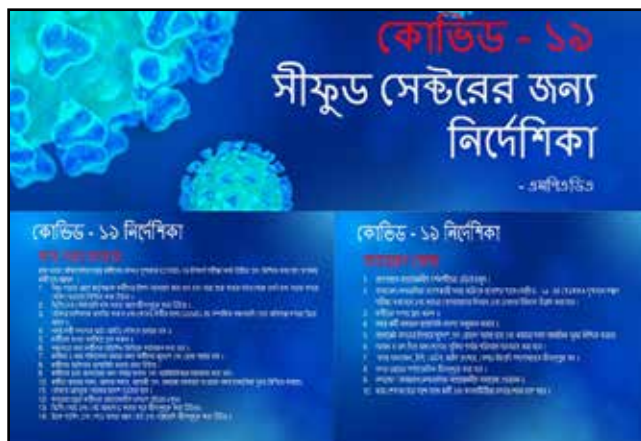
To disseminate this information among the stakeholders, especially the fishers, harbour workers, fishing crews, boat owners, auctioneers etc, NETFISH sensitized all the Harbour Data Collectors (HDC) in the maritime states on COVID-19 guidelines through telephonic discussions and virtual meetings arranged by the respective State Coordinators (SCO).

Special emphasis was given to the protocols to be followed in fishing harbours and fishing vessels. Then the HDCs were instructed to disseminate the information in the local language through the respective WhatsApp groups created by including fishers, boat owners and workers. Discussions were also held with fisheries officials, boat owners and fishers with regard to the necessary precautions to be taken.

State-wise details on the campaign are given below.

West Bengal: Video conferences on COVID-19 guidelines were organized by the SCO by involving HDCs of Deshapran, Shankarpur & Shoula harbours on 7th October 2020 and Freserganj, Raidighi, Kakdwip and Namkhana harbours on 8th October 2020. The guidelines were prepared in Bengali language and circulated among the HDCs as well as in the WhatsApp groups.

Also it was sent through Facebook and Email to all the seafood exporters of West Bengal, boat owners, fisherman associations, state fisheries officials, officials of BENFISH & WBFCL, faculties of West Bengal University of Animal and Fishery Science (WBUAFSc), Dean of WBUAFSc, Director of CIFRI, Barrackpur, Scientists of CIFE, Kolkata & Mumbai, KVK officials, faculty of Fisheries Colleges, feed manufacturer, aqua farmers and feed dealers.



The MPEDA presentation on Covid-19 Guidelines translated into Bengali

Odisha: An online training programme was arranged for the 5 HDCs of Odisha on 21st October 2020. They were enlightened on the safety measures to be followed by the stakeholders at fishing harbours & fishing vessels. The COVID-19 guidelines were translated into Odia and then sent to the HDCs for dissemination among the stakeholders through WhatsApp groups.

The messages were sent to trawler owners, supervisors, boat staff, crew members, net menders, auction hall workers, management society staff, state fisheries officials etc. at Paradeep, Balaramgadi, Bahabalpur, Dhamara and Chilka.

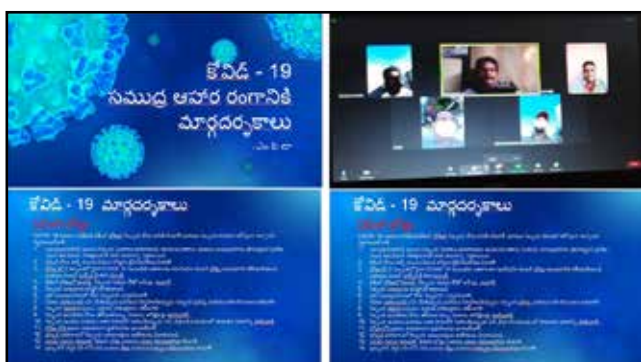


Covid-19 safety protocols for Harbours & Fishing Vessels prepared in Odia

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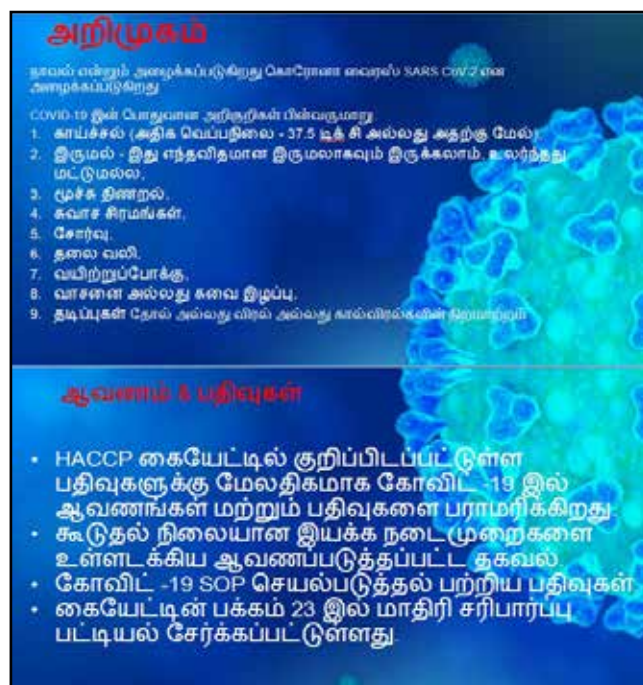
Andhra Pradesh: In Northern region of Andhra Pradesh, the PPT slides of MPEDA's COVID-19 guidelines relevant to fishermen such as the protocols to be followed at harbour/landing centers, fishing vessels, ice factories and transportation were translated to Telugu and sent to all the HDCs on 28th September 2020 for disseminating through their respective harbour WhatsApp groups. Later the entire presentation related to COVID-19 symptoms, precautions to be followed in the seafood sector was translated to Telugu and sent to the HDCs on 15th October 2020 for disseminating through WhatsApp. The HDCs shared it to 320 boat owners and in turn it was distributed further by them to around 500 boat owners. On 16th October the State Coordinator conducted an online awareness class to the HDCs of Visakhapatnam, Kakinada, Yanam and Pudumadaka harbours.

The SCO of Andhra Pradesh South sent the presentation received from MPEDA on 18th September 2020 to all the HDCs who disseminated them through WhatsApp groups. Later, the SCO translated the slides into Telugu and sent them to the HDCs of Nizampatnam, Machilipatnam and Vodarevu harbours on 15th October 2020. The same was shared to 198 boat owners at these harbours through the WhatsApp groups and these boat owners further shared it among 480 boat owners. On 16th October the SCO conducted an online awareness class to three HDCs of Nizampatnam, Machilipatnam and Vodarevu harbours.



View of Presentation slides prepared in Telugu and of the Video Conference conducted with the HDCs of Andhra Pradesh North region

Tamil Nadu: From 23rd September, the SCO of Tamil Nadu North carried out several rounds of discussions with all the 10 HDCs over phone regarding the COVID-19 guidelines. The guidelines translated into Tamil were sent to them and also it has been shared to nearly 2000 fishers, dry fish producers, agents, processing workers, pre-processing workers, Fisheries Department officials, NGOs etc.



Extracts from the Tamil version of the PPT on Covid-19 Guidelines

The Tamil Nadu South region organized a webinar based on the MPEDA's COVID-19 safety protocols in the seafood sector, with special reference to pre-processing centers, fishing vessels and fishing harbours in the Tamil language to the sea food processors, fisherfolk etc. Fisheries College & Research Institute (FCRI) Parakkai and M.S. Swaminathan Research Foundation (MSSRF) were the co-organizers of the programme, while Dr. P. Velayutham, Dean i/c FCRI, Dr. S. Velvizhi, Principal Scientist MSSRF & Dr. Vinoth S. Ravindran, SCO, NETFISH were the conveners. The webinar on 21st October 2020 was attended by 220 participants. Dr. G. Sugumar, Hon'ble Vice-Chancellor of Tamilnadu Dr. J. Jayalalithaa Fisheries University was the Chief Guest of the programme.

Mr. Thamailagan of MSSRF disseminated COVID-19 precautionary guidelines, including that of MPEDA, through their Fishermen Friend Mobile Application (FFMA). Stakeholders from Mallipattinam, Colachel, Tharuvaikulam, Tuticorin, Rameshwaram, Mandapam, Chinnamuttom, Thengapattanam and Kottaipattinam harbours attended the webinar.

Various seafood export firms under MPEDA, SRD, Tuticorin also participated. Group meetings for the staff at the supervisor level and above were arranged by M/s Edhayam Frozen Foods Pvt. Ltd., Deva Sea Foods Pvt Ltd and Nila Seafoods Pvt Ltd on their premises with regard to the webinar. Nearly 55 technicians of

the seafood processing plants participated. Mr. Daniel, Asst. Professor, FCRI delivered the vote of thanks.

[illegible]

*Flyer of the NETFISH-FCRI-MSSRF-Webinar on Covid-19
held in Tamil Nadu*

Kerala: After attending the MPEDA presentation, the SCO of Kerala South translated the presentation into Malayalam and then conducted a virtual meeting with nine HDCs on 24th September 2020. The guidelines were explained to them and the translated presentation was provided for distribution among the stakeholders. Also the HDCs were directed to conduct harbour-wise meetings. The Malayalam version of the guidelines was shared to more than 1800 stakeholders including fishermen, fish handling workers, auctioneers, merchants, drivers, ice sellers, fish aligned workers, net mending workers, truck drivers, etc. The messages were shared again on a weekly basis among the stakeholders.

In order to disseminate the COVID-19 guidelines to the stakeholders, a video conference was conducted involving 11 HDCs in Kerala North region on 20th September 2020. The Malayalam version of the guidelines was provided to the HDCs. This guideline

was then passed on to over 1000 stakeholders through the WhatsApp groups formed under each HDC. The information was given repeatedly on 25th September, 7th October and 12th October 2020. Also the handbook - 'Beat Covid', brought out by the MPEDA and the Times of India, was circulated among over 800 stakeholders. In addition to this, on the World Handwashing Day (October 15th), a graphic illustration on eight steps for proper hand washing was circulated to over 1000 stakeholders.



Malayalam Presentation prepared on Covid-19 safety protocols



Malayalam Presentation prepared on Covid-19 safety protocols

Karnataka & Goa: On 26th September 2020, the SCO gave a presentation on 'MPEDA's COVID-19 Guidelines for Seafood Sector' for the 9 HDCs of Karnataka regions. Both hard and soft copies of the guidelines were distributed among the HDCs. Information was shared to 1385 stakeholders including boat owners and

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workers of 13 harbours in Karnataka & Goa regions by the HDCs through WhatsApp groups. In some harbours, HDCs assisted health workers to arrange the COVID-19 rapid tests for fishers. The SCO sent the MPEDA's COVID-19 guidelines to the officers of fishing harbours as well.

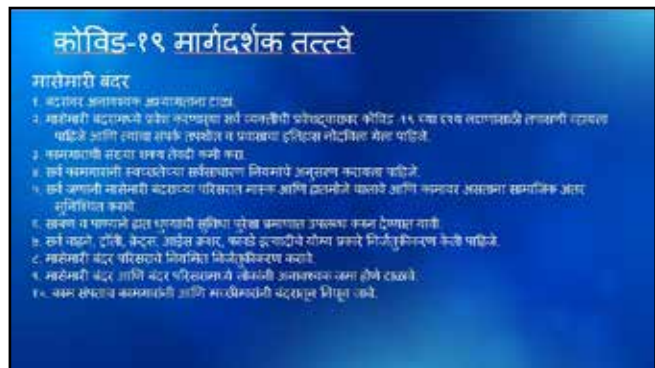


Covid-19 Safety Protocol Oath taking events organized at Mangalore & Malpe harbours



HDC assisting Health workers for Rapid Test for Covid-19 at Tadri harbour

Maharashtra: An online session was conducted on 17th October 2020 by the SCO for the HDCs on COVID-19 protocols to be followed in the seafood sector and especially in fishing vessels and harbours. Fourteen HDCs attended the session. A digital presentation on the guidelines was translated into Marathi and then shared to all the HDCs who shared it in the WhatsApp groups formed by including stakeholders. The message was passed on to 453 beneficiaries.



Marathi slide on Covid-19 guidelines to be followed at harbours

Gujarat: A video conference with 10 HDCs of Gujarat was conducted on 8th October 2020. Mr. Vinodkumar Shrimali, Deputy Director, MPEDA, RD Veraval and Mr. Jignesh Visavadia, State Coordinator, NETFISH interacted with the HDCs and explained the guidelines on COVID-19 through a presentation prepared in Gujarati language. It was then circulated to all HDCs, who then arranged virtual meetings with the stakeholder groups of the respective harbours and distributed the guidelines among them. A total of 977 stakeholders of Gujarat received the translated presentation.



NETFISH State Coordinator conducting Video conference with HDCs of Gujarat



Presentation slides on Covid-19 safety protocol prepared in Gujarati

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Andhra Pradesh is confident of increasing seafood exports

The impact of COVID-19 pandemic notwithstanding, Marine Products Export Development Authority (MPEDA), is confident of increasing seafood exports from India, mainly Andhra Pradesh. MPEDA an autonomous body under the Ministry of Commerce and Industries. Andhra Pradesh is considered an important hub due to its vast seacoast, the second largest after Gujarat. With vannamei (white-leg shrimp), a exotic species developed by aqua farmers becoming highly popular in the export market due to its low price and culinary taste, MPEDA, which is mandated by the Government of India to promote exports, is focusing on increasing aquafarms in AP, which has a lion's share of India's vannamei cultivation. India produced 7, 47,111 MT of shrimps last year, of which over 68% had come from AP's over 52,000 shrimp farms covering a water spread of 75,000 hectares.

Visakhapatnam Port is a big centre for export of seafood through reefer containers. It has a world-class container terminal under PPP mode developed by Visakha Container Terminal Private Ltd (VCTPL), a joint venture of J.M Baxi Group and Dubai Ports (DP) World. Anil Narayanan, Deputy COO of VCTPL said during 2019-20, they had exported 35,000 twenty-foot units (TEUs) of reefer containers, 90% of its seafood mainly vannamei. Despite dislocation in road traffic for sometime during lockdown, this year they were expecting to handle almost the same volume and increase it significantly in the next financial year. Fifty

percent of seafood goes to the United States, Europe 10 pc, China 18 pc, Middle East 4.5 pc and South East Asia 7 to 8 pc. Recognising the growing importance of AP, MPEDA has launched India's first toll-free call centre here exclusively for aquafarmers. Now they can call for guidance 24x7 on toll-free number 1800-425-4648.

K.S. Srinivas, MPEDA Chairman, said, "I request the aquafarmers to make use of the toll-free number 1800-425-4648 with IVRS (interactive voice response system) facility established at Vijayawada to clear their technical doubts from the experts and not to fall in the trap of quacks. It will also help them in seeking information about the various support schemes extended by the field offices of MPEDA." Dr. Karthikeyan, MPEDA Director, said the small-scale aquaculture farmers are encountering problems in getting proper guidance and technical support, especially during the culture period of farming. "It forces them to seek advice from inexperienced consultants and feed/input suppliers who hold sway over the majority of small aquaculture farms. This often leads to crop failures and quality issues," he pointed out. Bala Subramanian V, General Secretary, Prawn Farmers Federation of India, members of National Centre for Sustainable Aquaculture (NaCSA) and other stakeholders also participated in the function. Shri K. Sivarajan, Deputy Director, MPEDA Regional Division, Vijayawada, proposed a vote of thanks.

-www.siasat.com



Indian Oil Sardine seemingly on revival path along Kerala coast: CMFRI

Indian oil sardine, which was showing a declining trend for the past few years, appears to be on a revival path along the Kerala coast, read a statement by the Central Marine Fisheries Research Institute (CMFRI), Kochi on 02.01.2021. It said that scattered batches of immature sardines have been reported from the southern coast of the state because of a seemingly favourable condition in the marine ecosystem. "For the last five years, there has been a sharp decline of oil sardine along the Kerala coast.

El Nino Southern Oscillation causes a rise in sea-surface temperature and triggers changes in the ocean's vertical, thermal structure, particularly in coastal regions, and the warming of sea water has been a major reason for the decline in the sardine population," read the statement. Kerala witnessed a significant drop of 15.4 per cent in the marine fish landings last year with total landings of 5.44 lakh ton. "A sharp decline in catch of oil sardine and Indian mackerel, the two major resources in the state, is the highlight of Kerala's landings. The extensive catching of these stocks as it may badly affect the expected revival.

Upon assessing the sexual maturity, a team of researchers of the CMFRI has found that these

sardines having a size of 14-16 cm are yet to reach the reproductive stage," it said. Flagging concerns over indiscriminate fishing of these small sardines, researchers pointed out that they require another three more months to attain full maturity, it said.

The CMFRI's study shows that the spawning stock biomass of sardine along Kerala waters is meagre now. "Considering this unusual and unfavourable status of the stock, we advise not to catch these sardines even though they fall above the minimum legal size of 10 cm", said EM Abdussamad, principal scientist of CMFRI who led the study. CMFRI Director A Gopalakrishnan said that CMFRI has brought the matter to the attention of Fisheries Minister J Mercykutty Amma. "The fish registered a slight increase in 2017 but continued to fall deep again during the following years. The last year witnessed the lowest catch of sardine in two decades at 44,320 tonnes. We had earlier found that unfavourable conditions in the ocean ecosystem following the El Nino was behind fluctuations in the availability of the sardine," CMFRI said. "Imposing self-regulation in fishing these sardines would greatly help augmenting the revival. Marine fish catch grew 2.1 per cent YoY in 2019, with the country recording 3.56 million ton in total landings," it said. (ANI)

-www.businessworld.in

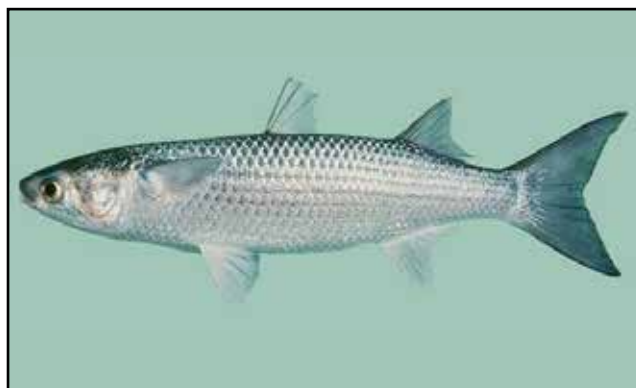


CIBA develops indigenous hatchery tech for high-value commercial fish Grey Mullet

This tech can give a major leg-up to fish production; farmers have been awaiting it for over three decades

For the first time in the country, Chennai-based Central Institute of Brackishwater Aquaculture (CIBA) has announced roll-out of the indigenous hatchery technology for Grey Mullet, a high-valued commercial fish.

CIBA has successfully bred the Grey Mullet (Madavai), a highly sought after fish for farming; farmers have been awaiting such a technology for more than three decades. The long-awaited breeding technology is a major breakthrough that can help increase fish production, in line with the government's blue revolution initiatives, said KK Vijayan, Director, CIBA.



Seafood industry to recover in FY22 on strong demand: CRISIL SME Tracker

Subdued demand in both domestic and export markets will shave 25-30 per cent of the revenue of small and medium enterprises (SMEs), which account for nearly 80 per cent of the seafood industry in India, in the current fiscal year (FY21).

Domestic appetite for seafood waned as the pandemic-induced lockdown weakened demand from hotels, restaurants and cafes. Households also cut down on seafood consumption on fears of transmission of the disease.

Export demand, on its part, plunged as the top 15 severely impacted Covid-19 countries — including the US, Russia, Italy, Spain and the UK — account for about 65 per cent of India's seafood export basket.

That said, the industry is projected to rebound in the next fiscal year (FY22), with about 12 per cent growth in revenue, led by recovery in demand. Though exports are also expected to see an uptick, increasing

competition from Ecuador, Vietnam and Thailand is likely to cap export growth. Over the medium-to-long term, fish production in India will improve largely on account of increase in overall aquaculture production. In FY20, aquaculture products comprised 70-75 per cent of the country's overall seafood exports. The size of the export market for shrimps alone was \$4.5 billion, with white leg shrimps accounting for a 75-80 per cent share. Exporters typically earn higher margins than domestic players. However, the rising global supply of shrimp has exerted downward pressure on prices, paring export realisations.

Meanwhile, the government is looking to ensure sustainable growth of the seafood industry by allowing fishing within permissible ecological limits. Moreover, to avoid excessive exploitation of resources, it has directed states to end bull trawling and refrain from using LED lights to attract fish.

<https://www.business-standard.com>



Karnataka: College of fisheries to prepare DPR for dry fish curing yards

MANGALURU: Based on a request from the state government, the College of fisheries will soon prepare a detailed project report (DPR) for setting up dry fish curing yards in the three districts of coastal Karnataka.

Speaking on the sidelines of a three-day training programme for fisherwomen, organised jointly by the College of Fisheries and the coastal development authority on Friday, B Manja Naik, professor and head, department of fish processing technology, College of Fisheries told TOI, "The government has asked the college to prepare a DPR for setting up a dry fish curing yard at Mangaluru, Udupi and Karwar.

Traditionally, fishermen have been drying fish, but this is done in an unscientific and unhygienic manner, leading to the stench in the surrounding areas. Since there is a good demand for dry fish, we have decided to train fishermen to use the Solar Biomass Hybrid dryer as well as train them in branding and getting Food Safety and Standards Authority of India (FSSAI) certification for the products," he said.

Dry fish segment constitutes 2-4% of the total fish production in India and the aim is to increase the dry fish export by introducing technology. The three-day workshop will cover all aspects and the women will also be given field training.

In the first batch, 22 women are being trained and plans are to organise more such programmes. Using the Solar Biomass Hybrid dryer will give a huge boost to the industry and the feedback from women at the training programme will be incorporated in the DPR, Dr Naik said.

The training programme was inaugurated by Coastal Development Authority chairman Mattar Rathnakar Hegde, who said that the training programme is being conducted on the lines of the Prime Minister Narendra Modi's call for Athmanirbhar Bharat, which translates to 'self-reliant India' or 'self-sufficient India'.

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Mr. K.S. Pradeep joins MPEDA as Secretary



Mr. K.S. Pradeep, an Indian Forest Service (IFS) officer of Odisha Cadre (2011 batch), joined MPEDA as Secretary on 7th January 2021. Mr. Pradeep, a graduate in Agriculture, has served as the Executive Director at Odisha Mining Corporation (OMC) Limited, Odisha. He has also worked as the Divisional Forest Officer, Athmallik Forest Division, Angul District, Odisha and as Divisional Forest Officer, Balliguda Forest Division, Kandhamal District, Odisha.



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