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## CONTENTS Volume V, No. 8, November 2017

05

MPEDA participates in the Busan International Seafood & Fisheries Expo





09

China Fisheries & Seafood Expo - 2017 at Qingdao, China

13

Indian delegation visits South Korea



19

BOBP-IGO organizes Regional Dialogue on highly migratory fish species

2

Highlights of marine fish landings in selected harbours of India during October 2017

31

NETFISH -MPEDA trains fisher women on value-added fishery products

33

Kochi hosts Indian Fisheries and Aquaculture Forum

35

Strategies for value-addition of fish

38

Orientation programme held in Nellore on the impact of Antibiotic usage on shrimp farming



41

MPEDA & USFDA organises training course on GAP in Mangalore



43

Worlds heaviest bony fish discovered in Japan



**COVER IMAGE**: View of Norianjin Fish Market, Seoul, South Korea **PHOTO**: Dr. Ram Mohan M. K.

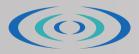
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Dr. A. JAYATHILAK IAS Chairman

Dear friends,

ovember was an action filled one for MPEDA and the sector itself. During the first week, MPEDA showcased our seafood products in the China Fisheries and Seafood Expo held at Qingdao along with nine exporters. Soon after that we had a trade participation in the Busan International Seafood and Fisheries Expo. Alongside, I had led a trade delegation to South Korea, during which, we had interactions with the Korean National Fishery Products Quality Management Service, Korean Food and Safety Authorities, Fishery Trade Associations, importers and Embassy officials on ways and means to improve Indian seafood exports to South Korea tackling the trade barriers. Having food habits close to that of Japan, seafood forms a substantial part of the South Korean menu in various forms. I could see a lot of seafood restaurants in Busan with re-circulation systems displaying squids, abalones, octopuses, fishes, crabs, sea squirts, sea cucumbers and all alive for the customers to choose.

South Korea is a highly potential market for Indian shrimps, fishes, surimi, cephalopods and crabs. The visit to the Noriyanjin fish market in the outskirts of Seoul was an eye opener on the way a market could be managed so efficiently by the Government, attracting customers and tourists alike. It is high time that our seafood exporters focus on South Korean market for their export needs. MPEDA has given certain strong recommendations to the Ministry to improve our market share in South Korea.

An audit team from the Food and Veterinary Office to evaluate compliance with EU standards has visited India during the latter half of the month. MPEDA along with EIC had coordinated the arrangements for the audit team visit, which was scheduled to Odisha and Chennai. I congratulate all the officials and staff members of MPEDA who had coordinated and participated in the preparatory arrangements for the audit, for their excellent work. We are hopeful that the audit team is quite satisfied with the system in place, and could bring out valuable recommendations considering the scope for continuous improvement. I feel that the works undertaken to improvise the system in Odisha shall continue further to sustain the standards achieved and shall serve as a reference for other states to emulate.

MPEDA has also participated in a delegation to Vietnam by the Commerce Ministry in an effort to improve the trade relationships between the countries. Vietnam is the second largest market for Indian seafood, and has strong trade relationships in other commodities also. Vietnam supplies us *pangasius* fillets for our hotel industry, while we supply shrimps and cephalopods for their export processing sector.

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## MPEDA participates in the Busan International Seafood & Fisheries Expo



A view of India Pavilion & MPEDA stall

usan International Seafood and Fisheries Expo (BISFE, 2017), with a special focus on seafood, seafood processing and equipment and marine bio-technology, witnessed more than 13,500 visitors from around the globe.

There were 401 exhibitors from 20 countries displaying their products in 910 stalls. The expo hosted at Busan Metropolitan city of South Korea and organised by BEXCO, Korea Fishery Trade Association, National Federation of Fisheries Cooperatives and Korea Trade Industrial Promotion Agency. It was held from November 8 to 10, 2017 at Hall numbers 1, 2 and 3A of Exhibition Centre 1.

BISFE 2017 was inaugurated by Mr. Seo Byong Soo, Mayor of Busan Metropolitan City, in the presence of a host of dignitaries viz., President, National Institute of Fisheries Science, Deputy Director General, Department of Commerce of Shandong Province, Chairman, Busan Metropolitan Council, Chairman, Marine Products Export Development Authority, India, Chairman, National Federation of Fisheries Co-operatives, and CEO, M/s. Dong Won Industries.

The event was supported by the Ministry of Ocean and Fisheries, Ministry of Trade, Industry and Energy, Korea Fisheries Association and Korea Overseas Fisheries Association. International events like 2017 Second Half overseas buyer business meeting, 2017 BISFE Foreign Buyer Business meeting, creating fisheries product sourcing

fair, Korean buyer business meeting, overseas exhibitor industrial tour, overseas buyer industrial tour etc. were also held during the Expo.

The Korean Aquaculture workshop 2017, Dietitian Workshop, Busan Fisheries Policy Forum, The Korean society of fisheries and aquatic science conference were also conducted at BISFE as concurrent programmes.

#### **MPEDA at BISFE 2017**

BISFE 2017 is significant to Indian seafood sector considering the declining trend in marine products export to Korea since 2013-14 and existing tariff related issues and concerns on health certificate requirements for shrimp export. Indian Pavilion with total floor area of 54 sq. m. space was shared by MPEDA (36 sq.m) and M/s. Ulka Seafoods (P) Ltd (18 sq.m). The frozen, chilled, dried and eat seafood samples were displayed in MPEDA stall in freezer, chiller and open containers. The visitors and buyers were provided with copies of MPEDA publicity literature.

The standee in English and Korean languages displaying the features of MPEDA's new business exchange portal, FISH EXCHNAGE, (www.fishexchange.mpeda.gov.in) attracted a lot of enquiry from the visitors. The advantage of the portal for sourcing seafood from India were explained to the visitors/buyers at MPEDA stall.



Dr. A. Jayathilak IAS, Chairman, MPEDA (third from right) at the opening ceremony of the Busan International Seafood and Fisheries Expo 2017

The participation of Indian seafood sector in the show was coordinated by Mr. V. V. Suresh Kumar, and Dr. P. Javagopal. Assistant Directors, MPEDA and Mr. Ajay Kumar Sah, Section Officer, Department of Commerce, Government of India. Dr. A. Jayatilak IAS, Chairman and Dr. M.K. Ram Mohan, Joint Director (Marketing), MPEDA, who had come on a delegation visit to South Korea had also briefly attended the show. Chairman, MPEDA was an invited guest for the inaugural ceremony of the show at the Busan International Seafood & Fisheries Expo. M/s. Ulka Seafoods (P) Ltd had a separate stall within the Indian pavilion. M/s. Ulka Seafoods had exported 1812 MT worth USD 4.39 million of seafood to Korea during 2016-17. This company is a leading Surimi processor and exporter in India since 2002 having a production capacity of 500 MT/day. Mr. Sachin and Mr. Pradeep Sane from M/s. Gadre Marine Exports (P) Ltd and Mr. Anwar Hashim, Managing Director, M/s. Abad Fisheries (P) Ltd.

met and discussed with prospective buyers & clients at the space provided within MPEDA stall. Hundreds of visitors from various countries visited the MPEDA stall. Some of them were prospective buyers/existing buyers and others were from educational institutions, seafood industry etc.

#### www.fishexchange.mpeda.gov.in

This online trade portal provides a platform for buyers across the globe to interact and source seafood from India. It is loaded with micro sites of Indian seafood exporters registered with MPEDA to place their offers and product details. The portal has latest and updated information on world's and India's seafood trade statistics, production information, price trends, marine reports, country profiles, regulatory and tariff information, standards, notifications, information on upcoming business events, fairs etc. and fulfill its role as a one stop shop for the entire seafood trade needs.

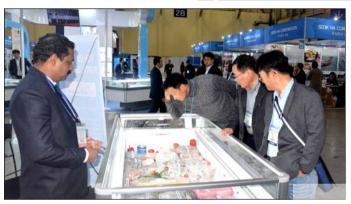


A view of the stalls





↑ Chairman, MPEDA with the MPEDA/MOC&I officials at the MPEDA stand





∧ Views of visitor interaction

#### Overview of the fishery sector in Korea

orea is a peninsula with a coastline of 2413 km and an archipelago of 3000 islands. Korean coastal and offshore waters are rich in fishery resources and due to this abundance, Koreans have developed the distinct fish-eating culture with a recorded per capita seafood products consumption of 53.9 kg/year (finfish 22.4 kg, shellfish 16 kg and seaweed 15.6 kg) in 2014.

#### Aquaculture

Aquaculture contributed 47.5 percent of total fishery production in Korea during 2014. The mariculture in Korea is dominated by seaweed production, accounting for almost 70 percent of the total mariculture production in 2014. Korea is the global leader in the production of flat fish (Olive flounder), which is cultured in land based culture tanks. Korean rockfish, seabream, rock seabream are other common species cultured in floating net pens and cages.

#### Capture Fisheries

The mixing of the warm Tsushima Current and the cold Liman Current along the east and west coasts has created

several rich fishing grounds along the East Sea, Korea Strait and Yellow Sea, where abundant supplies of fish of different varieties are caught. The main fishing methods are trawling, jigging, long-lining and gill-netting.

Fishery resources in the coastal and offshore waters have generally been overexploited, particularly for the commercially important species such as red-lip croaker and Alaska Pollack.

#### Fisheries market

Fishery products are marketed through a complex distribution system in Korea, which can be largely divided into two categories: one that takes place at landing ports and another in areas of consumption. Marketing and distribution of the products at landing ports takes place through fishery co-operative auction markets and the Busan common fish markets, which are always located at water fronts, but distribution to consumption areas is made through whole-sale markets, inland joint sale and direct-sale markets and retailers. With the exception of the traditional ('jaere' in Korean) market, there are 330 official fish markets in Korea.



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Washing Machine



Cooking Machine(Water&Steam)



Aluminium (SS) Pan (Tray)



Breading machine (Line)



**Tunnel Powder Coating Machine** 



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Shrimp Peeler

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## China Fisheries & Seafood Expo - 2017 at Qingdao, China

ndia, in its ride for popularising its quality products internationally and expanding its export market, has been continuously watching the world-wide market trends and scenario so as to achieve its goal of maximum aquaculture production. MPEDA, the government's right arm for seafood export has been participating in the export promotional international programmes for the past several years.

South East Asia is the second largest destination of India's marine products, with a share of 29.91 per cent in dollar terms. Overall, exports to South East Asia increased by 47.41 per cent in quantity, 52.84 per cent in rupee value and 49.90 per cent in dollar earnings. In China's import market Russia tops and India stands at 18th Rank. In case of export from India China's place is at around 9th rank in terms of US dollar realized.

#### **CHINA SEAFOOD & FISHERIES EXPO-2017**

The China Fisheries and Seafood Expo 2017, the mega exhibition show organised at Qingdao, China was very important and successful for its international role to fulfill

the exhibition's very important requirement of bringing the world's seafood champions under one umbrella.

The Qingdao International Expo Center located at Jimo City / Qingdao City, Shandong Province, China witnessed this show. The expo centre is located on Aoshan Bay, about 40 minutes north of downtown.

MPEDA, THE GOVERNMENT'S RIGHT ARM FOR SEAFOOD EXPORT HAS BEEN PARTICIPATING IN THE EXPORT PROMOTIONAL INTERNATIONAL PROGRAMMES FOR THE PAST SEVERAL YEARS.

The expo was organised for three days from November 1-3, 2017. It was impressive with around 1400 companies exhibiting their products and services with a demonstration of the operation of machinery and quality of cooked seafood

items. There were thousands of delegates registered and visited the show.

#### THE INDIAN PARTICIPATION

MPEDA has deputed Mr. C. Wilson and Mr. K. Sivarajan, Deputy Directors to lead the Indian team.

for Indian pavilion, MPEDA has occupied a space of two stalls measuring 12 sq.m. M/s. Growel Processors, Andhra Pradesh has occupied four stalls measuring 24 sq.m. and all the other stalls were of 6 sq.m. size.

MPEDA has displayed 33 varieties of frozen seafood items in the stall such as Black pomfret, Silver pomfret, Chinese pomfret, Silver croaker, frozen Shrimp, Squid, boiled clam meat, pasteurized crab meat, Cuttlefish, Ribbon fish steaks,



↑ Team India in front of Indian pavilion

MPEDA has participated in the exhibition along with 9 co-exhibitors by booking 72 sq.m. area under Indian pavilion stall No. 1401 in E-2 Wing. The co-exhibitors in the MPEDA - Indian pavilion were M/s. Castlerock Fisheries Pvt. Ltd, Maharashtra, M/s. Blue Fin Frozen Foods Pvt. Ltd, Maharashtra, M/s. Growel Processors, Andhra Pradesh, M/s. Kings International Ltd, Tamil Nadu, M/s. Seven Seas India Pvt. Ltd, Tamil Nadu, M/s. Fresh Catch Exports, Andhra Pradesh, M/s. Sonia Fisheries, Maharashtra, M/s. Premier Marine Products, Kerala and M/s. Vanitha Cold Storage, Gujarat.

In addition to the above, there were three other Indian stalls registered and installed separately by a trader and exporters namely Ocean Pearl Fisheries Trading, West Bengal, Jagadeesh Marine Exports, Andhra Pradesh and Ulka Seafoods, Goa & Maharashtra.

#### MPEDA STALL

MPEDA stall was put up at E 2 Wing and the Indian Pavilion was numbered as 1401. Of the 72 sq.m. stall space booked

value added products such as Kerala prawn curry, etc.

Visitors were curious to know about the Indian seafood products. The products were demonstrated to the visitors who were very keen to know about the treasures of Indian seafood items. The major enquiries were about ribbon fish, *L.vannamei*, Black Tiger, cuttlefish, squid, tuna, live crabs, shellfishes, Tilapia etc. Most of the visitors were interested in frozen products, where as a few have asked for live items from India. The genuine discussion along with product demonstration has made most of the visitors, traders, and exporters more enthusiastic. There were visitors from China, Korea, Zambia, South Africa, Germany, Portugal, USA, Latin America, Bahrain etc.

To have a more active discussion with the delegates from China and also to deal with the local service providers for arrangements of product and services, language interpreters were appointed by MPEDA at the stall.

More than 2000 delegates visited the MPEDA stall and had the MPEDA's brochures printed in Chinese and English

languages, details of Indian exporters and their products and the information on Indian Seafood Show to be organised in Goa. Most of the visitors have shown a keen interest in knowing about the forthcoming India International Seafood Show 2018 to be held during January 27-29, 2018 in Goa. Discussions were carried out in two round tables in the stall by the two officers, simultaneously, as most of the time the stall was crowded for getting information. The officers and interpreters have demonstrated the products

displayed in the stall, engaged in discussions and cleared their queries on various aspects. The discussions were progressive and useful.

All the stalls in Indian pavilion have got trade/business enquiries in the range of 100-200 nos. Majority of trade enquires with MPEDA were for Ribbon fish, *L. vannamei*, Black Tiger shrimp, Squid, Cuttlefish, Mud crab etc. and machinery requirement and its business in India.



Team India in MPEDA stall



Exhibits from other countries at the expo



MPEDA officials in discussion with a visitor



**↑** MPEDA representatives with the translators



MPEDA officers with another visitor

#### **Chinese seafood market**



Dried seafood items displayed in supermarket

hina is the world's largest producer, consumer, importer, and exporter of seafood products and handling around 35-40 percent of global production. China is also the only country where aquaculture production is larger than wild capture fisheries. The main export market for China's seafood product is Japan which holds approximately 20 percent share, followed by the US and Hong Kong. In Europe-Germany, Spain, the Netherlands, and the United Kingdom are the major markets for Chinese seafood products.

It is reported that in 2015, China accounted for around 20 percent of the luxury seafood consumption globally. It is predicted to increase consumption of seafood by Chinese consumers from 25.4 Kg per person per year to 35.9 per capita in 2020. It may be remembered that it was 11.5 kg per capita consumption in 1999. The Chinese young population seeks to procure imported seafood not only as part of their status but also the belief that imported seafood is of higher quality as it comes from a cleaner environment. Hence India can play a major role in Chinese seafood market for its production of seafood items in a quality environment, good atmosphere, and clean water sources.

Fresh Water aquaculture products such as carp, shrimp, and prawns, and Brackish/sea water products including yellow croakers, ribbonfish, and squid continue to be favourites in

Northern China along with imported seawater products such as cod, squid, plaice, and mackerel. Processed shellfish/shrimp/prawns and tilapia fillets are increasingly popular among city consumers with busy lifestyles. High-value imported seafood items such as lobster, geoducks, salmon, and crab are widely used by hotels and restaurants for high-end consumers. U.S. salmon, American lobster, snow crab legs, and cod are some of the products available in plenty in supermarkets of China.

The Seafood consumption in China is increasing annually matching rising import levels and income. By 2020, each person will eat 35.9 kg, and urban consumption of seafood has already passed 40 kg per capita at present.

#### **VISIT LOCAL SUPERMARKETS**

In any country, the markets will give an idea about the eating trends and habits of the inhabitants. We have visited two supermarkets to know about the availability of seafood items. There were plenty of dried, ready to cook and frozen items displayed in these markets, pointing towards the chinese desire for seafood items. There were the fishes such as eel, prawn, shrimp, ribbon fish, tilapia, mackerel, salmon, catfish, grouper etc. in plenty available in the local markets.



#### Indian delegation visits South Korea



Dr. A. Jayathilak IAS, Chairman, MPEDA is greeted by Mr. Park Shinchul, Director General of NFPQMS, Republic of Korea.

Dr. M. K. Ram Mohan, Joint Director (Marketing) is seen to the extreme right

n Indian delegation led by Dr. A. Jayathilak IAS, Chairman, MPEDA had visited South Korea to study the market prospects and to interact with the trade associations import officials, and other related Government Departments with an objective to increase the share of seafood export from India to South Korea. The members of the delegation for the five-day visit on November 7-11,

2017 were Dr. A Jayathilak IAS, Chairman, MPEDA, Dr. M. K. Ram Mohan, Joint Director (Marketing), MPEDA, Mr. Anwar Hashim, Director, M/s. Abad Overseas Private Limited, Cochin, Kerala, Mr. Raju Rohakale, Director, M/s. Ulka Seafoods Pvt Ltd, Taloja, Maharashtra, Mr. Pradeep Sane and Mr. Sachin Bonde from M/s. Gadre Marine Export Private Limited, Ratnagiri, Maharashtra.

#### **VISIT TO BUSAN INTERNATIONAL SEAFOOD AND FISHERIES EXPO**

On November 8, 2017, during forenoon the Chairman had interactions with Mr. Yoshiyuki Shige, Senior Executive Manager, Japan Fisheries Association, Mr. Lynne Larrabee, Director, US Department of Agriculture, Embassy of USA, Seoul, Mr. Jeong Oh- Ham, President and CEO of Bexco, Seoul, Mr. Yoon Heui-Ro, Executive Vice President, Bexco, Seoul, Mr. Kang Hyeong Cheol, Domestic Office Director, Korea International Co-operation Agency, Busan, Mr. Seo Man Seok, President, Busan Advanced Food Manufacturer Association, at the venue of Busan International Seafood and Fisheries Expo 2017.

Chairman, MPEDA was also an invited guest to the opening ceremony of the Busan International Seafood and Fisheries Expo 2017. The trade members of the delegation had business interactions with the buyers in the MPEDA stand at the Busan International Seafood and Fisheries Expo.

At the venue of Busan International Seafood and Fisheries

Expo, Chairman, MPEDA had interactions on seafood trade with Mr. Bae Ki-II, Chairman, and Mr. Dug-Boo Choi, Managing Director, Korea Fishery Trade Association.



Trucks with facilities for live fish transportation

The delegation members met Mr. Park Shinchul, Director

General of National Fishery Products Quality Management Service, Ministry of Ocean and Fisheries, Republic of Korea. The other representation from Government of Korea was Mr. Cho Byoung, Youl, Deputy Director, Quarantine and Inspection, NFPQMS, Busan and Ms. Kang Geumja Inspector, Agro-Live stock and Fishery Products Safety Division, Regional Office, Food and Safety, Busan. During the meeting, a discussion was held on the notification which is being brought out by Korean Authorities on seafood imports and pointed out the provisions of contention in the notification. The meetings were arranged by Ms. Jiyoung Chang, Trade Marketing Executive, Embassy of India, Seoul. Mr. Sungdeuk Lee served as the interpreter Chairman during the delegation visits. After the meetings, Chairman also found time in the MPEDA booth at BISFE interacting with visitors along with trade members.

#### VISIT TO THE ADVANCED SEAFOOD PROCESSING AND DISTRIBUTION COMPLEX, SEO-GU, BUSAN



The delegation visiting the Advanced Seafood Processing and Distribution Complex in Busan

On November 9, 2017, the trade delegation visited the Advanced Seafood Processing and Distribution Complex in Busan. The delegation was received Mr. Kyun-Hyun Lee, Top Manager, the Busan Facility Management for the distribution of International Fisheries products. The facility has separate birthing areas for domestic and international fishing vessels and it operates around the clock and procures around 3000 ton per day on an average. It has separate storages depending upon the specific temperature requirement of different species. That is designated areas for foreign

vessels which are mostly used by Russian trawlers. The facility is run by the Government and the charges for the facility are limited to 0.005 percent of the trading volume. The facility has a market meeting hall, customs and immigration services, service support by Korea Food and Drug Administration, Busan National Quarantine Station, wholesale market stall, the old storage capacity of 25000 tons, ice manufacturing of 1000 ton per day a live fish storage facility, waiting room for workers besides parking space. This is operational from September 2008.

#### VISIT TO FISHERIES SCIENCE MUSEUM, GIJANG-GUN, KOREA



View of the Fisheries Science Museum



↑ Inside the Fisheries Science Museum, Busan

Chairman, MPEDA accompanied by Joint Director (M), MPEDA and Mr. Ajay Sah, Section Officer EP (MP), MOC & I have visited the Fisheries Science Museum of the National Institute of Fisheries Science, Korea with an objective to get insights on the displays offered and the presentation material used for market promotion of fishes and seafood. The Fisheries Science Museum was opened on May 26, 1997, to introduce the development process of technology



A display inside the Fisheries Science Museum, Busan

and its future as well as to stimulate curious minds among the public. The museum has 14 display sections including an aquarium, a ship exhibition, and ship control room navigation. It exhibits over 7000 materials such as marine resources, fisheries and aquaculture technology, sea ranching, fish specimens, skeletons and models of other marine fauna etc.

#### **VISIT TO NORYANGJIN FISHERIES MARKET. SEOUL**

The delegation visited on November 10, 2017, the popular Noryangjin Fisheries Market, Suhyup Noryangjin Fisheries Marketing Co. Ltd. (NOFIM) in the outsets of Seoul city. Following a presentation by Mr. Kim Do-Ko, Manager of the market facilities, the delegation had a round in the market premises.

The annual trading volume of the market is equivalent to Korean won 340 Billion (approximately US\$ 0.35 Billion). Around 2000 species of seafood items are traded in this market which has 3000 employees/traders and visited by over 30,000 people daily. This market accounts for 45 percent of fishery products supplied to the Seoul metropolitan and neighbouring areas.

The Suhyup Noryangjin Fisheries Marketing Co. Ltd. manages the market as well as the fishery resources

associated with it. They also buy fishery products and put it for auction including imported cargo. They also have manufacturing facility with sections for storage of frozen and fresh cargo.

After the market visit, the delegation members met Mr. Lim Byoung-Deug, Director/Strategic Division Director, Suhyup Noryangjin Fisheries Marketing Co. Ltd. He has mentioned that 40 percent of the trade volume comprises imported products in this market and the Suhyup Noryangjin Fisheries Marketing Co. Ltd. is directly involved in importing seafood from other countries. As a practice, they sent their personnel to visit the processing units in the exporting country and inspect the sanitation and hygienic systems followed and the products manufactured before approving the supplier. Presently, they import shrimps mostly from Saudi Arabia



A view of Noryangjin Fisheries Market

and Ecuador. They have facilities to do the quality checks by the Food Service Management authorities.

The Suhyup Noryangjin Fisheries Marketing Co. Ltd. has arranged a meeting with some buyers of seafood. Most of them import more than 500 tons of shrimp and have informed that the market preference is for whole shrimp as well as headless shrimp of the grades 17/19, 31/40, 41/50, 51/70 per pound.

Afterwards, the delegation visited the seafood display and sale section of a supermarket managed by M/s Lotte and

interacted with the salesmen. Various frozen products were displayed in the market.

The supermarket also has a backup kitchen which prepares seafood products and sells it across the counters to the customers. The shrimp displayed in the supermarket were mainly sourced from Indonesia, Thailand, and Vietnam, while fishes mostly of local origin.

The delegation also met His Excellency Mr. Vikram Doraiswami, Ambassador of India to South Korea in the Indian Embassy at Seoul.

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↑ Visit to Lotte Supermarket in Seoul



Delegation meets H.E. Ambassador and other Senior Officers of EOI, Seoul

The meeting also had the presence of Mr. Satish Kumar Sivan, Deputy Chief of Mission, Mr. Mijito Vinito Second Secretary (Commercial & Information), Embassy of India, Seoul. Chairman, MPEDA has briefed the Ambassador about the trade issues such as higher tariff rate for Indian shrimp, the rules of origin issue with regard to surimi and the proposed Biosecurity Regulation by the Korean authorities, and explained the interactions the trade delegation had with

the authorities of NFPQMS, Korea and the Korean office of Food and Drug Safety.

The delegation visit to South Korea gave a broader insight into the market preferences and also the quality perspectives prescribed by the market. This information will be helpful in pursuing market promotion efforts alongside tackling the trade issues through diplomatic ways.



## **BOBP-IGO organizes Regional Dialogue on highly migratory fish species**

he Bay of Bengal Programme (BOBP), an Inter-Governmental Organization mandated to enhance cooperation among member-countries, convened a day-long regional dialogue on 'Management of Highly Migratory Fish Species (HMFS) in the Bay of Bengal Region' in Kochi, Kerala, India on November 23, 2017. The regional dialogue was part of the 11<sup>th</sup> Indian Fisheries and Aquaculture Forum organized by the ICAR-Central Institute of Fisheries Technology in association with the Asian Fisheries Society - Indian Branch (AFSIB) held on November 21- 24, 2017.

Many of the world's most valuable fisheries comprise of shared and highly migratory fish stocks (HMFS) and include species such as tunas, billfishes and pelagic sharks. These valuable HMFS are capable of contributing far more significantly to economic growth than is currently the case.

stocks underpin millions of livelihoods and food security in regions such as the Bay of Bengal (BoB), where 50 percent of the Exclusive Economic Zone-based tuna catch is by local small-scale fishing vessels. In addition to issues related to overfishing and managing fishing capacity, the other key concerns relate to incomplete data on the stocks and bycatch of Endangered, Threatened and Protected species.

The Dialogue was attended by 45 participants, comprising three representatives from Bangladesh, four from Sri Lanka, one from the Southeast Asian Fisheries Development Center (SEAFDEC) and representatives from research and development institutions, export houses, NGOs and fisher associations in India. Seven technical presentations were made followed by discussions.

In the concluding part of the Regional Dialogue, nine



Delegates of the Regional Dialogue on highly migratory fish species in the Bay of Bengal region

The capacity of many tuna fisheries now substantially exceeds requirements for sustainable and optimal extraction. Without an effective management, stocks are already biologically and economically fully exploited or overexploited. This is likely to impact negatively on the economies of many countries, especially where these species form an important source of revenue and livelihoods. The Indian Ocean Tuna Commission (IOTC) has cautioned that the yellowfin tuna is overexploited in the Indian Ocean and the catch should be reduced by 20 to 30 percent. These

panelists shared their views on four key themes that included research and development, market instruments, value addition and regional cooperation in the management of HMFS. The Regional Dialogue helped foster better understanding and potential coordination for conservation and management of the HMFS in the region and also towards the development of business plans that will attract investment into a long-term pilot on sustainable fisheries for tunas and tuna-like fishes in the Bay of Bengal region.

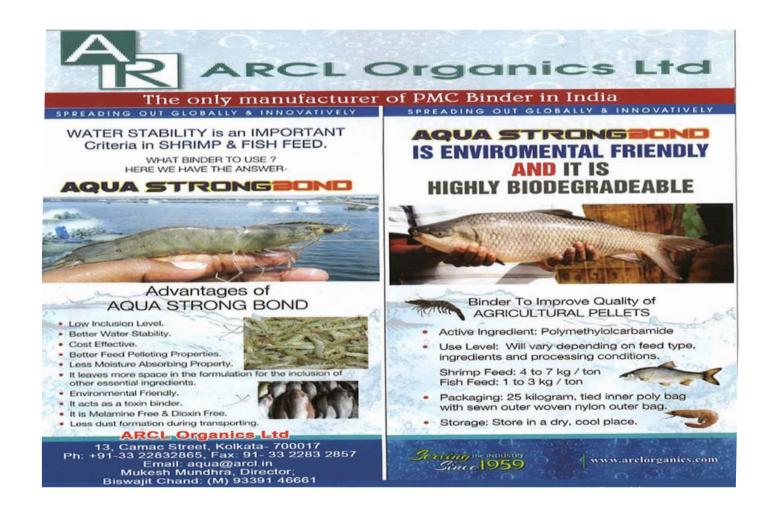
Following presentations were made by BOBP-IGO and representatives from different institutions.

- 1. Ecological and Economic Importance of Highly Migratory Fish Species - State of Knowledge: Dr. Yugraj Singh Yadava, Director, Bay of Bengal Programme
- 2. Potentialities of Highly Migratory Fish Stocks in the Exclusive Economic Zone of Bangladesh: Md. Enamul Hoq, Bangladesh Fisheries Research Institute
- 3. Ocean Partnership Project for sustainable Fisheries and Biodiversity Conservation Models for Innovation and Reforms: Bay of Bengal: Dr. E. Vivekanandan, National Consultant, Fisheries Development, OPPBOB
- 4. Tuna Fishery Status and Future Management Plans for

the Indian Ocean: Dr. E. Vivekanandan, National Consultant, Fisheries Development, OPPBOB

- 5. Status and Management of Highly Migratory Fish Species of Sri Lanka: HLNS Herath, Department of Fisheries and Aquatic Resources, Colombo, Sri Lanka
- 6. Regional Plan of Action for Sustainable Utilization of Neritic Tunas in Southeast Asia: Isara Chanrachkii, SEAFDEC
- 7. Value Addition in Tuna for Marketing of High-Value Products: M.K. Venu, Moon Fisheries, Kochi.

On behalf of MPEDA, Mr. T. Dola Sankar, Director (Marketing), Dr. T.R. Gibinkumar, and Mr. M. Shaji, Deputy Directors and Dr. Joice V. Thomas, Chief Executive, NETFISH -MPEDA took part in the dialogue.



# Highlights of marine fish landings in selected harbours of India during October 2017

#### N.R. SANGEETHA, V.V. AFSAL, JOICE V. THOMAS

**NETFISH-MPEDA** 

nformation on boat arrivals and fish landings at the major fishing harbours along the east and west coasts of India is recorded by NETFISH as part of MPEDA's catch certification system. NETFISH - MPEDA monitors the marine fish capture along Indian coast by recording the boat arrivals and fish landings at 46 major harbours and landing centres (Table 1) from the 9 maritime states in the country. The data collected are processed to arrive at a species-wise, state-wise, region-wise and harbour-wise evaluation of landings using MS office (excel). This report highlights the marine fish landings at major harbours of India during October 2017.

Table 1. List of harbours and landing centres selected for collecting the data

| Sl. No. | State       | Fishing harbour        |
|---------|-------------|------------------------|
| 1       |             | Beypore                |
| 2       |             | Puthiyappa             |
| 3       |             | Thoppumpady            |
| 4       | Kerala      | Munambam               |
| 5       | Refuid      | Sakthikulangara        |
| 6       |             | Thottapally            |
| 7       |             | Kayamkulam             |
| 8       |             | Vizhinjam              |
| 9       |             | Malpe                  |
| 10      |             | Gangoli                |
| 11      | Karnataka   | Tadri                  |
| 12      |             | Karwar                 |
| 13      |             | Honnavar               |
| 14      |             | Harne                  |
| 15      | Maharashtra | New Ferry Wharf        |
| 16      |             | Ratnagiri (Mirkarwada) |
| 17      |             | Sasson Dock            |
| 18      |             | Veraval                |
| 19      | Gujarat     | Porbandar              |
| 20      |             | Mangrol                |
| 21      | )           | Digha (Sankarpur)      |
| 22      | West Bengal | Deshapran              |
| 23      |             | Namkhana               |

| 24 |                   | Sultanpur     |
|----|-------------------|---------------|
| 25 | West Bengal       | Kakdwip       |
| 26 |                   | Raidigi       |
| 27 |                   | Paradeep      |
| 28 | Odisha            | Balaramgadi   |
| 29 | Ouisna            | Bahabalapur   |
| 30 |                   | Dhamara       |
| 31 |                   | Kakinada      |
| 32 | Andhra Pradesh    | Machilipatnam |
| 33 | Allullia Plauesii | Nizampatnam   |
| 34 |                   | Visakhapatnam |
| 35 |                   | Chennai       |
| 36 |                   | Pazhaiyar     |
| 37 |                   | Nagapattinam  |
| 38 |                   | Tuticorin     |
| 39 | Tamil Nadu        | Cuddalore     |
| 40 |                   | Mandapam      |
| 41 |                   | Chinnamuttom  |
| 42 |                   | Colachel      |
| 43 |                   | Pondicherry   |
| 44 |                   | Karaikal      |
| 45 | Goa               | Cutbona       |
| 46 | GUa               | Malim         |

#### **ESTIMATES BASED ON FISH LANDINGS**

The marine catch landings recorded during October 2017 from the selected 46 harbours and landing centres totalled to a quantity of 102,848.44 tons. The pelagic finfish resource landings formed the major share (i.e. 52 percent) of the total catch, which was to the tune of 53,123.87 tons (Fig.1).

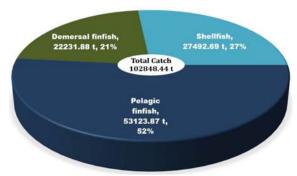
The shellfish resources contributed 27,492.69 tons (27 percent) whereas the share by Demersal finfish stocks was 22,231.88 tons (21 percent).

Of the 123 varieties of fish items recorded during the term, the

top five contributors in the chronological order were Indian mackerel, Indian oil sardine, Ribbonfish, Cuttlefish and Squid. These five species together formed 47 percent of the total catch (Fig. 2). The Indian mackerel in the topmost position recorded a quantity of 13,024.08 tons, forming 13 percent of the total catch. Besides the above cited five major fishery items, the other important contributors to the landing were Japanese Threadfin bream and Croakers, each contributing a share of 5,220.54 tons and 3,786.02 tons respectively. The Indian drift fish was the species which recorded the least quantity (0.1 ton) during the month.

The category-wise quantity of various fishery items recorded during the month is given in Table 2. Among pelagic finfish resources the Indian mackerel recorded the highest landing which was followed by Indian oil sardine and Ribbonfish. In the case of demersal finfishes, the maximum contribution was by Japanese threadfin bream and then by Croakers. Around 63 percent of the shellfish landing was formed by the Molluscan stock and the rest by Crustaceans.

Cuttlefish and Squid were the major contributors among Molluscs and in the case of Crustaceans, Penaeid shrimps were the major contributor- wherein *Karikkadi* shrimp had the highest share (2257.19 tons).



↑ Fig. 1. Category-wise fish landings during October 2017

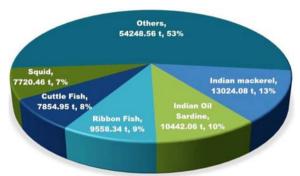


Fig. 2. Major items landed during October 2017

Table 2. Category-wise landing of various fishery items during October 2017

| Fish item          | Quantity in tons | % of Total Catch |  |
|--------------------|------------------|------------------|--|
| Pelagic finfish    |                  |                  |  |
| Indian mackerel    | 13024.08         | 12.66            |  |
| Indian Oil Sardine | 10442.06         | 10.15            |  |
| Ribbon Fish        | 9558.34          | 9.29             |  |
| Tunas              | 3310.27          | 3.22             |  |
| Scads              | 2482.31          | 2.41             |  |
| Seer Fish          | 2352.79          | 2.29             |  |
| Horse mackerel     | 1825.97          | 1.78             |  |
| Leather jacket     | 1757.56          | 1.71             |  |
| Bombay Duck        | 1657.12          | 1.61             |  |
| Anchovies          | 1651.88          | 1.61             |  |
| Hilsa              | 1157.30          | 1.13             |  |
| Lesser Sardines    | 851.71           | 0.83             |  |
| Dolphin fish       | 846.61           | 0.82             |  |
| Trevallys          | 674.04           | 0.66             |  |
| Barracudas         | 396.34           | 0.39             |  |
| Tardoore           | 390.18           | 0.38             |  |
| Queen fishes       | 156.34           | 0.15             |  |
| Sail fish          | 87.81            | 0.09             |  |

| Wolf herring              | 78.67    | 0.08  |
|---------------------------|----------|-------|
| Cobia                     | 66.09    | 0.06  |
| Mullet                    | 62.58    | 0.06  |
| Marlins                   | 59.46    | 0.06  |
| Oriental Bonito           | 55.80    | 0.05  |
| Indian ilisha             | 49.15    | 0.05  |
| Indian salmon             | 29.43    | 0.03  |
| Needle fish               | 23.96    | 0.02  |
| Sea bass                  | 23.59    | 0.02  |
| Flat needle fish          | 22.80    | 0.02  |
| Silver sillago            | 14.50    | 0.01  |
| Rainbow runner            | 9.66     | 0.01  |
| Milk fish                 | 5.20     | 0.01  |
| Indian thread fish        | 0.30     | 0.00  |
| Total                     | 53123.87 | 51.65 |
| Demersal finfish          |          |       |
| Japanese Thread fin bream | 5220.55  | 5.08  |
| Croakers                  | 3806.49  | 3.70  |
| Reef cods                 | 2991.94  | 2.91  |
| Lizard fish               | 2387.00  | 2.32  |
|                           |          |       |

| Bull's eyes       | 2380.90  | 2.31  |
|-------------------|----------|-------|
| Pomfrets          | 1271.11  | 1.24  |
| Cat fish          | 1271.03  | 1.24  |
| Snappers          | 1113.84  | 1.08  |
| Sole fish         | 745.22   | 0.72  |
| Goat fish         | 329.59   | 0.32  |
| Eel               | 238.92   | 0.23  |
| Moon fish         | 142.56   | 0.14  |
| Rays              | 105.12   | 0.10  |
| Pony fishes       | 90.90    | 0.09  |
| Tiger Perch       | 37.36    | 0.04  |
| Trigger fish      | 26.00    | 0.03  |
| Emperor Bream     | 14.90    | 0.01  |
| Ghol              | 12.47    | 0.01  |
| Black tip shark   | 10.64    | 0.01  |
| Spine foots       | 8.93     | 0.01  |
| Glassy Perchlet   | 8.80     | 0.01  |
| Indian Halibut    | 6.36     | 0.01  |
| Silver biddy      | 5.15     | 0.01  |
| Sea-breams        | 3.18     | 0.00  |
| Parrot fish       | 2.15     | 0.00  |
| Batfish           | 0.40     | 0.00  |
| Butter fish       | 0.30     | 0.00  |
| Indian drift fish | 0.10     | 0.00  |
| Total             | 22231.88 | 21.62 |

#### **REGION-WISE LANDINGS**

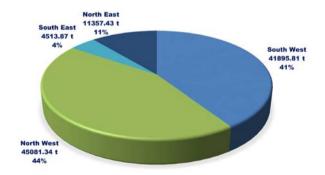
On assessing the landing data region-wise, it was found that the North West coast (comprised of seven selected landing sites in Maharashtra and Gujarat coasts) recorded the maximum quantity which was to the tune of 45,081.34 tons (44 percent) (Fig. 3).

The South West region (comprised of 15 selected harbours in Kerala, Karnataka and Goa) contributing 41,895.81 tons (41 percent) to the total landing held the subsequent position. The landings from 14 harbours in the South East region, i.e. in Tamil Nadu and Andhra Pradesh, could form only 4 percent of the total catch, which was least among the four regions. The North East region consisting of 10 of the selected landings sites in Odisha and West Bengal recorded a quantity of 11,357.43 tons.

In the North West, South West and North East coasts, pelagic finfish landing was more than the other 2 categories whereas in South East the landings were dominated by shellfish

| Shellfish                      |           |        |  |
|--------------------------------|-----------|--------|--|
| Crustacean                     |           |        |  |
| Penaeid Shrimps                | 9275.79   | 9.02   |  |
| Sea Crab                       | 635.10    | 0.62   |  |
| Mud Crab                       | 133.82    | 0.13   |  |
| Lobsters                       | 25.28     | 0.02   |  |
| Non-penaeid<br>shrimps         | 2.50      | 0.00   |  |
| Total Crustacean               | 10072.48  | 9.79   |  |
| Mollusc                        |           |        |  |
| Cuttlefish                     | 7854.95   | 7.64   |  |
| Squid                          | 7720.46   | 7.51   |  |
| Octopus                        | 1842.80   | 1.79   |  |
| Clam                           | 2.00      | 0.00   |  |
| Total Mollusc                  | 17420.21  | 16.94  |  |
| Total Shellfish 27492.69 26.73 |           |        |  |
| Grand Total                    | 102848.44 | 100.00 |  |

resources (Fig. 4). Demersal finfish landing was the lowest in all the regions except North West.



↑ Fig. 3. Region-wise landings recorded during October 2017

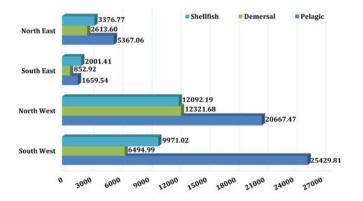


Fig. 4. Comparison of category-wise contribution (in tons) to the total landings of each region

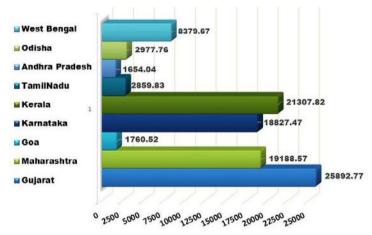
Table 3. Major items landed in each region during October 2017

| Item               | Quantity in tons | % of total<br>landings of the<br>region |
|--------------------|------------------|---|
| South West         |                  |   |
| Indian Oil Sardine | 9419.35          | 22.48                                   |
| Indian mackerel    | 4385.62          | 10.47                                   |
| Squid              | 3601.64          | 8.60                                    |
| Ribbon Fish        | 3165.50          | 7.56                                    |
| Cuttlefish         | 2841.08          | 6.78                                    |
| North West         |                  |   |
| Indian mackerel    | 7826.93          | 37.87                                   |
| Ribbon Fish        | 5613.12          | 27.16                                   |
| Leather jacket     | 1560.56          | 7.55                                    |
| Seer Fish          | 1108.61          | 5.36                                    |
| Horse mackerel     | 877.22           | 4.24                                    |
| South East         |                  |   |
| Cuttlefish         | 459.17           | 10.17                                   |
| Tuna               | 409.39           | 9.07                                    |
| Squid              | 305.08           | 6.76                                    |
| Brown Shrimp       | 269.74           | 5.98                                    |
| White Prawn        | 229.26           | 5.08                                    |
| North East         |                  |   |
| Croaker            | 1512.10          | 13.31                                   |
| Hilsa              | 1155.60          | 10.17                                   |
| Bombay Duck        | 840.66           | 7.40                                    |
| Karikkadi Shrimp   | 824.81           | 7.26                                    |
| Indian mackerel    | 632.98           | 5.57                                    |

#### STATE-WISE LANDINGS

Among the nine maritime states along the main land of India, the state of Gujarat had recorded the maximum marine fish landing during the month, which was to the tune of 25,892.77 tons forming more than 25 percent of the total catch (Fig. 5). Next to Gujarat, the state of Kerala contributed 21,307.82 tons which were more than 20 percent of the total from all the states. Maharashtra held the third place with a total landing of 19,188.57 tons (18 percent).

The West coast states together formed more than 84 percent of the total catch. In East coast, the highest landing was reported from West Bengal which was 8,379.67 tons (8 percent). The state which recorded least marine landing during the month was Andhra Pradesh where only 1,654.04 tons of fish were recorded.



↑ Fig. 5. State-wise fish landings (in tons) during October 2017

Table 4. Major items landed in various states during October 2017

| Item                       | Quantity in tons | % of total landings of the state |  |  |
|----------------------------|------------------|----------------------------------|--|--|
| Kerala                     |                  |                                  |  |  |
| Cuttlefish                 | 2128.50          | 9.99                             |  |  |
| Squid                      | 2072.86          | 9.73                             |  |  |
| Ribbon Fish                | 1979.11          | 9.29                             |  |  |
| Indian Oil Sardine         | 1557.11          | 7.31                             |  |  |
| Bull's eye- blood coloured | 1333.35          | 6.26                             |  |  |
| Karnataka                  |                  |                                  |  |  |
| Indian Oil Sardine         | 7806.19          | 41.46                            |  |  |
| Indian mackerel            | 2525.47          | 13.41                            |  |  |
| Squid                      | 1481.28          | 7.87                             |  |  |
| Ribbon Fish                | 1103.10          | 5.86                             |  |  |
| Cuttlefish                 | 709.58           | 3.77                             |  |  |

Table 4. Major items landed in various states during October 2017

| Table 4. Major items landed in various states during October 2017 |         |              |  |
|---|---------|--------------|--|
| Goa   |         |              |  |
| Indian mackerel   | 707.35  | 40.18        |  |
| Tuna  | 267.20  | 15.18        |  |
| Horse mackerel  | 178.75  | 10.15        |  |
| Moon fish   | 96.95   | 5.51         |  |
| Ribbon Fish   | 83.29   | 4.73         |  |
| Maharashtra   |         |              |  |
| Indian mackerel   | 7328.03 | 38.19        |  |
| Croaker   | 1183.33 | 6.17         |  |
| Squid   | 990.03  | 5.16         |  |
| Japanese Thread fin bream   | 791.28  | 4.12         |  |
| Horse mackerel  | 702.72  | 3.66         |  |
| Gujarat   |         |              |  |
| Ribbon Fish   | 4982.25 | 19.24        |  |
| Cuttlefish  | 3958.00 | 15.29        |  |
| Japanese Thread fin bream   | 3059.00 | 11.81        |  |
| Squid   | 2531.00 | 9.77         |  |
| Reef cod  | 2079.80 | 8.03         |  |
| Tamil Nadu  |         |              |  |
| Cuttlefish  | 439.61  | 15.37        |  |
| Squid   | 282.80  | 9.89         |  |
| Tuna  | 177.03  | 6.19         |  |
| Indian Scad   | 173.85  | 6.08         |  |
| Indian mackerel   | 120.92  | 4.23         |  |
| Andhra Pradesh  |         |              |  |
| Tuna  | 232.36  | 12.59        |  |
| Brown Shrimp  | 217.17  | 11.77        |  |
| White Prawn   | 191.45  | 10.38        |  |
| Karikkadi Shrimp  | 112.40  | 6.09         |  |
| Tiger Prawn   | 82.35   | 4.46         |  |
| Odisha  |         |              |  |
| Croaker   | 817.43  | 27.45        |  |
| Ribbon Fish   | 288.70  | 9.70         |  |
| Karikkadi Shrimp  | 257.13  | 8.64         |  |
| Indian mackerel   | 137.28  | 4.61         |  |
| Black pomfret   | 136.91  | 4.60         |  |
|   | 150.91  | 4.00         |  |
| West Bengal   | 1041.47 | 10.40        |  |
| Hilsa<br>Romboy Duok  | 1041.47 | 12.43        |  |
| Bombay Duck<br>Croaker  | 763.81  | 9.11<br>8.29 |  |
|   | 694.67  |              |  |
| Karikkadi Shrimp  | 567.68  | 6.77         |  |
| Indian mackerel   | 495.70  | 5.92         |  |

#### HARBOUR-WISE LANDINGS

The harbour-wise marine catch landings recorded during the month along West and East coasts are presented in fig. 6 and fig. 7 respectively. Among the 46 harbours, Veraval harbour in Gujarat registered the maximum landing of 11,808.50 tons (11 percent) and followed by Malpe harbour in Karnataka with a contribution of 10839.50 tons (10 percent). Beypore harbour in Kerala with 10,009.17 tons (9 percent) held the third position. Along East coast, the harbour which recorded the highest landing was Deshapran harbour in West Bengal where 2883.58 tons (3 percent) was landed.

Among the selected 22 harbours along the West coast, 15 recorded more than 1000 tons of catch whereas only 4 harbours along East coast had recorded over 1000 tons. The least quantity of landings was recorded from Tuticorin harbour (30.50 tons).

#### **ESTIMATES BASED ON BOAT ARRIVAL**

A total of 34,623 boat arrivals were recorded from the selected harbours during October 2017, of which 4116 boat arrivals were from Veraval harbour which was the highest. Next to Veraval was the Porbandar harbour where 3,419 numbers of boat arrivals had occurred. Only 10 out of the 46 harbours had recorded more than 1000 boat arrivals during the period, the details of which are given in table 5. More than 76 percent of the fishing vessels which landed their catch at the harbours belonged to the category of Trawlers and the remaining landings were by Purse seiners, Ring seiners, Gillnetters and Traditional crafts.

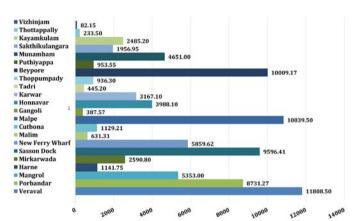


Fig. 6. Landings (in tons) at harbours along West coast during October 2017

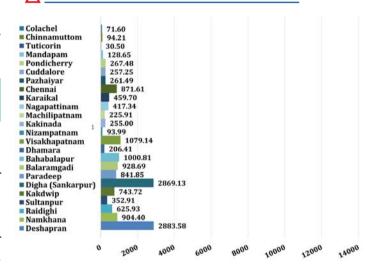


Fig. 7. Landings (in tons) at harbours along East coast during October 2017

Table 5. Fishing harbours which recorded > 1000 boat landings during October 2017

| Sl. No. | Fishing harbours  | State       | Number of boat landings |
|---------|-------------------|-------------|-------------------------|
| 1       | Veraval           | Gujarat     | 4116                    |
| 2       | Porbandar         | Gujarat     | 3419                    |
| 3       | Malpe             | Karnataka   | 2675                    |
| 4       | Mangrol           | Gujarat     | 2277                    |
| 5       | Sasson Dock       | Maharashtra | 1928                    |
| 6       | Harne             | Maharashtra | 1342                    |
| 7       | New Ferry Wharf   | Maharashtra | 1291                    |
| 8       | Digha (Sankarpur) | West Bengal | 1191                    |
| 9       | Deshapran         | West Bengal | 1144                    |
| 10      | Sakthikulangara   | Kerala      | 1004                    |

#### **COMPARATIVE ANALYSIS**

Table 6 shows the comparison of the data of October with that of previous months. The total fish catch had shown increasing trend over the months and there was an increase by around 800 tons in October when compared to that of September. The Pelagic finfish continued as the top contributor to the total catch and registered an increase of 6 percent than that of the previous month. A corresponding decrease was observed in the percentage share of shellfish landing, whereas the percentage share of Demersal finfish resources remained the same. Indian mackerel recorded as the topmost contributor whereas Squid had moved to the fifth position. The state of Gujarat took up the topmost position in terms of landings and Karnataka was moved down to the 4th position during the month. Veraval harbour in Gujarat continued the highest position among the harbours when considering the quantity landed. The total number of boat landings recorded had increased in October by nearly 2000 boats in comparison to that of September.

#### **SUMMARY**

In October 2017, a total of 1,02,848.44 tons of marine fishery resources were landed in 46 major fishing harbours of India wherein pelagic finfish contributed more quantity than shellfish stocks and demersal finfish.

Considering the total quantity landed, Indian mackerel recorded as the major fishery item. Landings from the West coast states together formed more than 84 percent of the total catch, and the North West coast contributed the maximum share of around 44 percent. Gujarat recorded the highest catch among the 9 maritime states.

More than 1000 tons of fish landings were reported from 19 of the selected harbours and the Veraval harbour recorded the highest landing as well as the maximum boat arrivals.



Table 6. Comparative analysis of the data

| Tabel Oatab                      | August 2017       | September 2017   | October 2017          |
|----------------------------------|-------------------|------------------|-----------------------|
| Total Catch                      | 77121.23 t        | 102013.55 t      | 102848.44 t           |
| Landing of Pelagic finfishes     | 32387.86 t (42%)  | 46448.00 t (46%) | 53123.87 t (52%)      |
| Landing of Demersal finfishes    | 15951.06 t (21%)  | 21374.27 t (21%) | 22231.88 t (21%)      |
| Landing of Shellfishes           | 28782.31 t (37%)  | 34191.28 t (33%) | 27492.69 t (27%)      |
| Species recorded highest landing | Ribbon fish (15%) | Squid (14%)      | Indian mackerel (13%) |
| State recorded highest landing   | Kerala (30%)      | Karnataka (25%)  | Gujarat (25%)         |
| Harbour recorded highest landing | Beypore (12%)     | Veraval (14%)    | Veraval (11%)         |
| Total Boat Arrivals              | 26881             | 32657            | 34623                 |

\*Percentage of Total Catch

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#### NETFISH-MPEDA training on 'fabrication of square mesh cod-end'

o popularize square mesh cod-ends in trawl nets and thus to promote responsible fishing practices, NETFISH conducted hands-on training programmes on 'fabrication of square mesh cod-ends' for the fishers and net menders in Maharashtra, Odisha and Karnataka. Square mesh cod-ends, compared to its diamond predecessor, has many advantages such as escapement of juveniles fish and other valuable marine organisms as well as less fuel consumption. The trainings in Odisha and Karnataka were carried out with the support of technical personnel from ICAR-CIFT.



Explaining the fabrication techniques to the trainees in Maharashtra

At Thal, Chalmala, Sakharakshi, Bodni and Rewas fishing villages of Raigad district in Maharashtra five training programmes were organized on September 14<sup>th</sup>, 15<sup>th</sup> and 29<sup>th</sup> 2017, with the support of member NGO-Kalarang Sanskrutik Samajik Sanstha. Through these trainings, 94 fishermen were made aware of conservation of marine resources by avoiding juvenile fishes in catch and demonstrated on how to make square mesh cod ends with available diamond mesh webbing. The trainees were explained the technique of fabrication of square mesh cod end and accordingly they made sample pieces in the programme.

Two square mesh fabrication trainings were conducted on October 25-26, 2017 at Paradeep Harbour with the technical support of Mr. Damdora Rout, Technical Officer, Mr. Sanyasi Ganik, Skilled Support Staff, and Mr. V. Kamraju, Net Mender from CIFT, Vizag. Each day's training was attended by 30 selected net menders from Paradeep and thus in total 60 net menders were benefitted by the two programmes. Hands on training on conversion of existing diamond mesh nets to square meshed cod ends was given by dividing the trainees in to 3 groups under each CIFT person. First the

trainees were shown how to convert diamond mesh net to square mesh ones and afterwards each group was made to fabricate square mesh net pieces using available diamond mesh nets. From the 60 trainees, 5 master trainees were selected by NETFISH, who will be the future trainers for the trainings to be conducted at other locations in Odisha. Member NGO, SRMSS coordinated the training programmes for NETFISH.

Three training programmes on 'fabrication of square mesh cod-ends' were conducted during October 24-26, 2017 in Malpe, Honnavar & Tadri for 105 net menders and fishers. Mr. Aravind, Senior Technical Officer from CIFT, Kochi provided the technical guidance in these training programmes. He has explained the benefits of square mesh cod-ends over diamond meshed ones to the trainees and then demonstrated conversion of diamond mesh net in to square mesh cod-end. In Malpe after the training session, the team comprising expert from CIFT, NETFISH SCO and NGO visited 8 different trawl net fabricator workshops in and around Malpe harbour and gave awareness cum training for net makers about square mesh cod-ends and its fabrication. An onboard fishing trial using square mesh cod-end was also carried out off the coast of Honnavar and Tadri, to show how the juveniles could escape from the net.



Onboard fishing trial using Square mesh cod-end at Honnavar

Along with expert from CIFT, NETFISH SCO, AD Fisheries, NGOs and fisher leaders participated in the onboard trial. State Fisheries official, officials from MPEDA Sub Regional Division Mangalore and fisher leaders from various associations and unions had attended the trainings held in Karnataka. Member NGO, CARES coordinated the training programme in Malpe and NGO, SCODWES co-ordinated the programmes in Honnavar and Tadri.



↑ SCO, NETFISH Maharashtra with the trainees



★ Helping out the net mender for square mesh fabrication

The fishers and net menders who have participated in the square mesh fabrication trainings fully agreed that the use of square mesh cod end in trawl fishing is beneficial in terms of conservation of fishery resources as well as saving sorting time and fuel. Every one took the square mesh training in a positive way and urged NETFISH to organize more number of programmes in this line.

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# NETFISH -MPEDA trains fisher women on value-added fishery products



Trainees and officers with the value added products prepared at NIFPHATT

With an aim to improve the living conditions of fisherfolk, NETFISH - MPEDA conducted various training programmes, especially for fisherwomen, on 'Preparation of Value Added Fishery Products' Recently five such value addition trainings were conducted in West Bengal, Kerala, Karnataka and Maharashtra

The training organized on October 12, 2017 at Khejuri Suryadip Mahila Swayambhar Gosthi Prathamik Samabay Samity Limited, Khejuri, Purba Medinipur, West Bengal was attended by 33 members from 10 different fisherwomen Self Help Groups of Khejuri block.

The inaugural function of the training was attended by the Panchayat Pradhan of Khejuri Grama Panchayat, Karmadhyakshya of Khejuri –II Panchayat Samity, Ex-MLA, Area Coordinator of Anadadhara Prakalpa- SHG, other staff of Khejuri –II Block Development Office and HDC Deshapran. The Karmadhyakshya highlighted that good number of tourists and pilgrims visit Khejuri throughout the year and hence it is a suitable area to prepare and sell value-added fishery products. Panchayat Pradhan in his speech assured all sort of assistance from the Panchayat to set up a stall for selling value-added fishery products. She also thanked NETFISH for conducting such training programme for the SHGs. NETFISH arranged all the ingredients, vegetables, fish, prawn and hired necessary utensils and accessories for conducting the training programme.

Mr. Atanu Ray, NETFISH State Coordinator in West Bengal has demonstrated the preparation of various value-added fishery products such as fish balls, fish pickle, prawn pickle, coated prawn products such as breaded butterfly, breaded stretched shrimp, fish pakora, etc. All the trainees were also engaged in the preparation of these products. They were trained to make butterfly cut and stretch shrimp during the programme. The details of ingredients and recipe for each product in the Bengali language were given to all the participants.

THE KARMADHYAKSHYA HIGHLIGHTED THAT GOOD NUMBER OF TOURISTS AND PILGRIMS VISIT KHEJURI THROUGHOUT THE YEAR AND HENCE IT IS A SUITABLE AREA TO PREPARE AND SELL VALUE-ADDED FISHERY PRODUCTS.

Similarly, another programme was organized on November 16, 2017, at Dadanpatrabar Matsya Khuti, Dadanpatrabar, Kalindi, Ramnagar, Purba Medinipur for 27 fisherwomen from three different SHGs from Dakshin Purushottampur (Chewasuli) and Dadanpatrabar, New Jaldah of Ramnagar. The trainees were explained about the FISH Nutricart in Vishakapatnam and urged them to set up a kiosk near to the sea coast where a good number of people gathers around



A view of the training conducted at Khejuri, West Bengal

Preparing value added fishery products in Vengurle programme

the year. The participants of both the training, after tasting the prepared products, got themselves convinced about its quality and taste and they thanked NETFISH for providing such a valuable training. Sarboday Sangha, the member NGO, supported NETFISH for arranging these programmes.

NETFISH arranged three-day hands on training programme on value addition of fishery products from November 8-10, 2017 at National Institute of Fisheries Post Harvest Technology and Training (NIFPHATT), Kochi for a group of 15 fisherwomen. The programme was inaugurated by Dr. Jai Singh Meena, Director-in-charge, NIFPHATT in a function presided over by Dr. Joice V. Thomas, CE, NETFISH-MPEDA.

NETFISH-MPEDA has identified a potential group of women from the coastal village of Munakkakadavu in Thrissur district who are interested to take up value addition of fishery products as a source of livelihood. A few of them are currently engaged in dryfish production at a very small scale. On interaction with the group, they expressed their willingness to improve their business by selling more variety of products, reaching a wider spectrum of people in the market and thus to have a better livelihood.

Subsequently, a training programme was organized by NETFISH -MPEDA at NIFPHATT for this group of fisherwomen and they were given hands on training on the preparation of eleven items such as fish cutlet, fish finger, fish rolls, fish samosa, dry prawn masala, fish wafers, fish curry, fish pickle, dry prawn chutney, fish soup and traditional fish fry (*pollichathu*). The trainees actively participated in the three-day programme and they were distributed training certificate at the end of the programme. The fisherwomen expressed their deep gratitude to NETFISH-MPEDA and NIFPHATT for arranging such a useful training programme for them.

On November 16, 2017, value addition training was given at Aligadda, near to Karwar Harbour for the members of Gulabi Mahila Swasahaya Sangh, fisherwomen Self Help Groups. First, the trainees were introduced to the hygienic handling of fish, personal hygiene, preparation of quality fish products and marketing and financial management. Then hands on training on preparation of different products like mackerel fish mol (pickle), Shark fish mol (pickle), dried shrimp chutney powder, dried anchovy chutney powder and dried clam chutney powder was given to the trainees. The member NGO, SCODWES supported in coordinating the training. In Maharashtra, training was conducted at Vengurle and Kelus in Sindhudurg district on November 29, 2017, which were attended by 10 fisherwomen in Vengurle and 15 fisherwomen in Kelus. They prepared fish Cutlets, fish vada and prawn pickle in both the programmes. These programmes were conducted with local co-operation of Nagarik Bahu Uddeshiy Seva Pratishthan, Sindhudurg.



∧ Value Addition training at Dadanpatrabar, West Bengal



Value addition training at Karwar

## Kochi hosts Indian Fisheries and Aquaculture Forum



Mr. M. Venkaiah Naidu, Hon'ble Vice President of India inaugurating the 11th Indian Fisheries and Aquaculture Forum

he Asian Fisheries Society - Indian Branch (AFSIB) organized 11th Indian Fisheries and Aquaculture Forum (IFAF) on 'Fostering Innovations in Fisheries and Aquaculture - Focus on Sustainability and Safety' through Indian Council of Agricultural Research - Central Institute of Fisheries Technology (ICAR-CIFT) at Cochin. The programme was held on November 21-24, 2017 at Hotel Le Meridien, Kochi, Kerala. It has provided a comprehensive outlook for the Fisheries and Aquaculture sectors, for achieving greater synergy among the stakeholders and planning strategies for capture fisheries and aqua farming to build higher levels of sustainability and profitability in line with Blue Growth Initiative.

The objectives of the forum was to provide a scientific platform to deliberate on the current research outputs and identify the research and development needs of the sector, nurture innovation skills to address the issues of sustainability and safety of fish, encourage scientists to think, develop and undertake need-based research to address core issues affecting fisheries sector and to review the research and developments in fisheries science, develop strategies for transfer and refinement of these technologies.

Mr. Venkaiah Naidu, Hon'ble Vice President of India has inaugurated the function. Governor of Kerala Justice (Retd.) P. Sathasivam, Dr. K.T. Jaleel, Minister for Local Administration, Government of Kerala, Minister for Fisheries, Mrs. J. Mercykutty Amma, Harbour Engineering and Cashew Industry, Government of Kerala, Prof. K.V. Thomas, Member of Parliament, , Ernakulam along with Dr. Trilochan Mohapatra, Secretary, DARE and DG, ICAR, Dr. J.K. Jena DDG (Fishery Science), ICAR, Dr. C.N. Ravishankar, Convener, 11th IFAF, Director, ICAR-CIFT and many more luminaries also graced the event. The event had technical sessions on Fisheries

resources, Fishing systems for sustainable fisheries, Aquaculture production, Aquatic animal health management, Fish processing and packaging, Fishomics and Frontier Sciences for Blue Bio-economy, Socio-Economics, Fisheries Trade, Policy and Governance. Symposium, exhibition, oral and poster presentations were parallel events. Gratitude Awards, Lifetime Achievement Awards, Gender Justice and Equity Award, SOFTI Biennial Award, Prof. HPC Shetty Award, Dr. TVR Pillai Award, Mr.J.V.H. Dixitulu National Award and PFGF Awards were also distributed in the triennial event.



Mrs. J. Mercykutty Amma, Minister for Fisheries, Harbour Engineering & Cashew Industry, Govt. of Kerala and Prof. K.V. Thomas, Member of Parliament at the exhibition stall of MPEDA

#### **MPEDA'S PARTICIPATION**

MPEDA participated in the event and arranged two stalls with 6 live specimens in the exhibition. Under the guidance of Mr. T Dola Sankar, Director (Marketing), Mr. M. Shaji, Deputy Director, Mr. V. I. Hakkim, Assistant Director, Dr. Joice V. Thomas, CE, NETFISH-MPEDA and Mrs. Manjusha, Field Supervisor has coordinated MPEDA's participation.

The exhibition during 11th IFAF gave an opportunity for highlighting the technologies and achievements of different research institutes and developmental organizations working in the domain of agriculture and allied sectors including fisheries for the benefit of the rural farming community, agri-business sector, food-processing industries, scholars and for promoting small farmer entrepreneurship development.

The exhibition stalls visited by Minister Mrs. J. Mercykutty Amma, Prof. K.V. Thomas, Member of Parliament, Scientists from India and abroad specially involved in fisheries and aquaculture sectors, business executives of seafood industries, fish processing, packaging industries and retail chains, conference delegates, fish entrepreneurs, students and other invitees.



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isheries sector plays a very important role in the economic, social and nutritional well being of people in the Asian countries, which often figures as an important component in the rural development and poverty alleviation. In India, the sector has been recognized as a powerful income and employment generator to over 14 million fishers and farmers. The sector offers affordable and quality animal protein to the people ensuring nutritional security. With an export value of over Rs. 37,000 crores, the fisheries sector is playing a major role in stimulating and strengthening the economic growth of the nation. The government policies were attuned towards ushering 'Blue Revolution' (*Neel Kranti*), by sustainable utilization of fisheries for improving the lives and livelihoods of fishers and their families. However, several issues such as overfishing, stagnation of marine fish production, the impact of climate change, the disease in aquaculture and quality of seafood and trade-related aspects have emerged in recent years.



## Strategies for value-addition of fish

#### SRINU RATHLAVATH, GONUGODUGU PRAVEEN KUMAR, BHARGAVI PRIYADARSHINI, K.A. MARTIN XAVIER

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alues-addition has become an increasingly important concept for sustainability, marketing and sales. Values-addition is defined as foods that are produced and marketed using attributes other than their inherent nutritional or food characteristics. Value-added fish and shellfish products usually undergo some level of processing that will inactivate or kill bacteria and pathogens. The inactivation or reduction of bacteria in a food generally results in shelf-life extension and can also provide new market opportunities. The deterioration of fish and shellfish quality is attributed to the decomposition of key components of the raw material by endogenous enzymes or microbial action.

Heat and cold are the two major food processing treatments used throughout the world and both have a significant effect on inactivating enzymes and destroying microorganisms. However, processing can be a two-edged sword, as food products can undergo alteration (protein denaturation) that will affect final product quality and acceptability. Freezing is a good example of a technology that has been in existence for more than 100 years but only recently has been specifically used to maintain high quality and preserve the natural attributes of fresh fish and shellfish. The general premise of value-addition has changed over the past years. While most of us are familiar with traditional processing of seafood (smoking, curing), there are other concepts that need to be addressed when discussing valued-added seafood products. It is important to understand the driving forces for new products and how new demands can be met with

new technologies and new philosophies. The consumer is striving to understand the whole food system rather than just purchasing the end product at retail and that has significantly changed how the industry does business and presents products to the consumer. Therefore, this article will discuss aspects one should consider for the development of value-added fish and fish products. There are several advantages of value-added production from all sectors of the seafood industry.

Value-added products can increase shelf life, provide another level of safety, help maintain a high level of quality, open new market opportunities, offer a solution for over-supply issues, as well as promote use of new technologies.

#### 2. VALUE-ADDED PRODUCT DEVELOPMENT (VAPD)

One of the primary objectives of value-added product development is to create new markets for industries that may have shown stagnant growth in the marketplace. The different strategies one should consider for the proper utilisation of the resources and to develop a highly acceptable value-added product has been discussed below.

#### 2.1. MARKET-DRIVEN STRATEGY

Current changes in eating habits of growing population provide multiple opportunities that will allow VAPD in seafood to capture new and expanding markets at domestic and

international level. Poultry industries has done extremely well in developing VAPD and have been satisfying consumer demand by it's astounding to visit a retail operation and witness the wide variety of poultry products that are offered to the consumer from just few single species. There are five basic five principles need to be followed to satisfy the consumer with VAPD are (i) quality (ii) safety (iii) convenience (iv) taste and (v) affordability for any new product. It is often not possible to capture all five attributes in a single value-added product. The most successful product ventures generally provide the majority of these principles. Wide variety of fishes and shellfishes are considered a benefit from a culinary standpoint and develop a value added product. Each and every fish and shellfishes have their own processing methods for the end product preparation. For example, the main safety and quality concerns of oyster processing are quite different from those of tilapia processing. Furthermore, the consumer may also have different priorities in these two sectors. While safety may be paramount for the consumer in an oyster product, convenience and cost may be the important purchasing criteria for tilapia.

INNOVATIVE TECHNOLOGIES CAN PROVIDE INTERESTING OPPORTUNITIES FOR HIGH-QUALITY, SAFE SEAFOOD PRODUCTS THAT ARE APPEALING TO THE CONSUMER.

Industry must understand the supply issues, competition, regulations and industry proficiency is vital to the expansion or development of new markets. Successful entry into the markets is often determined by the ability of the industry to understand the needs and know how to address them. In addition, the general recognition that seafood is not only a food of sustenance but also one highly valued for its nutritional quality is becoming more important to the consumer as well. One needs to ask what resources will best meet the demands for increasing populations as well as provide a source of value-added seafood products.

Innovative technologies can provide interesting opportunities for high-quality, safe seafood products that are appealing to the consumer. When the needs of both the consumer and the industry converge, we see great opportunities for success in the arena of seafood value-added products. More recent trends in food consumption patterns include understanding market demands that focus on different demographics and the needs within that age group. Convenience is always an important driver for new seafood markets and the recent food trend toward fish fingers, fish burgers, fish sandwich

spread, fish nuggets, crab cakes or sliders, fish tacos and other snacks provide new openings for market driven seafood products.

#### 2.2. VALUES-DRIVEN STRATEGY

A value-chain is an alliance of enterprises collaborating vertically to achieve a more rewarding position on the marketplace. This concept is critical to value-added seafood as distribution is often the major bottleneck in the successful marketing of these products. Seafood is one of the first industry sectors to embrace the 'traceability' concept; many seafood companies began their own traceability programmes. Traceability is looked upon as a regulatory programme to prevent consumer fraud and ensure the wholesomeness of the seafood supply, several companies have added elements of marketing to the traceability component to promote seafood and highlight value-added attributes to their products.

For example Gulf Wild programme allows the customer to verify fish species, see the harvesting vessel's name and captain's background, know what fish house and city where the seafood was landed, down to a 10-mile square location in the Gulf where the fish was caught. This type of information can be a powerful marketing tool to assure the consumer that their fish or seafood product is harvested in a sustainable manner as well as giving support to local fisheries. There are several other traceability programmes that exist and are being developed.

Sustainability is often a critical factor in the value-added arena and can be an important driver in the marketing of seafood throughout the world. There are several programmes that highlight sustainability in fisheries. MSC, ASMI etc. are some private certification programmes. These programmes focus on the sustainability of fisheries stocks and have a biological emphasis, as well as stressing low environmental impact. Many private companies have their own sustainability programme that covers more of the value chain from capture to processing and distribution and often have third party certification.

The MSC certified fisheries programme is one of the oldest sustainability programmes and is well accepted. The programme has developed standards for sustainable fishing and seafood traceability and works closely with major fisheries organizations to certify fisheries and their management practices. Currently, 23 percent of consumers recognize the MSC label. More importantly, large retail operations require that their fishery resource is sustainable and certified. This remarkable transition to requiring sustainable products is also crucial for the aquaculture sector and there are several programmes underway to certify proper management of aquaculture as well. These include third party certification programmes such as Best

Aquaculture Practices, and the Aquaculture Stewardship Council, which is similar to the MSC programme.

#### 2.3. HEALTH-DRIVEN STRATEGY

Seafood has been long viewed as a healthy food for its health-promoting lipids and good source of proteins. Many studies have shown the association of fish consumption and reductions in death from coronary heart disease. Fish contains high amount of omega-3 fatty acids. Unsaturated fatty acids like EPA and DHA cannot be synthesized in substantial amounts by the human body and can be obtained through the diet containing seafood especially fatty fish. Seafood also contains a number of vitamins (A, B-complex and D) and minerals (such as selenium, iodine, iron and zinc) that have been linked to various health benefits. Based on the identification and characterization of the health benefits of seafood and EPA/DHA intake, a number of health-based guidance values and nutritional recommendations have been developed by various health organizations.

While it is recognized that there are some risks involved with seafood consumption, it is widely accepted that the benefits greatly outweigh these and that the general populace needs to increase its consumption of fish and shellfish. The seafood industry has recognized the marketing advantage of omega-3 that is uniquely found in seafood. Many of the traditional and new value-added products have developed labels that highlight the nutritional benefits such as high omega-3 content. Seafood value-added products serve this market well; there will be opportunities to develop new products that focus on the nutritional quality, as well as the eating quality of seafood products. Sometimes omega-3 is enriched to seafood product as in the case of fortified surimi seafood. The main concern has been that these fatty acids are highly unsaturated and that lipid oxidation will occur and off-flavours develop. Research has shown that seafood products can be fortified with fish oils with minimal deterioration of the sensory characteristics of the product. Some of the species such as small pelagic fish (e.g. sardines, anchovies) also have high amounts of EPA and DHA but are often directed toward non-food uses. Although these species are canned by traditional methods and represent a low-priced and highly nutritious product for the general consumer, new opportunities can be generated for entrepreneurs and chefs to add-value to new dishes and create new products at the high end as well.

#### 2.4. RESOURCE-DRIVEN STRATEGY

It is a well-known fact that capture fisheries are at their limit and there is little opportunity for growth in this sector. Therefore, there is little room for expansion of resources in the wild-capture sector and most of the growth in fisheries and satisfying increased world demand will come from aquaculture. World aquaculture production continues to

increase at about 5 percent per year while wild capture has levelled off or slightly decreased. Marine aquaculture has grown faster than inland aquaculture and should continue to hold this level of growth over the next decade as new technologies and new species facilitate growth in this sector. Consequently, the role of aquaculture in most developing countries often has two purposes: satisfying domestic markets and consumer demands, and a mechanism for foreign investment and economic benefits through international markets and revenue generation. The dramatic increase in aquaculture production is a two-edged sword as there is increased concern about environmental damage and other impacts on developing countries where growth is highest.

#### 2.5. TECHNOLOGY-DRIVEN STRATEGY

VALUE-ADDED PRODUCTS CAN BE DRIVEN BY NEW TECHNOLOGIES THAT ALLOW FOR PROCESSING BREAKTHROUGHS IN PRODUCT SAFETY, QUALITY OR EFFICIENCY OF PRODUCTION.

Value-added products can be driven by new technologies that allow for processing breakthroughs in product safety, quality or efficiency of production. Emerging technologies, such as high pressure processing, radio-frequency heating, flexible retort packaging, etc., have spurred increased research activity and the potential for improving the safety and quality of seafood products. Novel packaging technologies have allowed for innovative developments in VAPD and new market opportunities for many traditional products. There is a need to reduce the risk of naturally occurring pathogens like *Vibrio, Clostridium* as well as the public health significance pathogens. Researchers and their industry counterparts should increase the safety of the product along with developing new unique products for the consumer.

Several companies are now freezing seafood, thereby creating a portfolio of safe products for the consumer to choose from. High pressure processing (HPP) is an emerging technology that has shown by several researchers to inactivate *Vibrio* pathogens in whole oysters. Other notable technologies are modified atmosphere packaging (MAP), flexible retort packaging for canning and filtered smoke application. MAP has been proposed for seafood to control both spoilage and pathogenic microbes. This pack uses carbon dioxide, nitrogen and oxygen at varying ratios.

Flexible retort packages are also gaining popularity as an alternative to cans as the material cost is five times cheaper than cans and their thin profile can reduce shipping space almost sevenfold. In addition, increased heat penetration

efficiency can significantly reduce cooking time and thereby increase product quality. Finally, the large flat surface area of these packages allows increased space for printing. Innovations in this packaging technology include packages that can stand on their end, with easy to tear tops that can be removed for direct package microwaving and direct consumption. Addition of sodium nitrite for curing smoked fishes is another technology which serves not only fix colour, but also to enhance the inhibitory effectiveness of salt against C. *botulinum* type E spores.

#### 3. CONCLUSIONS

Attention to consumer demands as well as industry needs will be key to the introduction of value-added products and their success in the marketplace. The positive health aspects of seafood will continue to be a driver for the development of new products and the use of resources that highlight these characteristics. Increased worldwide demand for seafood will be met primarily through increases in aquaculture. The production of value-added seafood products affords new opportunities for entrepreneurs and established companies to meet future market challenges at the local, regional and international level.

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## **AQUACULTURE** SCENE

# Orientation programme held in Nellore on the impact of Antibiotic usage on shrimp farming

ne-day orientation programme on the use of antibiotics and its impact on shrimp farming was organized at Nellore. The meeting was chaired by Mr. Rama Sankar Naik IAS, Commissioner of Fisheries, Andhra Pradesh.

Mr. V. Venkata Subba Reddy, Joint Collector – II, Ms. M.B. Mayadevi, representative of Export Inspection Council, Mr. Murali, representative of Drugs Control Department, Dr. P. Hari Babu, Associate Dean, College of Fisheries Science, Muthukur, representative of Fisheries College/University, Dr. P. Ram Mohan Rao, Fisheries Consultant, Dept. of Fisheries (SIFT, Kakinada), Mrs. Regina, Deputy Director of Fisheries O/o Commissioner of Fisheries, Vijayawada, Mr. A. Solomon Raju, Joint Director of Fisheries, Nellore participated the meeting. Dr. K. Ganesh, Assistant Director, MPEDA Satellite Centre, Nellore represented MPEDA at the programme.

The first session was attended by 43 field and feed technicians and the second session held at Grievance hall, collectorate was attended by 49, including lab operators/ technicians, processors and hatchery operators. Dr. Ganesh explained the present scenario in aquaculture sector and the alarming rejections from EU and US which may have a severe impact on export of marine products from India. Also, the steps are taken so far and the suggested emergency preparedness was explained in detail. Similarly, the importance of Geo-tagging and tractability up to production level were explained to the participants in both the sessions.

The need for following aseptic handling techniques in live feed handling and the achievement so far made in live feed production by MPEDA-RGCA were explained. The participants well appreciated the dedicated efforts taken by MPEDA especially on the ongoing pre-harvest test (PHT)

## **AQUACULTURE** SCENE

enrolment programme throughout the state.

Participants suggested that PHT should make compulsory for every harvest and farmers should mandatorily check shrimp seed for the presence of banned antibiotics. The Government should take initiative for making the availability of SPF polychaetes worms in India or explore whether such facility can be created in Andhra Pradesh.

It was informed that all the hatcheries in Andhra Pradesh are finding it difficult to get quality microalgae. For each batch, they have to travel to Kochi or Tuticorin. The quality issues, due to contamination through live feed need to be

addressed. In crucial situations, hatcheries are compelled to use antibiotics.

Participants opined that proper training needs to be given to farm technicians and consultants by government agencies as a majority of the small-scale farmers solely depend on such technicians and their prescriptions and suggesting.

The government should make some arrangements for producing more artemia cyst in India as scarcity leads to shooting up of prices. The quarantine facility for vannamei should be made available in Andhra Pradesh as early as possible, the participants requested.

# Orientation programme on the impact of antibiotic use at Guntur



ne-day orientation programme on various aspects of antibiotics in aquaculture was organized at the College of Agriculture, Bapatla in Andhra Pradesh on 6th December 2017. The meeting was chaired by the Commissioner of Fisheries, Andhra Pradesh. Deputy Director, MPEDA Regional Division, Vizag, Assistant Director, Export Inspection Council and Consultant, SIFT also participated in the programme. The orientation was focused on feed and field technicians, hatchery and lab technicians, as well as aggregators and exporters' agents or exporters.

The impact of antibiotic usages and rejections happening worldwide were explained to the stakeholders. Based on the insights from the orientation programme, the stakeholders requested for the immediate opening up of MPEDA ELISA lab at Bapatla. The participants have also suggested that two aqua labs need to be set up on an immediate basis preferably Karlapalem and Nizampatnam, and requirement of aqua-zonation for the districts.

The programme discussed pre-harvest test to be made compulsory and provisions for testing antibiotics in hatchery samples at MPEDA ELISA Labs. Stakeholders demanded that farms without enrolment should be immediately closed

down by the District Collectors. Exporters should restrain from encouraging non-tested farm materials and farms detected with antibiotics should be immediately closed down. The participants asked for proper training for farm technicians and feed technicians by relevant agencies.

#### KRISHNA DISTRICT

Representing MPEDA, Director (Marketing) and Deputy Director, Regional Division, Vijayawada attended one-day orientation programme held at Sub Collectors office at Animal Husbandry function hall in Vijayawada on 4<sup>th</sup> December 2017. The meeting was chaired by the Commissioner of Fisheries, Andhra Pradesh.

The meeting suggested that there should be provision at MPEDA ELISA Labs for testing antibiotics in hatchery seed samples. Participants suggested that antibiotic test kits should be subsidised. It was also demanded that the import duty on Artemia may be given away by the Government of India. There were requests for strict enforcement of the activities of TASKFORCE as well as strict action and implementation of G.O.Ms. no.2.

## **AQUACULTURE** SCENE

## Shrimp hatchery operators meeting held at Vijayawada



Mr. Archiman Lahiri, Deputy Director, MPEDA addressing the participants

PEDA Regional Division, Vijayawada organized a hatchery operators meet on antibiotics issues under the Chairmanship of Commissioner of Fisheries, Govt. of Andhra Pradesh. The meet was attended by 37 shrimp hatchery operators. Under the National Residue Control (NRCP) plan the meeting was intended to discuss the issues in the Shrimp samples and the corrective measures to be taken by the different stakeholders. Mr. Archiman Lahiri, Deputy Director, MPEDA, Regional Division, Vijayawada welcomed the gathering and briefed about the importance of the meeting.

Mr. Rama Sankar Naik IAS, Commissioner of Fisheries, informed about the meeting with the Chief Secretary on antibiotics issues. He brought into limelight the Apex committee appointment under the Chairmanship of the Health Minister. He urged all operators to follow the Coastal Aquaculture Authority (CAA) norms.

The meeting concluded that the antibiotics detected from the farmed products are mainly from feed supplements. There was consensus for setting up of an advanced lab at center place of coastal districts like Eluru to test feed supplements. The participants suggested that shrimp seed should be collected from all hatcheries for testing and inland hatcheries need to be brought into strict surveillance. Seawater also should be tested at high tide/low tide, continuously for 15 days and weeds should be removed from drains especially at sea mouth. The meeting also pointed to the need for orientation training by government institutions to hatchery technicians. The hatchery operators requested for reduction of power tariff to Rs.1.10/unit as in Odisha and to provide a subsidy for Artemia imports.

The points of discussion were clarified and explained in detail by Mr. Archiman Lahiri, Deputy Director MPEDA. Mr. B. Rao, Assistant Director, MPEDA proposed a vote of thanks.



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## MPEDA & USFDA organises training course on GAP in Mangalore

ndian aqua-cultured seafood currently enjoys a worldwide reputation as a safe and wholesome food. To maintain this status, hatchery operators and farmers need to determine and update the preventive controls or Good Aquaculture Practices (GAPs) which are essential to minimize the potential risks for farm-raised products from pathogens, chemicals, filth, and unapproved or misused animal drugs. A better approach is to educate the hatchery operators, farmers and processors in Good Aquaculture Practices to make awareness to improve the safety of farm-raised shrimps for domestic consumption as well as for exports. The majority of the concerns on the safety and quality of aquaculture products originate at the farm level, where there is a requirement for proper scientific training. These concerns include awareness on contamination with human pathogens and chemical contaminants, use of unapproved chemotherapeutic drugs, etc.

To update the stakeholders in the recent developments, Marine Products Export Development Authority (MPEDA) in association with U.S. Food and Drug Administration (FDA) organized a two-day training programme on Good Aquaculture Practices and Food Safety Preventative Controls for Aquaculture Farms during November 17-18, 2017 in Mangalore. This programme included lectures, presentations, problem analysis, pond farm and production facility requirements and evaluation. Group discussion and presentations on various hazards and hazard analysis in Good Aquaculture Practices were a real eye-opener for the participants. The two-day programme helped them evaluate the local practices and make recommendations for improvement with the interaction between the group and the faculty from USFDA.

This programme conducted for the benefit of stakeholders in West coast involved in Aquaculture and processing of



↑ Dr. Christopher Priddy, Assistant Country Director, USFDA, New Delhi narrating the course outline at the USFDA-MPEDA training programme

aqua-cultured items. Training mainly focused on control or prevention of food safety issues. Various ideas were discussed during these training programmes.

Dr. Ansar Ali, Deputy Director, MPEDA, Head Office, Kochi delivered the welcome address. He requested the participants to utilize this opportunity for learning about the preventive controls introduced by the USFDA for aquaculture farms towards achieving sea-food safety. Representing the FDA, Dr. Stanley Serfling, Consumer

Safety Officer and Dr. Christopher Priddy, Assistant Country Director, USFDA, New Delhi narrated course outline. Mr. Shanmukha Rao, Chief Executive Officer, NaCSA highlighted the initiatives of NaCSA on sustainable aquaculture. Mr. S. Asok Kumar, Deputy Director, MPEDA, Sub Regional Division, Mangalore described the role of MPEDA in residue monitoring across the country and urged the participants to actively involved in the group discussions and presentation. He has also extended vote of thanks.

### **QUALITY FRONT**



A Participants along with MPEDA officials and USFDA trainers

Classes were taken by Dr. Christopher Priddy and Dr. Stanley Serfling of USFDA, Mr. Shanmukha Rao, CEO, NaCSA, Mr. Pandirajan, Assistant Director, Regional Division, Panvel and Mr. G. Ramar, Junior Technical Officer, Sub Regional Centre, Karwar.



Dr. Stanley Serfling, Consumer Safety Officer, USFDA interacting with participants

The participants discussed topics such as preventative controls for aquaculture farms, farm bio-security outside the farm, USFDA approved aquaculture drugs and laboratory testing, Good Aquaculture Practices plan elements inside the farm, USFDA Seafood HACCP regulations, preventive controls for seafood safety, USFDA seafood import programme and Good Aquaculture Practices for India.

The training course was attended by 57 stakeholders in the West coast viz. hatchery operators, farmers, processors, officials from various state and central government agencies viz. state fisheries departments, state fisheries college, Marine Products Export Development Authority (MPEDA), Export Inspection Council (EIC), Central Marine Fisheries Research Institute (CMFRI), National Centre for Sustainable Aquaculture (NaCSA) and Network for Fish Quality Management and Sustainable Fishing (NETFISH).





## Worlds heaviest bony fish discovered in Japan

The world's heaviest bony fish ever caught - weighing a whopping 2,300 kilogram's - has been identified and correctly named by Japanese experts.

The fish is a *Mola alexandrini* bump-head sunfish, and not a member of the more commonly known *Mola mola* ocean sunfish species as originally thought, according to researchers from Hiroshima University.



Bony fish have skeletons made of bone rather than cartilage, as is the case for sharks or rays. In the study, published in the journal Ichthyological Research,

researchers led by Etsuro Sawai referred to more than one thousand documents and specimens from around the world - some of which date back 500 years.

Their aim was to clarify the scientific names for the species of the genus Mola in fish. They also solved a case of mistaken identity. The Guinness World Records lists the world's heaviest bony fish as *Mola mola*, researchers said.

However, Sawais team found a female *Mola alexandrini* specimen of 2,300 kg and 2.72 m. caught off the Japanese coast in 1996 as the heaviest bony fish ever recorded. Sawais team re-identified it as actually being a *Mola alexandrini* based on its characteristic head bump, chin bump and rounded clavus although this specimen was identified Mola mola until now.

Ocean sunfishes count among the world's largest bony fish, and have for centuries attracted interest from seafarers because of their impressive size and shape, researchers said. Specimens can measure up to three meters, and many weighing more than two thousand kg have been caught. Instead of a caudal fin, sunfish have a broad rudder-like lobe called a clavus, they said.

-www.indiatoday.intoday.in

## Fish from Bengal on high international demand

Fish from Bengal is gradually acquiring high demand, both in India and internationally. This became evident at the recent World Food India international exhibition at New Delhi too, where various deals were clinched by State Government organisations like State Fisheries Development Corporation (SFDC) and others.

Government organisations of different states are also setting up agreements with SFDC for acquiring expertise in cultivating fishes in demand in those states, as well as buying hatchlings from SFDC.

Internationally, fish export from Bengal is making a lot of progress. There is high demand for frozen and sun-dried fish from Bengal in Italy. Shrimps like black tiger shrimp, monodon and vannamei are in high demand in China.

SFDC is also opening restaurants in other states. One has already been opened in Noida. Preparations for opening in other cities too, like Delhi are in progress. To make fish from Bengal fit international standards, SFDC is acquiring expertise from other countries.

For example, Russia has expressed eagerness in this respect. The corporation has recently opened a few model fish processing units in Purba Medinipur district.

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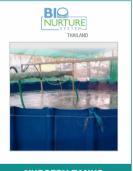








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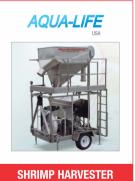


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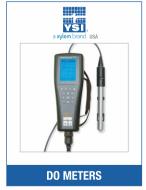












## **NEWS** SPECTRUM

# ICAR-CIFT launched Mobile Application for Fisheries Technology



Dr. C.N. Ravishankar, Dr. J.K. Jena, Dr. B.A. Shyam Sundar,
Dr. Manoj P. Samuel and Mr. C.G. Joshy at the launch of the app

In an effort to leverage the potential of Information and Communication Technologies for disseminating the research outputs to the public, the ICAR-Central Institute of Fisheries Technology, Kochi has developed a mobile app, which will provide quick access to information related to harvest and post-harvest aspects in fisheries. The application has been launched by Dr. J.K. Jena, Deputy Director General (Fisheries), Indian Council of Agricultural

Research, New Delhi at a function held at ICAR-CIFT on November 25, 2017. Dr. C.N. Ravishankar, Director ICAR-CIFT and Dr. B.A. Shyam Sundar, Vice President, Asian Fisheries Society Indian branch (AFSIB) were also present on the occasion.

Dr. Jena lauded the efforts of ICAR-CIFT for undertaking need-based research for harvest and post-harvest fisheries sector as well as innovative mechanisms for disseminating the research outputs. The app provides information on harvest and post-harvest technologies including quality assurance and management, biochemistry and nutrition, microbiology and engineering aspects. The information related to various training and other programmes of ICAR-CIFT will also be available in the application. The application can be freely downloaded from the Google play store. Dr. Ravishankar opined that the application is guite user-friendly and will be regularly updated.

#### -CIFT

## India's shrimp export to China is going to go up

In a reversal of the trend, the Indian exporters plan large-scale ferrying of the premium aquatic food, shrimp to China as the demand shoots up driven by the consumption in the neighbouring country. China will be the next new market for the Indian shrimp exporters, say leading industry players.

"China, which traditionally has been the large producer of shrimps, is becoming the world's largest consumer of this premium aquatic food. In the near future, India will see China as the biggest market," says Kamlesh Gupta, Chairman, WestCoast Group, one of the leading seafood exporters in the country.

According to a report by Globefish, a division of Food and Agriculture Organisation (FAO) of the UN, India, and Chile are expected to be the standout performers in 2017. Bumper harvests of aqua-cultured vannamei shrimp are the main factor behind this status, said the report.



At present, the top markets for seafood exports from India are the US, Europe, Japan, China and South East Asia. Frozen shrimp contributes to 38.28 percent share in quantity and 64.50 percent in value. India has set a target of earning \$15.28 billion (Rs. 1 lakh crore) from its shrimp exports by 2022. In the last financial year, the country earned \$5.78 billion (compared to \$4.69 billion in the previous year) from exporting 1.13 million tones of seafood. India became the largest shrimp's exporter in the world with 438,500 tones in 2016, a y-o-y growth of 14.5 percent.

Gupta says, India with its superior quality production and processing of shrimp attracts buyers from the US and Japan. As per an earlier FAO report, India became the largest shrimps exporter in the world with 438,500 tones in 2016, a y-o-y growth of 14.5%. The top five shrimp exporters to the international market in 2016 were India, Vietnam, Ecuador, Indonesia, and Thailand.

-www.businesstoday.in

#### **NEWS SPECTRUM**

## Salmon, sardine on the menu may protect the elderly from sight loss



According to a recent research, eating plenty of salmon, sardines, and mackerel may protect older people against loss of sight. A chemical found in fish oil boosts the daily survival of cells critical to eyesight protecting against age-related vision loss. The discovery could lead to new treatments for a host of degenerative diseases of the retina - based on harnessing its power, reports Express. co.uk. Results reveal the omega-3 fatty acid DHA, which is abundant in oily fish, 'preconditions' different types of retinal cells to be able to withstand 'stress,' such as their blood supply being cut off.

In laboratory tests, human eye cells exposed to constant light withstand damage if they are supplemented with such

oils. Neuroscientist Professor Nicolas Bazan of Louisiana State University, said, "Our findings support the proposed concept that DHA and docosanoids, molecules made in the brain at the onset of injury or disease, are responsible for activating sustained cellular mechanisms that elicit long-term preconditioning protection."

Although fish oil also contains omega-6 AA, which is inflammatory and could, therefore, cause damage, omega-3 DHA is thought to alter the former oil's action. In laboratory experiments, the researchers exposed human retinal cells, as well as those of living rats, to constant light, prior to omega-3 DHA supplementation. The study was published in journal Cellular and Molecular Neurobiology.

- www.business-standard.com



## **Government introduces FPOs** in fishery sector



Agriculture Minister Radha Mohan Singh on November 30, 2017, said the government will encourage setting up of Farmer Producer Companies (FPOs) in the fishery sector, a move that will boost fishermen's income. The government has received proposals for 21 FPOs in major fish-producing states, he said in a statement. The government's Small Farmers' Agri-Business Consortium (SFAC) under its venture capital assistance (VCA) scheme is providing financial help to set up FPOs. Addressing the 22<sup>nd</sup> board meeting of the SFAC, Singh said VCA scheme is getting good responses from agripreneurs and many proposals are in the pipeline for sanction. Besides fishery, efforts are being made to promote setting up of FPOs in spices, especially in the northeastern region, he said.SFAC and Spice Board is working with North Eastern Council (NEC) to form spice-based FPOs in Sikkim and Arunachal Pradesh, he added.The minister further said awareness is being created about FPOs across the country. Even training is being given to the FPOs' board officials on the professional way of handling the companies.

-www. economictimes.indiatimes.com

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Prawn

#### 2. Guangdong Rainbow Aquatic **Development Co. Ltd.China**

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E-mail: businessemail123@163.com

**HLSO-PUD Shrimp** 

#### 3. Amanda

Tang Shan All Benefit Commercial Co.

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Shrimp

#### 4. Seafood

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E-mail: seafood2011@163.com

Sea caught shrimp

#### 5. I Schroeder Hamburg

**Business Manager Frozen Fish Claus Norup** 

Am Sandtorkai 37 20457 Hamburg, Germany Tel: 49 04037674210

Fax: 49 040376743210 E-mail: c.norup@iska.de

Web: www.iskg.de Shrimp

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Vannamei

#### FISH

#### 1 Lilv

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Frozen fish

#### 2. Nelson K S Yu

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Cuttlefish

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Ribbon fish

#### 10. Ramanan

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#### 11. Elva Chan

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Cuttlefish

#### 12. Zhang Yong Ding

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All kinds of fish

#### 13. Li

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Ribbon Fish

#### 14. Tuna Paradise Co. Ltd.

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#### 15. Hang Guo

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Ribbon fish

#### 16. Bobbylu

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Fish

## 17. Xingfiang Pix Yang Internation Company

China

Mob: 86 18167977691

E-mail: zhang760bi760@126.com

Bill fish

#### 18. Yuan

CEO Sintec Inc.

Tel: 13335003472

E-mail: 871467548@qq.com

Web: www.nx.cn Ribbon fish

#### 19. Wang Dona

E-mail: dongdong77777@hotmail.com *Fish maw* 

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#### 1. Sun Tao (Eddy)

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Shrimp, Surimi, Sardine

#### 2. Martin Xu

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#### 3. Henry Chen

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Fax: 351 219 737 689,
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Tiger shrimp, L. vannamei shrimp, Cuttlefish

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#### 6. Zoya Kamenskaya

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E-mail: zoya@kaluri.ru, www.siprod.ru

Fish, Shrimp

#### 7. Jack Hsu

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Mob: 86-139 6721 6688 E-mail: yuehsu@139.com Web: www.hsyg.com.cn All kinds of seafood

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| 4       | Water Quality in the Ornamental Aquatic Industry – Serial 1                        |  |  |  |
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| 8       | Living Jewels - A Handbook on Fresh Water Ornamental Fish                          | are available                                |  |  |
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| 2  | MPEDA Newsletter   | 1000.00                   |  |  |  |
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| 3  | Indian Fishery Hand Book   | 250.00                    |  |  |  |
| 4  | Exporters Directory- Digital CD  | 50.00                     |  |  |  |
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#### 9. Kevin Cpo

Shanghai Chuxian Industry Co. Ltd. Building 10, 1365 East Kangqiao Road Pudong New Area, Shanhai

Mob: 15026716728 Tel: 86 21 50886218 E-mail: 93635717@qq.com Web: www.shchuxian.com Black tiger, Ribbon fish, L. vannamei

#### 10. Xu Jia Qi

Qingdao Weego Import & Export Co. Ltd.

**General Manager** 

Rm 3001 Donghai Hotel Building 17 Huiquan Rd Qingdao 266071, China

Tel: 86-532-83888031 Fax: 86-532-83896004 Mob: 13906421471

E-mail: qdhuatong@cip.163.com Indian seafood-Tuna, Skipjack

#### 11. Zhourongrong

Tel:13012557755/0532-66798523

Mob: 13706484338

E-mail: zhourongrong888@126.com

All kinds of seafood

#### 12. Da Hu Seafood

Tel: 86 139 1767 4058 E-mail: 1391767458@163.com

Raw fish, Shrimp

#### 13. Xue Rui Wu

General Manager Guangxi JinFulmport & Export Trade Co. Ltd. No.3-1, Beilun Avenue

Dongxing, Guangxi Tel: 18377023339

E-mail: 2729405630@qq.com L. vannamei shrimp, Ribbon fish

#### 14. Jocelyn

Overseas Business Development Manager No.3131, Jinshajiang Road, Shang Hai

Tel: 021-6430 3835 Mob: 86 18252585935

E-mail:xiongshujian@jiuyescm.com

Web: www.jiuyescm.com All kinds of seafood

#### 15. Timothy Ho

Manager Grand Ocean Seafoods Pvt. Ltd. 15 Woodlands Loop 04-24 Singapore-738 322 Tel: 65 6555 9101 Mob: 65 93829381 E-mail: chinzhu@gmail.com All kinds of seafood

#### 16. Zhang Shi Yong

Branch President
Puguang, Japan, Korea
Tel: 010- 5027- 4899
Mob: 86 186 6036 4899

E-mail: zhangshiyong@puguangsd.com *L. vannamei shrimp, Ribbon fish* 

#### 17. Jin He Wang

General Manager
Nanchang Deep Trading Co. Ltd.
Nanchang Qingyunpu South Agricultural
Products Logistics
Center Two No. 16 Room 108

Layer 1-2 Shops Tel: 13707085235

E-mail: 13707085235@gg.com

All kinds of seafood

#### 18. Miaoli

Trade Minister Zhoushan Xinyi Import & Export Co. Ltd. Room 501, Nos. 185 Caishi Road Caifu Building, Shenjiamen Putuo District, Zhoushan, Zhejiang

Tel: 0580-3262867 Mob: 139 6723 3035 E-mail: skyandhe@yeah.net Crab, Pomfret

#### 19. Liu Zuo Peng

Tel: 0411-82560058/0411-82560048

Mob: 13500733778

E-Mail: Liuzuopeng11@163.com

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Fish, Prawn

#### 21. Larry Wu

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#### 23. Chuan Biao Shi Pin

Tel: 13250566666 All kinds of seafood

#### 24. Tel: 15278188829 13377093398

E-mail: 15278188829@163.com

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#### 25. Hiking Group

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## TRADE ENQUIRY RECEIVED AT BUSAN INTERNATIONAL SEAFOOD & FISHERIES EXPO 2017

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#### 1. Dae Bang Fishery Company Ltd.

(D) Amnamkongwonlo 218 Seo-ku, Busan, South Korea Tel: +82512552202

Fax: +82512552203 Mob: +821076116114

E-mail: daebang2202@gmail.com

Frozen shrimp

#### 2. Gi Tae Hwang

Chunil Foods Company Rm 501, Das ung Bldg, 448 Sang-Dong Buchun City, Kyunggi-Do, South Korea

Te l: +82328207931 Fax: +82328128704 Mob: +82 1076514736

E-mail: gthwang@chunilfood.co.kr

Frozen shrimp

#### 3. Coral International Inc.

9F, S17, Garden 5 Tool B/D, 10 Chungmin – RO, Songpa-Gu Seoul. South Korea

Tel: +82234012932 Fax: +82234012931 Mob: +821092296693 E-mail: Coral8888@nate.com

Frozen shrimp

#### 4. E-Land Park Ltd.

Chanjeon-dong Mapo-gu Seoul, South Korea Tel: +82 7070136617 Fax: +82 7070161606 Mob: +82 1079005688

E-mail: Jung\_hyobum@eland.co.kr

Frozen shrimp

#### 5. Ato Trading Company Ltd.

1502ho, Sajosf Distribution Center #71, Wonyang-ro-Seo-gu Busan, South Korea Tel: +82 512563100

Fax: +82 512564100 Mob: +82 1098738825 E-mail: atotrading@naver.com

Frozen shrimp

#### 6. Haising International Trading Inc.

1120 Tapscott Road, Unit 14 & 15 Scarborough, On, CA Mix 1E8, Canada

Tel: 416 2913688 Fax: 4162913686 Mob: 416 4285506

E-mail: HaisingInternational.JunLi@gmail.com

Frozen shrimp

#### 7. Soctrang Seafood Joint Stock Company

220 National Road 1A

Soc Trang City, Soc Trang Province

Viet Nam

Tel: +84 79 3822164-3822367 Fax: +84 79 3823620-3821801 E-mail: stapimex-pkd@vnn.vn

Frozen shrimp

#### 8. JS Corporation

3<sup>rd</sup> floor, 38, Motgol-ro Nam-gu, Busan, South Korea Tel: +82 516273203

Fax: +82 516283203 Mob: +82 1023364041

E-mail: jscorporation@naver.com

Frozen shrimp

#### 9. Dawon Fisheries Company Ltd.

223, 2F, Dongseong YounghwaTown 941, Jeongio-ro, Jangan-gu, Suwon-si Gyeonggi-do, South Korea

Tel: +82 7078570057 Fax: +82 312567896 Mob: +82 1053442344

E-mail: lengua2344@hanmail.net

Frozen shrimp

#### 10. S.S Trade Co. Ltd.

116-8, Younghak-ro Suseong-gu, Daegu, South Korea

Tel: 82 1097790008 Fax: 82 5051389909 Frozen shrimp

#### 11. S.S. D.K. Ocean Foods Co. Ltd.

3F, 81-3, Nonhyun-Dongkangnam-Ku

Seoul, South Korea Tel: 82 2 546 1930

E-mail: sms9909@naver.com

Frozen shrimp

#### 12. Eunha Marine Company Ltd.

36, Noksansandan 381-ro, Gangseo-gu

Busan, South Korea Tel: +82 512462775 Fax: +82 512457297 Frozen shrimp vannamei

#### FISH

#### 1. Pacific Fisheries Company Ltd.

Legacy Products Company Ltd. 3711 Moncton ST, Richmond B.C.

V7E 3A5, Canada

Tel: 01036401222/0512434132 E-mail: gcc1010@gmail.com Frozen Silver Pomfret

#### 2. Jyoti Company

#05-12, Bik 122, Richfield Ind Centre Eunos Avenue 7, Singapore – 409575

Tel: 65 67424844 Fax: 65 68424844 Mob: 65 94245169 E-mail: jyofin@gmail.com Frozen Eel Fish Maw

#### 3. Eunhang Trading

2F, Borim Cold Storage #73, Wonyang-Ro, Seo-gu Busan, South Korea Tel: +82 512578441 Fax: +82 512578440

E-mail: salbe1514@naver.com

Yellow Croaker

#### 4. S.M. Biotechnology Co. Ltd.

B-604, A-623, 640, 1 Wonyang-ro, Seo-gu Busan, South Korea Tel: +82 512536927 Fax: +82 512536928 E-mail: utvnews@naver.com Mackerel

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#### 6. Chung Ha Fishery Company Ltd.

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E-mail: chunghafishery@never.com

Frozen Silver Pomfret

#### 7. Keumhoseafood Company Ltd.

125-25, Gobong-ro 702beon-gil lisandong-gu, Goyang-si Gyeonggi-do, South Korea Tel: +82 319776655 Fax: +82 319776755-7 Mob: +82 1024653683 E-mail: texa20@naver.com Frozen Ribbon fish

#### 8. Kang Corporation

E-mail: oceanpro3283@hanmail.net Frozen Ribbon fish

#### **CEPHALOPODS**

#### 1. Sunmoon Fisheries

Room 402 – 1A Wooyang Cold Storage 2 factory #689-4, Nambumin-dong Seo-gu, Busan, South Korea Tel: +82 512459414 Fax: +82 512459416 E-mail: sunkoon@yahoo.co.kr Frozen Cuttlefish

#### 2. Sane Trading Company

Sane FNC
SAENG SU B/D 5F, 47-3
Amnamgongwon-RO
SEO\_GU, BUSAN, South Korea
Tel: +82 514688840
Fax: +82 514688839
Mob: +82 1037816661
E-mail: oooxxx@empas.com
Un-cleaned frozen cuttlefish



#### MIXED ITEMS / OTHER

#### 1. Fish Loan Brokerage Company Ltd.

South Korea

Tel: +82 512314114-6 Fax: +82 512314118-9 Mob: +82 1048604114 E-mail: indofish@naver.com Frozen Croaker, Frozen Octopus

#### 2. K2 Trading Company Ltd.

South Korea

Tel: +82 10 58725709 E-mail: park\_korea@yahoo.com Curry packets, biriyani packets

#### 3. JAEHO Products Company Ltd.

Jaeho Cold Storage 196 Jangnim-ro, Saha-gu Busan Metropolitan City (Jangnim-dong), South Korea Tel: +82 515079201-9 Fax: +82 512617381

Fax: +82 512617381 Mob: +82 1077429203 E-mail: jdky1846@never.com All kinds of frozen marine products

#### 4. Mijuo Company Ltd.

South Korea Sea Crabs

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#### 7. Join Company Ltd.

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#### 8. Ye In International Co. Ltd.

307-2 Ho, Sanggadong

305, Dadae-ro, Saha-gu Busan, South Korea

Tel: +82 512623371 Mob: +82 1028587179 Fax: + 82 512623372 E-mail: sywoon@hanmail.net All kinds of frozen marine products

#### 9. G.O. Trading

37-7 Chungmudaero 34 beon-gil, Seo-gu, Busan, South Korea

Tel: +82 51 257/247 0235 Mob: +82 10 2639-0235 Fax: +82 51 247-0232 E-mail: lov235@daum.net

Frozen Crab

#### 10. Ocean Pick

2L Samokovsko shoes blvd, 1138 Sofia, Bulgaria Tel: +359876250907

E-mail: donchev@ocean-bg.com

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#### 11. Baek Kyung Corporation

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Fax: +82 514413384 E-mail: bkco02@naver.com

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#### 12. Seawell Co. Ltd.

508-1 Byeoksan, e-Centum classone 99 Centumdong-ro, Haeundae-gu Busan, South Korea

Mob: +82 1040304786 Tel: +82 515321435 Fax: +82 515321104

E-mail: aquatic5@seawell.kr

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#### 13. Jinsung Trading Company

Busan, South Korea Tel: +82 512208134-6 Tel: +82 514653061 Fax: +82 512208137

E-mail: js-trading@hanmail.net

Surimi

#### 14. Sunglim SI Trading Company Ltd.

#803, Dongwontongyoung Fisheries 24, Gamcheonhang-Ro, Saha-gu Busan. South Korea

Tel: +82 512912277
Fax: +82 512912509
Mob: +82 1071664587
E-mail: slt7319@naver.com
All kinds of seafood

#### 15. Nokchaeewon Company Ltd.

956-25 Bangbae dong Seoul, South Korea Tel: +82 2 597 3949 +82 2 521 4116

E-mail: leo@nokchawon.co.kr Frozen shrimp, Small octopus,

web foot octopus

#### 16. Kuhong International Ltd.

FT B 6/F Minden Hse 13-15 Minden Avenue, Tsim Sha tsui Kowloon, Hong Kong Tel: 852 23692300 Fax: 852 31054599 Mob: 852 97513886

E-mail: rajkumar31@hotmail.com kuhong@biznetvigator.com Frozen shrimp, Grouper, Ribbon fish, Frozen Cuttlefish, Lobsters

#### 17. Bukang Provisions Company Ltd.

37, Eulsukdo – daero 873 beon-gil Saha-gu, Busan, South Korea

Tel: +82513155012 Mob: +821072113104 Fax: +82513226844

E-mail: bkpro@bukangmarine.com

bkrpo@bkmarine.net Frozen shrimp, frozen finfish

#### **18. SASE**

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6 Mandai Link, Singapore 728652 (Super market Chain in Singapore)

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Penglai, Shandong, China Tel: +86 5353350078 Fax: +86 5353350075

E-mail: jingshuiweiye@hotmail.com Frozen shrimp, frozen Ribbon fish, Pomfret

#### 21. Woowon Holdings Inc.

(Uri Venture Town II, Mullae-dong 3-ga) #406 70, Seonyu-ro

Yeongdeungpo, South Korea

Tel: +82 232836000 Fax: +82 28527309 Mob: +82 1057786227

E-mail: ebis@woowon.holdings Various products of frozen shrimp, Giant squid, Cuttlefish, swimming crab

#### 22. Nokchaewon Company Ltd.

34g Noksan industry road, Gang Seo Gu, Busan, South Korea

Tel: +82 518997832 Fax: +82 518322070 Mob: +82 109113-7882

E-mail: ncwgd56@nokchaewon.co.kr All kinds of frozen marine products

#### 23. E mart

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#### 24. Hanul Yang

Marine Bio Center Rm 221 1-1 Gwaebeopdong Sasanggu, Busan, South Korea

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E-mail: kellyhanulyang@gmail.com Frozen shrimp, frozen Clam

#### 25. Sea Ever Co. Ltd.

South Korea

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E-mail: tldpqj4939@daum.net Frozen shrimp, frozen Cuttlefish

#### 26. Dongwon

68, Mabang-ro, Seocho-gu Seoul, 06775, South Korea

Tel: +82 25893081 Fax: +82 25893899

E-mail: hoon@dongwon.com Frozen Squid, frozen Mackerel

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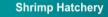
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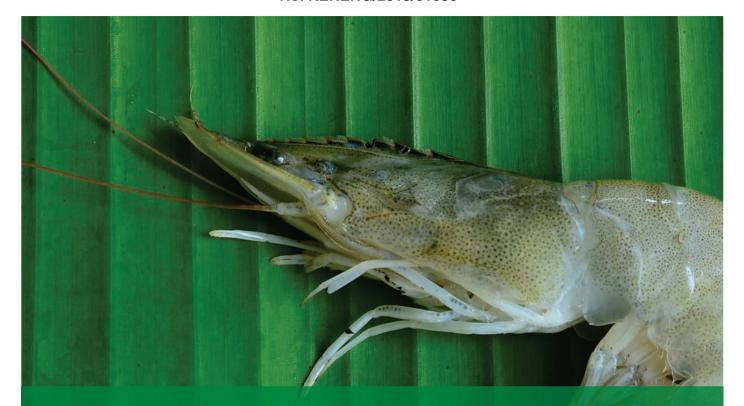


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