



MPEDA

Newsletter

VOL. X NO. 4 JULY 2022

**Mr. Piyush Goyal,
Hon'ble Union Minister
Visits MPEDA**

**Seafood Trade Gains
Momentum**



MAIN STORY

**Alternative Seafood &
Status in India: An Overview**

**GAqPs Training: USFDA &
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On the Platter

Dr. K. N. Raghavan IRS Chairman

Friends,

June had been an eventful month for MPEDA. The highlight to our office this month was the visit of Hon'ble Commerce and Industry Minister Mr. Piyush Goyal, for the first time on 6th June. The visit was to review the export promotion activities of MPEDA. We presented before the Minister a roadmap to achieve Rs.1 Lakh Crore exports by 2025. Hon'ble Minister also held consultative meetings with the members of the Seafood Exporters Association of India and the fishers from Kerala, Tamil Nadu and Karnataka.

A consultative workshop on 'Way forward for the enhancement of seafood exports from India' was organized by MPEDA along with the Coastal Aquaculture Authority (CAA) with the support of National Fisheries Development Board (NFDB) as a part of MPEDA Golden Jubilee celebrations and Azadi Ka Amrut Mahotsav on 17th June 2022. The consultative meeting was chaired by Mr. Jatindra Nath Swain IAS, Secretary, Department of Fisheries, Government of India. The workshop had presentations by MPEDA, CAA, NFDB, BOBP, and ICAR, with participation from fisheries departments of all coastal states and other stakeholder institutes. The consultations were beneficial and provided inputs in drafting an action plan to enhance the production and export of quality seafood from the country, as well as improve the share of value addition in our exports. I place on record our sincere gratitude to all officials and organizations who took part in the workshop and contributed to the deliberations.

MPEDA in association with USFDA and JIFSAN held a "Seafood HACCP Train - The - Trainers programme" at Kochi from 20th to 23rd June 2022. This was organized for participants selected from the Seafood HACCP Basic Course and internet training course conducted in the past. The objective of the programme was to equip the trainers to impart the knowledge on Seafood HACCP among the seafood export and related stakeholder fraternity.

A programme on "FDA Import Operations" was organized for the leading seafood exporters to the US on 24th June 2022. Faculty from USFDA conducted the programme and shared knowledge about Seafood Import Regulations in USA.

A training programme on "Antibiotic screening by ELISA method" was organized by QC lab, Kochi for the seafood processing technologists. This was the first of its kind and MPEDA plans to impart similar programmes in other labs as well.

A series of campaigns were organized by MPEDA and its field offices to mark the International Yoga Day celebrations. This started with countdown events and culminated with Yoga demonstrations and lecture on the benefits of Yoga on the International day of Yoga.

Virtual Buyer seller Meets and Business Meets were arranged with buyers of Spain and Malaysia in June. We are also gearing up for the participation in the upcoming seafood exhibitions in Japan, Singapore and Germany.

India could place before the WTO members and the global fishing society the aspirations and concerns of its traditional fishers on fisheries subsidies, when the negotiations were held in Geneva. This helped our leaders to effectively safeguard support to small scale fishers while seeking to curb subsidies showered by certain nations on industrial fishing fleets.

Thank you.

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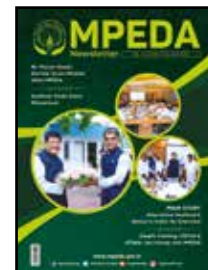
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Indian Mission at Brussels holds seafood & Coffee tasting event

As part of ongoing activities related to *Azadi Ka Amrit Mahotsav* and on the occasion of upcoming 75th Independence Day of India, Embassy of India, Brussels in collaboration with Coffee Board of India and the Marine Products Exports Development Authority organized a seafood and coffee tasting event on 10th May 2022 at the Chancery : 'Blue Platter with Brown Cup' under the Market Expansion Scheme of MEA's Economic Diplomacy and State Division. The objective of the event was to showcase India's economic growth and trade potential and promote the Indian seafood cuisine and Indian coffee. Two of India's very premier products that support livelihoods of millions of small and marginal rural households was offered and special emphasis was placed on India's export growth trend, its vast resources in the form of coastline and pristine waters followed by distinguished Indian coffee in terms of its taste, aroma and quality.

The event commenced with the welcome message from Mrs. Meekashi Lekhi, Minister of State for External Affairs and Culture of India, highlighting close bilateral relationship between India and Belgium which is based on rule of law, federalism and pluralism. It was followed by the introductory remarks made by H.E. Mr. Santosh Jha, Ambassador. He mentioned the importance of Coffee and Seafood in daily food and beverage basket of the Europeans, especially the Belgians. He shared India's vision of becoming top country to provide sustainable and quality products to every corner of the world.

A virtual presentation through Webex was made by Dr. Mandappa, Divisional Head Coffee Quality, Coffee Board highlighting specialty and uniqueness of Indian Coffee, its role in protecting environment and future goals and opportunities for coffee producers and exporters. A corporate video provided a glimpse of MPEDA's role in various activities of seafood production, processing, marketing and exports. The video highlighted the implementation of schemes vital to the industry by extending assistance for infrastructure development for better preservation and modernized processing following quality regime.

The varieties of Indian seafood comprising of Vannamei



Shrimps, Squid Rings, Tuna Cubes and Seerfish Steaks and the rich taste and aroma of Indian Coffee was served during the afternoon. The description and the uniqueness of the fish variety was displayed near the buffet.

Approximately 40 guests attended the event including representatives from European Commission and Belgium Government agencies, business representatives, importers, key representatives from the wider food and drink industry. Pamphlets and brochures belonging to Coffee Board, MPEDA and exporters were displayed at the event.

Menu – Indian Fish Promotion

Mangalorean Gassi Squid Curry - Gassi gravies are coconut and mustard seed based with plenty of black pepper and ginger. The sourness in the gravy comes from tamarind.

Chennai Masala Prawns - The prawns have been prepared in a masala with distinctive South Indian flavours, with mustard seeds and curry leaves. Sautéed with lemon, garlic and a little chilli.

Tuna Fish Pakora - A taste of Bengal. Tuna chunks fried in a chickpea batter with spices, onions and green chillies, served with mango chutney and cucumber mint raita (yoghurt).

Goan Surmai Fish Fry - Goan Cuisine is Indian-Portuguese fusion cooking. Surmai has been marinated in a recheado cinnamon and vinegar base, coated in semolina and shallow fried.

Business meet for trade promotion between the central provinces of Vietnam and India

MPEDA alongwith the Seafood Exporters Association of India (SEAI) participated in the business meet organized by the Consulate of India in Ho Chi Minh City, Vietnam in association with the Khanh Hoa Provincial People's Committee on 10th May 2022. The meet was aimed to boost trade cooperation between the central provinces of Vietnam and India. The hybrid programme was held in Nha Trang City in the central province of Khanh Hoa, Vietnam.

Consulate General of India in Ho Chi Minh City Mr. Madan Mohan Sethi and Vice-Chairman of Khanh Hoa Provincial People's Committee Mr. Dinh Van Thieu participated in the seminar "Opportunities to promote trade between the central provinces of Vietnam and India in 2022" conducted in association with the meet. Speaking at the event Mr. Madan Mohan Sethi, Consul General of India in Ho Chi Minh City said the number of Indian products imported by Vietnam is on the rise

and vice versa and there will be more cooperative opportunities between the two sides in the future. Mr. Dinh Van Thieu said that the workshop aims to promote the connection, information exchange and cooperation between enterprises of the two countries.

Despite the COVID-19 pandemic, two-way trade between the two countries reached 13.2 billion USD during 2021, up 36 percent compared with that of 2020, according to the Ministry of Industry and Trade, Vietnam and the figure is expected to reach 15 billion USD this year.

In the first three months of 2022, bilateral trade turnover between Vietnam and India reached 4 billion USD, a 24 percent year-on-year increase. Specifically, Vietnam exported 2 billion USD worth of products to India and spent 2 billion USD on imports from India, an increase of 17 percent and 31 percent, respectively, against last year's figures.



MARKETING NEWS

Vietnam is now India's 18th largest trade partner globally and the fourth largest in the ASEAN while India is the seventh-largest trade partner, seventh most prominent exporter and the ninth largest importer of Vietnam. Mr. Mme. Bui Thị Thanh An, Deputy Director of Trade Promotion Department, Vietnam Trade Promotion Agency gave a talk on "Introduction to South Central Coast's strengths and trade development cooperation mechanisms, policies and activities".

Dr. M. Karthikeyan, Director, MPEDA represented MPEDA in the meet and gave a presentation on "Introduction on the Fisheries processing sector of India". Director informed that India will be holding a series of programmes to popularise its seafood products to Vietnam and seek Vietnamese partners to have investments in India. Mr. Alex Ninan, President, Seafood Exporters Association of India, Kerala Region talked about the India's seafood export industry.

Dr. Tarun Bajaj, Director, Agricultural and Processed Food Products Export Development Authority (APEDA) gave a presentation on "Introduction on the Agro-commodities processing sector of India".

Mr. Mme. Phan Thị Thu Cuc, Deputy Director, Khanh

Hoà, Department of Industry and Trade talked about the Import & Export market of Khanh Hoa province and opportunities for Indian enterprises especially for Agro-commodities and fisheries processing sector. Dr. Kamallesh Mishra President, Seafood Exporters Association of India, Odisha region has made a presentation on the "Potentials and opportunities for commercial development cooperation of Odisha in fisheries sector". Mr. Hiren Gandhi, Gujarat Chamber of Commerce and Industry (GCCl) also gave a presentation on the "Potentials and opportunities for commercial development cooperation of Gujarat".

The Business meet provided the attendees information about the role of trade promotion in supporting businesses to develop foreign markets; seafood and agricultural product processing industries of India; seafood export market of India; potential and opportunities for trade development cooperation of Odisha State and Gujarat State (India), etc.

Officials from the Departments of Industry and Trade of the central provinces provided information about the market conditions and demands in Vietnam to Indian enterprises. They also hoped to promote trade relations with Indian firms.



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MPEDA organized VBSM's in association with Indian missions abroad

United Kingdom



MPEDA had organized a VBSM for Indian exporters with M/s. BTM International, U.K on 19th May 2022. M/s. BTM International, a prominent supplier of canned fish in U.K was looking for curry cut frozen fish from India. 7 exporters had participated in the meet and presented their credentials to the buyer. Exporters also answered the concerns of the buyer on glaze, packaging, license etc. Dr. T. R. Gibinkumar, Deputy Director (Market Promotion & Statistics) moderated the meet.

Reunion Islands, France



MPEDA in association with Consulate General of India, Reunion islands, has arranged a Virtual Buyer Seller meet for exporters. Mr. Alexandre Wu Tiu Yen from M/s.

AH-CHOU SARL and Mr. Nicolas Hoarau from M/s. STE Armement Des Mascareignes Pro on 24th of May. During the introductory session, Dr. T. R. Gibinkumar, Deputy Director (Market Promotion & Statistics) gave a brief on the export of seafood to Reunion Island over the years. Currently, India is exporting seafood worth USD 9.9 million to the Reunion islands.

A short video message from Mr. Jitendra Nath Majhi, Consul General of India to Reunion Island was played. The exporters were called for the presentations and the meet had a participation of over 9 exporters from India.

Oman



To increase the marine products exports to Oman, MPEDA in association with EOI, Muscat organized a preliminary buyer seller meet on 1st of June 2022. Dr. T. R. Gibinkumar, Deputy Director (Market Promotion & Statistics) introduced the participants of the meet and gave an overview of seafood export from India to Oman. In 2021-22, India exported USD 8.8 million worth seafood products to Oman and it is the 5th largest buyer among GCC nations. Major items of export to Oman include Vannamei, Black Tiger shrimps, frozen and chilled fishes and Surimi analogue products. Ten exporters from India participated in the meet and gave their presentations. Major buyers like Lulu group, Seapride LLC, Oman Fisheries and Mr. Rishad etc from Oman detailed about their requirements. Mr. Anil Kumar. P., Joint Director (Marketing) MPEDA, thanked the buyers and the exporters for their participation and gave insight on capacity utilization of Indian processing plants for re-export.



MPEDA participates in the 12th Indian Fisheries and Aquaculture Forum

The 12th Indian Fisheries and Aquaculture Forum was jointly organized by Tamilnadu Jayalalitha Fisheries University and AFSIB with the theme “Fish for Nutritional Security and Economic Sustainability” at Indian Bank Management Academy for Growth and Excellence, Chennai from 5th to 7th May 2022. The event was inaugurated by Mr. R. N. Ravi, His Excellency Governor of Tamilnadu, and Chancellor of J. Jayalalitha Fisheries University Tamilnadu, in the presence of Mr. Parshottam Rupala, Hon’ble Minister of Fisheries, Govt. of India, Mr. Anitha R. Radhakrishnan, Minister of Fisheries Development Cooperation & Animal Husbandry, Govt. of Tamilnadu, Dr. Joy Krishna Jena, Deputy Director General of Fisheries, ICAR and Dr. G. Sugumar, Vice Chancellor of Tamil Nadu Jayalalitha Fisheries University.

Of the 905 scientific paper abstracts received, 741 were presented. On the first day, Dr. M. Karthikeyan, Director, MPEDA gave a key note address on the topic “Food safety issues in Indian Sea food exports”.

Four parallel events took place along with the technical sessions which were:

- 1) International symposium on insulating marine fisheries sector in South Asia from uncertainties: global overview on the status of fisheries insurance by BOBP
- 2) Industry’s expectation from the Institute and scope for the Professionals in Fisheries, Importance of research in shrimp aquaculture for validation and improvement by Society of Aquaculture Professionals(SAP).
- 3) Special session on Gender in Fisheries and Aquaculture jointly organized by ICAR, CIFT,SOFTI & AFS
- 4) NFDB Sponsored Farmers Meet.

Including the participants in the parallel events, about 2250 visits were recorded for the event. The products included IQF cuttlefish skewer, squid tubes block frozen, squid rings, octopus IQF, cuttlefish whole cleaned IQF, cuttlefish whole cleaned block frozen, peeled and deveined tail on vannamei shrimps



Mr. R. N. Ravi, His Excellency Governor of Tamil Nadu, Inaugurates 12th IFAF



Dr. M. Karthikeyan, Director, MPEDA visits MPEDA-RGCA stall



Visitors to MPEDA – RGCA stall

(PDTO), pulled veined (PVPD) IQF vannamei shrimps, Headless shell on vannamei shrimp block frozen, other value added products viz., dried air bladders of fishes, pet feeds made from fish and fishery products etc. MPEDA publications were also displayed in the stall. RGCA, has displayed diversified export oriented cultivable species of fishes and crustaceans including GIFT, Seabass and Mud crabs in aquarium tanks. The activities and schemes of MPEDA and RGCA were also explained to visitors.



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Hon'ble Union Minister of Commerce & Industry Mr. Piyush Goyal visits MPEDA

Mr. Piyush Goyal, Hon'ble Union Minister of Commerce & Industry, Consumer Affairs & Food & Public Distribution and Textiles, Govt. of India, visited the port city of Kochi during 6th and 7th June 2022. During the visit, Hon'ble Minister chaired meetings with MPEDA, SEAI, Rubber Board and fishers group at MPEDA head quarters on 6th June 2022.

Hon'ble Minister has reviewed the export promotion activities of MPEDA. Twenty five exporters of seafood from various maritime states including office bearers of the Seafood Exporters Association of India (SEAI) participated in the discussions. Chairman, MPEDA briefed the activities and achievements of the organization. The challenges faced by the seafood export sector were briefed to the Hon'ble Minister.

Mr. Piyush Goyal congratulated MPEDA and the seafood exporters on record export achievement of US \$ 7.74 billion, and stated that "India aims to double the marine product exports to Rs. One lakh crore within the next five years". Hon'ble Minister has assured interventions from his side to minimize the hurdles in trade to enhance exports and value addition.

The exporters were urged by the Minister to educate, assist and encourage the fishers to follow the sustainable measures in fishing and also to preserve the quality of the catch.

Hon'ble Minister has also informed that the Indian missions abroad have geared up to help the exporters in expanding the trade. SEAI was represented by Mr. Jagdish Fofandi, National President and Regional Presidents from Andhra Pradesh, Karnataka and Kerala besides other exporters from different states.

Minister has also informed that India has entered into free trade agreement with many countries and there are forthcoming trade negotiations with EU as well.



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The Central Govt. is on fast track mode to have trade pacts with importing nations. All these are envisaged to enhance the export trade from the country, and the trade relaxations will not only benefit the exporters, but fishers and farmers also.

While having a meeting with the fishers and fish workers from different maritime states on his visit to Kerala, Hon'ble Minister said that the interests of the fishers in the country would not be compromised and it will be reflected in India's position in the 12th Ministerial Conference of WTO at Geneva.



The fishers who met the Hon'ble Minister gave a representation requesting that the Central Government may fight in WTO against its plan to stop fisheries subsidies, which is targeted at artisanal and small scale fishers in developing nations. The Hon'ble Minister informed that fisheries will be one of the key topics to be discussed at the conference and the issues raised would be discussed.



Monthly outlook forecast report

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USDINR

The RBI will maintain a depreciating rupee policy. Therefore, in the short-term, the RBI will limit rupee depreciate to the 78 level. RBI's rate hikes should support to reduce the upside but it is unlikely to avoid it completely. On the other hand Indian Rupee is likely to remain on the back stretch for now as USD/INR is still holding near the high, around the 77.60 level though most of the other Asian pairs have fallen back in recent weeks.

Also, India's economic growth slowed in the January-March period of 2021-22 to 4.1%, a four-quarter low, highlighting in part the impact of the Omicron pandemic on the manufacturing sector and contact-intensive services.

For the entire financial year of 2021-22, the NSO marginally expected its year-on-year GDP growth forecast to 8.7 %, down from 8.9% forecasted in

February. That would be the slowest pace in a year, following 5.4% growth in the previous quarter. The economy's near-term prospects have been darkened by a spike in retail inflation, which hit an eight-year high of 7.8% in April.

The surge in energy and commodity prices following the Ukraine crisis is also exerting a drag on economic activity. Though relaxation of the virus-led lockdowns joins faded challenges on the Fed's aggressive rate hikes to favour the US stock futures, as well as Asia-Pacific equities, geopolitical headlines join firmer yields are challenging traders.

It's important to notice that a two-month high in oil prices, around \$116.50, also pressurised the local unit due to India's record deficit and heavy reliance on energy imports. It is expected that strong Indian consumption and imports will continue to put pressure on the rupee. Hence USD/INR is likely to remain cushioned near term due to FII outflows and the strong dollar. USD/INR pairs one-day losses around 77.79, staying within



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a fortnight-long triangle, during intraday session. The pair has displayed a unimaginable performance since the last week after failing to overstep monthly highs at 78.12. While a short-term trading range below 78.00 capped USD/INR upside, the pair bears have recently turned positive as the RSI (14) hints at receding bullish momentum. The asset has been trading back and forth in a range of 77.33-78.12 for the past two weeks.

However, the USD/INR sellers need to acquire the 100-SMA, around 77.50, to take control back. An acute narrow gap between the 20- and 50-period Exponential Moving Averages indicates the continuation of a balanced market profile. Following the, low of May 10 oscillating near 77.10 will come next to the 200-SMA level adopting 77.05 to restrict the short-term USD/INR downside.

On the other hand, recovery remains very much positive until the pair stays below the above mentioned triangle's resistance line near 77.79. Also upside key psychological hurdle is the 78.00 level. Should the USD/INR prices cross the 78.00 resistance, the odds of witnessing the 80.00 threshold on the chart can't be ruled out.

EURUSD

Eurozone inflation surged to 8.1% in the month of May, above 7.5% and above assumptions of 7.7%. The core figure reported the above predictions at

3.8% against 3.5% and thus confirms again the case for European Central Bank tightening in Q3. Yet, the confusion for the European Central Bank is whether the bank will move on with 25 or 50 basis points in July. While slow-paced growth leads to the risk of going further, but still influences dim plunges in the greenback. European Union leaders decided to a put a ban on oil partially on Russia will choke two-thirds of oil imports from Russia, will finally put the pressure on the growth overview for the European Union going further and the expansion will squeeze the European Currency.

The current rebound in the Euro is nearly 4% from its recent bottom levels, collate to pre regains of 3.3-3.5% in the month of January and March, which indicated the current rebound is probably slightly longer. The US Fed's Bostic previous week's comments pertaining to a crucial halt in tightening instantly as September considerably aggravated the USD weakening, the US Fed will have some desire to turn away from its hawkish tightening overview stated inflation stays very adherent at hugely raised levels.

The Euro was very volatile in the month of May as it tested lows last seen in 2017 of 1.0348 and then it turned around to make an attempt towards the 1.08 handle but only reached the 1.0786 level. The pair has sliced below the 50-day EMA which has already been in a downtrend from the past one year. It also seems that there is a significant amount of resistance around the 1.08 level as seen in the past, hence a break above it would signal a major turnaround. Currently we can say that we've had a relief



FOCUS AREA

rally and then it might resume going lower. Furthermore, the major prevalent market sentiment is that ECB will not be able to do that.

The Eurozone's economy is still struggling and is the primary reason for it pushing lower. If the pair breaks down, the 1.05 level should be well supported. While, if we were to pick up momentum and rally from here, and break above the 1.08 level, it's not until we get trade above the 1.09 level that it will be a turnaround. Until then, we can continue expecting fading rallies.

GBPUSD

After falling for 4 consecutive months, finally pair got relief and ended the month slight higher. Pair fell to 1.2154 levels which we saw in Mar 2020. Thanks to the announcement of large govt. spending package to help households at the end of month which aided the pair to rebound to 1.26 levels and Major pullback in the dollar index due to traders lowered Federal Reserve rate increase anticipations amid signs the central bank might slow or even pause its tightening cycle in the 2nd half of the year also helped the sterling to gain versus the dollar.

Support by Government to help households might help the pair to gain further as market participants think it should support the economy in the short term. It's a

quiet month ahead for the pair on the event side as there is no major data release in UK in the first week due to local holidays there but market participants will be eyeing on US Nonfarm Payrolls which is expected to come lower by 108k compared to the previous print of 428k while Industrial production is set to release in the mid of month along with claimant count change and unemployment rate, which is expected to be higher by 0.1% compared to the previous release of 3.7%. BOE interest rate decision is also scheduled at the mid of month which is anticipated in line with the last release.

The pair was very volatile last month traded within the range of 1.2154 – 1.2666 and ended at psychological level of \$1.2600 which is slightly higher compared to previous month close of 1.2571. Currently pair is close to its near term resistance of \$1.2660-70, breaking of these levels can open the doors of \$1.27 psychological level followed by \$1.28 which is quite possible by looking at the trend while on the downside \$1.2450 could be a major support as 20 days SMA is there. On daily time frame Momentum indicator RSI trading at 54 levels which is considered to be slight overbought and MACD is trading in a neutral zone.

Exporters can look to hedge their exposure as pair has rebounded 4% in just a span of 15 days, USDINR also trading near all-time high levels which is giving good levels to pound exporters for hedging.



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USDJPY

The USDJPY went to a high of 131.347 and went as low as 126.361 during the month of May. The Japanese currency fell to a 2-decade low during the 4th week while The Prime Minister of Japan Fumio Kishida commented on the Japanese economy that hikes in raw material prices made weak by a weaker yen are creating hurdles for households and businesses.

The two-month rush in the USD JPY was put on the break as Treasury yields fall eroded the currency pair's most meticulous logic while slowing growth in China, equity wildness, and the predicted drag of US Fed rate hikes on the US economy led to a fair survival to the yen safety trade.

We witnessed the biggest loss with a decline of 1.1% just after the four days of the 2-decade highest mark at 131.25, yet, recovery came out even as the US dollar advanced sharply higher against all other major peers and in the Dollar Index.

The Japanese yen marked a one-month highest mark against the greenback at 128.892 on the last trading day of May which is considered a promising back-pedal of the Japanese yen's reckless fall since the beginning of March.

The technical conditions indicating lower USD/JPY remain intact. The MACD has descended though the



spread is almost the same. The RSI is now above the level of 50 and tilted. The actual ranges were restricted but the Support level on the chart will be at 128.74 (indicated with a pink color horizontal line) and the second support is at 126.36.

The first resistance area will be at 130 which is a psychological level followed by the second resistance at 131.25 (marked in the green horizontal line). In a world of expensive commodities and oil prices, costs to the Japanese economy and consumers of a weak currency outweigh the benefits of export pricing.

The Fed rate tightening is not going to be dissuaded by a drop in inflation before the year-end, but the major part of the credit market adjustment has already taken place.



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Kerala records the highest marine landings and boat arrivals in May 2022

Dr. Afsal V.V. & Dr. Joice V. Thomas
NETFISH-MPEDA

As part of the Catch Certification system of MPEDA, the NETFISH monitors the marine fish landings occurring at selected major harbours/landing centres in India through the Harbour Data Collectors engaged at around 100 landing sites across the country.

The details of the fishing vessels arriving at the harbour/landing centre and the species-wise quantity landed by these vessels are recorded on a daily basis. This report summarizes the species-wise, harbour-wise and state-wise trends on marine landings observed during May 2022.

I. OBSERVATIONS ON FISH CATCH LANDINGS

In May 2022, catch landing data was obtained from 78 selected landing sites across the Indian coastline. The total marine fish landings reported was 39,992.99 tons, comprising 19,898.06 tons (50 %) of Pelagic finfishes, 11,605.72 tons (29 %) of Demersal finfishes, 5,012.31 tons (12 %) of Crustaceans and 3,476.90 tons (9 %) of Molluscs (Fig.1).

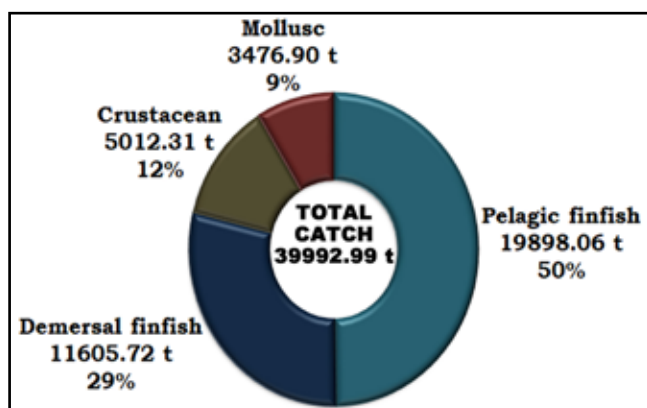


Fig.1: Catch composition of marine landings recorded in May 2022

Among the 221 species of marine fishery items landed during the month, the major five contributors were *Rastrelliger kanagurta* (Indian mackerel), *Nemipterus japonicus* (Japanese thread fin bream), *Harpadon nehereus* (Bombay duck), *Lepturacanthus savala* (Ribbon fish) and *Stolephorus indicus* (Indian Anchovy) (Table 1).

Table 1: Major fish species landed during May 2022

Sl. No:	Common name	Scientific name	Qty (tons)
1	Indian mackerel	<i>Rastrelliger kanagurta</i>	4782.17
2	Japanese thread fin bream	<i>Nemipterus japonicus</i>	4166.92
3	Bombay duck	<i>Harpadon nehereus</i>	1910.96
4	Ribbon fish	<i>Lepturacanthus savala</i>	1842.55
5	Indian anchovy	<i>Stolephorus indicus</i>	1583.86

On categorizing various species landed into their common groups and analysing the landings, the Mackerels, Threadfin breams, Coastal shrimps, Ribbon fishes and Anchovy topped the list with highest contributions. These five fishery items together had formed 47 % of the total catch (Fig. 2). The other major items reported were Scads and Tunas, each contributing about 2,563.80 t & 1,930.05 t respectively to the total catch.

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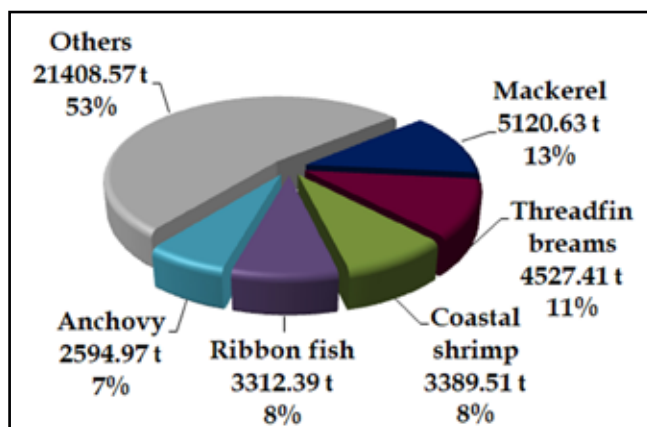


Fig. 2: Major fishery items landed during May 2022

Among Pelagic finfishes, Mackerels and Ribbon fishes were the highest contributors, and in the case of Demersal finfishes, Threadfin breams and Lizard fish were the most landed items. About 68 % of the Crustacean catch was comprised of different species of coastal shrimps, of which the *Poovalan* shrimp (*Metapenaeus dobsonii*) was the dominant species with a landing of 867.66 tons. Among Molluscan resources, squid was the most landed item and then followed by octopus.

State-wise landings: Kerala with a total landing of 10,262.96 tons (26 %) stood as the top contributor amongst the coastal states/UT (Fig.3).

Gujarat, Maharashtra and Karnataka were next in the line-up, with a contribution of 10,004.98 tons (25 %), 8,386.22 tons (21 %) and 7,916.89 tons (20 %) respectively to the total catch. The landing from East coast was very meagre during the month and no landing was reported from West Bengal.

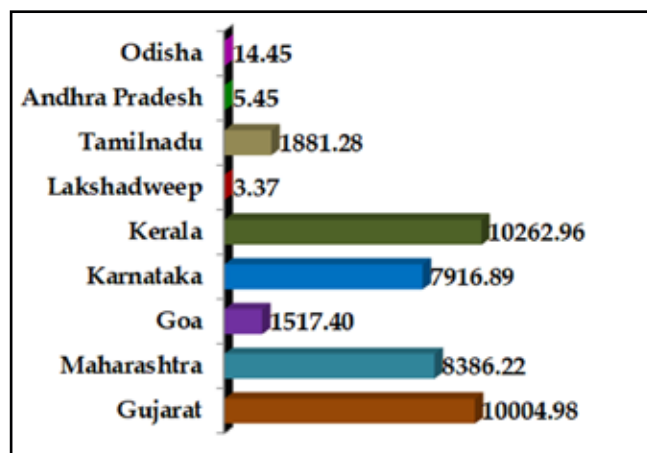


Fig. 3: State- wise fish landings (in tons) during May 2022

Harbour-wise landings: The monthly landing is reported from 78 landing sites along the 8 coastal states and the Kavaratti landing centre in Lakshadweep Island. The Malpe harbour in Karnataka had recorded the maximum fish landings, 4,165.68 tons, followed by Mangalore and Veraval harbours, with a share of 3,222.85 tons and 2,417.64 tons respectively.

II.OBSERVATIONS ON BOAT ARRIVALS

A total of 26,194 fishing vessel arrivals were recorded from 78 fish landing sites during May 2022. State - wise figure (Fig. 4) shows that the highest number of boat arrivals were in Kerala (32 %) followed by Gujarat (20 %), Maharashtra (17 %) and Tamil Nadu (16 %). Porbandar (1,421), Veraval (1,362) and Sakthikulangara (1,125) harbours had topped the list in terms of highest number of boat arrivals.

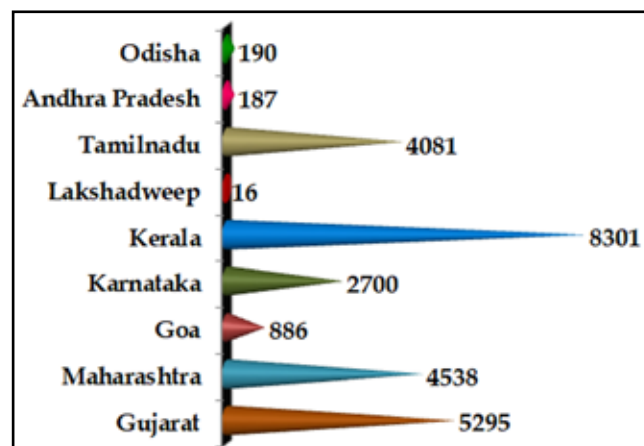
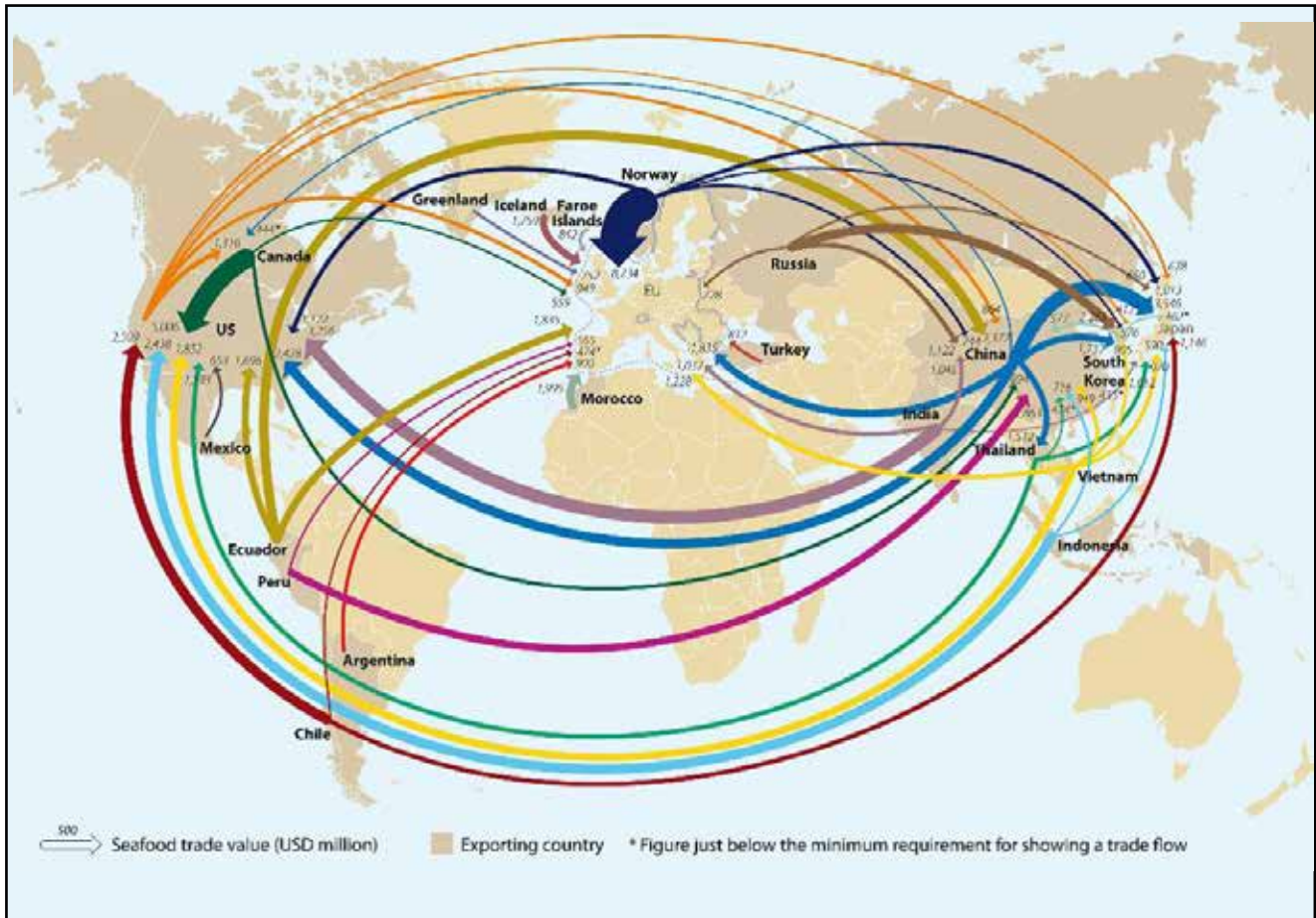


Fig. 4: State-wise boat arrivals (nos.) during May 2022

Summary: A total of 39,992.99 tons of marine landings and 26,194 of boat arrivals were reported during May 2022 from 78 major fishing harbour/landing centres along the 8 maritime states and the Lakshadweep Island. The total catch reported had dropped during the month due to the fishing ban period along the East coast. Compared to April 2022, landings decreased by about 16,000 tons during May 2022. Boat arrivals were down by about 8000 numbers.

The Pelagic finfish resources continued as the major contributor to the total landings and the Indian mackerel (*Rastrelliger kanagurta*) retained its top rank as the most landed species. Kerala overtook Gujarat to move to top spot in total catch landed. It also retained the first place in boat arrivals. Malpe harbour recorded maximum catch while Porbandar harbour remained top in the number of boat arrivals.

Seafood trade keeps growing



Top seafood trade flows by value (USD millions), 2021

Source: Trade Data Monitor, Rabobank 2022

Global seafood trade is vast as per the recently published World Seafood Map. World Seafood Map compiles and accelerates fisheries and aquaculture sectors. According to RaboResearch, there are 55 flows, and each have valued over 400 million per year and 19 trade flows, worth between USD 200 million and 400 million and depict the international nature and diversity of seafood trade.

Developing countries play a significant role in seafood exports. Developed countries are depending on developing nations for importing the high-value species, especially shrimp from India and Ecuador, and salmonids from Chile. In 2021, trade from Norway to the EU (27+UK) retains its top spot, valued at over USD 8.7 billion and salmon is mainly cultivated. Trade

from Canada to the US holds the second place, worth USD 5 billion and dominated by crustaceans (excluding shrimp), with USD 3.34 billion. Seafood trade from India to US come third place with the worth of more than USD 3.3 billion. Farmed vannamei shrimp had more demand which accounts for 80% of India's total seafood export to US.

Frozen shrimp is the major item of export from India. Around 79 countries imported shrimp from India during the fiscal year 2020-21. India has been exporting seafood to more than 120 countries. In the last six years, Indian seafood exports has grown from USD 4687.95 million in 2015-16 to USD 5956.94 million in 2020-21. During 2021-22 marine products exports from India reached all time high of USD 7740.22 million.

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The EU, US, and China crosses USD 80 Billion

The combined imports of the US, China and EU (27+UK) are USD 80 billion. EU (27+UK) remains the largest seafood buyer, with seafood worth over USD 34 billion by value. Since 2013, the export tends to a CAGR (Compound annual growth rate) of only 2%, while in the last five years, US and China displayed CAGRs of 6% and 10%, respectively. The CAGR of India for the last five years till 2020-21 was 4.91% and CAGR for the last five years till 2021-22 is 6.02%.

During 2021, US total seafood imports were valued at USD 28.1 billion. US demand for premium seafood is reflected in its increasing shrimp, salmonids and crabs imports with CAGRs (2016-2021) of 7.1%, 10.3%, and 19%, respectively. China's seafood imports were valued at USD 17.2 billion in 2021 and had a CAGR of 10.1% (2013-21). There was a strong rebound in the imports followed by the initial Covid -19 lockdowns. Shrimp, fishmeal, crabs, and salmonids contributed to this growth and accounted for 94% of import growth. Since 2013, shrimp and salmonids have been high-value species, which exhibited volume CAGRs of 6% and 2% and value CAGRs of 3.3% and 2.8%, respectively.

Conclusion

It is expected that in the coming years, sustainability

and demand for healthy and premium species will continue to drive trade volumes of high-valued marine resources and exporters like India and Ecuador are better positioned to capitalize on emerging trends and eliminate a difference between the exporter rankings. It is also observed that there is high price for many seafood species due to challenges in global trade such as rising freight and energy costs and continuous lockdowns in China. The continuous lockdowns in China results in discontinuous production and shipment delays that could slow down the economy. However, the impact on seafood demand may change because it is expected that the recession shall develop in the second half of 2022 or 2023. This may affect the seafood market price and the value of trade flows.

In conclusion, seafood is not only an important healthy protein, but also an important export commodity for many developing countries and a source of employment for millions of people. FAO estimates around 60 million peoples are engaged in fisheries sector worldwide.

Reference

- RaboResearch 2022: Seafood Trade Keeps Growing From Strength to Strength, May 2022
- MPEDA Press Release: April 2022

Compiled by: Sneha Sajeev, Bhushan Patil & Dr. T. R. Gibinkumar, MPEDA, Kochi -36, India



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Marine mammal & sea turtle bycatch survey by NETFISH

As part of a programme initiated by Department of Fisheries under the aegis of FSI along with other scientific organizations such as CMFRI and CIFT, to satisfy the need of MMPA programme of USA, the NETFISH has started conducting 2nd phase of fishermen interviews to understand the marine mammal and sea turtle interactions and sightings during fishing.

This information from fishers will be helpful for assessing the extent to which the marine mammal and sea turtle population is affected by fishing. Around 6000 interviews with fishers from trawlers, gill netters, purse seiners, long liners, etc. are intended to be conducted under the programme, covering 138 major fish landing sites in 9 maritime states of India, by the Harbour Data Collectors of MPEDA-NETFISH.

A prescribed format is used to collect the information from fishers, which will be further analysed using statistical tools. Interaction of marine mammals and sea turtle during fishing is the major aspect to be taken care of, in order to address to the need of their conservation.





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Global overview of alternative seafood & status in India

*Amod Ashok Salgaonkar, Co-founder & Chief Operating Officer A2S2 Enterprises, India
Email: amod@a2s2enterprises.com*

Alternative Seafood

Global fish production has grown virtually non-stop in the last 65 years reaching an all-time high of 177.8 million tonnes in 2019. That's more than a nine-fold increase since 1950. An average person eats about 20.5 kilos of fish every year. So, the demand will keep growing and considering the immense pressure on oceans & water systems; it shall be worth to look at the innovative alternate ways of producing the seafood which in general can be called as "Alternative Seafood".

Alternative seafood which is emerging as a new source of food with potential to augment future food supplies; mainly comprise of all plant-based, fermentation-derived & cell-based seafood alternatives that mimic the taste, texture, appearance and/or nutritional properties of conventional seafood.

Techniques used in alternative food production

Texturization of proteins is the process of creating three dimensional structures that match the texture, mouthfeel, and appearance of animal-based meat. This process can form protein fibers that resemble muscle tissue. Extrusion is a process that transforms biopolymer ingredients like proteins and polysaccharides into semi-solids. Low-moisture extrusion is useful for producing restructured meat products like patties where as high moisture extrusion is better for producing whole muscle type products e.g fillets. Shear cell technology allows for independently controlled shear rate, temperature, and residence time, unlike extrusion where these three parameters are coupled.

1. Plant-based seafood alternatives

There are different ingredients which have been used while making various plant-based seafoods. It includes legumes, soy, wheat, seaweeds, potato, eggplant and many more. Plant-based seafood shall also become useful for attracting those consumers who do not eat

traditional seafood as an animal protein but still would like to give the joy to tastebuds. Among one of the innovative cases - TofunaFysh used marinated jackfruit to mimic shredded texture of meat for preparing flaked tuna fish product "Gardein". Ocean Hugger Foods used the concept of biomimicry to replicate texture & flavour of sushi using fruits & vegetable to make their plant-based seafood products.

General information of product type & main ingredients	
Product Type	Main Ingredients
Tuna Chunks, Fish Burgers, Fish Cakes & Crab Cakes	Six legume blend (including peas, chickpeas, lentils, soy, fava beans & navy beans)
Fish Fillets & Crab Cakes	Soy, Wheat & Potato
Caviar	Seaweeds
Fish Fingers, Tuna Paste, Fish Cakes & Smoked Salmon	Soy, Potato, Konjac, Wheat
Ahimi - Raw Tuna Unami - Raw Eel	Tomatoes / Eggplants
Shrimp	Seaweeds

Source: Kazir, M.; Livney, Y.D. Plant-Based Seafood Analogs. Molecules 2021, 26, 1559.

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Something Different: Plant-based Seaweed Caviar



Seaweed Caviar is a plant-based food with no animal ingredient. Species of seaweed used is Kelp.

- Harvest from seabed, made from Kelp
- Seaweed is dried
- Converted into powder
- Powder processed with salt, spices, water and citric acid which all drips into a liquid
- Final product is Plant-based Seaweed Caviar

Source: Cavi-art



Salmon roe (left) and sturgeon caviar (right) served with mother of pearl caviar spoons to avoid tainting the taste of the caviar.

Courtesy : Wikipedia
(Actual Seafood Caviar)

Reference: A2S2 Enterprises 04/2022-Amod Ashok Salgaonkar/Understanding Alternative Seafood-Special Guest Lecture for Norwegian University of Life Sciences (NMBU) Norway/06.04.22

Notable Examples in Alternative Seafood (Plant-based Seafood)

**THE PLANT
BASED
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OMNI

- **Mind Blown Coconut Shrimp** was named the Most Disruptive Product of 2020 in the Prepared Foods' Spirit of Innovation awards.
- Other product range: Mind blown dusted shrimp, dusted scallops, lobster crab cakes
- Base: Virginia
- Earlier name: Van Cleve Seafood Co
- Distributor partner: Pod Foods (US)



- Product Range: Tuna pouches, crab cakes, fish fillets, fish steaks etc
- 2020: Joint venture with Giant Bumble Bee Foods
- Base: Virginia
- 2020: Entered European market
- 2021: Secured \$26.35 million in Series B funding



- Base: Hong-Kong
- Range: Fish fillets, Ocean Burger, Salmon, Shelf-stable Tuna, Crab cakes
- 2021: Present in Restaurant & Retail segment



Note : Product range are from respective websites

2. Cultivated/Cell-based Seafood

The core concept behind this method is the tissue regeneration process, which naturally occurs in all animals; tissues renew themselves by reproducing

cells to repair and maintain overall health. Cultivated seafood replicates this process under controlled conditions. If this nascent technology scales, it would alleviate pressure on oceans, lakes and rivers. This process brings a lot many advantages among

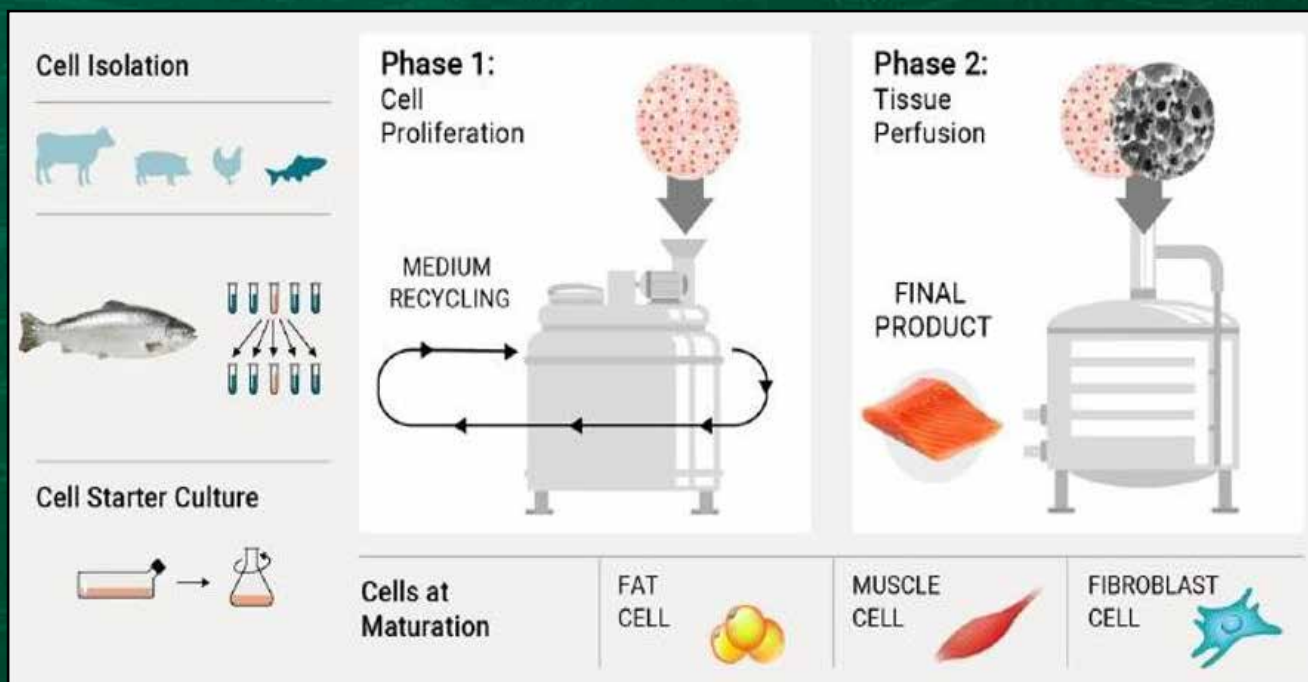
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which important one is less usage of resources when compared with conventional seafood production. This method avoids production of trimmings, bones etc. and produce only desired seafood product. Various reports have also mentioned that this method is useful in substantially lowering the GHG emissions.

and high protein content of many microorganisms to efficiently produce large quantities of protein. This biomass serves as either the predominant ingredient of a food product or one of several primary ingredients in a blend.

3. Precision fermentation: Uses specially designed

Cell-based Meat Production Schematic Diagram for Seafood



Source: "An Ocean of Opportunity" Report by Good Food Institute, 2019

Cultivated meat / seafood begins with taking a number of cells from an animal and nurturing them in a nutrient-rich, animal-free growth medium, where they are capable of multiplying.

Subsequently, the cells can be stimulated to differentiate into muscle, fiber, or fat cells, and through tissue engineering techniques supporting the three-dimensional organization of the cells, a tissue is grown that mirrors traditionally produced.

3. Fermentation derived Seafood

There are three basic types of fermentation which are practiced in Alternative Food category.

1. Traditional Fermentation: Uses intact live microorganisms to modulate and process plant-derived ingredients.

2. Biomass fermentation: Leverages the fast growth

microbial hosts as "cell factories" for producing specific functional ingredients such as dairy proteins or egg proteins.

Quorn's fingers, Odontella, Meati, 3F Bio, Good Catch products are reknown in Alt seafood category through fermentation. The company Meati uses the method of "Biomass Fermentation" for making their products and US based Aqua Cultured Foods is making a large shout in the category.

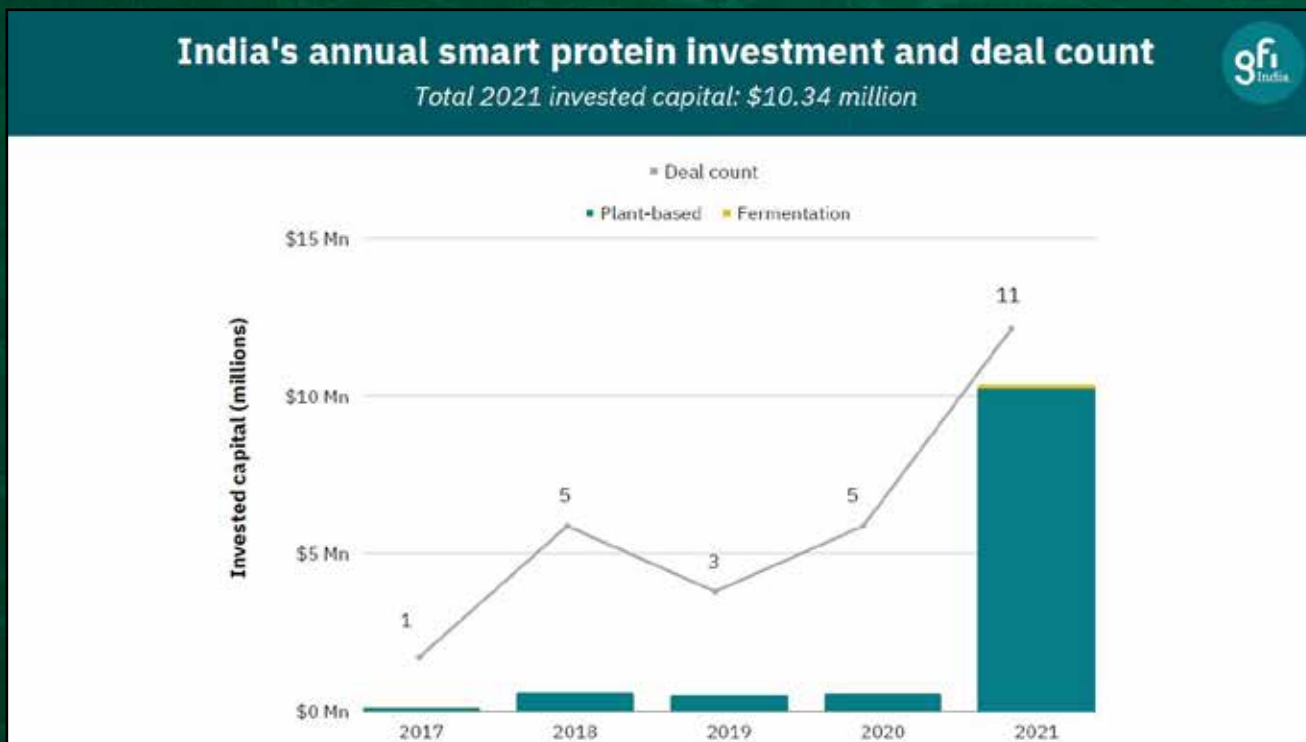
Alternative Seafood Scenario in India

Alternative Food category as a whole is at very niche stage presently in India. As per study from Good Food Institute India; the smart protein investment in India attracted a capital of US\$ 10.34 million in 2021. Though slowly developing, there is a presence of plant-based meat products in various formats like Amazon India, Flipkart Wholesale, Big Basket, Swiggy, Urban

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Platter, Godrej's Nature's Basket & include the brands like GoodDot, Blue Tribe Foods, Imagine Meats, Beyond Meat, Shaka Harry, Vezley, Greenest Foods etc. Couple of brands among mentioned has few SKU's which include plant-based seafood but it is negligible and the momentum is yet to gear up.

secure, forward and future-proof food production, the company is currently growing its capabilities to bring the best of both worlds in India and New Zealand to commercialise their fresh whole-cut seafood alternatives. The founders share a vision to unleash a carbon neutral food system by unlocking technological



Source: Good Food Institute India

Alternative Seafood Companies in India

The India Smart Protein Innovation Challenge (ISPIC) by Good Food Institute India (GFI India) has brought out amazing startups in the smart protein space. The 2021 edition of ISPIC witnessed participation from over 750 candidates across 250+ universities & organizations in India. Among the winners of this challenge in 2021; there were five startups who expressed the vision to build the products in the "Alternative Seafood" category and we will understand the status as time passes.

Presently, one company working dedicatedly since over an year in the Alt Seafood space in India is "Sea Spire". Its founded by Varun Gadodia & Shantanu Dhangar. SeaSpire is a technology startup aiming to disrupt the rising seafood demand with seafood alternatives developed by novel technologies. Focusing on tech-play and a vision for a more



Image Credit: Company Website

MAIN STORY

innovations to thrive Bio-economy. The company is aiming to bring the products in the Indian market soon with focus on HoReCa and retail segment & launched first whole cut plant-based snapper in June 2022.



Plant based whole cut snapper fillet developed by SeaSpire

Regulatory Framework: FSSAI Novel Food, India 2021

As per FSSAI - Novel food is a food that may not have a history of human consumption; or may have any ingredient used in it which or the source from which it is derived, may not have a history of human consumption; or a food or ingredient obtained by new technology with innovative engineering process, where the process may give rise to significant change in the composition or structure or size of the food or food ingredients which may alter the nutritional value, metabolism or level of undesirable substances.

FAO's work for cell-based Food

FAO has released a report in 2022 namely "Thinking about the Future of Food Safety: A Foresight Report" in which "Cell-based Food" segment also got included. Under the sub-segment "Cell-based Food" – major points noted are 1) Various terminologies used for cell-based food products 2) An overview of cell-based food products & 3) FAO initiatives for cell-based food production.

About A2S2 Enterprises:

"A2S2 Enterprises" is based in Mumbai, India & it's co-founded by Amod Ashok Salgaonkar. The entity involved in the seafood trade business and also have engagements / tie-ups with various organizations for assignments-based work. Amod is known internationally for developing sustainable seafood business framework and he speaks at various national & international conferences besides guiding on policy related matters. He is one of the key professional playing role as an Industry Advisory Board Member at Good Food Institute India & one of his responsibility involves creation of right ecosystem for developing "Alternative Seafood" framework in India.

While aquatic cell-based food production may open the door for aquatic resource-poor countries, this specific sector has an additional terminology-related consideration. Aquaculture products are usually referred to as "farmed" or "cultured" fish/seafood in order to be distinguished from wild-catches. Therefore, the terms used for cell-based food production of aquatic products may need different words to clearly differentiate aquaculture products from cell based aquatic products (Hallman and Hallman, 2020).

Conclusion

"Alternative Seafood" as a segment is developing very fast throughout the world and gaining momentum majorly in USA and Europe and has also started concentrating in Asia. Singapore is leading the path by giving all support in every possible manner for "Alternative Food" sector. The cell-based seafood sub-segment may take more years to see the products commercially available however plant-based seafood is already present on shelves in few markets of the world and fermentation derived seafood may become visible widely in some markets in a year or two. India may play crucial act in developing this segment considering the large availability of various resources, best brains, availability of best class infrastructure and most important the need of feeding the billion mouths in next 30 years.

Note: The topic is vast and interested readers can reach out to the author for more information.





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Charming Cichlids

**V. K. Dey**

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

Cichlids of Lake Malawi are pretty, hardy and quite easy to breed in the right environment. They belong to two distinct groups, mbuna and non-mbuna. Mbuna is the local name for those which live in the rocky part of the lake while non-mbuna are in the warmer upper layers of the open water of the lake. There are many species in each group but they have some common characteristics which will be of interest to the hobbyists. Mbuna are smaller in size, colourful, herbivorous, more active and aggressive while non-mbuna are less aggressive, considered larger in size and are omnivorous. The species belonging to the mbuna group are *Labidochromis*, *Melanochromis*, *Cynotilapia* and *Pseudotropheus* and those in non-mbuna group are *Aulonocara*, *Cyrtocara*, *Nimbochromis*, *Protomelas*, *Copadichromis*, *Lethrinops* etc. The most striking feature of Malawi cichlids is their colour. Almost all species have striking colouration. The males have brighter colour than the females. In their natural habitat, Lake Malawi, the water pH ranges between 7.8 and 8.3 and temperature 26 - 30°C. Non-mbuna are very sensitive to low oxygen levels and thus live in well oxygenated upper water layers of the lake. The dissolved oxygen content of the water should be around 6 ppm or higher.

When feeding Malawi cichlids, it would be better to take into account their dietary habits. Good quality pellets or flakes could be given along with tubifex or blood worms at least once a week. Generally a standard low protein flake food (protein content 33-38%) can be given to all species. As a booster, spirulina can be fed from time to time. If the water conditions are favourable, with good quality food and better water filtration, they would breed in captivity. They are mouth breeders. The female lays eggs on the rock or sand, which are fertilised by the male. Once the eggs are fertilised, they are taken into the mouth of the female fish and incubated until they hatch. When the young ones have absorbed their yolk sac, which takes about 18 days, the female will release them, depending on the species and water temperature. During this period, the female eats very little or nothing at all. The female will take care of the young ones for several days. The young ones will take powdered feed. Freshly hatched brine shrimp can also

be fed. The temperature at this stage should be 28.5°C with gentle aeration. *Labidochromis* sp is one of the most popular cichlids in the hobby, of which *L. caeruleus* (Lemon yellow cichlid) is most beautiful with its bright yellow colour and a black stripe through the dorsal fin. Compared to other mbuna species, it is not very aggressive and both males and females are attractive. The fish is easy to keep and breed in captivity. It prefers hard alkaline water with temperature ranging from 24 - 27.5°C and can tolerate slightly higher or lower temperature. They are omnivorous, feeding on insects, snails and molluscs. However, in aquarium conditions, good quality flake food and cichlid pellets supplemented with frozen food would be ideal.

Melanochromis auratus, known as Malawi golden cichlid among the hobbyists, is yet another popular fish with its golden colour and black stripes over the body. They can be aggressive and should be combined with other larger mbuna species. However, it is not advisable to keep more than one male or similar males of other *Melanochromis*. The water conditions should be 23 - 28°C temperature, with hard alkaline water, and pH ranging from 7.6 - 8.6. They feed on algae and other aquarium foods. Colouration in younger fish is identical but older males show much darker colour. They are easy to breed and attain a maximum size of 10 - 13 cm.

Cynotilapia sp is better known as afra or mbuna black afra in the trade. The normal colour of the male is a light blue body with dark blue vertical stripes, while females usually have a grey-beige colour. They should not be kept together with other mbunas whose male or female colouration resembles theirs. If other aggressive fishes are present in the aquarium they will lose their colour and become gray-blue without stripes. Males are dominant and violent. The appearance of males varies between the different populations. Males can attain a length of 11 cm while females are somewhat smaller. They will breed in captivity if the water conditions are favourable. *Protomelas fenestratus*, known as "thick lip" among the hobbyists, has a characteristic laterally compressed shape. In adult fish both males and females have exceptionally enlarged fleshy lips. Males are mostly coloured with greenish blue cheeks and yellow belly.



USFDA and JIFSAN collaborates with MPEDA in conducting Good Aquaculture Practices (GAqP) training



MPEDA in association with the United States Food and Drug Administration (USFDA) and Joint Institute for Food Safety and Applied Nutrition (JIFSAN) has organized five-day training programme during 9-13 May 2022 on Good Aquaculture Practices (GAqPs) at MPEDA Head Quarters, Kochi. The training was inaugurated on 9th May 2022 by Dr. M. Karthikeyan,

Director, MPEDA in presence of Dr. Natalie Mickelsen, Acting Deputy Director of USFDA India Office, Mr. Brett Koonse, Aquaculture and Seafood Safety Expert, JIFSAN, Dr. Pankaja Panda, Food Safety Coordinator, USFDA India office and Mr. C. Wilson, Joint Director (Aqua), MPEDA. The experts from JIFSAN training team for GAP - Mr. Brett Koonse, Aquaculture and

AQUACULTURE SCENE

Seafood Safety Expert and Mr. Lorenzo Juarez, CEO, Sea Products Development Corporation and officials of USFDA - Dr. Nichol Conklin, Mr. Stanley Serfling and Dr. Pankaja Panda handled the training sessions. The training was attended by officials of MPEDA, Department of fisheries of various state governments, academia, ICAR research institutes and the industry.

The technical sessions on the first day included an introduction to Good Aquaculture Practices and Aquaculture health management, which were taken by JIFSAN faculty, Mr. Brett Koonse and Mr. Lorenzo Juarez. A presentation on 'Overview of India aquaculture farm food safety program in India' was made by Dr. Ram Mohan M. K., Joint Director (QC), MPEDA. Another lecture on 'Current perspective on shrimp diseases in India' was given by Dr. Amerneni Ravi Kumar, ALPHABiologicals.

The second day started with a class on 'Biosecurity and operation on shrimp hatcheries' by Mr. Lorenzo. The session on Best Management Practice (BMP) for Shrimp Farms was handled by Mr. Brett and Mr. Lorenzo. There were group exercises and five groups were formed among the participants.

The groups worked on the following exercises – (1) Identifying disease risks and controls and (2) Identifying BMP controls and they have made presentations. Dr.



Sarah McMullen, Country Director at FDA office, India also attended the day's sessions.

The training session on the third day started with a class on Aquaculture food safety, opportunity and why India should Implement GAQPs. This was followed by a group activity on identifying food safety risks and controls. Dr. Manoj M. Sharma, M/s. Mayank Aquaculture Pvt Ltd., Gujarat gave a talk on aquaculture industry perspective.

A field visit to a shrimp farm- M/s. Thadathil Marine Venture in Alappuzha district in Kerala along with the officials and trainers from USFDA and JIFSAN was organized as part of the training on the fourth day. The



AQUACULTURE SCENE



trainees interacted with the farmer, Mr. Anish Augustine and made observations on the facilities and practices of culture in the farm from the perspective of biosecurity, best management practices and food safety. After

the field visit, the trainees worked in groups on their presentations on their farm observations, which were presented on the last day of the training.

The training concluded on 13th May 2022 with the valedictory function. The valedictory function was graced by the presence of Dr. K. N. Raghavan IRS, Chairman, MPEDA and Dr. Natalie Mickelson, Acting Deputy Director, USFDA India office. Dr. M. Karthikeyan, Director, MPEDA and Mr. K. S. Pradeep IFS, Secretary, MPEDA attended the function along with the experts from JIFSAN Training Team and Officials of USFDA. Certificates were distributed to the participants during the function.

The joint efforts by MPEDA, USFDA and JIFSAN in the conduct of such capacity building programmes, with a focus on assured quality and safe seafood products exported from India to the USA will foster a smoother trade relation between the two nations.



SPF *L. vannamei* broodstock consignments imported & quarantined at RGCA- AQF

APRIL 2022							
Sl. No	Hatchery	State	Broodstock Supplier	Date of receipt of the lot at AQF	No: of male brooders imported	No: of female brooders imported	Total imported (nos)
1	NGR Aquatech Pvt. Ltd	Andhra Pradesh	Kona Bay; Hawaii	01.04.22	600	600	1200
2	Shree Kanaka Matsya Hatcheries	Odisha	Kona Bay; Hawaii	01.04.22	300	300	600
3	Sai Lalitha Hatchery	Andhra Pradesh	Benchmark Genetics; Florida	01.04.22	300	300	600
4	Sri Manjunadha Hatcheries	Andhra Pradesh	Benchmark Genetics; Florida	01.04.22	300	300	600
5	Seven Staar Aquatech	Tamil Nadu	SIS; Florida	03.04.22	200	200	400
6	Apex Frozen Foods Ltd	Andhra Pradesh	SIS; Florida	09.04.22	500	500	1000
7	Pavani Hatcheries	Tamil Nadu	SIS; Hawaii	09.04.22	300	300	600
8	Hybrid Ebi Hatcheries Pvt. Ltd	Tamil Nadu	SIS; Hawaii	09.04.22	600	600	1200
9	Avanti Feeds - Unit I	Andhra Pradesh	SIS; Florida	16.04.22	600	600	1200
10	Royal Hatcheries - 1	Tamil Nadu	Syaqua; Florida	17.04.22	300	300	600
11	Aqua Prime International (India) Ltd	Andhra Pradesh	Syaqua; Florida	17.04.22	300	300	600
12	Ravi Hatcheries LLP	Andhra Pradesh	SIS; Florida	22.04.22	300	300	600
13	Sun Hatcheries - Unit II	Andhra Pradesh	SIS; Florida	23.04.22	200	200	400
14	Best India Marine Harvests	Tamil Nadu	Kona Bay; Hawaii	25.04.22	285	285	570
15	Sapthagiri Hatcheries	Andhra Pradesh	Kona Bay; Hawaii	25.04.22	600	600	1200

AQUACULTURE SCENE

16	Sapthagiri Hatcheries - Unit II	Andhra Pradesh	Kona Bay; Hawaii	25.04.22	600	600	1200
17	Varun Hatcheries	Andhra Pradesh	SIS; Florida	27.04.22	300	300	600
18	Blue Bay Culture	Tamil Nadu	Benchmark Genetics; Florida	27.04.22	200	200	400
19	BKMN Aqua	Andhra Pradesh	Benchmark Genetics; Florida	27.04.22	400	400	800
20	Srinivasa Hatcheries	Andhra Pradesh	Kona Bay; Hawaii	29.04.22	600	600	1200
21	Srinivasa Hatcheries - Unit II	Andhra Pradesh	Kona Bay; Hawaii	29.04.22	600	600	1200
22	Sri Manjunadha Hatcheries	Andhra Pradesh	Syaqua; Florida	29.04.22	300	300	600
TOTAL					8685	8685	17370

MAY 2022							
Sl. No	Name of the importer	State	Supplier	Date of receipt of the lot at AQF	"No. of male broodstock imported"	"No. of female broodstock imported"	Total imported (nos)
1	Srinivasa Aqua Hatcheries	Andhra Pradesh	Kona Bay; Hawaii	02.05.22	600	600	1200
2	Maruthi Aqua Technologies Pvt. Ltd	Andhra Pradesh	Kona Bay; Hawaii	02.05.22	500	500	1000
3	Sree Kamadhenu Aquatech Pvt. Ltd - Prakasam	Andhra Pradesh	Benchmark Genetics; Florida	04.05.22	200	200	400
4	Venture Shrimp Hatchery	Tamil Nadu	SIS; Florida	06.05.22	225	225	450
5	Golden Marine Harvest	Tamil Nadu	Syaqua; Florida	08.05.22	500	500	1000
6	Sree Kamadhenu Aquatech Pvt. Ltd	Andhra Pradesh	American Penaeid; Florida	08.05.22	200	200	400
7	Srinidhi Biotechnologies	Andhra Pradesh	SIS; Florida	11.05.22	600	600	1200
8	East Coast Hatcheries	Tamil Nadu	SIS; Florida	11.05.22	250	250	500
9	BMR Exports - Nellore	Andhra Pradesh	Sea Products; Texas	11.05.22	400	400	800

AQUACULTURE SCENE

10	Srinivasalu Hatchery	Andhra Pradesh	Benchmark Genet-ics; Florida	11.05.22	224	224	448
11	Blue Park Hatcheries (India) Pvt. Ltd	Andhra Pradesh	Kona Bay; Hawaii	13.05.22	400	400	800
12	Sai Bhargavi Hatcher-ies Pvt. Ltd	Andhra Pradesh	Kona Bay; Hawaii	13.05.22	250	250	500
13	Sripa Aqua Marine Pvt. Ltd	Andhra Pradesh	SIS; Florida	13.05.22	225	225	450
14	Snehitha Hatcheries - Unit II	Andhra Pradesh	Kona Bay; Hawaii	13.05.22	600	600	1200
15	SVR Hatcheries	Andhra Pradesh	SIS; Florida	14.05.22	600	600	1200
16	Meenakshi Hatcheries Pvt. Ltd	Andhra Pradesh	SIS; Florida	15.05.22	600	600	1200
17	Vaisakhi Bio Marine Pvt. Ltd	Tamil Nadu	SIS; Florida	18.05.22	160	0	160
18	Golden Marine Harvest - Unit V	Tamil Nadu	Sea Products; Texas	18.05.22	500	500	1000
19	Golden Prawns Pvt. Ltd	Andhra Pradesh	Syaqua; Florida	19.05.22	300	300	600
20	Fedora Sea Foods Pvt. Ltd	Andhra Pradesh	SIS; Florida	21.05.22	150	150	300
21	Vaisakhi Bio Resources Pvt. Ltd	Andhra Pradesh	Benchmark Genet-ics; Florida	21.05.22	456	456	912
22	Sree Dattareya Hatch-eries	Andhra Pradesh	SIS; Florida	21.05.22	300	300	600
23	Rama Shrimp Hatchery	Andhra Pradesh	Syaqua; Florida	22.05.22	600	600	1200
24	Sheng Long Bio-Tech (India) Pvt. Ltd	Tamil Nadu	SIS; Florida	22.05.22	300	300	600
25	Vaisakhi Bio Marine Pvt. Ltd - Unit III	Andhra Pradesh	Syaqua; Florida	26.05.22	600	600	1200
26	Samudra Hatcheries Pvt. Ltd	Andhra Pradesh	SIS; Florida	29.05.22	240	240	480
27	Anjaneya Marine Hatcheries	Andhra Pradesh	SIS; Florida	29.05.22	300	300	600
28	Coastal Aqua Pvt. Ltd	Andhra Pradesh	SIS; Florida	29.05.22	600	600	1200
29	BMR Marine Products Pvt. Ltd - Vizag	Andhra Pradesh	Kona Bay; Hawaii	30.05.22	400	400	800
30	Ananda Foods	Andhra Pradesh	Kona Bay; Hawaii	30.05.22	400	400	800
31	Sri Manjunadha Hatch-eries	Andhra Pradesh	Kona Bay; Hawaii	30.05.22	300	300	600
32	CP Aquaculture (India) Pvt. Ltd - Unit II	Andhra Pradesh	Kona Bay; Hawaii	30.05.22	300	300	600
	TOTAL				12280	12120	24400

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Awareness programme to A & N Island officials and stakeholders



Stakeholders attending the online awareness program in the conference hall of the Department of Industries, ANI

MPEDA, RD Chennai in association with Department of Industries, Andaman & Nicobar Islands Administration organized an online awareness program for the promotion of marine products exports from the islands on 20th May 2022 in two sessions.

The awareness programme was a part of the District as Export Hub initiative and the South Andaman District was selected as one of the 75 district for the pilot scheme implementation under the program. The participants were addressed by Mr. Arjun Upadhyay, DDGFT, Office of the Additional DGFT, Kolkata.

In the two sessions, presentations were made by Dr. Ansar Ali A. Deputy Director, MPEDA RD, Chennai on the 'Role of MPEDA in marine products exports', Mrs. Kabita Mishra, Deputy Director (Technical), EIA,



Online awareness program for the department officials of the Andaman & Nicobar Island Administration

Kolkata on the 'Role of EIC in exports', Mr. Sakthivel, Assistant Director (MS), MPEDA, HO presented 'Export potential of Tuna from Andaman & Nicobar Islands' and Dr. Vinoth. S. Ravindran, State Coordinator, MPEDA-NETFISH on the 'Onboard handling of Tuna for exports'.

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MPEDA organizes seafood HACCP basic training programme at Porbandar



Dr. M. Karthikeyan, Director, MPEDA and Mr. Karshanbhai Salet, Vice President, SEAI - Gujarat jointly inaugurate the training in presence of Mr. V. Vinod, Deputy Director (QC), Mr. Vaniya Kishorkumar, Assistant Director, MPEDA and Dr. Jyotiranjana Nayak, Deputy Director, EIA, Porbandar

MPEDA has organized four days Seafood HACCP basic training programme from 17th to 20th May 2022 at Hotel Lords Inn, Chowpati, Porbandar. The main objective of this training programme was to empower the technologists of seafood processing plants registered under Sub Regional Division, Porbandar with Seafood HACCP and related regulations. 29 Technologists working in different seafood processing establishments participated in the training programme.

MPEDA has organized four days Seafood HACCP basic training programme from 17th to 20th May 2022 at Hotel Lords Inn, Chowpati, Porbandar. The main objective of this training programme was to empower the technologists of seafood processing plants registered under Sub Regional Division, Porbandar with Seafood HACCP and related regulations. 29 Technologists working in different seafood processing establishments participated in the training programme. The training sessions were handled by Mr. V. Vinod,



Dr. M. Karthikeyan, Director, MPEDA delivers the presidential address

Deputy Director, Mr. Subray Pavar, Assistant Director, MPEDA, Mumbai and Mr. Kishorkumar Vaniya, Assistant Director. The training programme covered course introduction, Current Good Manufacturing Practices, Sanitation Standard Operating Procedures, Principles of HACCP and Development of HACCP

QUALITY FRONT

Plan Form. Apart from above, faculty also covered US Seafood regulations, traceability followed by practical sessions in different groups for preparation of SSOP documents, development of HACCP Plan for various seafood products.

The different products Plan Form were presented by the representative of each group and finally an assessment was conducted by way of conducting test and those who have scored maximum number of marks were appreciated by the faculty. Participants' feedback on the training was also collected. Dr. Ram Mohan M.K. Joint Director (QC) and HACCP Course Director distributed the training certificates to the participants in the valedictory session held on 20th May 2022.



Dr. Ram Mohan M. K., Joint Director (QC) addressing the participants during the valedictory function



View of training sessions



Group photo of Participants



Dr. L. Murugan, Honourable Union Minister of Dairying, Fisheries, Information & Broadcasting, visits Machalipatnam Harbour



Dr. L. Murugan, Hon'ble Minister with Mr. A. Jeyabal, Joint Director & Mr. K. Sivarajan, Dy. Director, MPEDA, Vijayawada

Dr. L. Murugan, Honourable Minister of Dairying, Fisheries, Information & Broadcasting, Govt. of India visited Machilipatnam harbour on 29th April 2022 to attend an interactive meeting with fishermen community organized in connection with the expansion of the Machilipatnam fishing harbour and Development of its Infrastructure facilities.

Dr. Murugan chaired the meeting in presence of Mr. Vallabhaneni Balasouri, Member of Parliament (LS), Dr. Seediri Appalaraju, Honarable Minister for Animal Husbandry, Fisheries & Dairy Development, Govt. of Andhra Pradesh, Mr. Perni Nani, MLA, Mr. K. Kanna Babu, IAS, Commissioner of Fisheries etc.

In his keynote address, the Minister highlighted about schemes under PMSSY and fisheries infrastructure

development and the impact of Blue revolution. He told that under blue revolution a fund of Rs 205 Crore was already spent on fisheries sector. The proposal for establishment of 50 fish landing centers has already been sanctioned. He informed that the Govt. of India also focused on cage culture and got very good results throughout the coastal states. He emphasized on implementing marine algal culture, SC and ST schemes, establishments of ice plants and processing units etc. Mr. Vallabhaneni Balasouri, MP informed that Rs.1cr each will be allotted for fiber boats for the economically poor fishermen along the coastal line like Nagayalanka, Krutivenu, Sorlagandi etc.

In his presidential address, Dr. Seediri Appalaraju, Honorable Minister of Andhra Pradesh detailed about

QUALITY FRONT



the schemes available with the Government, the progress of harbour development and expansion in Machilipatnam, Nizampatnam and Visakhapatnam. He also briefed about the newly proposed harbours & fish landing centers with the financial supports of central and state governments. Mr. Perni Nani, MLA thanked the central and state Governments for the support extended to the Machilipatnam harbour. Mr.

Jeyabal, Joint Director, Mr. K. Sivarajan, Dy. Director, MPEDA, RD, Vijayawada & Dr. Murali Mohan, State Coordinator (South), NETFISH-MPEDA received the Honorable Minister and had a brief talk about the aquaculture and export developments in AP. The visit of the Minister was to assess the progress of works in the Machilipatnam Harbour & interaction with fishermen community.



MPEDA-NETFISH organised training programmes on “Value added fish products preparation and hygienic handling”



Dr. Girija and Mrs. Jyoti demonstrating preparation of value added fish products

NETFISH-MPEDA organized two external funded one-day hands on capacity building training programmes on “Value added fish products preparation and hygienic handling” on 17th and 18th May, 2022 at Dive-Kevni village in Thane district which were sponsored by Mangrove Foundation of Maharashtra. Dr. Girija Behere, SCO, Maharashtra North, NETFISH-MPEDA and Mrs. Jyoti Shedage, QC Technologist from fish industry demonstrated preparation of Fish Bread Patties, Jawla Chutney, Prawn Pickle, Fish Soup Powder, and Butterfly shrimp. The objective of the programmes was to impart skill-based training to the members of various SHGs on different aspects of fish processing related to production of value-added quality fish products and hygienic handling of fish for capacity building. Dr. Girija delivered a lecture on “Value addition and Hygienic handling” during both training programmes. 42 beneficiaries from various places in Thane district participated in two training programmes. Training booklet, Kitchen Apron, Kitchen Caps, Hand gloves, Kitchen Napkins, cutting boards and knives were distributed to each beneficiary. Mr. Dhiraj and Mr. Jitendra, HDCs from NETFISH and Mr. Lavesh, Livelihood specialist and Project Associates from Mangrove Foundation of Maharashtra assisted the training.



Dr. Girija, State Coordinator, MPEDA-NETFISH, addressing the participants



Participants of the training programme

MPEDA-NETFISH conducts training programme on good fish drying practices at Karwar fishing harbour



Distributing hand gloves to the trainees



State Coordinator- NETFISH interacting with the trainees



Participants of the training programme





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WTO breaks a 7-year negotiating drought, agrees on all issues including fisheries subsidies

The World Trade Organization's members cleared a package of trade deals, including pledges on health, reform and food security, struck after more than five days of hard negotiations.

Representatives of the 164 countries, including India, cheered after the package was passed before Director-General Ngozi Okonjo-Iweala addressed them early on Friday. "The package of agreements you have reached will make a difference to the lives of people around the world," she said. "The outcomes demonstrate that the WTO is in fact capable of responding to emergencies of our time."

For the first time subsidies on overfishing, deep sea fishing and Illegal, Unreported and Unregulated (IUU) fishing were addressed through the proposed pact. "On India's instance sovereign rights on EEZ (Exclusive Economic Zones) have been firmly established. It is really a big achievement," PTI, quoting a source reported, adding that principal stakeholders who have benefited from these "historic decisions" taken by the 12th ministerial conference of the WTO are fishermen, farmers, food security, multilateralism, and trade and business, particularly digital economy and MSMEs.

It was also agreed to find a final solution to the issue of continuation of moratorium on imposing customs duties on electronic transmission of goods by the next ministerial conference of the WTO or not later than March 2024.

One of the sources termed this as the most successful conference in the history of the WTO as it has revitalised the organisation.

"It has restored multilateralism. India took a major leadership role and was the voice of the developing world and the LDCs (Least Developed Countries). The developing countries were building consensus and



providing solutions to break every deadlock from time to time during the different sessions and meetings," they added.

A decision on all the issues reflects camaraderie between developed and developing member countries.

"Great team effort was there while agreeing on the issues. Concerns of the ACP (African, Caribbean and Pacific countries) region were fully addressed on the fisheries decision," the sources said.

They added that the Indian delegation, which was headed by commerce and industry minister Piyush Goyal, was continuously getting the guidance and direction from Prime Minister Narendra Modi.

The focus of the Indian team was to protect the interests of fishermen and farmers.

These decisions also send a strong signal that the world can come together on critical areas like food security and humanitarian crises like the pandemic.

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NFI, other trade groups laud passage of Ocean Shipping Reform Act

The National Fisheries Institute and other organizations lauded the U.S. Congress's passage of the Ocean Shipping Reform Act on 14 June. The U.S. House of Representatives passed the Ocean Shipping Reform Act (OSRA) of 2022, which the U.S. Senate previously approved. U.S. President Joe Biden signed the bill on Thursday, 16 June.

The bill shifts the burden of proof regarding the reasonableness of detention or demurrage charges from the invoiced party to the ocean carrier; prohibits ocean carriers from unreasonably declining shipping opportunities for U.S. exports; requires ocean common carriers to provide quarterly reports on total import and export tonnage and loaded units per vessel that call ports in the United States; establishes a requirement to register shipping exchanges; and mandates the study of chassis supply and positioning issues to create a list of best practices, according to Freightwaves.

The legislation also boosts the U.S. Federal Maritime Commission's funding from USD 32.9 million (EUR 31.5 million) in 2022 to USD 49.2 million (EUR 47.1 million) in 2025 to provide adequate staff to fulfill expanded oversight role.

"The Ocean Shipping Reform Act is a good start in working to hold shipping lines accountable and begin addressing some of the backlogs in



the supply chain," NFI Communications Director Melanie Lewis told SeafoodSource.

"We are pleased that President Biden has signed the Ocean Shipping Reform Act of 2022. This bipartisan bill, which the National Fisheries Institute supported throughout, will help strengthen Federal Maritime Commission (FMC) oversight and allow the agency to more effectively discipline oceangoing carriers for unfair practices that harm U.S. seafood importers and exporters. This type of authority is badly needed at a time when logistics log jams continue to affect the entire value chain, imposing huge costs and delays on seafood producers and thereby exacerbating the food inflation pummeling millions of American families. FMC will now need to execute on a number of implementing rules in order for its new authorities to take effect. NFI stands ready to serve as a resource for FMC and encourages the administration to decisively address the continuing ports problem in other concrete ways as soon as possible."

NFI looks forward to participating in the rulemaking process with the Federal Maritime Commission "in an effort to make permanent changes to shipping line regulations," Lewis said.

Passage of the bill comes at a time when shipping container prices,

NEWS SPECTRUM

which have already significantly increased globally, are expected to continue to spike this year. There are only nine major ocean line shipping companies who ship from Asia to the U.S., Biden said during a 14 June call with retailers, and those companies have raised their prices by as much as 1,000 percent.

"One of the big reasons why prices are going up is the cost of shipping things across the Pacific, in particular," Biden said. Average container prices globally increased 5.4 percent for the 20-foot containers and 15 percent for 40-foot containers in May, according to tech firm Container xChange.

In a statement, the National Restaurant Association also said it supported the bill. "Whether it's food, packaging, or equipment restaurants depend on, supply chain disruptions are so bad, American importers and exporters are paying the highest shipping rates ever recorded for the worst service levels ever experienced," National Restaurant Association Executive Vice President of Public Affairs Sean Kennedy said in a press release. "There's no silver bullet that will solve the nation's supply chain challenges, but we're hopeful this legislation will provide some relief by updating federal regulations for the global shipping industry."

The legislation will require ocean carriers to certify that late fees – "detention and demurrage" charges – comply with federal regulations or face penalties, NRA said. It will also shift burden of proof regarding the reasonableness of "detention and demurrage" charges from the invoiced party to the ocean carrier. National Retail Federation Senior Vice President for Government Relations David French counts his group as another supporter of the bill. "Retailers and thousands of other businesses depend on the global maritime transportation system to move goods through the supply chain every day and continue to face significant challenges, including unfair business practices by ocean carriers," French said in a press release.

"Making OSRA federal law helps address longstanding systemic supply chain and port disruption issues that existed well before the pandemic by providing the Federal Maritime Commission the additional authority it needs. Additionally, it provides critical updates to the international maritime transportation system, which has been severely impacted by COVID-19."

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Two new species of the codling fish genus *Physiculus* identified from Lakshadweep, India



The genus *Physiculus* is widespread in the Indo-Pacific with more than 32 valid species, and about 12 species were recorded only from the Indian Ocean. Two new species similar to each other are collected from the outer reef drop off of Kavaratti Island, Lakshadweep, India, Arabian Sea and described. The species's were identified by a team led by Marine biodiversity research project Investigator Dr. Idrees Babu, Department of Science & Technology, U.T. of Lakshadweep. He's a researcher on the Nationwide Museum of Marine Biology and Aquarium in Taiwan and on the Australian Museum in Sydney. Dr. PC Mariambi, South Ching Ho, Panangad University of Fisheries and Ocean Research; S Suresh Kumar was additionally within the analysis staff.

Physiculus indicus sp. nov. is characterised by its light organ situated at about the middle of pelvic-fin base and anus, a small light organ, a rather forward situated

anus, no scales on the gular region, dorsal-fin rays 8-9+56-60, anal-fin rays 55-60, and 52 vertebrae. This species differs from nearest congeners in lacking gular scales, anus situated closer to the light organ and slightly fewer total vertebrae.

The research was revealed within the main scientific journal *Sutaxia* and within the Fish Catalog by William Eshmeyer of the California Academy of Sciences.

Physiculus lakshadeepa sp. nov. is characterised by a relatively high first dorsal fin (51.7-62.8% HL) and a light organ situated at the middle of the pelvic-fin base and anus. It has a small light organ, a rather forward situated anus, no scales on the gular region, dorsal-fin rays 8-9+51-59, anal-fin rays 53-59, and 49 vertebrae. *Physiculus lakshadeepa* differs from the nearest congeners in lacking gular scales, fewer anal-fin rays and fewer total vertebrae.

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Microplastics may not make their way into the edible parts of fish, say researchers

A study conducted by CTAQUA, the Technological Centre for Aquaculture and led by Juan Manuel García de Lomas, has analysed the presence of microplastics in fish from Spain's aquaculture industry. Recent reporting has noted that microplastics, which are becoming more common in the natural environment, can be found in trace amounts in the digestive tract of fish, but no transfer to the edible parts of fish have been reported.

The researchers made this observation after collecting data on water quality, aquafeed and farmed fish specimens from sites in Andalusia, the Canary Islands,

Catalonia, the Valencian community, the Balearic Islands and the Murcia region.

Microplastics are becoming more prevalent in different habitats – mainly as a result of 20th and 21st century plastic pollution. Once discarded, plastics decompose into tiny particles – microplastics – that can spread through multiple ecosystems. These particles have been detected in the air, in soil and in bodies of water. Though 80 percent of microplastics come from terrestrial sources, they have been detected in freshwater and marine environments across the globe.

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Cage culture for fisheries holds promise

The UN's FAO estimates indicate that growth in total fish consumption outpaced all other animal proteins, recording year-on-year growth of 2.1% since 2015 (SOFIA 2020–21). Scientific guidance supports the superiority of fish as a source of protein over other animal products. Aquaculture is as old as agriculture and globally accounts for 46% of total fish production. Adoption of scientific breeding technologies, feeding and the use of growth chemicals have led to a dramatic increase in production.

However, the soaring demand for fish in the future will be even more dramatic. We are likely to reach a population level of 9.8 billion by 2050 and it is imperative that food production including fish quantity be taken to the next level.

Globally, the fisheries industry is \$410 billion, employing approximately 60 million people. The present scale and certain extractive practices like bottom trawling, use of underwater explosives, etc., have led to the depletion of the marine ecosystem. Pollution and overfishing have rendered many water bodies unsuitable for fisheries. Wild fish stocks have come down dramatically—so much so in 2020, the Polynesian island of Palau banned sea fishing to protect the marine ecosystem.

Till the year 2000, marine fishing dominated India's total fish production. Since then, inland aquaculture has made rapid strides. Today, it accounts for 57% of India's domestic production and 68% of exports. On the other hand, marine fishing in India has stagnated. Apart from being constrained by the lack of modern fishing harbours, poor management of onshore infrastructure and questionable hygiene and sanitation, there are other problems—the lack of investment in marine fishing vessels makes the outlook bleak.

In this context, cage culture practised for many decades in Scandinavian countries appears to be most



promising. The productivity of this model and using it in hitherto unexploited resources such as reservoirs is quite appealing. In addition to all these pros, this method also reaps the highest productivity in proportion to the investment.

In India, nearly 16,000 cages have been installed across various states in different water bodies and reservoirs. A cage is typically a circular or a rectangular structure with bamboo or metal frames from which nylon nets are hung, which are submerged in water. The size extends from a 16-metre diameter for circular cages. For rectangular cages, the dimensions are 6m x 4m x 4m (lxbxh). Indian sizes are limited to small and medium dimensions.

The investment per cage comes to approximately ₹1 crore. Even though the investment for the cage and its installation can be on the higher side, the ease of management and sheer productivity has led some to describe cages as “floating ATM machines”.

However, the cage culture has not yet reached the desired extent of success in the country for several

reasons. We will analyse the many reasons behind its lack of success and describe how Odisha is pioneering a successful experiment.

One of the key success factors in reservoir cage culture is stakeholder management. Reservoirs are common property resources accessed by multiple stakeholders at any given point of time. States that have implemented reservoir cage cultures have provided 100% subsidy for initial capital investment to the fishermen communities who are traditional lease holders.

Cages require a very high level of initial investment and an enormous quantity of feed. The fisheries cooperatives lack the capacity to manage fish breeding even though there is a significant government subsidy.

India has nearly 300 major and 1,000 minor irrigation reservoirs according to the Central Water Commission (Annual Report 2020). These reservoirs are leased out to fishermen communities in the adjoining habitations.

Oftentimes they have primitive boats, small nets and are not aware of scientific stocking, leading to a suboptimal harvest. Sources from WorldFish, a research institute, indicate that even though the cooperative societies are heavily subsidised, the production has been below par and lacked recurring benefits.

This intensive form of fish farming is a business model with sizeable input and production cost, with non-avertible risks in return on investment. It calls for private sector investment and management. Countries like Norway, Canada and US, and Southeast Asian nations allow private sector with a mechanism of profit sharing with the fishing community.

However, states like Maharashtra, Chhattisgarh and Jharkhand relied exclusively on promoting the fishermen's cooperative societies. The private sector was not included in the plan. Hence, the states have under-performed.

In this scenario, the Odisha government has struck a winning note. It collaborated with WorldFish in 2018 to carry out a detailed study about the existing condition of reservoirs and planned for optimal capacities. Based on the findings of the study, Odisha published guidelines for cage culture in reservoirs for private entrepreneurs and companies in partnership with

Primary Fishermen Co-operative Societies (PFCS). The policy provides for reservoir areas, which did not interest the PFCS. One percent of the reservoir area has been demarcated for cage implementation. The area is divided into zones and each zone is further divided into 10–20 subzones measuring up to 1,000 sq.m. One subzone can accommodate 24 rectangular cages (three circular cages). Once installed, a circular cage continues to harvest approximately 30 tonnes of fish in half yearly cycles.

Entrepreneurs can access the allocated subzones for a five-year lease period at a floor price set by the government. If multiple entrepreneurs are interested in one subzone, the highest financial proposal among the shortlisted entrepreneurs is selected.

Further, a single-window interface to obtain multiple departmental approvals has been put in place. The entrepreneurs are supported by capital investment subsidy from the state scheme. Common infrastructure such as jetties, parking and landing halls are to be created by the state government.

The PFCS holds the area under lease and will receive 50% of the consideration amount from the entrepreneur. The partnership model is attracting growing interest among the PFCSs. This creates a win-win situation for both parties. This approach has addressed the PFCS' concern while permitting private capital investment.

Odisha is conducting an experiment to accommodate the traditional fishermen communities' interest along with investment from entrepreneurs. The model also ensures initial subsidy for capital investment to reduce the financial burden on entrepreneurs. There is a huge demand for reservoir-based fish and the return on investment makes the business model very attractive.

Currently, Hirakud Dam of Odisha has investments from 69 entrepreneurs. The plans include extension of the Hirakud model to Indravati, Rengali, Balimela and many other reservoirs. It is expected that cage culture across Odisha will translate into nearly 1.25 lakh MT harvest per annum soon.

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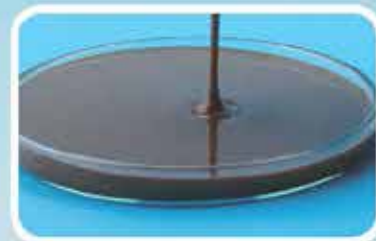
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