MPEDA

Newsletter

Vol.VI/No.8/ NOVEMBER 2018

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ISSN 0245-7059

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Printed and Published by
Mr. B. Sreekumar, Secretary
on behalf of The Marine Products
Export Development Authority
(Ministry of Commerce & Industry, Govt. of India)
MPEDA House, Panampilly Avenue
Kochi - 682 036, Tel: +91 484 2311979

Published by
MPEDA House
Panampilly Avenue
Kochi - 682 036

Printed at
Print Express
44/1469A, Asoka Road
Kaloor, Kochi - 682 017

In the Platter

K. S. Srinivas IAS
Chairman

Dear friends,

I am glad to inform you that the US Department of States team had visited of our wild caught shrimp harvesting systems in West Bengal and Odisha and observed whether those systems in any manner harm the marine turtle population of the country. The efforts taken to protect the Olive Ridley marine turtles were also explained to them.

The US Department of States (DOS) team have observed the traditional filtration systems, dol net operations as well as trawl fishery in West Bengal. In Odisha the fishing operations at the Paradeep Fishing Harbour and fishery in the Chilika Lake were observed. There were stakeholder consultations in both the states in which the team has explained the Section 609 of US Public Law 101-162.

We are hopeful that the DOS will consider our request and certify the harvesting systems in the east coast for exports of shrimps to US. Further, the team is likely to visit the west coast to observe the shrimp harvest systems during early 2019 and MPEDA is gearing up for that. During the month, MPEDA has participated in two major exhibitions, the China Fishery and Seafood Expo held at Qingdao. There were a lot of visitors to the Indian Pavilion, which had the participation of 21 exporters as co-exhibitors. MPEDA has also participated in SEAFEX, Dubai along with 6 exporters. In addition, two of our officers were deputed to China International Import Expo held at Shanghai, who led the interactions with visitors and buyers along with other commodity boards.

As the Government of India is making keen efforts to push trade from India and China, MPEDA also joins the bandwagon to promote exports of marine products of India to that market. The affluent Chinese market has got good potential for high-end value added products. China is one of the largest exporters of seafood in the world, but also one among the largest importers of seafood meant for their domestic consumption and reprocessing activities as well. Though tariff differences exist when compared to SEAN nations, I would request all the exporters to focus and develop the Chinese market by supplying high quality products. This will help us to open up further avenues in East Asia and compensate for the shortfalls in the Western hemisphere.

Thank you.

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China Fisheries & Seafood Expo 2018

Chinese provinces seafood profile

China is the most promising market with great opportunities for seafood exporters. During 2017-18, export of marine products from India to China was 45,385 MT worth USD 158.30 million. The major items exported from India are frozen shrimp, frozen fish, dried and live items, which together constitute 86% of the total volume of fish and fish products.

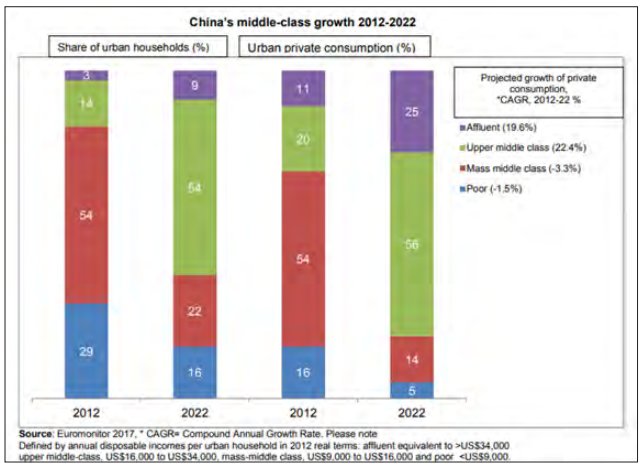
China is divided into 23 provinces; 22 provinces are controlled by the People's Republic of China (PRC). The 23rd province, Taiwan, is claimed by the PRC but it is not controlled by the PRC. During 2017, Shandong, Guangdong, Fujian and Zhejiang provinces were the largest seafood production areas due to favorable coastal locations and abundant freshwater resources. In terms of freshwater cultured production, Hubei, Guangdong, and Jiangsu provinces were the top-three producers. Qingdao and Dalian are the two largest sea ports in China.

Shanghai, Beijing, Guangzhou are important centers for retail outlet development. Chengdu and Shenyang are key cities connecting China with international trade and commerce.

Consumer profile in China

According to Euromonitor, China's fish expenditure per capita was US$ 37.4 in 2016 and is estimated to reach US$56.4 in 2021. The food habits of Chinese people are similar to Japan and South Korea. They prefer steamed, fried, boiled, blanched and even raw fish. Fresh fish is preferred to frozen fish as it tastes better than frozen. This is also the reason that they are very particular about the food safety and quality.

The growing market in China is supported by the emerging middle class who has brought about a change in the consumer purchase behavior. There is an increase in the percentage of consumers ready to pay premium price for quality food products.



Beijing, Guangzhou, Tianjin and provinces of Guangdong and Zhejiang are top areas in China in terms of per capita disposable income (Source 2017, China Yearbook, National Bureau of Statistics of China).

Freshwater aquaculture products are mostly consumed at home and restaurants due to its freshness and affordable price. The purchasing methodology differs among consumer groups. Younger generation mainly opt for online ordering due to the ease of selection and the short delivery duration of the product. There are various apps on mobile with wide range of food products including seafood on the menu with affordable prices and these products are delivered within an hour of the request placed.

This is not possible for people living in the interior areas of China where the availability of seafood is comparatively less. Older generation of Chinese consumers prefer purchase from supermarkets. In spite of the various online apps for purchase of seafood, major percentage of the Chinese population prefer supermarkets/ wholesale market/ fish market for their regular purchase.

Channels for Seafood distribution in China

China is one of the largest e-commerce and e-grocery market in the world. From 2012 to 2016, China's e grocery sale registered a compound annual growth rate of 52.9%. Alibaba and Jd.com are the top e-grocery retailers in China. An e-commerce channel is developed between Canada and China which is expected to increase the trade. Partnership between Alibaba group and Canada has contributed significantly to business development of Canada in China.

Top 10 retailers in China are

- China Resources Vanguard
- Ole' & BLT
- RT-Mart
- Wal Mart
- Carrefour
- Yonghui
- Lianhua
- Dashang Group
- Sam's Club
- Wu Mart

Mobile payment services like Ali pay, We pay and We Chat pay are some examples of online payment platform used in China. Chinese consumer receives products within days or hours during online purchase. The duration of delivery is crucial for e- marketing. Most people prefer home delivery within an hour in the case of perishable items like seafood or grocery. Other channels for seafood distribution include wholesale markets, fish markets, supermarkets & restaurant/ hotel chains.

The Exhibition

China Fisheries & Seafood Expo 2018 is a platform to learn about the latest trends in seafood and meet new and existing seafood importers and exporters of Asia.

This year the expo was conducted in Qingdao, China from November 7-9, 2018. There were approximately 1520 number of exhibitors and more than 29,250 numbers of visitors to the expo. Participants included importers, distributors, retailers, food service operators, aquaculture producers, processing companies, equipment manufacturers etc.

MPEDA set up Indian Pavilion in which 21 Indian exporters participated as co-exhibitors displaying variety of seafood products. Indian Pavilion was located in E3 hall with a floor space of 174 sqm. MPEDA's participation in the show was organized by Mrs. Anju and Dr. Pau Biak Lun, Assistant Directors, MPEDA.

MPEDA displayed sample of frozen, chilled, dry & ready to eat products. Publicity material included brochures in both English and Chinese about Indian Seafood. Another brochure in English gave details of the co – exhibitors. CD's of exporter directory was also distributed to the visitors to the stall. A display on Fish Exchange Portal in Chinese language was placed in the stall. The trade enquiries received during the China 2018 are listed separately in this Newsletter.

MPEDA officials interact with visitors to the stall

A view of India Pavilion and MPEDA stall

Interaction with Seafood Importers from China

Interaction with seafood importers from China revealed that their requirement included a continuous supply of clean, high quality seafood. They reported that most of the times there is a mismatch between the product demanded and the product shipped by Indian exporters. This variation is mainly in the size or grade requirement. As for the quality of the product, most of the importers were satisfied with the quality of seafood from India. Another point raised was the increased price of shrimps when compared with the price offered by other countries. The unit price detail collected from Trade map is given below. Indian shrimp price is higher in comparison with only Argentina and Pakistan.

There is a strong competition in the Chinese market with Russia being its largest supplier under Chapter 03, followed by USA, Canada, Norway and New Zealand. There is good demand for frozen fishes, shrimp and dried products. During the expo, many Chinese importers/ common people enquired about dried shrimp, fish and fish maws. Importers were also interested to know about different species of fishes available in Indian waters. For example, many expressed interest in parrot fish, yellow croaker etc.

Feedback from the co-exhibitors was collected regarding the expo and they opined that China is a vast market with lot of opportunity for Indian seafood.

Interaction with students & visitors during the expo revealed that interior provinces of China mainly have only frozen seafood available even if preference is for chilled seafood. The reason cited was difficulty / no proper facility to route chilled food to the supermarkets in these provinces. Most of the people also expressed interest in value added ready to eat seafood items. They said that meat items in ready to eat form are available but seafood items are comparatively less. Seafood purchase place is mainly nearby supermarkets.

Import under HS 030617 with unit value

Country	Imports in tons (2017)	Unit Value (USD/Ton)
Canada	54,875	11,262
Argentina	20,632	6,861
USA	15,499	18,850
Ecuador	15,030	7,261
Thailand	14,546	10,297
India	13,591	6,918
Pakistan	5,411	5,725
Malaysia	3,437	9,606
Vietnam	3,128	12,111

Source: Trade Map

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Epidemiology of Hepatopancreatic Microsporidiosis caused by *Enterocytozoon hepatopenaei* in India

*K.P. JITHENDRAN, A. NAVANEETH KRISHNAN, V. JAGADEESAN, P. EZHIL PRAVEENA AND T. BHUVANESWARI

Introduction

Of late, shrimp farming has emerged as one of the most important segments in commercial fishing. This calls for more cautious and informed intervention in handling the threats faced by the industry. *Enterocytozoon hepatopenaei* (EHP), the causative agent of Hepatopancreatic Microsporidiosis (HPM) is one such major threat for the shrimp farming industry. It is an emerging microsporidian parasite for penaeid shrimp, which has been associated with growth retardation and significant losses in several shrimp farming countries in Asia.

More recently, the epizootics of *E. hepatopenaei* have been reported in India with several disease outbreaks. EHP has been found in the tubules of the shrimp's hepatopancreas and damages the organ which eventually may lead to abnormal metabolism and growth retardation in shrimp. This article examines the pathogen, disease, transmission, epidemiology, pathogenesis, diagnosis, treatment and control of Hepatopancreatic Microsporidiosis in penaeid shrimp in India.

Pathogen

Microsporidia are obligate, intracellular, spore-forming endoparasites known to infect a wide range of eukaryotic hosts, both terrestrial and aquatic. Several microsporidians have been reported as pathogens of penaeid shrimp as well as finfish. *Enterocytozoon hepatopenaei* was first reported as an unnamed microsporidian from growth retarded black tiger shrimp, *P. monodon* from Thailand in 2004. However, this parasite was characterized in detail and taxonomy was elucidated only in 2009. EHP infects *P. monodon*, *P. vannamei* and is suspected to infect *P. japonicus*. The susceptibility of different life cycle stages is also not clear; although post larvae (PL-7 onwards), juveniles, growers and broodstock are observed to be affected by the parasite.

Geographical distribution

The pathogen is now wide-spread with reported outbreaks in shrimp farming countries in south-east Asia including Vietnam, Thailand, Malaysia, Indonesia, China, India as well as Venezuela in South America (Fig. 1).

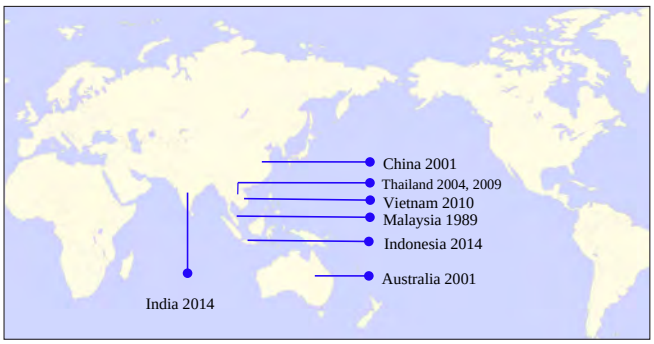

Fig. 1. Global distribution of microsporidian suspected as EHP in shrimp farming

In India, the disease emergence has been recorded since 2014 by CIBA and RGCA as a part of National Surveillance Programme on Aquatic Animal Diseases (NSPAAD), mainly in Andhra Pradesh and Tamil Nadu. More recently, the geographical distribution of *E. hepatopenaei* has expanded; with sporadic reports on many shrimp farms in east and west coasts and even in inland aquaculture system being affected. (Fig. 2,

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Table 1). It appears that the disease entered India in the recent past through infected broodstock and the geographical spread was attributed mainly through transport of infected seeds to other parts of the country. The emergence and spread of EHP in India will have a significant impact on the shrimp production after a three-fold increase in shrimp production since the introduction of *P. vannamei* in India during 2009. However, EHP has not been taken seriously due to low prevalence, and no substantial loss due to mortality as compared to WSSV. It is also unlikely that EHP has been a pre-existing disease in Indian shrimp aquaculture, as our data on other dominant species *P. monodon* never indicated its presence in India.

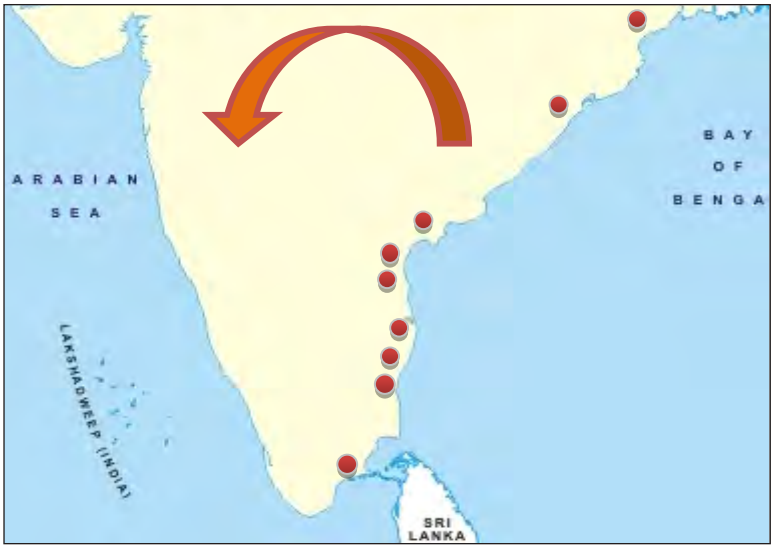

Fig. 2. Geographical spread of Enterocytozoon hepatopenaei in India

Table 1. Published reports of Enterocytozoon hepatopenaei in cultured shrimp in India

Sl. No.	Year	Species	Culture system	Clinical signs reported	Geographic location
1	2014 2015	*P. vannamei*	Farm	Size variation, Slow growth syndrome	Tamil Nadu, Andhra Pradesh, Odisha, and West Bengal
2	2014 2015	*P. vannamei* *P. monodon*	Farm	Size variation, Slow growth syndrome	Tamil Nadu, Andhra Pradesh, Odisha
3	2014 2015	*P. monodon* *P. vannamei*	Farm	Slow Growth Syndrome, Secondary bacterial infections	Tamil Nadu, Andhra Pradesh, Odisha
4	2015	*P. vannamei*	Farm	White feces syndrome, Growth retardation	Tamil Nadu, Andhra Pradesh
5	2016	*P. vannamei* (post larvae)	Hatch-ery	Black spots on post larvae	Tamil Nadu, Andhra Pradesh
6	2016	*P. vannamei*	Farm	Stunted growth	Tamil Nadu, Andhra Pradesh
7	2016	*P. vannamei*	Farm	NA	Tamil Nadu
8	2016 2017	*P. vannamei*	Farm	Size variation,White faeces syndrome,Loose shell	Tamil Nadu, Andhra Pradesh
9	2016	*P. vannamei*	Farm	White feces syndrome, stunted growth	Andhra Pradesh
10	2017	*P. vannamei*	Farm	NA	Maharashtra
11	2018	*P. vannamei*	Farm	Retarded growth	Andhra Pradesh

The disease

The parasite does not directly cause mortality in shrimps but known to cause severe growth retardation and hence causes high production losses in many Asian countries. The disease condition caused by the shrimp microsporidian parasite *Enterocytozoon hepatopenaei* is Hepatopancreatic Microsporidiosis (HPM), and is confined to the shrimp hepatopancreas.

The parasite replicates within the cytoplasmic area of tubule epithelial cells in the hepatopancreas, causing severe necrosis of hepatopancreatic tissues and growth retardation and overall reduced farm production. There are no specific clinical signs for EHP infection, but reported to be associated with size variation, stunted growth and/or white faeces syndrome and no mortality. EHP infects the hepatopancreatic tubules limiting the assimilation of nutrients and results in growth retardation.

Size variation may not be apparent during early days of culture (DOC) but farmers report EHP infected shrimp exhibiting white faeces syndrome as early as 23 DOC, often with a phase of recovery (Fig. 3, A&B).

Fig. 3. EHP affected shrimp pond showing white faecal threads floating on pond water surface (A); Shrimp showing normal hepatopancreas and floating strands of white faeces hanging from anal portion (B) and, the hepatopancreas wet smears showing developing stages of microsporidian in the hepatopancreatic tubules (C)

However, white faeces syndrome is not a consistent feature as compared to slow growth and size variation in experimental infections. Infected post larvae maintained in laboratory conditions never had white faecal syndrome but exhibits size variation, slow growth or both. Severe infections by EHP can increase the susceptibility for other bacterial infections like *Vibrio* spp. in shrimp farms and could manifest mild mortality.

EHP infection in pond conditions may happen continuously leading to progressive damage to the hepatopancreas with different degree of infection (Fig. 3, C); hence the signs of EHP appear as size variation, overall slow growth (Fig. 4) and loss during harvest. In hatcheries, if post larvae grow unusually slower and show size variation EHP can be suspected.

Fig. 4. EHP affected Penaeus vannamei shrimp showing size variation at the time of harvest

Biology and transmission

The lifecycle and underlying transmission mechanism of this microsporidian was poorly understood. In general, the life cycles of microsporidia have three phases: infective, proliferative, and sporogonic.

The infective phase is the mature spores, which are ovoid in shape (1.7 x 1 m in fresh preparation) and containing 5-6 coils of the polar filament within, appears the most important diagnostic phase of microsporidia (Fig. 5).

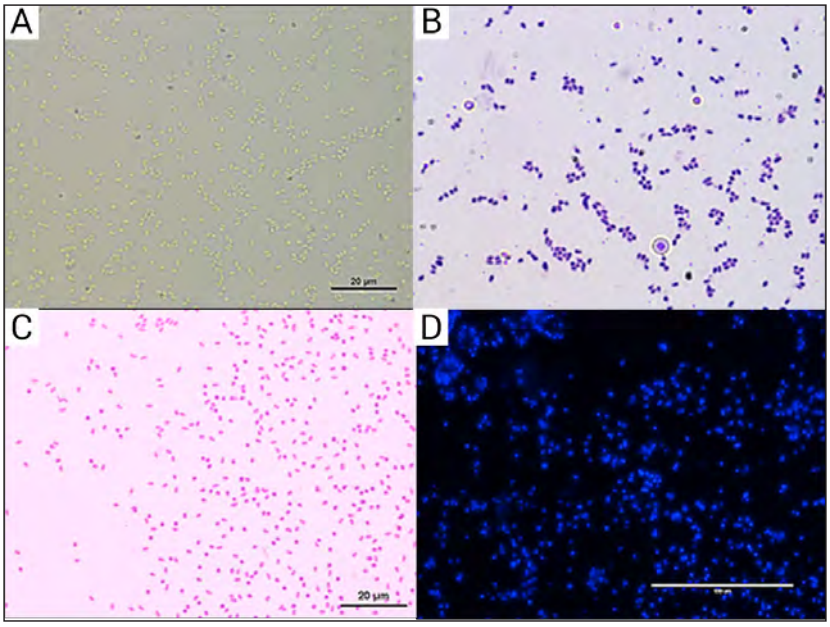

Fig. 5. Microscopic detection of purified spores of Enterocytozoon hepatopenaei from Penaeus vannamei: A-Fresh spores, B-Giemsa stain, C-Phloxine B stain, D-Calcofluor White stain. 1000 x (digitally enlarged)

The spores released in the environment are activated when external factors are suitable, and infect host cells by the extrusion of the polar filament containing sporoplasm inside. The proliferative phase includes sporoplasm and meronts in host cells, without chitin and a fixed form, are difficult to observe by light microscopy. The sporogonic phase includes sporonts, sporoblasts and developing spores, in which chitin and proteins gradually accumulate along the spore wall.

Due to the small size and intracellular location, most structures and developmental stages are visualized either by transmission or scanning electron microscopy. Polar filament precursors and other spore organelles formed within the sporogonal plasmodium and packaged into pre-sporoblast units prior to budding of sporoblasts to the host-cell cytoplasm. Once complete, the mature spores are released though faeces to the environment.

Enterocytozoon hepatopenaei morphologically resembles other microsporidian, but is transmitted directly from shrimp to shrimp by the oral route. Transmission occurs readily among individuals through cohabitation (spores released into the water through shrimp faeces) and as well as through healthy shrimp cannibalizing those that were moribund or dead due to infection. Other transmission route (trans-ovum) is poorly understood though suspected. So far, no secondary hosts are known to be involved in transmission of *E. Hepatopenaei* but carrier roles for live feeds (polychaete, mussel, clams etc.) are suspected. Laboratory infection has been successful through cohabitation and through oral route by consumption of infected tissue (cannibalism, predation etc.) and there exist no sufficient data to prove possible vertical transmission.

Laboratory diagnosis

Shrimp hepatopancreas is the target organ for the detection of EHP infection, primarily because of development within the cytoplasm of hepatopacreatic tubular cells. Mature spores are released through faeces, and hence faecal threads can also be used for non-lethal screening of precious SPF broodstock.

EHP infection can be detected by demonstrating spores (1.7 by 1 µm) in light microscopy of fresh or stained faecal and hepatopancreas tissue smears (Fig. 5, A-D) or by histology of hepatopancreas tissue sections (Fig. 6, A&B). The microscopic techniques may be enhanced by concentration and differential centrifugation of spores to detect light infections or even by special staining techniques.

Molecular based methods, such as polymerase chain reaction (Fig. 7) targeting 18s small sub unit rRNA (SSU-PCR), spore wall protein (SWP-PCR) and EHP-specific -tubulin gene, using DNA extracted from hepatopancreas tissue, faeces and whole post larva (PL) are the most commonly used diagnostic method for EHP detection in shrimps. Other molecular methods such as in situ-hybridisation, real time PCR and LAMP may also be the choice available for EHP detection in specialised laboratories.

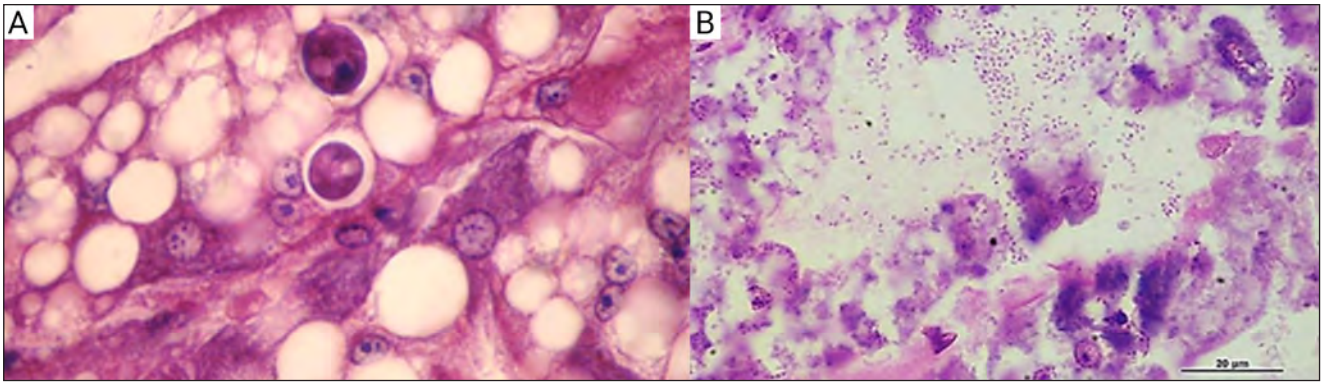

Fig.6. Histological section of shrimp hepatopancreas showing early and late plasmodia stages (A), and the necrosis of hepatopancreas and packed microsporidian spores in the lumen (B)

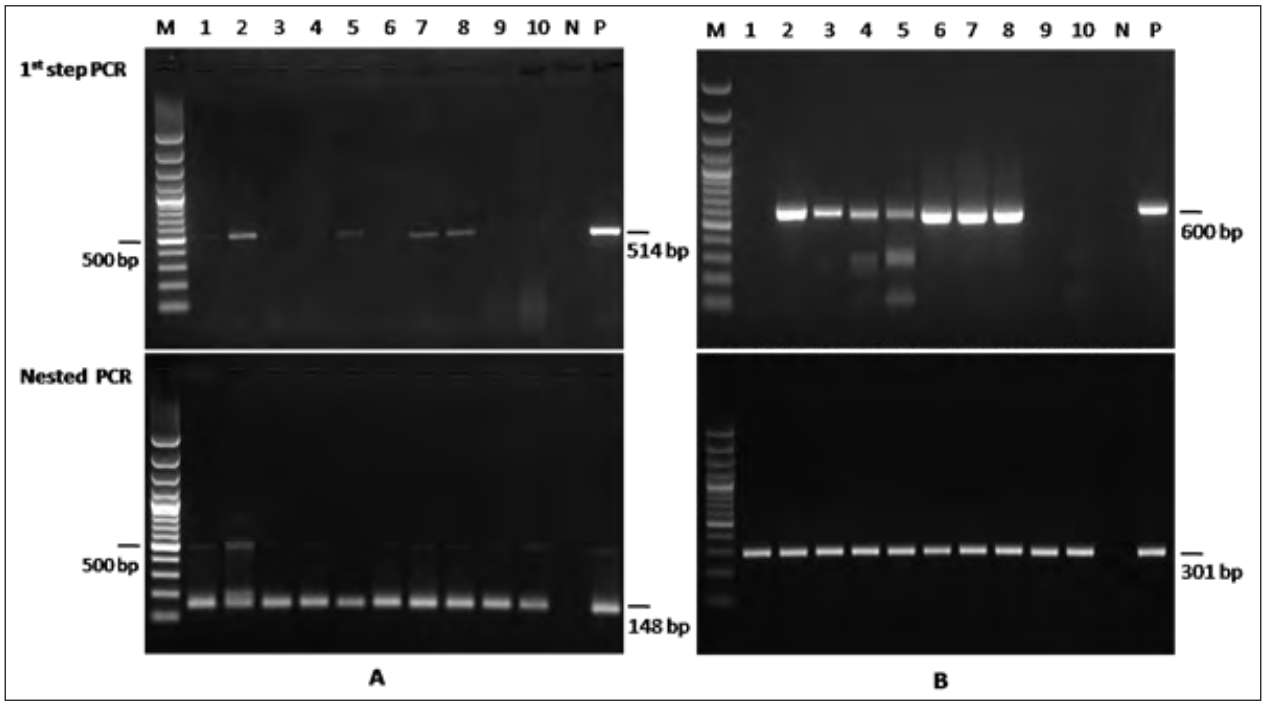

Fig. 7. Nested PCR detection of Enterocytozoon hepatopenaei in shrimp samples A- PCR targeting spore wall protein gene, B- PCR targeting 18s subunit (SSU) rDNA gene

Prevention and control

It has been found that EHP can be transmitted directly from shrimp to shrimp through feeding of EHP-infected hepatopancreas and cohabitation making control a difficult preposition in the culture ponds. Further, the microsporidian spores seem to be resistant to environmental condition and can persist in shrimp ponds and carry-over infection to next culture. This could lead to severe growth retardation in shrimp and massive production loss.

Today, there are no efficient treatments available for the control of EHP infection, as is the case with humans and animals. Spore activity was found to be inhibited by freezing at -20°C for at least 2 h and storage at 4°C. Low doses of chlorine, $KMnO_4$ and ethanol was found to be inhibitory to spore activity. The ponds having history of disease should be adequately dried (for 3-4 weeks) after harvest and residual spores in the soil may be inactivated by physical and chemical methods. In grow-out system, stocking EHP-free seeds and proper pond preparation between subsequent crops is of paramount importance to ensure that EHP spores along with the carriers were destroyed. Pond-drying followed by application of burnt lime or shell lime (CaO) on the pond bottom will help get rid of EHP spores from the pond sediment.

Better management practices (BMPs) are the only way to prevent the epidemics of EHP. However, farm level biosecurity measures are inadequate due to dominance of small and marginal farms in this sector.

Hatcheries may monitor the incoming shrimp brood stock for EHP by using faecal sample. Use of EHP-free live feeds and by following complete disinfection of hatchery facility with 2.5% sodium hydroxide solution (with minimum contact time-3 hrs) followed by drying the facility for a week, then rinsing with acidified chlorine (200 ppm) in between the production cycle may be ensured.

Way forward

The rapid spread of HPM in India within a span of three years is mainly due to lack of awareness, as the disease does not cause mortality compared to viral diseases. High density of susceptible host and serial infections of individual animals resulted in 'mass cultivation' of microsporidian spores in farms. Incipient nature and persistence of microsporidian spores in environment along with faeco-oral route of infection eventually favours this parasite to multiply in rearing ponds.

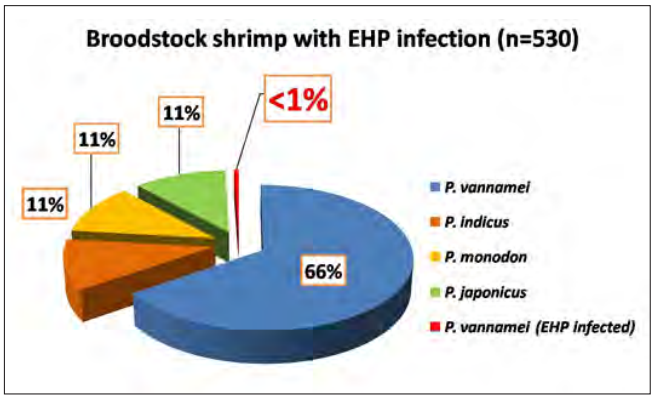

Fig. 8. Enterocytozoon hepatopenaei infection pattern in shrimp broodstock samples by nested PCR targeting spore wall protein gene [Only < 1% of the SPF P. vannamei tested were found positive, while all indigenous species were negative for EHP by non-lethal screening using faecal samples]

The exact source and nature of microsporidian transmission in Indian scenario is still not clear, though imported brood stock of *P. vannamei*, artemia cysts and post-larvae meant for stocking has been found positive for *E. hepatopenaei* during 2016 onwards (unpublished data).

Infection in hatchery may be through SPF brood stock or life cycle stages or live feeds. Rearing of SPF brood stock in non-bio secured facility and use of pond-raised brood stock may also facilitate massive infection. Hence a pre-screening of post-larvae for EHP is one option for farmers before stocking in ponds.

Care should be taken while sourcing seeds for introduction to newer areas, high density culture systems, viz., biofloc technology as the infections get magnified as the culture advances. Clear understanding on prevalence of EHP in wild caught broodstock of indigenous species of shrimp such as *P. indicus, P. monodon* and *P. japonicus* (Fig. 8) are needed. Though *P. monodon* is reported to be susceptible to EHP in India, this appears to be acquired at farm level.

No cases of EHP have been reported in traditional farming areas of western coast till date and we do not have the data on pre-existence of this infection prior to 2014 (Table 1). Constraints in dealing with this disease include, limitation of diagnostic techniques, lack of proper diagnostic facility and skilled man power.

Existence of cryptic carrier hosts in the system and availability of wide host range in new environment also could pose new issues in farming to deal this newly emerging problem in Indian aquaculture. Diagnosis of EHP in SPF brood stock of *P. vannamei* and post larvae in local hatcheries and other imported aquaculture feed viz., Artemia cysts (unpublished data) is a matter of great concern in shrimp aquaculture sector and warrant close look and policy interventions.

Conclusion

In shrimp aquaculture, a microsporidian parasite *E. hepatopenaei*, the causative agent of Hepatopancreatic Microsporidiosis had resulted in significant economic losses, in many shrimp farming nations.

The infection is not associated with any visible clinical signs or mortality in shrimp, it causes growth retardation to the extent of 15-30%. The EHP infection may be suspected with the occurrence of unusually inconsistent or retarded growth, or unusually high FCR in the absence of other gross signs of disease. Shrimp hepatopancreas is the target organ for EHP infection.

EHP infection can be transmitted horizontally through cohabitation and oral route and possibly vertical transmission. Geographic spread of EHP in shrimp farms and increasing incidences in brood stock, post larvae and other aquaculture input is a matter of great concern for future. The studies on the host range, biology, mode of transmission and control methods are needed on priority basis.

Highlights of marine fish landings in selected harbours of India during October 2018

SANTOSH KADAM, V. V. AFSAL, N. J. NEETHU AND JOICE V. THOMAS
NETFISH-MPEDA

Capture fisheries contribute nearly 70% of the quantity of fish and fishery products exported from India and 45% of the value of the exports. NETFISH records the marine fish landings and boat arrivals occurring at the major harbours of India as part of the Catch Certification system of MPEDA. This report presents the analysis result of harbour data obtained during October 2018.

Data Collection & Analysis

The fishery data were collected on a daily basis, both from primary and secondary sources, by the Harbour Data Collectors stationed at selected major harbours of India (see Table 1). Approximate quantity of various fish species that are landed in a day at the harbour was obtained by eye estimation. The name, registration number and type of fishing vessels arrived at the harbour were also recorded. Data obtained were further analysed using online applications and MS office (Excel) tools to arrive at species-wise, region-wise, state-wise and harbour-wise estimations. Data from 44 harbours belonging to 9 maritime states were obtained during the month which was analysed for this report.

Table 1. List of landing sites selected for data collection

Sl. No.	State	Fishing harbour
1	West Bengal	Deshapran
2		Namkhana
3		Raidighi
4		Digha (Sankarpur)
5	Odisha	Paradeep
6		Balaramgadi
7		Bahabalapur
8		Dhamara
9	Andhra Pradesh	Visakhapatnam
10	Andhra Pradesh	Nizampatnam
11		Kakinada
12		Machilipatnam
13	Tamil Nadu	Nagapattinam
14		Karaikal
15		Chennai
16		Pazhaiyar
17		Cuddalore
18		Pondicherry
19		Chinnamuttom
20		Mandapam
21		Tuticorin
22		Colachel
23	Kerala	Thoppumpady
24		Vizhinjam
25		Thottappally
26		Kayamkulam
27		Beypore
28		Sakthikulangara
29		Munambam
30		Puthiyappa
31	Karnataka	Tadri
32		Karwar
33		Mangalore
34		Honnavar
35		Malpe
36		Gangoli
37	Goa	Cutbona
38		Malim

39	Maharashtra	Ratnagiri (Mirkarwada)
40		Sasson Dock
41		Harne

42	Gujarat	Veraval
43		Mangrol
44		Porbandar

Appraisal of fish landings

A total of 83264.15 tons of marine fish landings was recorded from 44 landing sites during October 2018. The Pelagic finfishes was the highest contributor during the month by registering a quantity of 38139.34 tons (46%) and it was followed by Shellfishes with a contribution of 23099.84 tons (28%).

The demersal finfishes with a quantity of 22024.97 tons formed 26% of the total catch (Fig. 1). More than 65% of Shellfish landing was comprised of molluscans, where Cuttlefish and Squid recorded the highest quantity. Among crustaceans the *Karikkadi* shrimp formed the major share.

The total catch was comprised of 110 varieties of marine fishery items, among which the top five contributors in the chronological order were Ribbon fish, Indian Mackerel, Cuttlefish, Squid and Indian Oil Sardine (Fig. 2). These 5 fishery items together formed 42% of the total catch.

The other major contributors to the total catch were Japanese thread fin bream, Croaker and Reef cod, each recording more than 3000 tons. The species which registered least landing during the month was the Yellow fin seabream, with a quantity of 0.20 tons.

Table 2 has the details on the quantity of various fishery items recorded during October 2018. Among the Pelagic finfish resources, Ribbon fish and Indian mackerel were the major contributors and in the case of demersal finfishes, it was Japanese threadfin bream and Croakers which contributed more. Major items among Shellfish resources were Cuttlefish and Squid.

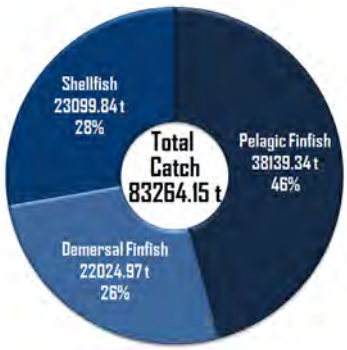

Fig. 1. Category-wise fish landings during October 2018

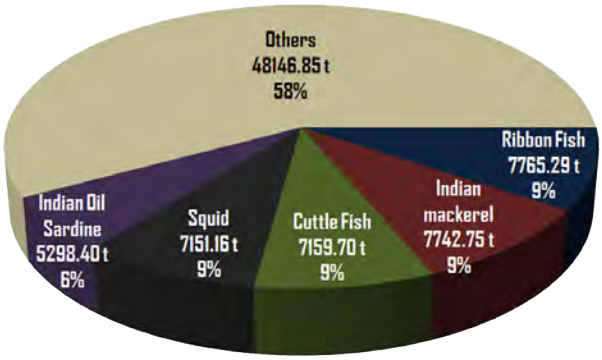

Fig. 2. Major fishery items landed during October 2018

Table 2. Category-wise landing of various fishery items during October 2018

Fish item	Quantity in tons	% of total catch
Pelagic finfish		
Ribbon Fish	7765.29	9.33
Indian Mackerel	7742.75	9.30
Indian Oil Sardine	5298.40	6.36
Tuna	3576.04	4.29
Horse Mackerel	2206.29	2.65
Seer Fish	1881.79	2.26
Scads	1787.67	2.15
Anchovies	1297.93	1.56
Leather Jacket	1270.67	1.53
Bombay Duck	1196.33	1.44
Trevallies	955.18	1.15
Hilsa	586.03	0.70
Dolphin Fish	567.05	0.68
Barracuda	508.81	0.61
Lesser Sardines	403.23	0.48

Herring	401.96	0.48
Queen Fish	302.53	0.36
Oriental Bonito	87.80	0.11
Mullet	84.75	0.10
Sail Fish	81.27	0.10
Indian Salmon	37.95	0.05
Cobia	22.37	0.03
Marlin	21.37	0.03
Needle Fish	12.50	0.02
Sea Bass	10.80	0.01
Silver Sillago	9.40	0.01
Flat Needle Fish	9.34	0.01
Indian Ilisha	8.60	0.01
Rainbow Runner	4.36	0.01
Indian Thread Fish	0.90	0.00
Total	**38139.34**	**45.81**
Demersal finfish		
Japanese Thread Fin Bream	4688.10	5.63
Croaker	3441.96	4.13
Reef Cod	3163.63	3.80
Bull's Eye	2475.67	2.97
Cat Fish	2116.32	2.54
Pomfret	1435.67	1.72
Lizard Fish	1241.29	1.49
Sole Fish	1138.50	1.37
Filefish	605.62	0.73
Snapper	454.78	0.55
Eel	289.53	0.35
Goat Fish	216.66	0.26
Moon Fish	207.05	0.25
Pony Fish	203.75	0.24
Ray	108.67	0.13
Batfish	72.80	0.09
Ghol	48.95	0.06
Perch	25.29	0.03
Indian Halibut	22.38	0.03

Parrot Fish	21.82	0.03
Whip Fin Silver Biddy	21.60	0.03
Black Tip Shark	10.60	0.01
Emperor Bream	10.52	0.01
Spine Foot	1.60	0.00
Guitar Fish	1.50	0.00
Trigger Fish	0.53	0.00
Yellow Fin Sea Bream	0.20	0.00
Total	**22024.97**	**26.45**
Shellfish		
Molluscs		
Cuttlefish	7159.70	8.60
Squid	7151.16	8.59
Octopus	835.45	1.00
Whelk	0.50	0.00
Total Molluscs	**15146.81**	**18.19**
Crustaceans		
Karikkadi Shrimp	1742.95	2.09
Deep Sea Shrimp	1552.09	1.86
Sea Crab	1067.88	1.28
Penaeid Shrimp	863.18	1.04
Pink Shrimp	810.22	0.97
White Prawn	537.73	0.65
Poovalan Shrimp	536.28	0.64
Tiger Prawn	281.22	0.34
Rainbow Prawn	194.42	0.23
Flower Prawn	191.40	0.23
Jawala	52.38	0.06
Red Shrimp	46.40	0.06
King Prawn	36.26	0.04
Lobster	21.23	0.03
Mud Crab	19.40	0.02
Total Crustaceans	**7953.03**	**9.55**
Total Shellfish	**23099.84**	**27.74**
Grand Total	**83264.15**	**100.00**

Region-wise landings

In October 2018, the maximum quantity of fish landings was recorded from the North West coast, where a total of 40457.17 tons (49% of total catch) of fish catch was reported from the selected harbours of Maharashtra and Gujarat. The South West coast comprised of Kerala, Karnataka and Goa had contributed 24306.56 tons (29%) to the total catch and thus held the second position. In South East coast, landings recorded from 14 harbours in Tamil Nadu and Andhra Pradesh was totalled to 5808.93 tons (7%), whereas along the North East coast 12691.49 tons (15%) of fish catch was recorded altogether from 8 harbours of West Bengal and Odisha (Fig. 3).

The five major fishery items which had contributed predominantly to the landings in each region are given in Table 3.

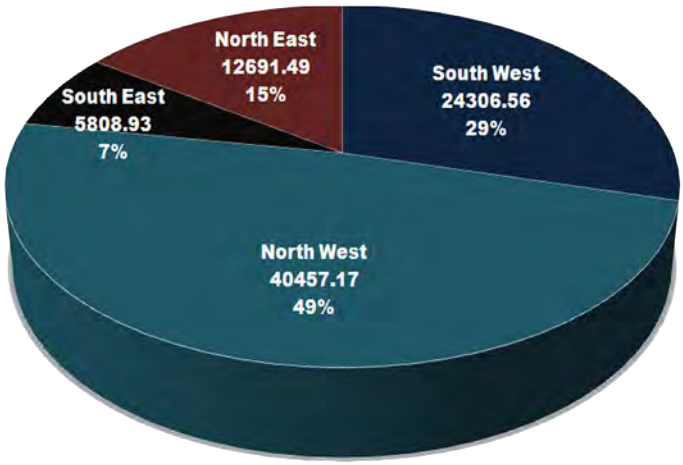

Fig. 3. Region-wise landings recorded during October 2018

Table 3. Major items landed in each region during October 2018

Item	Quantity in tons	% of total landings of the region
South West		
Indian mackerel	5231.16	21.52
Indian Oil Sardine	4550.50	18.72
Ribbon Fish	1747.75	7.19
Squid	1612.80	6.64
Bull's eye- dusky finned	991.16	4.08
North West		
Cuttlefish	5409.05	13.37
Ribbon Fish	5175.86	12.79
Squid	4837.52	11.96
Japanese Thread fin bream	4423.18	10.93
Reef cod	2562.79	6.33
South East		
Cuttlefish	739.67	12.73
Tuna	597.92	10.29
Squid	347.93	5.99
Ribbon Fish	338.11	5.82
Sea Crab	273.53	4.71
North East		
Croaker	1490.42	11.74
Karikkadi Shrimp	1035.87	8.16
Bombay Duck	936.42	7.38
Sea Crab	647.20	5.10
Indian mackerel	605.99	4.77

State-wise landings

The maximum landing during October was recorded from Gujarat, which was to the tune of 32846.38 tons, forming more than 39% of total catch (Fig. 4). This was followed by Karnataka with 15208.75 tons (18%) and then by West Bengal with a contribution of 9493.38 tons (11%). The state which reported least landing during the period was Andhra Pradesh, where only 2148.77 tons (2%) of marine fish catch was recorded. The West coast states together formed nearly 78% of the total catch and the rest of the 22% only belonged to the East coast states.

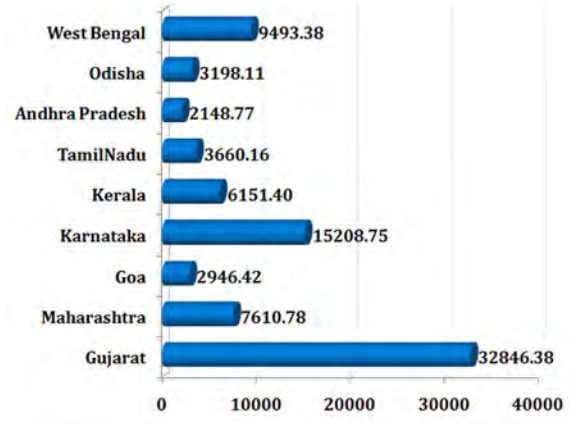

Fig.4. State-wise fish landings (in tons) during October 2018

The major five fishery items which had contributed significantly to the landings in each state during October are given in Table 4.

Table 4. Major items landed in various states during October 2018

Item	Quantity in tons	% of total landings of the state
Kerala		
Indian Mackerel	1381.25	22.45
Squid	781.00	12.70
Indian Oil Sardine	684.00	11.12
Cuttlefish	574.61	9.34
Ribbon Fish	501.84	8.16
Karnataka		
Indian Oil Sardine	3825.00	25.15
Indian Mackerel	2828.21	18.60
Ribbon Fish	1102.41	7.25
Bull's Eye- Dusky Finned	991.16	6.52
Squid	724.70	4.77
Goa		
Indian Mackerel	1021.70	34.68
Reef Cod	418.85	14.22
Horse Mackerel	338.20	11.48
Little Tunny	174.80	5.93
Tuna	149.45	5.07
Maharashtra		
Indian Mackerel	1105.53	14.53
Horse Mackerel	1029.14	13.52
Japanese Thread Fin Bream	738.18	9.70
Cat Fish	615.45	8.09
Squid	470.52	6.18
Gujarat		
Cuttlefish	5372.00	16.35
Ribbon Fish	5035.00	15.33
Squid	4367.00	13.30
Japanese Thread Fin Bream	3685.00	11.22
Reef Cod	2235.30	6.81
Tamil Nadu		
Cuttlefish	685.15	18.72
Squid	303.97	8.30

Tuna	225.05	6.15
Indian Scad	183.59	5.02
Sea Crab	180.02	4.92
Andhra Pradesh		
Tuna	372.87	17.35
Ribbon Fish	273.67	12.74
Brown Shrimp	173.43	8.07
White Prawn	154.13	7.17
Tiger Prawn	124.76	5.81
Odisha		
Croaker	736.23	23.02
Karikkadi Shrimp	483.32	15.11
Sea Crab	179.97	5.63
Tuna	178.28	5.57
Ribbon Fish	177.42	5.55
West Bengal		
Bombay Duck	855.74	9.01
Croaker	754.19	7.94
Karikkadi Shrimp	552.55	5.82
Hilsa	552.26	5.82
Indian Mackerel	508.45	5.36

Harbour-wise landings

Figures 5 and 6 represent the fish landings recorded during the month at the selected harbours of West coast and East coast respectively. Of the 44 harbours, Veraval harbour in Gujarat registered the maximum landing of 17714.20 tons (21%) and it was followed by Mangrol harbour with a contribution of 7733.50 tons (9%).

The Deshapran harbour with a quantity of 3877.50 tons (4%) could attain the seventh position and it was the harbour along East coast that registered the maximum landing. In October, 18 out of the 44 harbours had registered more than 1000 tons of fish catch, which consisted of 12 harbours of West coast and 6 harbours of East coast.

The least quantity of marine fish catch was recorded from Chinnamuttom harbour in TamilNadu (23.20 tons).

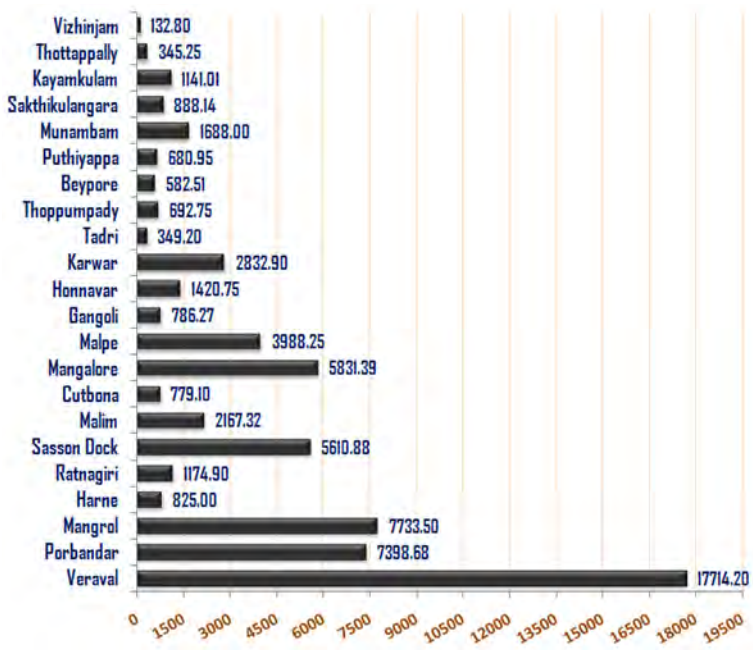

Fig. 5. Landings (in tons) recorded at harbours in west coast during October 2018

Appraisal of boat arrivals

A total of 30126 numbers of boat arrivals were recorded during October 2018, of which the highest number of boat arrivals was recorded at Veraval harbour (4476). The Porbandar harbour with 2663 boat arrivals held the next position. About 78% 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, Gill netters, Long liners and Traditional crafts.

Comparative analysis

Table 5 presents the comparison of data of October 2018 with that of previous months. The total fish catch had recorded a slight decline by about 600 tons during October when compared to that of September. On analysing the catch compositions during October, Pelagic finfish was found contributing the highest quantity as in previous month. However, the share of pelagic finfish was found increased by 10% than that of previous month and the other 2 categories had a corresponding decrease in their share. Ribbon fish had registered as the topmost contributor among the various fishery items landed during the period. Gujarat continued in the top position among the states and the Veraval harbour too maintained its topmost position among the harbours in terms of quantity of fish landed. The total number of boat arrivals recorded had increased in October when compared to that of September.

Fig. 6. Landings (in tons) recorded at harbours in east coast during October 2018

Summary

In October 2018, a total landing of 83264.15 tons of marine fishery resources were recorded from the 44 major fishing harbours of India, where in Pelagic finfish contributed the major quantity than the demersal finfish and shellfish stocks. Considering the fishery item-wise landings, though Ribbon fish was the major contributor Indian mackerel, Cuttlefish and Squid too recorded nearly same quantity during the month. About 78% of the total catch recorded during October was from the West coast. Gujarat recorded maximum landing during the period and the Veraval harbour had registered the highest landing as well as the maximum number of boat arrivals.

Table 5. Comparative analysis of the data

	August 2018	September 2018	October 2018
Total Catch	47118.88 t	83878.88 t	83264.15 t
Landing of Pelagic finfishes	13585.64 t (29%)	30605.87 t (36%)	38139.34 t (46%)
Landing of Demersal finfishes	15360.49 t (33%)	23239.71 t (28%)	22024.97 t (26%)
Landing of Shellfishes	18172.75 t (38%)	30033.30 t (36%)	23099.84 t (28%)
Species recorded highest landing	Japanese threadfin bream (16%)	Squid (15%)	Ribbon fish (9%)
State recorded highest landing	Kerala (26%)	Gujarat (38%)	Gujarat (39%)
Harbour recorded highest landing	Veraval (11%)	Veraval (22%)	Veraval (21%)
Total Boat Arrivals	17296	29333	30126

**Percentage of total catch*

Awareness Programme on Fish Exchange Portal

MPEDA officials with the participants of the programme

The MPEDA Regional Division, Veraval conducted an awareness programme on Fish Exchange portal, New Financial assistance schemes, e-stat package and EU-REX Registration for exporters in Veraval region on October 24 and November 20 at the Regional Division, Veraval. The programme was attended by managers, technical persons, technologists, and statistic dealing persons of the plants. As many as 24 exporters participated on October 24 and 21 exporters participated on November 20.

Mr. Ram Adhar Gupta, Deputy Director, Regional Division, Veraval started the programme by welcoming the participants and giving a detailed brief about the awareness programme.

Mr. Shrimali Vinodkumar, Assistant Director explained the details of the Fish Exchange portal for facilitation of trade between the Indian Seafood exporters and overseas buyers using the digital platform. He explained how trade facilitation is provided by this portal , which is the most pressing demand in today's competitive world trade. The portal enabled efficient and easier communication between exporters and importers resulting in sale promotion, market trend and availability and tracking. Exporters can view latest news around the globe, import procedure, market demand and product standards in this window. Exporters and importers can access the data, analytics and get updated market intelligence. Exporters registered under MPEDA are given access for posting their available products and offers, receive buying enquiry alert, check the latest trade statistic and plan their trade.

The participants at the programme were shown the registration process for exporters on fish exchange portal. The details of the new financial assistance scheme were also presented in detail at the programme.

Mr. Ghanshyam Mehta, Junior Technical Officer made a presentation on e-stat package and EU-REX and explained in detailed how an exporter can register for the same. Practical demonstration on how to prepare invoice and shipping bills were done at the programme and participants were advised to start entering statistical data from November 2018 onwards. The e-stat programme is all set to be implemented from December 1, 2018 and any difficulties faced by the exporters need to be rectified before that.

Stakeholder interaction at Kolkata ahead of US DOS team visit

Mr. K. S. Srinivas IAS, Chairman, MPEDA addressing the stakeholders

The Regional Division of MPEDA at Kolkata convened a meeting of stakeholders before the proposed visit by US Department of State (DOS).

The meeting at Hotel Novotel was held on October 26, which began with Deputy Director, Regional Division, Kolkata giving a brief introduction about the context of the meeting. In his welcome address, Secretary, MPEDA, gave a detailed overview about the purpose of the visit by US Department of States from October 31 to November 5. This was followed by a presentation by Joint Director (Marketing), MPEDA on the shrimp trade, harvesting systems and turtle conservation measures followed in India submitted before the US.

The Chairman of MPEDA, in his address, explained the strategies by which the US DOS visit will be organized and also explained about the importance of shrimp trade and associated regulations. The nation is now exporting Rs. 1,500 Crore worth wild caught shrimp products to USA. He said that Turtle Excluder Device (TED) is not relevant to West Bengal as there are no nesting places for turtle in Bengal beaches. Chairman also gave an idea about the schedule of visit in West Bengal by the US team, besides talking about their programme in Odisha and involvement of other related departments.

Chairman, MPEDA has also invited a couple of members to join the meeting with the Principal Secretary of Fisheries of West Bengal at his office on October 27 and sought the cooperation of all the stakeholders and exporters in making the visit a successful one.

Mr. Pranab Kar, Vice President, SEAI, West Bengal, Mr. Taj Mohammed, Secretary, SEAI, West Bengal, Mr. Ramlingam, Director, Mr. Arijit Bhattacharya of M/s. Triveni Exports, M/s. Megaa Moda Exports, and Mr. Deepak Nopany of M/s. Asian Exports brought to light various issues faced by the trade for Chairman's consideration.

Dr. Ram Mohan M.K., Joint Director, MPEDA presents on US shrimp trade and certification

Exporters meet on antibiotics at Bhimavaram

Mr. P. Anil Kumar, Joint Director, MPEDA interacting with the participants

The Sub Regional Division of MPEDA, Bhimavaram continued the ongoing stakeholders' awareness programme on US Seafood Import Monitoring Programme (SIMP) with an exporters's meet on antibiotics at Bhimavaram on October 26.

A view of the participants

During the SIMP awareness programmes at Vizag, Nellore and Bhimavaram, the exporters expressed concern at the increasing export rejections due to presence of antibiotics, especially the delisting of EU exporters and requested MPEDA to come out with a programme to eliminate antibiotic residue from the export value chain.

Following this, the Regional Division of MPEDA at Vijayawada drafted a proposal for procurement of antibiotic-free farmed shrimp for export processing and this was circulated among exporters by the Regional Division, Vizag and Sub Regional Division, Bhimavaram. Those interested were requested to attend a meeting to brainstorm on the proposal and further refine it for implementation. 27 participants representing 19 exporting units participated in the meeting.

Programme started with a brief introduction by Mr. M. Shaji, Deputy Director, Regional Office, Visakhapatnam.

Mr. Anil Kumar P., Joint Director, Regional Centre, presented the proposal for assisting the exporters to avoid exporting antibiotic contaminated farmed shrimp consignments and sought their comments and inputs. Dr. Pau Biak Lun, Assistant Director, Sub Regional Division, Bhimavaram led the class on trade issues and trade agreements in seafood sector.

Training for Seafood Processing Plant Workers

Mr. Karshanbhai R Salet, Vice president, Seafood Exporters Association, Gujarat inaugurating the training programme

The Marine Products Export Development Authority (MPEDA) is implementing an up-skilling programme for the seafood processing plant workers with the financial assistance of National Skill Development Corporation (NSDC) under Ministry of Skill Development and Entrepreneurship (MSDE).

This programme comes under the Pradhan Mantri Kaushal Vikas Yojana (PMKVY) and the project type is Recognition of Prior Learning (RPL). Two hundred training programmes are planned at present in 200 seafood processing plants registered under MPEDA in 9 maritime states, with a target of 6,000 seafood workers to be covered. The trainees, who are expected to pass with 70% score in an assessment by an independent assessor, will be certified under the National Skill Development Programme.

It is proposed to train and certify all the seafood processing workers of the country in future so that India becomes the first country with a fully certified labour force. MPEDA has trained 44 members of its officials under the Training of Trainers (ToT) programme conducted by the Sector Council, namely Food Industry, Capacity and Skill Initiating Sector Council (FICSI) and obtained certification for them to train the seafood workers in nine states.

The first batch of training under PMKVY was organized from October 29 to 31 at M/s. Sagar Samrat Seafoods, Porbandar and 26 seafood workers were trained on different aspects of plant, equipment and personal hygiene, sanitation aspects, product handling at various stages from pre-processing to packing etc.

The training programme was conducted by two ToT certified trainers – Mr. Jignesh M. Visavadia, State coordinator, Netfish Gujarat and Mr. Shrimali Vinodkumar M, Assistant Director, MPEDA Regional Division, Veraval. The up-skilling was conducted in class rooms and production line.

Mr. Jignesh M Visavadia, State co-ordinator, Netfish Gujarat leading the orientation programme

On the job skilling

On the third day of the programme, the assessor deputed by the independent assessment agency conducted the theoretical and practical skill assessment – both in class rooms and production line in seafood processing plant.

Orientation Programme

The second batch of training for seafood processing plant workers under Pradhan Mantri Kaushal Vikas Yojana (PMKVY) was organized from November 19 to 21 at M/s. Silver Sea Food Unit-II, Porbandar. Twenty-three seafood plant workers, who have been registered and enrolled under Skill Development and Management System (SDMS) of National Skill Development co-operation (NSDC) as per the protocol, were trained

Theory Assessment

on different aspects of plant, equipment and personal hygiene, sanitations aspects, product handling at various stages from pre-processing to packing etc. for two days.

The training was led by Mr. Jignesh M Visavadia, State coordinator, Netfish Gujarat. The deputed assessor from the sector council namely Food Industry, Capacity and Skill Initiating Sector Council (FICSI) did the independent assessment of the participants' skills at the end of the programme.

Sea Safety and Navigation Training by NETFISH

Demonstration of using life buoy by coast guard officials

NETFISH and MPEDA jointly organised an awareness programme in association with Sahyadri Community Development and Women Empowerment Society (SCODWES) to promote the use of life-saving equipment and its proper use among fishers of Aligadda, Baithkol and Kawar. Mr. Vijayakumar C. Yaragal, Deputy Director, MPEDA, Karwar, inaugurated the training programme at MPEDA office, Karwar Uttara Kannada District on October 31. Mr. Narayana K. A., State Coordinator, NETFISH, explained the objectives of the programme to the participants. Mr. Dinesh Kumar, Assistant Commandant, Coast Guard, Karwar, was the master trainer for the programme and he spoke on sea safety and navigation. Mr. Praveen Kumar, Senior Sailor, Coast Guard, Karwar, demonstrated and trained fishers in using life jackets and life buoys.

About 28 fishers actively participated in the training programme. Some of them requested NETFISH to provide the life-saving equipment and to conduct more programmes on this subject. Mrs. Nidhi Naik, Coordinator, SCODWES, welcomed the gathering and Mr. Umesh Marati, Coordinator, SCODWES, proposed the vote of thanks.

At Karaikal in Tamil Nadu, training programmes on GPS Handling and Sea Safety were conducted on October 23 and 24 respectively, in association with Fisheries Professional Organization (FPO), a member NGO.

The GPS training was aimed at generating awareness on importance of using GPS in fishing vessels and providing hands-on training on its operation and troubleshooting.

About 30 participants including drivers, boat owners and boat labours were made aware on the functions of GPS, various GPS receivers, GPS accuracy, GPS signal reception, how to record a waypoint, how to navigate to the recorded waypoints, how to use GPS waypoints in rescue situations, function of proximity alarm etc.

During the Sea Safety programme, 30 fishers were made aware about the importance of personal safety and demonstrated the safety equipment and how to manage the emergency situation. The trainees gained the knowledge about the safety equipment and there were requests made to NETFISH for providing life-saving apparatus in subsidized rates.

'Swachhata Hi Seva' 2018 campaign by NETFISH-MPEDA

Swachhata Hi Seva, a drive initiated by Government of India, aims at accelerating the jan andolan for realizing the vision of a Clean India. NETFISH had joined the campaign this year by organizing a series of harbour and coastal clean-up programmes across all the maritime states of India in October 2018.

In West Bengal, a Harbour Clean-up Programme was organized at Deshapran Fishing Harbour, Petuaghat, Purba Medinipur on October 9. The event had the participation of 31 people, including 20 students of National Social Service (NSS) unit of Nayaput Sudhir Kumar High School, Contai, Purba Medinipur, school teachers, staff of Junput Coastal Police, Fisheries officials, fishermen and net menders. Mr. Mofuddin, Officer-in-Charge of Junput Coastal Police Station, inaugurated the programme and highlighted the importance of sanitation and cleanliness. Mr. Pradyut Pahari, Special Officer, Deshapran Fishing Harbour, stressed on the significance of hygiene and sanitation at harbours. Mr. Atanu Ray, NETFISH State Coordinator, explained the importance to observe *Swachhata Hi Seva* and importance of cleaning of fishing harbour as well as personal hygiene of fishers. He also highlighted on the misuse of plastic and its adverse effects on our environment and also stated the initiative taken by NETFISH in Kerala to eradicate plastic from sea.

The participants were provided with hand gloves, caps and bags and were asked to collect debris, plastic carry bags, PET bottles, plastic cups, thermocol pieces, broken nets, ropes etc. from the premises of Deshapran fishing harbour. Bleaching powder was applied in the drainages, jetties as well as in unsanitary areas.

Harbour clean-up at Deshapran Fishing harbour

The Harbour Clean-up Programme conducted at Paradeep Fishing Harbour on October 5 2018 had active participation from Paradeep Fishing Harbour Management Society, fishermen, net menders and boat crew members. Mr. S. K. Mohapatra, State Coordinator, highlighted on the importance of sanitation and cleanliness at fishing harbours as it is the important area to maintain the quality of fish.

The participants wearing T-Shirt and caps provided by NETFISH had collected all sorts of plastic wastes from the harbour premises and discarded off safely.

Participants of the Clean-up drive at Paradeep harbour

NETFISH and its member NGO DFYWA organized a clean-up event at Pudimadaka fish landing centre on October 12, with the support of Fishermen Society of Jalaripeta, Pudimadaka. The programme started with a mass awareness meeting at the landing centre with 100 numbers of active fishermen.

Participants taking oath at Pudimadaka prior to the clean-up

Messages were conveyed to the fishers on the importance of Swachh Bharat Mission of Government of India and the need to implement it for good health as well as fish quality management.

Mr. Hanumantha Rao, State Coordinator, explained the requirement of hygiene in landing centres and the problem with open defecation along coastal area. Mr. Jaggarao, President of the Fishermen Society, talked against open defecation and expressed the need for keeping the landing centre clean for good health. Mr. Arjilli Dasu, DFYWA, explained about the importance and significance of organising clean-up programme under Swachh Bharat Mission of India. Towards the end of the meeting all the participants took an oath on 'Swacchatha hi Seva' and after that they were engaged in the clean-up drive, removing all kind of wastes from the harbour surroundings. NETFISH provided caps, hand gloves, brooms and offal bags to the participants.

As part of Swachhata Hi Seva campaign, NETFISH in Chennai along with member NGO Fisheries Professional Organization (FPO) and in collaboration with Fisheries Department and Dr. MGR Fisheries College and Research Institute, Thalainaiyeru, observed a clean-up day at Nagapattinam new beach on October 10. Hand bills stressing the need for keeping the beach clean and the role of public and fishermen in maintaining the bio-resources of sea were distributed.

Dr. R. Balasubramanian, State Co-ordinator, NETFISH and Mr. V. Soundarapandian, Co-ordinator, FPO, felicitated on the occasion. Mr. M. Muruganantham, Assistant Professor and Head, Department of Fish Processing Technology, co-ordinated the cleaning programme. Around 100 persons, including students and staff of Dr. M.G.R. Fisheries College and Research Institute, took active participation in the clean-up. The way leading to the beach, the children park nearby and the sand bed near the shore were thoroughly cleaned. T–shirts bearing NETFISH - MPEDA emblem was distributed to the participants.

Participants of the coastal clean-up programme held at Nagappattinam

A harbour clean-up programme was organised at the Cochin Fisheries harbour Thoppumpady on October 9 to mark the 'Swachhata Hi Seva' campaign. The programme was inaugurated by Mr. K.J. Maxy, Mattancherry MLA. Ms. Sangeetha N.R., State Co-ordinator, welcomed the gathering. Mr. S. Sreekumar, ATM of Cochin Fisheries Harbour, presided over the function and Mr. Abilash, Sub-inspector of Police, Thoppumpady, and Mr. A.M. Noushad, President of Gillnet Buying Agent Association, spoke. After the inauguration function, all the participants, including harbour workers, net menders, fishers etc., with the aid of one excavator machine and 5 outsourced labourers, carried out the cleaning activity. This was done mostly at the net mending area situated towards southern end of the harbour.

Mr. K. J. Maxy, MLA inaugurating the clean-up at Thoppumpady

NETFISH conducted a harbour clean-up drive at Munakakadavu landing centre in Thrissur district as part of 'Swachhata Hi Seva' programme on October 16. The programme was organised in association with the Labour Union Coordination Committee of Munakkakadavu harbour. The cleaning programme was inaugurated by Mr. P.K. Basheer, President of Kadappuram Grama Panchayat, in a function presided over by Mr. Santhosh N. K., NETFISH State Coordinator, and in the presence of Grama Panchayat ward members Mr. Ashkar Ali and Ms. Sreeba Ratheesh. Mr. P. A. Siddiq, President, Labour Union Coordination Committee, welcomed the gathering and Mr. Manaf, Treasurer, Labour Union Coordination Committee, proposed the vote of thanks. With the active participation of harbour workers, the overgrown grasses were cleared and all sorts of solid litter were removed from the harbour premises. Later on they washed and sanitized the auction hall and the compound. Hand gloves, face masks and cleaning materials were provided for the 40 harbour workers from different unions, who had participated in the cleaning activity.

Harbour workers clearing the bushes at Munakkakadavu harbour

Mudga fishing harbour clean-up by fish workers

As part of 'Swachhata Hi Seva' campaign, a clean-up event at Mudga fishing harbour, Amdalli, Uttara Kannada District was held on October 5, in association with SCODWES. More than 60 fishers of Mudga fishing harbour participated in the event. The event included a brief talk on harbour sanitation, then a clean-up drive and finally leaflets distribution.

Ms. Nidhi Naik, Field Co-ordinator, SCODWES, welcomed the dignitaries and fishers. Mr. P. Nagaraju, Deputy Director, Fisheries, Karwar, inaugurated the programme and urged the fishers to cooperate with the department in keeping the harbour clean. Mr. Narayana K. A., State Co-ordinator, NETFISH, talked about the objectives of the harbour clean-up programme and NETFISH activities in Karnataka with respect to quality management and sustainable fisheries. He also advised the fishers to practice hygienic fish handling on-board and inside the harbour. Mr. Chandrakanth Mangre, Secretary, Fishermen Co-operative Society, Mudga, advised the fishers to properly utilize the facilities provided to them in the harbour. After the inaugural session a demonstration on how to clean the fishing harbour and auction hall was arranged with the help of fishers. Following this, the auction hall, wharf and harbour premises were cleaned. As much as 50 hygiene kits consisted of liquid hand wash, hair oil, comb, tooth paste and brush were also distributed among beneficiaries selected from different boats at the function.

NETFISH, along with Nagarik Bahu Uddeshiy Seva Pratishthan, Sindhudurg and with the involvement of youths from fisher community, successfully planned and executed a clean-up programme under 'Swachhata Hi Seva' Mission at Dandi Sea Beach in Malvan, Sindhudurg on October 11. During the clean-up activity, plastic bottles, glass bottles, chappals and shoes, monofilament net pieces, pieces of thermacol, thermacol dishes, plastic carry bags, pieces of FRP, pieces of cartons, tin cans, plastic sheets, waste clothes, school bags, plastic cups, plastic glasses, plastic dishes, etc. were collected from the beach area and disposed off. T-shirts printed with Swachhata Hi Seva slogan and NETFISH-MPEDA logo and name were distributed among the participants along with caps bearing NETFISH logo.

जूनागढजनपदस्य चोरवाडस्थिते बंदर प्राथमिक–शालायां नेटफीश स्थानयाः उपक्रमे "स्वच्छता एव सेवा" कार्यक्रमः संपन्नः

(वार्ताहरः जगदीशः डाभी) जूनागढजनपदः। प्रातविवरणमनुसारं गांधी जयंत्याः उपलक्ष्ये जूनागढजनपदस्य चोरवाडनगरे स्थिते बंदर सर्वकारीय प्राथमिक–शालायां भारतसर्वकारस्य संस्था एवं सामाजिक– संस्थया समुद्रतटे सफाई अस्मिन् स्वच्छताभ्याने हरिलालभाई सोलंकी, खारवासमाजस्य सदस्याः उपस्थिताः आसन्। अस्मिन् कार्यक्रमे बंदर प्राथमिक–शालायाः प्रधानाचार्यश्री, शिक्षकेषु वासुदेवभाई कानाबारः, सुरेशभाई राठौड़, रेनिशभाई भीमाणी

Newspaper report on the clean-up drive held at Chorwad

A harbour and beach clean-up event was organized by NETFISH and B.A.Y.E.R.D.F.T at Chorwad Landing centre on October 4, to mark 'Swachhta Hi Seva' campaign. Around 60 participants, including students from Government School of Chorwad, took active participation in this programme. The president of fishermen community inaugurated the clean-up programme. Around 500-700 kgs of solid waste were collected during this clean-up and the landing centre was sanitized. The event helped to pass a message to the entire fisher community on the importance of cleanliness and to save marine environment and ocean resources by keeping it free from unwanted materials. The programme concluded as Mr. Jignesh Visavadia, State Coordinator, NETFISH proposed the vote of thanks.

Participants of the clean-up drive held at Munambam

'Swachhata Pakhwada' observed at fishing harbours

The Ministry of Commerce and Industry, Government of India, declared that 'Swachhata Pakhwada' fortnight would be observed from November 1 to 15. In this connection, the Marine Products Export Development Authority (MPEDA), in association with the Seafood Exporters Association of India (SEAI) and with the coordination of the Network for Fish Quality Management & Sustainable Fishing (NETFISH), organised clean-up programmes at two harbours in Kochi, Kerala.

Cochin Fisheries Harbour

A day-long cleanliness drive was carried out at Cochin Fisheries Harbour, Thoppumpady on November 13 in this connection. More than 35 participants, including MPEDA staff, SEAI staff, NETFISH staff and staff from nearby seafood processing factories, took part in the programme. One excavator machine and five labourers were also engaged for carrying out the clean-up.

The whole team removed all sorts of wastes such as plastic bottles, carry bags, plastic packets, broken nets, thick grass, fallen leaves from the harbour premises and disposed them safely. The wharf area and auction halls were washed clean using water.

Munambam Harbour

Another clean-up event was organised at Munambam harbour on November 14, where more than 30 participants including MPEDA staff, NETFISH staff and staff from nearby seafood processing factories, attended. Five workers were also employed to assist in the work. Mostly bushes, grasses, fallen leaves were removed from the harbour area during the programme, along with a few plastic wastes strewn around the harbour.

The auction hall and wharf area were also cleaned. Caps with Swachh Bharat logo, gloves and mouth pieces were provided to the participants of the programmes. Cleaning equipment and trolleys were also arranged to aid the clean-up process.

US DOS and NOAA Team visit to West Bengal

US DOS with harbour authorities,DOF, MPEDA Officials, Fishermen association and local Govt. representative

A two-member technical team from US Department of State and NOAA, Department of Commerce accompanied by Deputy Minister Counselor, US Embassy, New Delhi visited West Bengal on November 01 and 02 in connection to implementing Section 609 of the US Public Law, US Sea Turtle Conservation programme for shrimp capture mechanisms.

The team members were Mr. Joseph A Fette, Environment Officer, Office of Marine Conservation, section 609 Turtle Exclude Devices (TEDs) Programme, US Department of State, Bureau of Oceans and International Environmental and Scientific Affairs; Mr. Jeff Gearhart, Research Fisheries Biologist, National Marine Fisheries Service Centre, Mississipi laboratory, USA and Ms. Isabella, Deputy Minister Counselor, US Embassy, New Delhi.

On November 1, the US team along with MPEDA officials comprising of Mr. John Kingsly IAS, Resident Director, MPEDA, New York; Dr. Ram Mohan M.K., Joint Director; Mr. S.S. Shaji, Deputy Director and Mr. Archiman Lahiri, Deputy Director, visited Rajendranagar, Andulpota, North 24 Parganas to oversee the filtration system of harvest of black tiger shrimp (*Penaeus monodon*).

The team made a survey of the water body of Mr. Saheb Ali and group farmers residing at Rajendrapur village, who are practicing traditional shrimp filtration based on tidal dynamics and natural stock entry. The team later had a detailed discussion with the farmers, and saw a practical demonstration of the traps been set and harvested from the water bodies.

The team later had a meeting with the Secretary of Fisheries at the office of the Secretary, Benfish Complex. Chairman, MPEDA; Resident Director, MPEDA; Secretary, MPEDA; senior officials from the Department of Fisheries along with other MPEDA Officials and leading exporters from the region attended the meeting.

Mr. Saptarshi Biswas, Deputy Director, DoF, made a presentation on the fisheries scenario in West Bengal. This was followed by a presentation on turtle conservation approaches in India by Dr. Ram Mohan M.K., Joint Director, MPEDA.

A detailed presentation on Section 609 was also presented by Mr Joseph A. Fette. The presentations were followed by discussion.

US DOS team visiting the Traditional Wild fisheries area in West Bengal

On second day, the US team visited Deshapran fishing harbour, Purba Medinipur. The team was welcomed by the Harbour Officer, Block Development Officer, Assistant Director of Fisheries and Secretary, Fishermen Association at the harbour. The queries were answered by MPEDA officers and Mr. Shyamsunder Das of Fishermen Association. After extensive discussions, US team inspected the trawlers and Dol netters, and also checked the gears such as trawl net, gill net and dol net in the harbour. Mr. Atanu Ray, State Coordinator, Netfish and Mr. Lahiri explained how these three nets are operated.

After visiting the harbour, the team visited the processing facility of M/s. KNC Agro Pvt. Ltd., Pichhabani, and left for Bhubaneswar on November 3.

West Bengal Fisheries Secretary meets stakeholders in fisheries sector

Dr. Ravi Inder Singh IAS, Secretary, Department of Fisheries, Government of West Bengal, met the stakeholders in fisheries sector at the Conference hall of his office on October 26. The meeting was convened as per the request of MPEDA, in view of the impending visit of the officials of US Department of State (DOS) during 1-2, November 2018.

The US officials are visiting to see the measures taken by India to conserve Marine turtles during harvest of other marine products, especially shrimps, be it in ocean or it in aquaculture. As requested by MPEDA, Petuaghat harbour in East Medinipur has been selected for the visit of delegates from US. Dr. Singh reviewed the progress of minor maintenance work in the harbour with the concerned officials and ensured that it will be over by October 30. He instructed the Managing Director of the State Fisheries Development Corporation (SFDC) to make a field visit on the next day to assess the progress of the work.

Chairman, MPEDA thanked Dr. Singh for convening such a meeting and explained the importance of visit of delegates from USA. He also emphasized that India is serious about conservation of sea turtles, while harvesting fish from wild and aquaculture farms.

A brief itinerary of the visiting officials was presented. He sought the cooperation all the stakeholders for the forthcoming visit of US delegation.The meeting was attended by exporters, farmers, fishermen, boat owners apart from State fisheries department officials, harbour department officials and MPEDA officials.

Brainstorming on Sustainable Shrimp Farming

A brainstorming session on sustainable shrimp farming was organised by the the MPEDA Regional Division, Vijayawada along with the one-day meet for progressive farmers meet at Karlapalem, Guntur District, Andhra Pradesh on October 31.

Mr. P. Anil Kumar, Joint Director, MPEDA, Regional Division, Vijayawada briefed the farmers on the activities of MPEDA with regards to antibiotic issue, improving export markets etc. Around 10 farmers from Guntur district attended the brainstorming session, in which they were given some recommendations.

This included the antibiotic and disease-free certification of PL from hatcheries to be done by MPEDA, about exporters doing PHT before purchasing irrespective of whether exported to EU or not, that PHT should be made mandatory, MPEDA setting up Elisa Lab at Bapatla, field trails to be conducted to demonstrate strategies to prevent crop failure and to implement farm traceability including enrolment, antibiotic campaigns through capacity building of aquaculture professionals.

The participants were alerted that use of farm raised Brood stock by hatchery could result in the spread of disease-carrying seed. The MPEDA-RGCA brood stock may be supplied to hatcheries at a reduced price to compete with farm raised Brood stock to improve seed quality, it was suggested.

Earlier, Mr. P. Anil Kumar inaugurated the one-day meet, in which around 100 farmers, aquaculture technical professionals and officials of the Department of Fisheries, Andhra Pradesh, attended. The main objective was to create awareness among the farmers on current issues facing shrimp farming sector in Karlapalem Mandal.

Besides Mr. P. Anil Kumar, Mr. P. Brahmeswara Rao, Assistant Director, MPEDA, Regional Division, Vijayawada; Mr. K. Arivukkarasu, Assistant Director, MPEDA, Regional Division, Vijayawada; Mr. Kishore, Fisheries Development Officer, Bapatla and Dr. V. Ratnaprakash, KVK led the classes.

Mr. P. Anil Kumar made a presentation on Seafood Import Monitoring Programme (SIMP) and its importance on seafood export. He explained about non-tariff trade barriers on issue imposed by importing nations on the seafood export. Mr. Brahmeswara Rao's presentation was on the importance of farm enrolment for better future of aquaculture products. He also explained about certification scheme to be implemented by MPEDA for Better Management Practices (BMP) at hatchery/farm.

Mr. K. Arivukkarasu talked about the issues of using antibiotics in shrimp industry and also on the exchange portal for getting better prices for farm products. Dr. V. Ratnaprakash spoke about diseases that affect shrimp farming and explained about proper management during the detection of diseases. The participants were administered an oath for healthy and safe practices in shrimp farming. The programme ended with Mr. Brahmeswara Rao proposing the vote of thanks.

Training programme for farmers in Raibag

Mr. C. T. Nayak, Regional Deputy of Fisheries, Belgaum had inaugurated the three-day training programme for 20 farmers from Raibag in Belgaum district of Karnataka on October 11.

During his inaugural address, Mr. Nayak outlined the schemes that are being implemented for promoting fisheries activities by the State Fisheries Department. He sought the farming community's cooperation in implementing these schemes effectively. He requested the farmers to make use the MPEDA schemes also for promoting inland fisheries and augmenting Indian export for earning foreign exchange to the nation. He requested MPEDA to conduct such programmes in other taluks also so that more farmers are benefitted. It was pointed out that fish culture could be used to make optimum use of low saline soil land and alkaline water locked land to generate additional income.

The workshop was organised on the basis of a request placed by Mr. Sanjay Arekare, Assistant Director of Fisheries – Grade II, Chikodi. Addressing the participants, Mr. Babi Bopanna, Sr. Assistant Director of Fisheries, Belgaum talked in detail about the Indian Common Carp culture operations.

He emphasized the importance of the feed and feed management as it contributes 60% of the production cost. Mr. Manjunath, a progressive farmer involved in development of poultry, agriculture and fisheries and who had also participated in interstate tour programme last year to Andhra Pradesh, shared his experience and talked about what he learnt during the study tour.

Mr. Sanjay Akarere led the classes on IMC culture with special reference to the alkaline water-locked area. He covered topics like pre-stocking management, seed selection, seed stocking protocols, detail of water parameters, fish health management and post harvesting technology and market. Mr. G. Ramar, Junior Technical Officer led a class on site selection of shrimp farms, construction of the shrimp ponds with special reference to water controlling structures, pre-stocking management, seed selection, seed stocking protocols, detail of water parameters, shrimp health management, banned antibiotic in aquaculture farms, protocol of harvest management.

On the second day, Mr. Adarsha H.S., SMS-Fisheries, ICAR- BIRDS KVK Takkaratti, Gokak Taluk, Belgaum, delivered a lecture on water quality management and seed selection and stocking. Mr. Shivakumar K. Kambar, Consultant, Agricultural Technical Management Agency, Karageni talked about cultivable fishes in India and difference between IMC and other cultivable species. A field visit to Diggewadi and Exampa villages for getting first-hand information on fish farming operations was held on the final day of the programme.

Mr. Sanjay Akarere distributed the participation certificates and stipend to the trainees. Mr. G. Ramar proposed the vote of thanks.

Awareness programme on "banned antibiotics" and "diversification of aquaculture"

Dr. Vishnudas Gunaga, JTO, MPEDA explaining consequences of using banned antibiotics

The Sub Regional Division of MPEDA at Ratnagiri organised awareness programmes for farmers on November 2. The programme covered the issue of banned antibiotics and diversification of aquaculture in two sessions.

Dr. T. R. Gibinkumar, Deputy Director, MPEDA, Sub-Regional Division, Ratnagiri welcomed the participants

A view of participants

and explained about various schemes of MPEDA available for the benefit of farmers. Talking about the role of MPEDA in the development of aquaculture, he informed the participants about the opening of MPEDA's new Sub- Regional Centre at Ratnagiri for the benefit of farmers and exporters in Ratnagiri, Sindhudurg and neighbouring districts.

Dr. Vishnudas R. Gunaga, Junior Technical Officer, presented the list of antibiotics and chemicals banned in aquaculture and explained the consequences of using the same.

In the second session, Dr. Vishnudas narrated the purpose of conducting awareness campaign programme on diversification of aquaculture and explained the farming techniques involved in seabass, crab and tilapia etc.

Mr. Shaji George, Assistant Director advised the farmers to practice aquaculture in an eco-friendly sustainable manner without using any banned antibiotics.

After the classes, trainees interacted and clarified their various doubts on diversification of aquaculture and farm techniques involved in seabass, crab, tilapia etc. as well as antibiotic issues with MPEDA officials. The programme was attended by 10 participants from Ratnagiri and Sindhudurg.

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Training Programmes on Inland Fisheries

Mr. Gautham, Assistant Director of Fisheries, Basavakalyan, inaugurated a three-day training programme for farmers engaged in inland fisheries at Basavakalyan, Bidar district in Karnataka on November 15.

Situated on the northern parts of Karnataka, Bidar district has two river basins – Godavari and Krishna. Major parts of the district are covered by Godavari basin, which includes its two major tributaries namely the Manjra and the Karanja rivers. The Godavari basin extends to over 4,411 sq. km., of which Manjra covers up to 1,989 sq. km. and Karanja up to 2,422 sq. km.

The Krishna basin covers 585 sq. km., of which Mullamari river basin covers 249 sq. km. and Gandarinala river basin covers 336 sq. km . The Manjra river is a perennial river that flows over a distance of 155 km in the central part of the district and flows in eastern direction with a meandering course.

The Karanja river flows in northwestern direction for 74 km, with Karanja reservoir being major water source. Mullamari river originates near Matala village of Basavakalyan taluk and flows eastwards for 38 km before flowing into Kalaburgi district and joins the river Kagna.

The district has got 15 fishermen societies registered with the Department of Fisheries. The farmers in the region are extensively taking up aquaculture ventures in Indian Major Carp in ponds and reservoirs. The workshop was organised to spread awareness on other options in inland fisheries as well as *L. vannamei* culture in fresh waterbody, alkaline or low saline soil.

The State Government had earlier identified 8558 hectares as either alkaline land or water-logged region, which might not be used for agricultural purposes. Since most of the reservoirs are not perennial water-logging areas, scampi seeds are stocked as additional income along with carp seed. In his inaugural address, Mr. Gautham talked about various schemes being implemented by State Fisheries Department to promote fisheries activities. He also listed the schemes offered and the project for promotion of scampi culture.

Mr. Vijaykumar Yaragal, Deputy Director, MPEDA led the class on IMC culture, with special reference to the alkaline water-locked area. He was covered topics like pre-stocking management, seed selection, seed stocking protocols, detail of water parameters, fish health management and post-harvesting technology and market.

On the second day of the training programme, a field visit was arranged to a reservoir and the participants were explained about the installation of cage for export-oriented candidate species and fish farming operation in all respects. The farming community was urged to release scampi seed along with carp seed to generate additional income. Mr. Madiwalappa P.S., Executive Officer of Basavakalyan Taluk Panchayat was invited as Guest of Honour for the valedictory function of the training programme.

In his address, Mr. Madiwal appreciated the MPEDA effort to organise this programme in a remote place like Bidar. He requested the farming community to utilize the funds meant for fisheries promotional and development effectively without letting the funds return unutilised back to the government.

He requested the Assistant Director of Fisheries to come with viable proposals and utilize the same for development of fisheries sector. He also distributed the participation certificates and stipend to trainees. Mr. G. Ramar, Junior Technical officer, proposed the vote of thanks.

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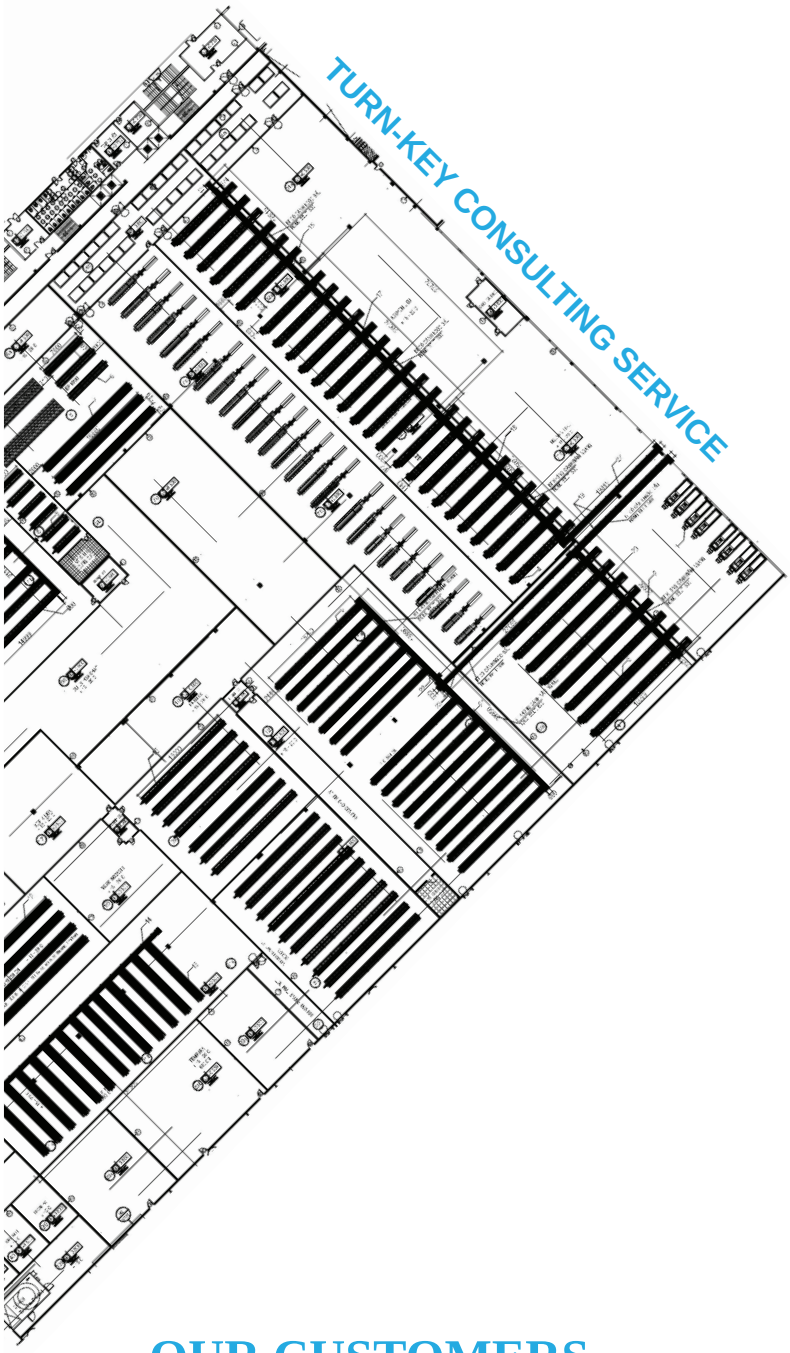

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Training Programme on "Eco-friendly and Sustainable Shrimp Farming"

Distribution of certificates to the trainees

The MPEDA Regional Division, Kolkata organized a 3-day training programme on "eco-friendly and sustainable shrimp farming" at Hasnabad, North 24 Parganas district from 23-25, October 2018.

The main objective was to educate the farmers on adoption of farming methods for eco friendly and sustainable in aqua culture with special emphasis on diversification in culture practices.

Mr. Dhirit Ekka, Assistant Director, MPEDA Regional Division, Kolkata inaugurated the programme. Talks related to the subject were delivered by Mr. Dhirit Ekka and Mr. Johnson D'Cruz, Assistant Directors, MPEDA, Regional Division, Kolkata, Mr. Pradip Maity, Field Manager, NaCSA, Mrs. Nandita Mallick, Field Extension Officer, Hasnabad and Mr. Somnath Manna, Assistant Manager CP Feeds, Hasnabad.

On the last day, detailed discussions were followed up with sessions marked out for clearing doubts that participants had. Certificates and stipend to 20 farmer trainees who attended the programme were distributed at the valedictory function.

Strategic Alliance by ICAR-CIBA for transfer of formulated fish and shrimp feed technology

A view of the programme

ICAR-CIBA entered into a strategic alliance with Aditi Enterprise, Porbandar, Gujarat by transferring Shrimp and Seabass Feed Processing Technologies to spread its feed biotechnology footprints in the West coast of the country. CIBA has developed cost effective and quality feed using indigenous feed ingredients for shrimp and seabass farming, and these technologies are being transferred to series of private entrepreneurs for up scaling and commercial production, on a non-exclusive basis. Adding to the list, Aditi Enterprise, Porbandar, Gujarat signed MoU with ICAR-CIBA for shrimp and seabass feed processing technology.

'Aditi enterprise', having its presence in the field of aquaculture and fisheries for the last one decade with hatchery, processing unit and an integrated feed mill envisaged to produce 'Vanami Plus' and 'Seebass Plus' feed with the technical collaboration of CIBA. The feed will cater to the need of aquaculture farmers of West coast of the country, particularly the small and marginal farmers, who cannot afford the high cost feed. The proposed concept of 'factory to farm' promoted by CIBA would help the farmer to source the feed directly from the feed mill, enabling the farmers to save the usual marketing cost also. During the signing of the MOU, Dr. K.K. Vijayan, Director, ICAR-CIBA, impressed upon the quality of feed vis-a-vis cost of production. Further, he emphasized that this integrated feed mill initiative being the first in the West coast region, would be a boon for the aqua farmers in increasing their profitability and falls under the Prime Minister's initiative of doubling of farmers income. Dr. K. Ambasankar, Principal Scientist and team leader for the Nutrition and Feed biotechnology programmes of CIBA, briefed about the significance of this MoU and highlighted the genesis of this initiative and opined that the success of this 'desi feeds' would create a win-win situation for the feed makers and the farmers. Earlier, Dr. T. Ravishankar, Principal Scientist and PI, Institute Technology Management Unit (ITMU)-ABI Unit, welcomed the clients and introduced them to the audience, all the HODs, Scientists from Nutrition group attended the function, which concluded with vote of thanks by Dr. De, Principal scientist, fish nutrition unit.

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ICAR-CIBA Signed MoU for the Technology Transfer of Seabass Fish Hatchery Technology

Hatchery technology developed by ICAR-CIBA for the production of seabass seed and nursery rearing technology for the fingerlings, has been transferred to a young entrepreneur, Mr. Nishanth Reddy from Nellore, Andhra Pradesh through a MOU on October 30, at CIBA Headquarters, in the presence of Dr. J K Jena, DDG (Fy. Science), ICAR, New Delhi. Dr. J.K. Jena expressed the market potential of seabass, which is profitable and also contribute to our effort in increasing the farmed fish production.

He has congratulated CIBA and the client for handholding initiative to start the first seabass hatchery in Andhra Pradesh. Dr. K.K.Vijayan Director, CIBA has emphasized the importance of setting up seabass hatchery in the private sector, as this would enable the supply of quality seabass seeds for the fish farmers, which is one of the major limiting factors in the expansion of seabass farming in the country.

Director appreciated the entrepreneurial attitude of Mr. Nisahanth Reddy, in taking up the startup programme and training under CIBA to gather experience in the hatchery technology and economic benefits. Mr.Nishanth Reddy envisaged his interest in taking up seabass hatchery and farming, as an alternative model to shrimp farming, as a sustainable and profitable aquaculture venture. He thanked CIBA for extending support and hand-holding him for his initiative in fish farming.

This novel initiative which will facilitate increased fish production, generation of employment and income, in tandem with the Central Govt. programme of doubling the farmers' income. Earlier, Dr. M. Kailasam, Principal Scientist & Head-in-Charge, Fish Culture Division, briefed about the significance of this MoU and welcomed the gathering. This event was coordinated by the Institute Technology Management Unit- ABI unit of CIBA and the Fish Culture Division scientists. HODs and Scientists of the institute participated in the event. Dr. P.K. Patil, ITMU, proposed the vote of thanks.

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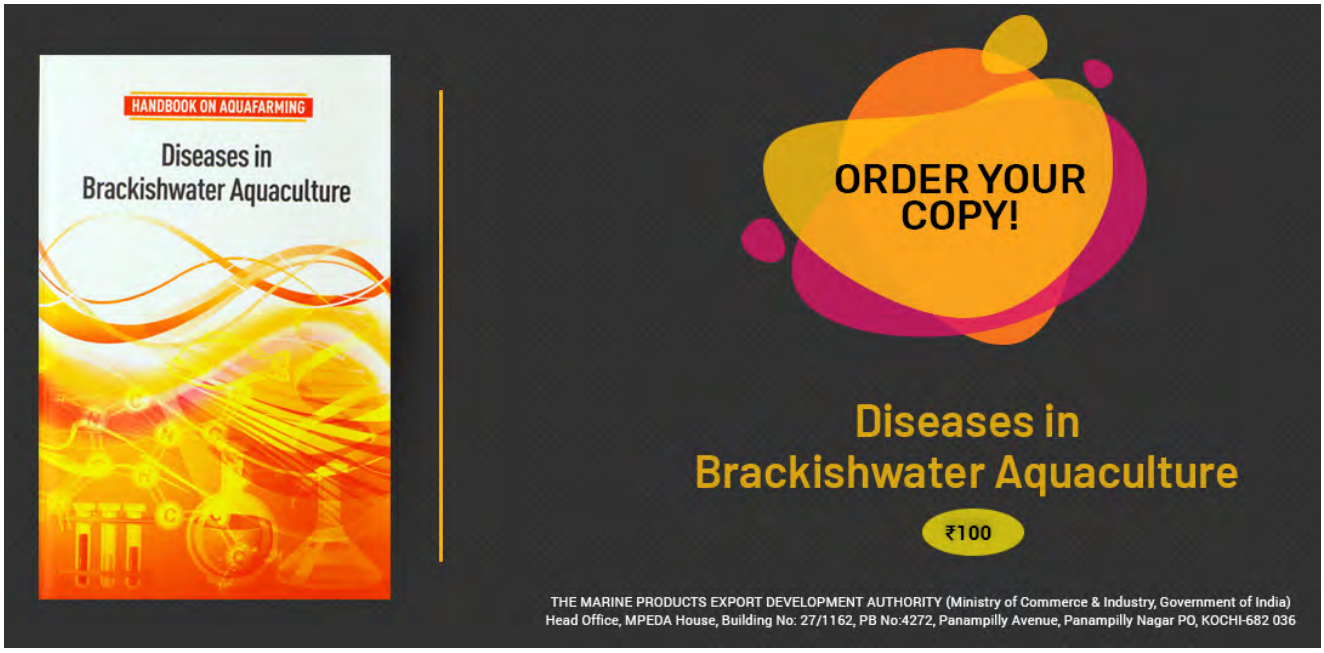

Warming of Indian Ocean Reportedly Threatening India's Fisheries

Warming of the Indian Ocean at a fast pace owing to climate change poses a threat to the multi-million dollar blue economy of India, scientists said in Kochi on November 08.

Climate change is affecting fisheries through change in stock productivity and its distribution, they said during the opening session of a 'Winter School on Climate Change in Marine Fisheries' being organised by the Central Marine Fisheries Research Institute in the city.

The change in climate change is causing floods and drought across the globe, Vice-Chancellor of Kerala University of Fisheries and Ocean Studies, A Ramachandran said while inaugurating the 21-day school which would provide a platform for an academic-oriented discussion on the effect of climate change on marine species.

Increased water temperature and higher carbon dioxide concentration make the ocean more acidic, he said. There would be a drop in productivity of marine species as there was a gradual damage being caused to the ecosystem and biodiversity, the Vice-Chancellor said. Commitment of the stakeholders and coordinated efforts were required for the growth of the blue economy in a sustainable way, he said.

Indian Ocean is warming at 0.11C per decade faster than the Atlantic (0.07C) and the Pacific (0.05C) and the temperature of the sea surface of the Indian Ocean would increase by 0.60 C by 2050, said director of Central Marine Fisheries Research Institute A Gopalakrishnan. "However, Indian marine fish harvesting is more eco-friendly than the global scenario. Our marine fisheries is emitting 17.5 per cent less carbon footprints than the global average when it comes to fishing material involved in fishery," he said.

The institute has catalogued resource-wise information and the institute was in the process of predicting fish bio-mass changes in Indian oceans in future, he said.

It has also prepared adaptation strategies to climate change with action plan and research on estimating primary productivity of Indian exclusive economic zone (EEZ) for assessing the carrying capacity in Indian waters with respect to climate change was also underway, Gopalakrishnan said.

Course Director of the Winter School and head of the Demersal Fisheries division of the Marine Fisheries Research Institute P U Zacharia said the country experienced 24 extreme climatic events around the Indian coasts resulting in loss of life and property.

"Estimate of climate change impact is essential to devise climate change policies and suggest adaptation and mitigation measures," he said.

The Winter School is aimed at equipping scientists, researchers and other stakeholders with the tools and requisite knowledge to assess and adapt to the changes occurring because of climatic variations, said the Central Marine Fisheries Research Institute.

As many as 25 researchers and teachers were participating in the programme.

- www.ndtv.com

NFDB funded Skill Development Programme on "Value Addition of Fish and Fishery Products"

ICAR–Central Institute of Fisheries Technology, Kochi, in collaboration with The Kerala State Co-operative Federation for Fisheries Development Ltd. (MATSYAFED) has conducted a three-day long skill development programme on "Value addition of fish and fishery products" from November 14 to 16 at Cherai village of Ernakulam district. The programme conducted with the assistance of National Fisheries Development Board (NFDB), Hyderabad was attended by 24 participants from coastal areas like Cherai, Munambam, Edavanakkad, Malipuram etc. Mr. A.B. Shaji of Cherai Fishermen Co-operative Society inaugurated the programme on 14 November 2018.

Mr. George, Manager, Matsyafed, Ernakulam District, offered felicitations on the occasion. Sessions on hygienic handling of fish, nutritional benefits of fish consumption, drying, handling, preprocessing, drying using solar dryers, quality evaluation and packaging, waste utilization, fish for alleviating malnutrition, entrepreneurship development, anti-microbial resistance and personal hygiene were conducted. Preparation of value added products like fish pappad, fish soup and hygienic drying using solar dryers were demonstrated.

The valedictory function of the programme was conducted on November 16. Mr. K.C. Rajeev, Board Member, MATSYAFED, was the chief guest for the function. Mr. Rajeev pointed out the importance of translating the learning to action and offered all the support from MATSYAFED in the future endeavors. He also appreciated the effort of ICAR-CIFT in reaching out to the fisherfolks with innovative technologies.

All the participants expressed their satisfaction at the end of the training programme. Participants demanded more trainings in the same line. Some of the participants expressed their willingness to initiate small scale enterprises based on the learning from the proagramme and by further updations. The certificates of participation were distributed by the chief guest and other resource persons. Dr. Suseela Mathew, Head, Biochemistry and Nutrition Division, ICAR-CIFT and Coordinator of the programme appreciated all the participants and MATSYFED Officers for their wholehearted support during the programme. She urged the participants to make use of the learning in their day-to-day life and to initiate small scale venture. She assured the support of ICAR-CIFT in providing technical know-how related to value addition of fish and fishery products.

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ICAR-CIFT, Cochin observes WAAW at Kumbalam, Kerala

ICAR-Central institute of Fisheries Technology, Cochin observed 'World Antibiotic Awareness Week' (WAAW) from November 12 to 18. As a part of it a one-day workshop was organized for the benefit of 26 fisherwomen of Kumbalam village, 30 kilometres away from Cochin on November 16. Scientists of ICAR-CIFT, who organized the programme, included Dr. Suseela Mathew, Principal Scientist & Head of Biochemistry and Nutrition Division, Dr. M.M. Prasad, Principal Scientist & Head of Microbiology, Fermentation and Biotechnology Division, Dr. K.K. Asha, Principal Scientist, Biochemistry and Nutrition Division, Dr. V.K. Sajesh, Scientist, Extension Information and Statistics Division and Mrs. T. Muthulakshmi, Scientist, Microbiology, Fermentation and Biotechnology Division.

Dr. Suseela Mathew dealt with the topic on nutritional importance of fish, while Dr. Asha spoke on the role of fish in Indian diet, in which fish is consumed by more than 70% of the Indian population. Ms. Muthulakshmi emphasized on personal hygiene and its importance in prevention/occurrence of diseases. Dr. Prasad described the development of antibiotic resistance due to improper use, low quality antibiotics, without prescription of authorized medical practitioners and how it can impact socio-economic conditions whenever a person is infected with resistant bacteria. This included Disability Adjusted Life Years (DALY). He added that aquaculturists should shun the use of antibiotics for prevention and prophylactic measures in aquaculture that can translate into development of multi-drug resistant bacteria. Translational facility of the talk into local language (Malayalam) was given by Dr. Suseela Mathew. At the end, all the participants pledged that they will not purchase any over-the-counter antibiotics and will take only upon prescription by the authorised doctors. The President of Kumbalam Gram Panchayat and Ward Member also spoke on the occasion.

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World Fisheris Day Celebrations at ICAR-CIFT

Dr. C. N. Ravishankar, Director, ICAR-CIFT addressing the gathering

ICAR-Central Institute of Fisheries Technology, Cochin celebrated 'World Fisheries Day' on Novemeber 21 to create awareness on conservation of fisheries resources and protection of environment among students of fisheries. As part of the celebrations, a one-day workshop on "Responsible fishing" was organized at ICAR-CIFT. The programme was attended by 44 graduate and post graduate students of fisheries from local colleges in and around Cochin along with scientists and staff of the Institute. Dr. Leela Edwin, Head, Fishing Technology Division welcomed the gathering and gave an insight on the theme. Dr. C.N. Ravishankar, Director in his address elaborated about the importance of World Fisheries Day and also about the various activities of ICAR-CIFT and its efforts towards promoting responsible fishing. Three lectures were delivered on the occasion: 1) Responsible use of energy in fishing – Dr. Leela Edwin, HOD, FT and Principal Scientist, 2) Juvenile fish catches: Implications and mitigation measures – Dr. V.R. Madhu, Principal Scientist and 3) Ghost fishing and plastic pollution in our seas - Dr. Saly N. Thomas, Principal Scientist. In the afternoon, a quiz competition on 'Fish and Fisheries' was conducted for the graduate and post graduate students of fisheries. The programme ended with vote of thanks by Dr. K.M. Sandhya, Scientist.

Student participants of the Workshop

- ICAR-CIFT

Received at China Fisheries & Seafood Expo 2018

SHRIMP

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2. Giuseppe Andrenacci
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Shrimp

5. Jaok Liu
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Farmed shrimp

6. Findus Nordic
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Sweden
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Small shrimp

FISH

1. Xin Pei Ming
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and Taoyuan
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Ribbon fish

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Fax: +86 0 21-63277100
Mob: +86 15021333606
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Frozen fish

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House#262/263, Main Road,
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Bashundhara R/A, Dhaka-1229,
Bangladesh
Tel: +88 02 55037315
Fax: +88 02 8431275
Mob: +88 02 8431275
E-mail: info@fmgreenagro.com
Web: www.fmgreenagro.com
Frozen seabass

4. Duong ThiBich Ngoc
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Binh Thanh District,
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vietfoods@vietfoodsvn.com
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Mackerel, Tuna, Anchovies

5.Xin Peri Ming
FeichengJinming aquatic
products Co. Ltd.
Junction of Industrial three road
and Taoyuan Street,
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Web: www.fcjmsc.com
Frozen ribbon fish

6. Jet
Shandong Kingsun Foods Co. Ltd.
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Tel: +86 532 8898 3775 8888
Mob: +86 186 6399 4055
E-mail: jet@kingsunfoods.com
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Ribbon fish, Silver pomfret

7. Jian Yi Qiu
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to U Shwe Bin Road, Industries
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Frozen black, Silver pomfret,
Chinese pomfret

8. Shamlan Abdulaziz Al-Taher
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Frozen white & black pomfret

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Ribbon fish

10. Tharaka Saram
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Mob: +94 (0) 777 877 677
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King fish

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Silver/Golden croakers

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Mob: +82 10 8736 1094
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Sole fish

13. Zhu Zhen Lin (Chaplin)
Autohaus Pvt. Ltd./Move Stone Services Pvt. Ltd.
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Croaker (Sample)

14. Sherry Li
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Ribbon fish

15. Max Kniaziev
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Red mullet

16. Gun Jun
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Fax: +021-65899771
Mob: 13601613499
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Ribbon fish

17. Kevin Tao
Qingdao Jiazhijie Aquatic Products Co. Ltd.
Tel: +0532 8355 3286
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E-mail: 511255572@qq.com
Frozen cobia

FISH MEAL/FISH OIL

1. Cathy Chen
Wuhancoland
Tel: +027 59903990
Mob: 15927477804
E-mail: cathychanchan@163.com
Web: www.coland-wuhan.com.cn
Fish meal

CEPHALOPODS

1. Zeng Yong Xiang
Tel: +0750 6209387, 6209399
E-mail: tinlok@126.com
Web: www.sy-hc.com
Frozen octopus

2. Fuyan Bai
Minghui Seafood
YangshugouTieshan Street Lvshun, Dalian, China
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Fax: +0411 86211399
E-mail: 18624382266@163.com, minghuiseafood@yeah.net
Frozen cuttlefish

3. Xiaofeng Liu
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Mob: +189 1126 1025
E-mail: Liuxiaofeng85@163.com
Web: www.milaebio.com
Squid

4. Qingdao Rishengcang Co. Ltd.
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E-mail: xin1982.3@163.com, rscfoods.1688.com
Web: www.rscfoods.com.cn
Cuttlefish

TRADE ENQUIRY

MIXED ITEMS / OTHER

1. Clement Chew
Lam Kee Fisheries Pte Ltd.
121 defu lane 10 Singapore 539231
Tel: +65 9272 1374, +65 6288 0111
Fax: +65 6382 0383
E-mail: lamkee@singnet.com.sg
Web: www.lamkeeseafood.com
Ready to eat curry

2. David
Integrity Import & Export Trade Fisheries Company
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E-mail: 90992531@qq.com, Sdc88872136@126.com
Frozen whole blue crab, Silver pomfret, Baigai

3. Liliya A. Kuropteva
Fish Company "Skif"
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Ready to eat curry

4. Wanida Anekrithi
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Tel: +02 928 2696 98
Fax: +02 928 2880
E-mail: wanidawealthy@gmail.com
Web: www.wh-foods.com
Baigai, Mud crab, Short neck clam, Mackerel, Shrimp

5. Mary Shen
Qingdao ShengshiKangyuan Import and Export Co. Ltd.
Room I, 12 Floor, TianZhi Building, Qingdao Free Trade Port Area, China- 266555
Tel: +86 532 8676 6171
Fax: +86 532 8676 8832
Mob: 18663994996
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All kinds of seafood

6. Baoxing Lin
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Office Building in Fujian Fuzhou Mawei bonded zone 7
Tel: +0591 83968128
Fax: +0591 83653128
Mob: 13809555228, 13600858898
Baigai, Mullet, Pomfret, Shrimp (sea caught)

7. Gwoli Chen
ToYo International Trading Inc.
29 New York Ave., Westbury NY 11590
Tel: +516 333 2662
Fax: +888 323 8155
Mob: 9175180348
Web: www.toyofoodusa.com
All kinds of seafood

8. Fares Ahmed Bugammaz
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Tel: +965 22452839/ +965 99699399
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Web: www.zbaidikw.com
Dried fish, Shrimp

9. Martin Xu
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All kinds of seafood

10. Bobo Phang
Lee's Frozen Food Sdn Bhd
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All kinds of seafood

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Dried seafood

12. Yangjie Lu
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Surimi products

13. Ken Chen
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Surimi

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Web: www.rzmeijia.com
Imitation products (surimi), Black tiger

15. Jade Yoon
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Mob: +86 139 9861 0817
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Web: www.handongfoods.com
Dried fish, Dried shrimp, Reef cod

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B.C. V3M 6S1, Canada
Tel: +1 604 777 0612
Fax: +1 604 777 0692
Mob: +1 778 999 7280
E-mail: johnson@jtjmotor.com
Web: www.jtjmotor.com
Shrimp, Pomfret, Mahi Mahi, Other seafood

17. Sha
Lingergy Fisheries
Meibo Complex, Hunsi West, Guangzhou, China
Tel: +0086 13560414859
E-mail: shaping1@hotmail.com
Frozen crab flakes, Blue crab

18. Xiao Shan
Tel: +021 66182225
Mob: 18502182288
E-mail: xtai-75@163.com
Whole blue crab

19. Libin Lu
Thai Union China Co., Ltd.
Room A1810, No. 596 of Mid Longhua Rd,
Xuhui District, Shanghai
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Dried shrimp, Fish maws

20. Annop Michael Kettratad
House of Crabs
32/6 Moo 8, NaiKhlong Bang PlaKot
PhraSamutChedi, Samut Prakan 10290 Thailand
Tel: +66 8 9499 0024
E-mail: michael@houseofcrabs.net
Web: www.houseofcrabs.net
Live mud crab

21. David
Integrity Import and Export Trade Fisheries Company
Tel: +0086 18105908322
E-mail: 90992531@qq.com, sdc88872136@126.com
Fish maws

22. Sarah
Qingdao Haoda Marine Biotech Co. Ltd. 188 Nanliu Rd., Chengyang,
Qingdao, China
Post Code : 266 108
Tel: +0086 532 80699888
Fax: +0086 532 80699188
E-mail: 32121339@qq.com
Web: www.haoda.com.cn
Ready to eat product (curry)

23. Jiang Li Qing
Liaoning Sinotrust IMP & Exp. Co. Ltd. Jiefang ST. No.9 Zhong Shan District, Dalian, China
Zip Code : 116001
Tel: +0411 82644576/82644526
Fax: +0411 82644586
Mob: 13998542208
E-mail: trustcenter@163.com
Dried shrimp, Ready to eat

24. Liu Guanghe
Dalian KingbrineSeafoods Co. Ltd. Dalian LongxiangSeafoods Co. Ltd. Houshi Village Daweijia Town Jinpu New Area Dalian, China
P.C. – 116110
Tel: +0086 411 87896180
Fax: +0086 411 87896711
E-mail: kingbrine@aliyun.com
Web: www.kingbrine.com
Surimi

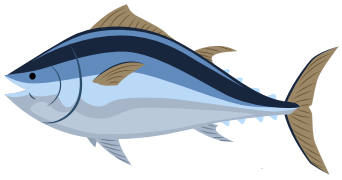
25. Manas Chand Medisetty
Enjoy Trading Corp.
1710 Flushing Ave, #11, Ridgewood, Ny 11385, USA
Tel: +718-628-8688
Fax: +718-628-8288
Mob: 16465800817
E-mail: manasmedis@gmail.com
Web: www.ehlinens.com
Croackers (white & yellow), *Pomfret (silver & Chinese), Ribbon fish, Eel, Sole*

26. Lauren Chen
Chung Kee Pharmaceutical Co. Ltd. Blk 29#101-112, Kang Mei Chinese Herb Market, Puning City, Guangdong Province,
P.R. China 515300
Tel: +086 663 2920002
Fax: +086 663 2920007
E-mail: chenluyun.94@yahoo.com
Dried fish, Fish maws, Shrimp (dried)

27. Jian Jiao
Beijing Tong Ren Tang Health (Dalian) Seafoods Co. Ltd.
No.2 Haiyun Road, Economic and Technological Development Zone, Lvshunkou District, Dalian City Liaoning Province, PR China
Tel: +0411 86201888
Fax: +0411 86245678
Dried fish maws

28. Mary Shen
Qingdao Shengshi Kangyuan Import & Export Co. Ltd.
Room I, 12 Floor, TianZhi Building Qingdao Free Trade Port Area, China 266555
Tel: +86 532 8676 6171
Fax: +86 532 8676 8832
Mob: 18663994996
E-mail: 18663994996@163.com
Ribbon fish, Pomfret

29. Suki Cheah
PiauKee Live & Frozen Seafoods Sdn Bhd, Lot 6, Jalan 10, Off JalanKuari, Kg CherasBaru, 56100 Kuala Lumpur, Malaysia
Tel: +603 4293 8888
Fax: +603 4293 1888
Mob: +6012 9692665
E-mail: suki@piaukee.com
Web: www.piaukee.com
All kinds of seafood



30. Alvin Zang
GEFCO Forwarding China Limited
Room 10-1, United Mansion,
No.9 Nanjing Road, Southern
District, 266071, Qingdao, China
Tel: +86 532 85711990
Fax: +86 532 6688 6096
Mob: +86 187 5325 7713
E-mail: Alvin.zang@gefco.net
Shrimp, Fish

31. Hai Tao Zhang
Jalan Tuna 6 Blok A, No.2
MuaraBaru
RM 29, Building No.9, No2
Gangqian Rd, Huangpu District,
Guangzhou,
China Seafood Sale Department
Mob: +62 (0) 81288889698,
+86 13826116787
E-mail: 2223491641@qq.com
Frozen baby cuttlefish, Frozen baigai, Pomfret

32. Amy
A3208, 4/F, Main Tower,
2-12 Huacheng Avenue,
Zhujiang New City, Guangzhou,
China 510623
Tel: +8620 38299000
Fax: +8620 38299661
Mob: +86 17061703076
E-mail: aaa1810xx@sina.com
Yellow croaker, Mackerel, Whole squid, Black pomfret, Ribbon fish, Cuttlefish, Baby octopus

33. Wenzhou Yiding Food Co. Ltd.
Tel: +0577 88122999/88122099
Mob: 15988712345
E-mail: 36933778@qq.com
Fish maws

34. Eric Zhou
Room 27F, No.295 Jiahe Road,
Siming District, Xiamen,
Fujian, China
Mob: +86 18290517360
Tel: +86 0592 6037553
E-mail: Eric@tzhseafood.com
All kinds of seafood

35. Barry Wang
Ewfresh Network Technology
(Beijing) Co. Ltd.
No.17, Jingsheng Middle St.,
Tongzhou District, Beijing,
China, 101102
Tel: +400 029 6788/
+86 10 56592733
Mob: +86 18613842823
E-mail: barrywang@sunkfa.com,
sjf.livel@sunkfa.com
Web: www.sunkfa.com,
www.ewfresh.com
All kinds of seafood

36. Connor Dumont
China Domestic Sales
Representative
PO Box 97
16797 SE, OR 97015
Clackamas, OR 97015
Tel: +503 905 4500
Mob: +86 186 1671 3568
Mud crab

37. Akbar Ashraf
Zbaidi Ali Kuwait Fisheries
Tel: +965 2252839
E-mail: akbar@zbaidikw.com,
Info@zbaidkw.com
Web: www.zbaidikw.com
Dry fish, Shrimp, Seer fish

38. Evgeny Malgin
Units 01-04, 36th Floor
41 Heung Yip Road, Hong Kong
Mob: +86 132 4981 4387
E-mail: evgeny.malgin@x5.ru
Web: www.x5.ru
All kinds of seafood

39. S Aravinthan
Suganth International Pvt. Ltd
65/352A, Vystwyke Road,
Colombo 15, Sri Lanka
Tel: +94 11 2521059, +94 11 2521153
Fax: +94 11 2521322
E-mail: suganth@slt.lk
Web: www.suganth.net
Fish maws

40. Zhao Wentao
Yangzhou street No. 19,
Shahekou District, Dalian
Tel: +86 411 8870 2857
Fax: +86 411 8388 6998
Mob: +86 188 4113 3900
E-mail: globalreal@126.com
Tuna, Snapper, Octopus, Chinese pomfret, Live/chilled crab

41. Huizhong Seafood
No.10, Anle East Road, Shuidong
Town, Dianbai District, Maoming
City, Cuangdong Province, China
Mob: 86 18138039335
Tel: +86 668 5788688
Fax: +86 668 5788039
E-mail: henryseafood@qq.com
Web: www.huizhongseatood.com
Tilapia, Squid

42. Kuei Feng Chen
Daton Seafood Co. Ltd.
Dachen Seafood Co. Ltd.
17F, No.240, Datong Rd, Xinzhi
Dist, New Taipei City, 221, Taiwan,
R.O.C.
Tel: +886 2 86461000
Fax: +886 2 86462000
Mob: +0930 410930
E-mail: Domon19901010@gmail.com
Baigai

43. Shen Ha
Deep Ocean Seafood Import
Export
Tel: +86 133387708866, +84
1252377598
Mob: +86 7707676008
E-mail: DeepOceanSeafood@gmail.com,
YangShenSeafood@gmail.com
Web: www.DeepOceanSeafood.com,
YangShenSeafood.1688.com
Groupers, Ribbon fish, Pomfret

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