MPEDA

Newsletter

VOL. VIII NO. 8 & 9 NOVEMBER & DECEMBER 2020

Cover Story

World Fisheries Day
November 21

India's Marine Export Performance November 2020

Rainbow in a Bowl
The Showstoppers

Histamine Poisoning a biohazard in seafood

ISSN 0245-7059

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25 YEARS

FEEDING GROWTH SINCE 1993

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

We are not just celebrating a milestone. We are celebrating India's rise as a powerhouse in shrimp production as we watch the Vannamei shrimp, that we fought to introduce, change the industry. We are celebrating countless seafood platters that our farmers brought to dinner tables all over the world. We are celebrating the success saga of our farmers, dealers, employees and partners. Join us, as we set our eyes on scaling newer heights.

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On the Platter

K. S. Srinivas IAS
Chairman

Dear friends,

In a major trade development, Food Inspection and Safety Division of Ministry of Health, Labour & Welfare, MHLW, Japan has completely lifted the import monitoring inspections for Furazolidone (AOZ) in Indian farmed Black Tiger Shrimps following the track record of past inspections from the existing 30% compulsory inspection. Indian Black Tiger from our farms will only be subjected to regular monitoring tests as applicable to all other traded commodities. I am hopeful that this measure by the Japanese Government will give an impetus to the farming and export of Black Tiger shrimps from India to Japan.

As a part of MPEDA's efforts on market promotion for Indian seafood, MPEDA had launched an international television commercial through BBC World News, across North America, Europe, Middle East and North Africa on late December 2020 aimed at Brand Promotion of Indian Seafood and to popularize it among the consumers across these markets.

MPEDA has also released a short video on the COVID safety protocols implemented across the Seafood value chain in India. The film is intended to assure the International buyers and consumers of seafood, of the safety precautions that India follows to ensure that Indian seafood is Safe, Healthy & Hygienic. Another animation film to create awareness among the stakeholders to strictly follow Covid safety protocols at all stages of seafood sourcing and processing was also released in different Indian languages.

MPEDA in association with High Commission of India in Vietnam and the Vietnamese Association of Seafood Exporters and Producers has organized a Primary Buyer Seller Meet on 10th November 2020 with a webinar on "Seafood Market updates from Vietnam". A Secondary Virtual Buyer Seller Meet (VBSM) was conducted by MPEDA on 18th November 2020 in association with Embassy of India in Beijing, China. 7th of its Primary Buyer Seller Meet Webinar series on "Discussion on EU Seafood Market, focusing Germany" was held on 15th December 2020. On 22nd December 2020, a Secondary Virtual Buyer Seller Meet was arranged in association with Embassy of India in Beijing, China. The series of interactions over online platform has to be continued to enthuse trade confidence among the exporters and importers as well.

The cumulative export figures for April to December 2020 has shown a decline of 21.43% in quantity and 16.19% in US$ earnings as per provisional figures, compared to the same period last year. Though the figures are not very encouraging, December exports have improved slightly compared to November 2020. Cyclonic weather in the east coast, severe shortage of containers, another bout of lockdown in European countries, all compounded this drop.

Season's greetings to all!

Thank You.

MPEDA
VOL. VIII / NO. 8 & 9 / NOVEMBER-DECEMBER 2020 Newsletter

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Printed and Published by

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on behalf of The Marine Products Export Development Authority (Ministry of Commerce & Industry, Govt. of India)
MPEDA House, Panampilly Avenue
Kochi, Kerala - 682 036, Tel: +91 2311901

Published by
MPEDA House
Panampilly Avenue
Kochi , Kerala - 682 036

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

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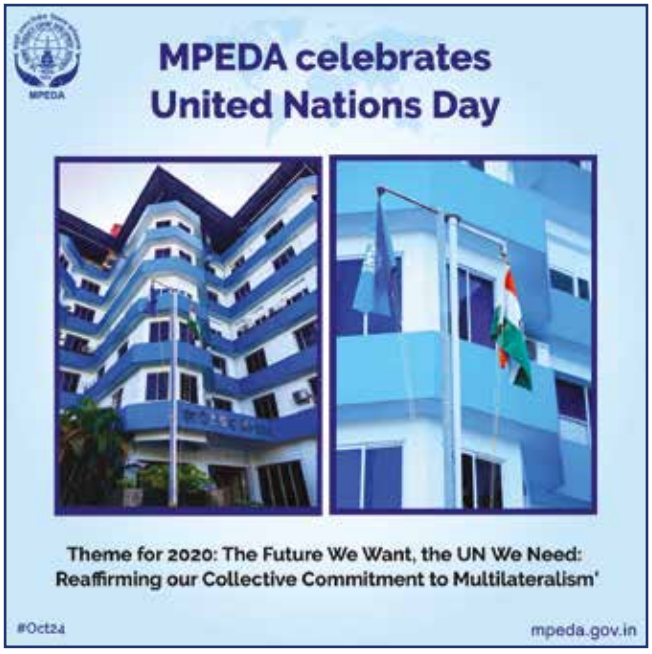
United Nations Day: 75 Years of Working for Peace

MPEDA observed the 75th UN Day at its headquarters in Kochi on October 24th 2020

UN Day marks the anniversary of the entry into force of the UN Charter in 1945 and the year 2020 marks the 75th anniversary of the United Nations and its founding Charter.

While this anniversary comes in a time of great disruption for the world due to the global health crisis, the UN has reminded its member countries the times of struggle can become an opportunity for positive change and transformation. October 24 is observed as United Nations Day since 1948. In 1971, the United Nations General Assembly recommended that the day be observed by Member States as a public holiday.

MPEDA celebrated UN day by hoisting the Indian flag and UN flag side by side on October 24th 2020 at MPEDA headquarters in Kochi.



75 Years Working for Peace

The United Nations was founded immediately after the end of World War II. It succeeded in the failed League of Nations with the aim of preventing further wars. It is an intergovernmental organisation whose primary role is to maintain world peace and security.

The UN Charter is the founding document of this great non-partisan institution that has been working towards global peace and equality. The Charter was signed on 26 June 1945 by the representatives of the 50 countries. Poland, which was not represented at the Conference, signed it later and became one of the original 51 Member States. The United Nations officially came into existence on 24 October 1945, when the Charter was ratified by China, France, the Soviet Union, the United Kingdom, the United States and by a majority of other signatories.

With the ratification of the UN Charter by the majority of its signatories, including the five permanent members of the Security Council, the United Nations officially came into being. There is no other global organization with the legitimacy, convening power and normative impact of the United Nations.

The name "United Nations" was coined by United States President Franklin D. Roosevelt and first used in the Declaration by the United Nations of 1 January 1942, during the Second World War.

Message of the Secretary-General

"The 75th anniversary of the United Nations falls in the middle of a global pandemic. Our founding mission is more critical than ever. On this anniversary, I ask people everywhere to join together. The United Nations not only stands with you. The United Nations belongs to you and is you: "we the peoples".

Antonio Guterres,
United Nations Secretary-General

To commemorate the 75 years of the United Nations, Member States held a high-level event on 21 September 2020, where they reaffirmed and recognized that our challenges are interconnected and can only be addressed through reinvigorated multilateralism.

Why Numbers Matter: Understanding Data Needs of the Fisheries Sector

MPEDA hosted a webinar to mark this year's World Statistics Day

Marking the World Statistics Day on October 20th 2020, MPEDA organized a webinar on the theme 'connecting the world with data we can trust'. The highlight of the webinar was a talk by Dr. V. Geethalakshmi, Principal Scientist, Extension, Information & Statistics Division, ICAR-CIFT.

Welcoming the guest and the participants to the webinar, Dr. T R Gibinkumar, Deputy Director (Statistics, MPEDA) informed that the World Statistics Day is being celebrated once in five years, the first edition was celebrated in 2010, second was held in 2015 and the third in 2020.

Addressing over 50 participants that included exporters, farmers and academicians, Dr. Geethalakshmi described the importance of Statistics and its applications in the fisheries sector along with the areas in the sector where data could be captured.

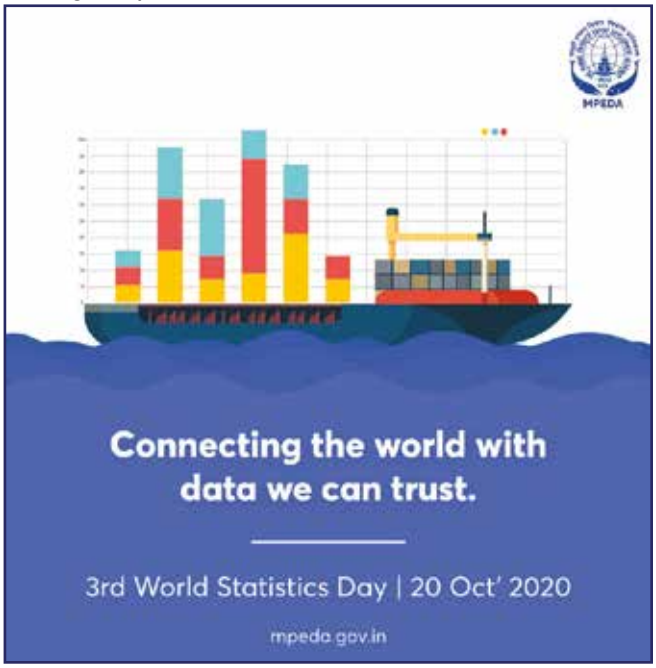
Leading the webinar, Dr. Geethalakshmi touched upon

the scope for data collection in fisheries sector such as, energy utilized for fishing, fishing locations, fishing ground information, per capita income of fishers, fishing capacity utilization, number of migrant laborers & their per capita income, waste generation, ice utilization, transportation, pre and post harvest losses and similar areas in aquaculture sector.

According to her, one of the major issues faced in data collection and processing in the fisheries sector is the unavailability of a national integrated database from source to table for better research and policy decisions. Widespread use of digital networks across all channels of fisheries sector also poses issues in this sector.

Minimizing IUU Fishing with the help of AI & Blockchain

Employing the new digital technologies in the fisheries sector can improve data collection, traceability and eliminate IUU fishing, Dr. Geethalakshmi pointed out during the presentation.



For example, the Blockchain technology can boost data availability and traceability, while application of Internet of Things (IOT) can strengthen fish supply chain.

Besides Blockchain, Data Mining and Artificial Intelligence will help to minimize IUU fishing. They may also be helpful in making the global traceability streams of fish and other seafood products, she added.

Q&A Session

During the question & answer session that followed, Dr. Geethalakshmi said the possibilities of Blockchain technology need to be ascertained and implemented through the collaboration of various institutes and government agencies.

Agencies like MPEDA should take the initiative in applying the Blockchain technology for better usability in the sector., she said.

Shri. Bhushan Patil, Assistant Director (Statistics) proposed the Vote of Thanks.

Besides, spreading awareness on the importance of World Statistics Day through social media, MPEDA also displayed a banner at its headquarters.

Australia publishes draft on Animal Biosecurity Risks

Stakeholders can submit comments till 15 January 2021 on the draft report which includes review of the biosecurity risks of prawns imported from all countries

The Australian department issued Animal Biosecurity Advice 2020-A05 on 28 September 2020, notifying stakeholders of the release of the review of the biosecurity risks of prawns imported from all countries for human consumption. Stakeholders are invited to provide comments on the draft report by 15 January 2021. The department will carefully consider all submissions before preparing the final report.

A copy of Animal Biosecurity Advice 2020-A05 can be accessed at agriculture.gov.au/biosecurity/risk-analysis/memos/

Export of marine products from India to Australia for the last 5 years has been attached as Annexure I. The following provides the proposed import conditions for 3 categories of prawns and prawn products exported to Australia.

1. Prawns sourced from a country, zone or compartment that is recognized by Australia to be free of pathogenic agents of biosecurity concern

Prawns sourced from disease free countries, zones or compartments may be exported to Australia as whole prawns, partially peeled, peeled or other. To recognize this condition, the department would need to undertake an evaluation of the exporting country's competent authority to approve the trade. If assessed and approved by the department, the competent authority in the exporting country must certify on an official government health certificate that the prawns or prawn products:

> Have been sourced from a country, compartment or zone that is recognized by Australia to be free of all the prescribed pathogenic agents like "Candidatus Hepatobacter penaei" (only if the product is chilled), covert mortality nodavirus, Enterocytozoon hepatopenaei, infectious myonecrosis virus, Laem-Singh virus, Taura syndrome virus, Vibrio parahaemolyticus strains containing Pir toxins, white spot syndrome virus (WSSV) and yellow head virus genotype 1 (YHV1).

Shrimp affected by White spot syndrome virus

> Have been processed, inspected and graded in premises approved by and under the control of the Competent Authority

> Are free from visible signs of infectious diseases

> Each package is marked with the words "For human consumption only. Not to be used as bait or feed for aquatic animals".

If uncooked prawns are sourced from a country, zone or compartment recognized by Australia to be free of the above pathogenic agents, batch-testing for WSSV and YHV1 pre-export and on-arrival in Australia is not

an import requirement.

However, verification activities may be implemented at the border to provide Australia with ongoing assurances that trade in uncooked prawns achieves Australia's appropriate level of protection (ALOP). Verification may include an appropriate level of on-arrival testing at a rate considered appropriate by the department for any of the pathogenic agents listed above.

2. Uncooked prawns

Uncooked prawns are prawns which have been deveined and had the head and shell removed (the last shell segment and tail fans permitted) and may be marinated prawns, or Australian prawns processed overseas in facilities which have not been assessed and approved by the department through an official evaluation of the exporting country's Competent authority.

Uncooked prawns

All imported uncooked prawns must be free from both WSSV and YHV1. The Competent Authority in the exporting country must certify on an official government health certificate that the uncooked prawns:

a) are frozen and have had the head and shell removed (the last shell segment and tail fans permitted)

b) have been deveined (removal of the digestive tract to at least the last shell segment)

c) product from each batch has been found post processing to be free of WSSV and YHV1 based on a sampling and testing method recognized by the World Organization for Animal Health (OIE) for demonstrating absence of disease

d) have been inspected and graded in premises approved by and under the control of the Competent Authority

e) are free from visible signs of infectious diseases

f) are fit for human consumption

g) are in packages marked with the words "For human consumption only. Not to be used as bait or feed for aquatic animals".

On-arrival in Australia each batch of uncooked prawns will be subject to seals intact inspection and testing for WSSV and YHV1 at a screening laboratory approved by the department.

3. Cooked prawns

Cooked prawns

Minimum cooking times and temperatures are not specified for cooked prawns. However, the Competent Authority must be able to certify that all the protein in the prawn meat has coagulated and no raw prawn meat remains. An example of a cooking time considered necessary to achieve coagulation of proteins in prawns and prawn products is cooking prawns to a minimum 70°C core temperature for at least 11 seconds.The Competent Authority in the exporting country must certify on an official government health certificate that the cooked prawns:

a) have been cooked in premises approved by and under the control of the competent authority and as a result of the cooking process, all the protein in the prawn meat has coagulated and no raw prawn meat remains

b) are fit for human consumption

Annexure I

Below given are the item-wise export of marine products from India to Australia for the last 5 years.

ITEM WISE EXPORT OF MARINE PRODUCTS TO AUSTRALIA

Q: Quantity in M T, V: Value in Rs. Crore, $: US Dollar Million

ITEM		2015-16	2016-17	2017-18	2018-19	2019-20
FROZEN SHRIMP	Q:	117	26	100	30	11
	V:	8.71	2.74	8.75	1.70	0.56
	$:	1.34	0.41	1.37	0.25	0.08
FROZEN FISH	Q:	462	174	231	49	41
	V:	3.26	1.86	3.49	1.69	1.88
	$:	0.51	0.28	0.55	0.24	0.27
FR CUT-TLE FISH	Q:	73	21	63	0	16
	V:	2.47	0.51	3.19	0.00	0.65
	$:	0.38	0.08	0.50	0.00	0.09
FR SQUID	Q:	100	111	96	84	116
	V:	1.39	1.70	1.88	2.06	2.86
	$:	0.21	0.25	0.30	0.30	0.41
DRIED ITEM	Q:	46	301	3410	1098	1771
	V:	0.47	2.79	32.05	10.88	17.34
	$:	0.07	0.42	5.04	1.58	2.45
LIVE ITEMS	Q:	0	0	0	0	0
	V:	0.00	0.00	0.00	0.00	0.00
	$:	0.00	0.00	0.00	0.00	0.00
CHILLED ITEMS	Q:	8	0	0	0	0
	V:	0.25	0.00	0.00	0.00	0.00
	$:	0.04	0.00	0.00	0.00	0.00
OTHERS	Q:	2469	465	1169	1752	378
	V:	27.46	9.24	17.12	26.06	10.01
	$:	4.23	1.40	2.70	3.73	1.43
Total	Q:	3277	1098	5071	3014	2334
	V:	44.01	18.85	66.49	42.39	33.31
	$:	6.78	2.84	10.45	6.09	4.73

Japan completely lifts inspection of Black Tiger shrimps from India

Kochi, Dec 9: In a massive relief to the seafood exporters who were reeling under the hard days of business in view of the COVID-19 pandemic, Japan has completely lifted inspection of Indian Black Tiger shrimps after the export consignments of this delectable prawn variety were found totally free from any residue of synthetic anti-bacterial drug furazolidone. The decision in this regard was conveyed by Food Inspection and Safety Division of Japan's Ministry of Health, Labour and Welfare (MHLW) to the Indian Embassy in Japan, the Marine Products Export Development Authority (MPEDA) and Export Inspection Council of India.

The MHLW had earlier reduced import inspection sampling frequency for Black Tiger shrimp (Penaeus monodon) to 30 per cent from the 100 per cent through a notification issued on March 25 this year. Since there were no detections of furazolidone in further export consignments of farmed Black Tiger shrimp from India, Japan decided to provide complete relaxation in inspection of import sampling frequency in tune with Section 3, Article 26 of its Food Sanitation Act.

The MHLW, through its letter of December 1, also conveyed that the chiefs of Quarantine Station had been informed that the Inspection Order related with furazolidone on Indian cultured Black Tiger shrimp is completely lifted, and the item would only be subjected to the regular internal monitoring plan, which is mandatory for all the food items distributed in Japan. A two-member expert team had surveyed the Black Tiger shrimp hatcheries, farms, and processing units that exported the variety during 2-6 March 2020 ahead of the initial order.

Welcoming the order, MPEDA Chairman Mr. K. S. Srinivas IAS said it would boost the morale of Indian seafood exporters who are battling various trade and logistic issues in the wake of the COVID-19 pandemic that adversely affected the seafood markets abroad."MPEDA has been raising the request to exempt Black Tiger from import inspection for antibiotic residue at various platforms. The decision by Japanese authorities will further enhance the farming and export of Black Tiger variety, especially from the states like West Bengal and Kerala," he added.

Mr. Srinivas also pointed out that MPEDA's new Multispecies Aquaculture Complex (MAC) at Vallarpadam in Kochi has been making sustained efforts to revive the production of Black Tiger shrimps by supplying its healthy seeds to the farmers, who are quite satisfied with it as it exhibits better growth and survival at field level. Black Tiger shrimp, commonly known as the giant tiger prawn or Asian Tiger shrimp, is a popular seafood delicacy the world over and also forms an important segment of India's marine products export basket. Japan consumes nearly 40 per cent of India's Black Tiger shrimp exports, while it enjoys niche markets in the EU and USA.

Information and communication technologies for small-scale fisheries

Globally, poor fisheries management squanders roughly USD 80 billion annually in lost economic potential and 11 percent in catch potential (World Bank, 2017). Every day, around the world, approximately 40 million fishers go out to fish, but we have little idea of where they go or what they catch, not to mention the importance of these catches for income and food and nutrition security.

Small-scale fisheries landings contribute to the diets of at least 1 billion people worldwide, but given how little we know about small-scale fisheries in low-income countries, this is likely to be substantially underestimated. Many small-scale fishers subsist or gain income through informal transactions, which makes them difficult to track and quantify. This, combined with the scale and diversity of small-scale fisheries, has presented major challenges to documenting them in detail to date. However, the size and low cost of emerging technologies could present solutions to this long-standing data gap.

Information and communication technologies (ICTs) allow us to automate and augment the collection, collation, communication and analysis of more and better data to inform targeted interventions. There is an urgent need for governments to be informed of the potential uses of the latest technologies in capture fisheries and the outcomes realized so far. It is also important to understand the potential consequences or risks to governments or small-scale fishers and resources linked to the use and proliferation of ICTs.

Increased penetration of power infrastructure and mobile coverage along with the drop-in costs of connectivity have driven a rapid uptake of mobile technologies. This momentum provides stakeholders in the fisheries sector with opportunities to develop, adapt and apply these technologies as a way of leveraging the potential of fisheries to achieve the UN Sustainable Development Goals (SDGs) of zero hunger and no poverty.

Discussion and conclusions

The diversity and isolation of many small-scale fisheries are responsible for their resilience and perseverance in providing food and income. But they also represent the most substantial obstacles to their emancipation from poverty.

One of the most significant challenges to implementing ICT4SSF is insufficient understanding of the social,

economic and cultural barriers to digital inclusion, along with the differences in data needs, digital literacies, network and power infrastructures. To bridge the digital divide, specific attention must be paid to ensure that these services and solutions reach vulnerable and marginalized communities.

Evidence from many reports suggests that unless an ICT is designed or developed locally, it will not be successful beyond the scope of donor project timelines due to either a lack of local applicability, unsustainable finances or an insufficient knowledge foundation. A participatory approach that co-designs the application of the ICT can minimize the risks of it being disconnected from the ground reality, and can ultimately save money and time. More important is achieving larger socioeconomic and environmental gains, such as gender equality, inclusive governance and improved well-being.

Policy coherence, institutional coordination and collaboration

ICTs have potential to contribute to combating poverty by allowing poor countries to leapfrog traditional stages of development to access the digital economy with government policies targeting digital inclusion along with narrowing the gaps between individuals based on gender, religion, economic class, etc.

The regulatory environment, particularly in the least developed country context, can significantly influence the availability and adoption of ICTs. The inclusive growth of small-scale fisheries relies on socially and geographically isolated individuals accessing and using digital services for a better life. Governments must build on positive examples to raise awareness of the benefits of inclusion, while investing in extension and capacity building to enable them to choose.

Welfare and well-being

Fishers need to understand how to use a technology (literacy) and also how they could benefit from using it. This can be done through capacity building activities and strategies that give marginalized groups an opportunity to learn outside of formal education systems.

Using existing or integrated platforms to take advantage of data links could also pose significant opportunities to improve well-being. Simple integrations and adaptability built into ICTs, such as allowing fishers to add information of departure time and expected time of arrival or generating SMS alerts when fishers return to port, can bring substantial gains in fisher safety as well as monitoring efficiency.

Gender

Globally, women play a significant, yet undervalued, role in small-scale fisheries. Enabling ICT use by women represents an opportunity to fight long-standing inequalities in developing countries, including access to employment, income, education and health services. Addressing the digital gender gap requires not only substantial investment in women's education, but also the proactive development of their capacity and confidence to effectively participate in decision-making processes. Women must be consulted and involved in ICT product/service design and implementation, including testing and piloting, and in proactively tailoring marketing and distribution approaches to their needs. The need for gender-disaggregated data in official statistics at a minimum is becoming more appreciated. The contribution of women fishers and fish workers in small-scale fisheries is substantial and their omission from statistics and decision-making impacts our ability to manage resources effectively.

Transparency and trust

Digital trust is determined by the ICT properties and is a representation of trust in the designers, creators and operators of that technology.

Communities have little control over how the data is used, managed and analyzed. Many initiatives are extractive and lack the transparent and two-way information flow between small-scale fisheries incentivizes cooperation toward common goals. There are few mechanisms in place for information to flow both ways, to be co-generated, and few regulations in place to protect an individual's data privacy and ownership. So far, these have been poorly addressed in the small-scale fisheries sector.

Value chains and markets

ICT usage has been theorized that they will bring about increased supply chain efficiency and increased welfare by driving reduced price dispersion, ensuring equal opportunities and benefits. Often fishers are obliged to land their catches at a particular market due to credit arrangements, or agreements with buyers or fuel subsidies. To operate outside of these and attempt to exploit price differences across spatially distributed markets adds significant risk and potential costs that their digital trust of an information service might not justify. It works better in geographically isolated markets. Increasing numbers of small-scale fisheries actors look for ways to shorten value chains and sell directly to consumers suggest that the ability to market directly combined with the resulting economic incentives drives social-ecological resilience in small-scale fisheries communities through better cooperation, communication and information flow.

COVID-19

The coronavirus pandemic (COVID-19) has brought massive global economic and food security shocks, with devastating and lasting impacts on the world's poor and vulnerable. The emergency measures restricting movements and forcing millions of people to return to rural areas from cities has brought new and rapid awareness of the enormous value of small-scale fisheries for food security. The pandemic has also highlighted the urgent need for digital inclusion of these vulnerable groups to ensure that everyone has the opportunity to learn from home with digital technology, to send money to relatives easily and instantaneously, and to access online services. This should be the new normal we strive for.

Way forward

Small-scale fishing communities in developing countries are often representative of some of the most geographically and socially marginalized individuals and groups in the world. As such, the biggest barriers to using ICTs are naturally the broader development challenges themselves, such as poverty, literacy, gender inequality and services infrastructure. The Principles for Digital Development in guiding ICT4SSF with best practices are as follows:

- Design with the user but with all stakeholders in mind.
- Understand the existing ecosystem.
- Design for scale, but be prepared to scale gradually and through partnerships.
- Build for sustainability and adaptability.
- Be data-driven by building capacity to understand and use the data.
- Use open standards, open data, open source and open innovation.
- Reuse and improve.
- Address privacy and security.
- Be collaborative.

Guiding questions

The following guiding questions are proposed for governments, development workers and ICT4SSF practitioners to frame the evaluation, design and development of ICT4SSF initiatives as a platform that enables broader human-rights objectives of the SSF

Guidelines:

a. Management

- Who is providing/generating the data? Who owns it? Who holds it?
- Does the data include gendered traditional knowledge?
- Will users trust the source of the data? Is there a way to use technology to amplify local efforts?
- How will data be checked and validated to ensure accuracy?
- Can the technology be used to both share and collect information?
- How can the technology increase insights and trust from fishers and be used to set targets, create strategies and track progress on improving well-being and governance?
- Are initial and ongoing costs of the technology and data sustainable for small-scale fisheries actors?
- Is it using a platform that stakeholders use or are already familiar with?
- What are the user benefits to incentivize and encourage continued use?
- Are there issues of literacy or awareness that could influence understanding, uptake and benefit sharing?
- How will the data be used for decision-making? Is the process transparent and inclusive?
- Is the technology a shared and multipurpose platform, or can it interact with them?

b. Well-being, decent work and gender equality

• Who are the users? What are their expectations and needs?
• What are the priorities and aspirations of women and men users for their own social, economic and environmental well-being?
• Are there issues of literacy or awareness that could influence understanding, uptake and benefit sharing? Will any groups be excluded or disadvantaged?
• Are initial and ongoing costs of the technology sustainable for small-scale fisheries actors? Is it using a platform that stakeholders use or are already familiar with?
• Does the technology build on local systems and infrastructure or use a platform that stakeholders are already familiar with and trust?
• Will users trust the information provider? Is there a way to use the technology to amplify local efforts to build trust and legitimacy?
• Is the technology a shared and multipurpose platform, or can it interact with them?

c. Value chains, benefit distribution and poverty

• Who are the users? What are their expectations and needs?
• Does the technology facilitate pathways for financial inclusion?
• How will users apply the technology in their established network transactions?
• Does the system secure rights to data privacy and protection?
• Are payment mechanisms selected for recipient empowerment?
• Are there any requirements of information held by private sector companies or individuals?
• What are the user benefits to incentivize and encourage continued use?
• Are initial and ongoing costs of technology and communication sustainable for small-scale fisheries actors? Will these costs exclude any groups?
• Are there issues of literacy or awareness that could influence understanding, uptake and benefit sharing? Will any groups be excluded or disadvantaged?
• Does the technology build on local systems and infrastructure or use a platform that stakeholders are already familiar with?
• Is the technology a shared and multipurpose platform, or can it interacts with them?

Reference:

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Seafood fraud - Is it a threat to food safety?

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Introduction

Seafood is one of the widely preferred food commodities among the consumers all around the world because of their nutritional quality and delicacy. This high preference for seafood increases demand every year. Moreover, elimination of numerous trade barriers between the countries paves the way for the increase of seafood trade in the international market. The high demand of seafood, continuous decline of fish resources in nature as well as industry's greed for money encourage the sellers to involve in seafood fraud.

These seafood frauds, usually committed for economic gain, consist of a variety of illegal activities. Such acts often result in mislabelling and provision of false, confusing and insufficient information to consumers. Not only does it impact consumers economically, but also adversely affects their health.

Since seafood supply has a long, non-transparent and complicated marketing channel, the seafood fraud can happen at any point of trade. Due to the increasing complexity in the supply channel, it is difficult to point out the exact place and time where the fraud happened. Seafood fraud consists of several illegal activities viz., transhipment, overtreatment, mislabelling and species substitution.

Transhipment

Trans-shipment happens when a particular product is exported from a country to another through a third country, instead of direct export. Although, in common business point of view trans-shipment is normally allowed, it is unlawful when trans-shipment is carried out to avoid the tax and duties as well as other trade restrictions.

A typical example is that if a producer from Malaysia exports shrimps directly to the US, they should pay an anti-dumping duty of 63%. Instead if he exports through a third country like Indonesia or Thailand, he can avoid this anti-dumping duty. Here, the trans-shipment is carried out to circumvent the anti-dumping duty.

Over-treatment

Over-treatment of fish products are frequently done for several purposes such as gaining extra weight or reducing the core food material by increasing the coating material content. For instance, to increase the shrimp weight, processors use water-retaining chemicals such as sodium tripolyphosphate (STPP) or over-glazing with ice.

Frozen seafood such as fillets, shrimps, crab claw and other products are treated lightly with glaze water for dehydration which is caused by freezer burn. In general, surplus quantities of glaze water are purposely added into the product to increase the product weight. Weight of this added glaze water should be excluded from the product weight which is mentioned in the product label.

To restrict the use of excess water as glaze in fishery products, the USFDA reissued its 1991 guidance in 2009, should contain a warning to the seafood processing industries which explain the addition of

excess water in the underweight products to falsify as a proper weight as mentioned in the label is an offense. Hence, STPP or other water-retaining chemicals treated seafood products should be clearly mentioned on the product label.

Some food regulatory authorities advise to banned all the water retention chemicals which are used in fish and shellfish. Likewise in fish products, over-breading is another type of over-treatment, which may increase the product weight and consumers may paid excess amount for only the bread crumbs. To restrict these type of fraud, USFDA given a standard for breaded shrimp like products should contain at least 50% shrimp.

In another instance, Sashimi, a tuna product which is a popular food eaten as raw. Oxymyoglobin is the compound responsible for bright red color, which indicates the freshness of the tuna meat.

Due to the long and improper storage condition oxymyoglobin will convert into metmyoglobin and it exhibits brown color. To mask the brown color and impaired quality of tuna, carbon monoxide (CO), the chemical that reacts with the muscle pigments and forms a stable carboxymyoglobin complex, is being applied in the meat to change the brown color into desirable red color. This is another example of fish fraud by selling a stale fish as fresh by means of treating the tuna with a chemical.

Mislabelling

Any false and inappropriate information given for a particular product comes under mislabeling. In the case of fish and fishery products, human errors for fish species and origin identification may lead to unintentional mislabeling in product preparation. However, mislabeling is intentionally practiced by the producers more often for economic gain.

These types of illegal activities not only affect the consumers' health and wealth, but also damage the credibility of fishers and exporters who obey the rules. Moreover, mislabeling can also encourage illegal or unregulated fishing and export practices which affect marine ecology. Finally, mislabeling can lead to serious health issues by hiding the information about the presence of allergens, contaminants or toxins.

Species substitution

Among different types of seafood fraud, species substitution is a serious threat in the seafood trade because of various reasons such as health, economic and ecological impacts. Species substitution is often carried out by substituting adulterated, low-value fish species for high-value species in the seafood supply chain to gain more money.

A study conducted in the U.S. has revealed that nearly 37% of fish and 13% of other seafood were mislabeled. Particularly 94% of fish sold as red snapper *(Lutjanus campechanus)* in the U.S. market was substituted with other species (Marko et al., 2004).

There are different species substitution methods in the seafood supply chain such as substituting one species with another species, substituting same species of different geographical origin, substituting wild species with cultured species, substituting species with genetically modified species. Species substitution widely happening worldwide are given in the table 1.

Table 1. Fish species substitution in worldwide markets

Species	Substituted By	Market
Cod *(Gadus morhua)*	Pacific cod *(Gadus macrocephalus)*, Alaska Pollack *(Theragra chalcogramma)*	Japan,Europe, United States
Red snapper *(Lutjanus campechanus)*	Lane snapper *(L. synagris)* or crimson snapper *(L. erythropterus)*	United States
Grouper *(Ephinephelus spp. and Mycteroperca spp.)*	Nile perch *(Lates niloticus)* and wreckfish *(Polyprion americanus)*	Europe

Albacore tuna *(Thunnus alalunga)*	Skipjack tuna *(Katsuwonus pelamis)*, yellowfin tuna *(T. albacares)*	Europe
Mediterranean horse mackerel *(Trachurus mediterraneus)*	Blue jack mackerel *(T. picturatus)*	Europe
European pilchard *(Sardina pilchardus)*	Other pilchard and sardinella *(Sardinops, Sardinella spp.)*	Europe
European hake *(Merluccius merluccius)*	Deep water hake *(M. paradoxus)*, Chilean hake *(M. gayi)*	Europe
Sturgeon caviar *(Acipenser sturio)*	Siberian sturgeon caviar *(Acipenser baerii)*	Worldwide
Japanese mackerel *(Scomber japonicus)*	Atlantic mackerel *(Scomber scombrus)*	Japan
Surimi from Alaska Pollock *(Theragra chalcogramma)*	Cod *(Merluccius spp.)*	Europe
Blue mussel *(Mytilus galloprovincialis)*	Green mussel *(Perna spp)* and other mussel *(Aulacomya, Semimytilus and Choromytilus spp.)*	Europe
Bill fish species: Makaira nigricans *(blue marlin)*, M. indica *(black marlin)*, Istiophorus platypterus *(sailfish)*, and Tetrapturus audax *(striped marlin)*	Swordfish *(Xiphias gladius)*	World wide

Health risks of species substitution

Although seafood products are generally promoted and recommended by nutritionists as a healthier protein alternative, several examples of mislabelling of fish and seafood may also put customer health at serious risk. More than 600 people in Hong Kong eventually admitted to the hospital after purchasing gempylotoxin containing escolar, and oilfish, which was actually mislabeled as Atlantic cod. The oily diarrhoea is caused by indigestible oil contained in these fish, which accumulates in the rectum before being expelled. Escolar is sometimes mislabeled as white tuna, super white tuna, rudderfish, butterfish, walu, cod, orange roughy and seabass. Seafood substitution also poses serious risks for people allergic to certain species. Fish and shellfish are some of the most common triggers for severe allergic reactions.

Mislabeling of pufferfish as “monk fish” and oilfish as ‘cod’ caused serious illness in Chicago. Pufferfish contains tetrodotoxin (TTX), which is a heat-stable neurotoxin that blocks sodium conductance and neuronal transmission in skeletal muscle leading to weakness or paralysis and potentially death, if ingested in sufficient quantities.

Another hazard that arises from mislabeling seafood is the possibility of unknowingly serving fish from a region that has been flagged for a health risk. For example, if an area of the water is closed because of Ciguatera and snapper is caught in that area and then labeled as a species not typically from that area

that is a health issue. Ciguatera is an important form of human poisoning. The disease is characterized by gastrointestinal, neurological and cardiovascular disturbances. In cases of severe toxicity, paralysis, coma and death may occur.

Another health problem is created when fish containing histidine are mislabeled. Histidine can be converted to histamine over time by enzymes released in the fish due to the action of spoilage bacteria. High levels of histamine, an allergen, can cause illness when ingested by humans.

For example, if histidine rich fish such as tuna or swordfish is labeled as a fish that doesn't carry histidine, such as grouper, it can create serious health problems. Fish such as tilefish contain high levels of mercury, and women who are pregnant or breastfeeding are advised to avoid these fish.

Tilefish are commonly mislabeled as halibut and red snapper. Substitutions of these species for others can also pose a health risk.

Financial losses

Mislabelling of seafood products cause financial losses mainly for customers, if they are manipulated to pay higher prices for substituted products of a lower value.

The industry of domestically farm-raised catfish in America suffered financial loss from the import of Vietnamese frozen fish fillets sold as catfish, but was produced from a different species commonly known as basa or tra. At a certain point, the total import of these pangasius species from Vietnam captured at least 20% of the American catfish market and reached the scale when local fish farming become unprofitable.

Ecological losses

The increased awareness of sustainable and ethical fishing is more often observed among customers in developed countries, e.g., Swedish Organizations and consumers have boycotted Baltic cod because of perceived overfishing and farmed salmons have been boycotted by Canadian "Farmed and Dangerous" groups.

These efforts are pointless, if mislabeling of seafood products occurs and Baltic cods and farmed salmons are still sold under different labels. In 1996, stocks of red snapper, considered to be one of the most economically important fish in the Gulf of Mexico, were declared grossly overfished and the incidents of mislabeling probably affected the accuracy of fishery resource management data.

Authentication methods

A variety of DNA based methods such as PCR-RFLP, AFLP, RAPD, SNP and microsatelites offer a promising alternative for reliable species differentiation even in heated food samples, since the thermostability of DNA is much higher than that of proteins.

To date, PCR-RFLP methods were widely used for seafood authentication because of their reliability, simplicity and cost-effectiveness. Sumathi et al. (2015) have developed PCR-RFLP markers for identification of five species of raw and processed groupers belonging to the genus, Epinephelus.

Nagalakshmi et al. (2016) conducted a study to find out the level of seafood mislabeling prevailing in India using DNA barcoding and the study revealed 22% of seafood mislabeling prevailing in Indian domestic market.

Several works have been developed molecular markers on authentication of commercially important shrimp species (*Wilwet et al.*, 2018) and snappers (*Sivaraman et al.*, 2018 & 2019a). Recently SSCP markers were developed by Sivaraman et al. (2019b) for the rapid identification of high valued exportable species from the genus Lutjanus.

Conclusion

Consumers have the right to know more about the seafood they consume and have confidence that the information they receive is accurate. Seafood fraud not only cheats consumers, but also has harmful effects on human health and our marine ecosystems.

Ensuring that the seafood sold is safe, legal and accurately labeled should not be a luxury, but a necessity.

Seafood traceability, or tracking fish from boat to plate, would significantly reduce seafood fraud, while providing consumers with more information about what they are eating.

Traceability allows officials and those in the supply chain to know more about where the fish came from, making it harder to mislabel and misrepresent seafood. Labeling requirements should be included in any traceability system adopted.

Seafood labels need to include critical information such

as when, where and how a fish was caught, what species it is, whether it was farmed or previously frozen and if any additives have been used during processing. By implementing full traceability of all seafood sold in the markets, consumers will be protected from seafood fraud, and illegally caught fish will be kept out of the markets.

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Histamine Poisoning: a biohazard in seafood

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Histamine fish poisoning is caused by ingestion of certain species of marine fish that contain high levels of histamine. Earlier it was known to have occurred when the fishes belonging to the Scombridae family were consumed and hence it was named as scombroid fish poisoning.

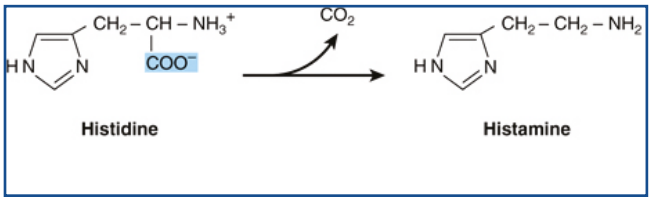
But later many other fish families were also found to be responsible for this scombroid fish poisoning so the name histamine fish poisoning is now popularly used due to the presence of histamine in other fishes [1]. It is now one of the most common seafood borne illnesses around the globe and it is considered as a biohazard due to the production of histamine which is a biogenic amine.

Histamine metabolism

In a normal human body, histamine is produced as an endogenous messenger molecule which is involved in local immune and physiological responses and also serves as a neurotransmitter for several major organs like brain, spinal cord, and uterus [2, 3]. The metabolism of histidine basically undergoes two major ways: at first, it catabolyses to glutamic acid, which initiates the degradation of histidine to urocanic acid by action of the enzyme histidase.

The formed glutamate product is converted to alpha-ketoglutarate, which is an intermediate product in the citric acid cycle or Krebs cycle. The second way is the decarboxylation reaction by the action of the enzyme histidine decarboxylase forming histamine.

Histamine exerts its effects through the activation of four different types of histamine receptor namely H1, H2, H3 and H4. These histamine receptors are expressed on different cell types and work through different signaling pathways, resulting in multiple bio- responses.



Conversion of histidine to histamine [4]

Chemically histamine is 4-(2-aminoethyl) imidazole, and is a basic organic nitrogenous amine with low molecular weight. It is a colorless, odourless, tasteless compound which is difficult to be detected when present in any food which is still edible. But excessive intake of histamine through food may cause overactive immune systems and cause some serious allergic conditions. Usually the symptoms occur after 10-30 minutes of eating the hazardous fish and can extend up to a maximum of two days.

Symptoms commonly associated with histamine poisonings

Type of disorder	Common symptoms
Cardiovascular	Tachycardia, Facial rash, Urticaria, Hypotension, irregular heartbeat
Neurological	Blurred vision, dizziness
Gastrointestinal	Diarrhoea, vomiting, abdominal cramps
Sensorial	Nausea, tongue swelling, oral burning and peppery taste sensations

Seafoods associated with the biohazard

Fishes having higher histidine content are known to play a major role in histamine production as they easily decarboxylate the histidine into this amine.

During fish processing and storage if these fishes were subjected to room temperatures, some bacteria may utilize the free histidine and produce histamine by histidine decarboxylase enzymes which may result in formation of histamine in fish muscle. Once this harmful histamine is formed it cannot be destroyed by simple cooking or freezing that makes their risks more vulnerable.

Many commercially important marine fish species are involved in histamine poisoning. Tuna fish which accounts for 8% of global fish trade and other pelagic species such as mackerel, anchovies and sardines which have a significant role in global fish production are also involved in histamine fish poisoning [5].

All these fishes are fast swimmers and contain high levels of free histidine in their body tissues as energy reservoirs. The poisonous condition is also observed in certain salted and cured products. Highest percentage of histamine has been found in brownfish meals made from fishes like mackerel, sardine, bonitos and horse mackerel.

Bacterial species associated with the biohazard

Biogenic amine production requires availability of amino acids and amino acid decarboxylases synthesized by bacteria which are mostly gram-negative enteric bacteria.

Enterobacteriaceae are the most common bacterial species capable of producing histamine, along with other gram-negative bacterial population that includes *Morganella morganii, Escherichia coli, Proteus vulgaris, Proteus oxylota, Klebsiella variicola, Raoultella ornitholytica, Photobacterium phosphoreum etc*.

However, many gram-positive bacteria belong to Staphylococcus, Lactobacillus and Tetragenococcus have also been reported to produce histamine [6-8]. These bacteria are naturally found in the fish gills and intestine as well as in the surrounding marine environment without causing them any harm.

The optimum range of pH for the effective action of the enzyme histidine decarboxylase is 2.5 to 6.5 which corresponds to the mild pH range of the fresh scombroids i.e. 5.5 to 6.5, triggering the production of histamine from the bacterial decarboxylase. Hence it can be stated that production of this biogenic hazard occurs at very early stages of fish meat deterioration.

Permissible Limits

As seafoods pose a major threat with this bioamine toxicity, exported items are set as per certain acceptability limits. Maximum permissible levels of histamine for Raw/Chilled/Frozen Finfish as per FSSAI standards/ European Commission Regulation EC No 2073/2005 (Regulation 2073/2005/EC) is 200 mg/kg [9].

But foods like Fermented fish sauces are consumed in little quantities (a few grams per serving), so Codex decisions (CODEX STAN 302 – 2011; Standard for Fish Sauce) have set a limit up to 400 mg/kg histamine in such products. The FDA considers a toxic value of histamine higher than 50mg/100 g of tuna.

Detection Methods

As histamine is a tasteless and colorless compound, it is almost impossible to detect its presence in fish muscle organoleptically. So advanced analytical methods like: Colorimetric method, Thin layer chromatography, Daphnia assay, Fluorometric technique, Gas chromatography, High Pressure Liquid Chromatography (HPLC), Spectro-fluorometric method, Flow injection analysis, Rapid enzymatic method (fast plate reading) can be used for detection of histamine in food samples. Among these, HPLC method is a more sensitive, reliable and commonly used method for its detection.

Measures to limit the Level of Biohazard

Temperature

Temperature is a very important factor in histamine production. Fish raw materials if exposed to elevated temperatures before processing may lead to overproduction and over accumulation of several biogenic amines including histamine.

Studies conducted to observe histamine production rate at room and chilled temperature in sardine

(Sardinella pilchardus) showed that after 24 hours histamine level in fish stored at room temperature is 2350 ppm compared to 1 week time when the fish was stored at chilled temperatures to attain such histamine blevels [10].

These results suggested that lowering of temperature can effectively reduce the histamine formation in fish.

Hygienic handling

The quality of food products depends mainly on the way we handle it, so hygienic handling of the fish from catch to consumer can maintain the quality and reduce the risk of histamine poisoning. Care should be taken to avoid the catch to get contaminated with microbes by following proper hygiene practices. Good manufacturing practices (GMP) and HACCP can help to reduce this histamine poisoning.

Clinical management

Antihistamines are drugs which are used optimally to minimize the allergy caused by histamine. Most commonly used drugs include diphenhydramine, ranitidine and epinephrine.

They outwit the histamine poisoning by blocking the histamine receptors that reduces the over immune responses. HMT (Histamine N-methyltransferase) and DAO (Diamine oxidase) are the two enzymes which can break down histamine and help in recovering from histamine poisoning. Though the adverse responses of this bioamine are self-limiting and resolve fairly within a small period of time.

Conclusion

Histamine poisoning is one of the most common problems in the seafood business. They account for the world's largest proportion of cases among the major fish-borne illnesses.

Even though it does not often lead to death of the consumer, it causes several effects on human health and can lead to reluctance in the acceptability of scombroid fishes in the consumer forum.

Fish handling practices play a critical role with regard to histamine production and it is proven well that maintaining proper temperature and hygiene can help in overcoming this biohazard threat to a maximum extent.

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Marine fish landings: Pelagic fin fish resources takes the lion share of landings

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

As part of the Catch Certification process of MPEDA, the NETFISH records the landings of marine fishery resources happening at 100 major harbour/landing centres in the 9 maritime states of India on a daily basis and upload the data into the MPEDA Catch Certificate website. The details of boats arriving and the various fishery items being landed by the fishing vessels are collected by the Harbour Data Collectors deployed at the selected harbours. During October 2020, data was obtained from 95 harbours of the country and an analysis was carried out to understand the species-wise, harbour-wise and state-wise trend. This analysis results are briefed in this report.

I. Estimation on fish landings

A total landing of 107595.10 tons of marine fishery items was recorded from the 95 selected harbours during October 2020 and the total catch consisted of 41555.80 tons (39%) of Pelagic finfish resources, 36774.67 tons (34%) of Demersal finfishes, 14975.99 tons (14%) of Crustaceans, 14284.15 tons (13%) of Molluscs and a small quantity of other items (4.50 tons) (Fig.1).

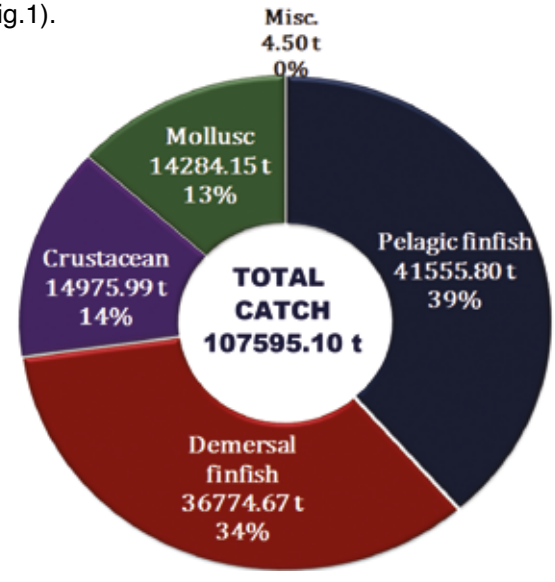


Fig.1. Catch composition of marine landings recorded in October 2020

About 268 species of fishery items were recorded during the period, of which the major five contributors were *Lepturacanthus savala* (Ribbon fish), *Odonus niger* (Red-toothed triggerfish), *Parapenaeopsis stylifera* (*Karikkadi* shrimp), *Harpadon nehereus* (Bombay duck) and *Johnius Spp* (Croaker) (Table 1).

Table 1. Major fish species landed during October 2020

Sl. No.	Common name	Scientific name	Qty. in tons
1	Ribbon fish	*Lepturacanthus savala*	9991.72
2	Red-toothed triggerfish	*Odonus niger*	7183.79
3	*Karikkadi* shrimp	*Parapenaeopsis stylifera*	4696.56
4	Bombay duck	*Harpadon nehereus*	4455.67
5	Croaker	*Johnius Spp*	4434.39

Considering various fishery items landed, in general, the top five contributors during the period were Coastal shrimps, Ribbon fish, Trigger fish, Squid and Cuttlefish which together formed 40% of the total catch (Fig. 2).

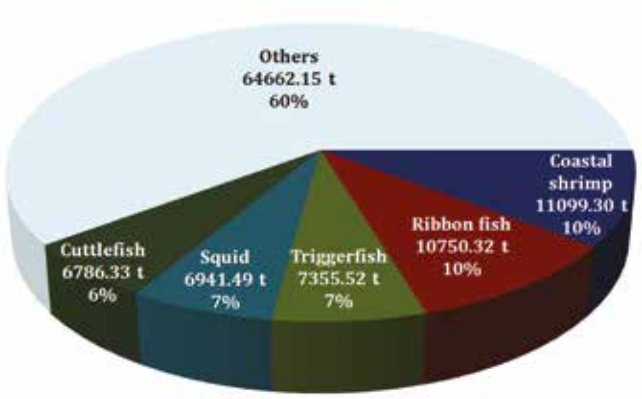


Fig. 2. Major fishery items landed during October 2020

Table 2 presents the quantity-wise catch of various categories of fishery items recorded during October 2020. Among the Pelagic finfish resources, Ribbon fish, Scad and Tuna were the major contributors whereas among Demersal finfishes, the major contributors were Trigger fish, Croaker and Threadfin bream. The Crustacean catch mostly comprised of various species of Coastal shrimps, among which the highest contributor was the *Karikkadi* shrimp. Squid was the major Molluscan landed during the month.

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

Sl. No.	Common Name	Quantity (tons)	% of total catch
Pelagic finfishes			
1	Ribbon fish	10750.32	9.99
2	Scad	5994.52	5.57
3	Tuna	4520.39	4.20
4	Bombay duck	4455.67	4.14
5	Indian mackerel	4163.61	3.87
6	Seer fish	1935.37	1.80
7	Lesser Sardine	1749.99	1.63
8	Trevally	1734.67	1.61
9	Anchovy	1341.84	1.25
10	Indian oil sardine	1174.63	1.09
11	Shad	656.53	0.61
12	Barracuda	431.73	0.40
13	Herring	393.40	0.37
14	Mahi mahi	377.93	0.35
15	Needlefish	327.10	0.30
16	Queen fish	320.13	0.30
17	Indian Salmon	303.83	0.28
18	Mullet	209.88	0.20
19	Sword fish	203.16	0.19
20	Cobia	182.83	0.17
21	Sail Fish	108.34	0.10
22	Marlin	106.30	0.10
23	Flying fish	43.76	0.04
24	Silver Biddies	22.25	0.02
25	Halfbeak	11.67	0.01
26	Indian threadfish	10.55	0.01
27	Milk fish	9.48	0.01
28	Whiting	8.53	0.01
29	Barramundi	4.96	0.00
30	Pompano	1.65	0.00
31	Sickle Fish	0.46	0.00
32	Spade Fish	0.30	0.00
33	Spearfish	0.03	0.00
34	Wahoo	0.01	0.00
	Total	**41555.80**	**38.62**
Demersal finfishes			
35	Triggerfish	7355.52	6.84
36	Croaker	6593.21	6.13
37	Japanese thread fin bream	4233.18	3.93
38	Pomfret	3646.82	3.39
39	Catfish	3472.12	3.23
40	Lizard Fish	2870.65	2.67
41	Unicorn leatherjacket	1714.34	1.59
42	Bullseye	1160.66	1.08
43	Threadfin bream	1135.35	1.06
44	Sole fish	983.03	0.91
45	Moon Fish	897.00	0.83
46	Reef Cod	813.19	0.76
47	Goat Fish	410.70	0.38
48	Pony fish	283.17	0.26
49	Shark	265.11	0.25
50	Ray fish	262.98	0.24
51	Snapper	215.56	0.20
52	Eel	191.38	0.18
53	Rabbit Fish	91.72	0.09
54	Perch	44.58	0.04
55	Emperor Bream	37.49	0.03
56	Flat Head	34.98	0.03

57	Seabream	16.20	0.02
58	Indian halibut	11.91	0.01
59	Parrot Fish	10.11	0.01
60	Indian threadfin	9.55	0.01
61	Grunts	9.20	0.01
62	Grouper	2.76	0.00
63	Surgeon fish	2.21	0.00
	Total	**36774.67**	**34.18**
Crustaceans			
64	Coastal shrimp	11099.30	10.31
65	Deep sea shrimp	2643.55	2.46
66	Sea crab	1187.37	1.10
67	Lobster	43.58	0.04
68	Mud crab	2.19	0.00
	Total crustacean	14975.99	13.92
Molluscs			
69	Squid	6941.49	6.45
70	Cuttlefish	6786.33	6.31
71	Octopus	556.32	0.52
72	Baigai	0.01	0.00
	Total mollusc	14284.15	13.27
Others			
73	Jellyfish	4.50	0.00
	Total	**14.71**	**0.01**
	Grand Total	**107595.11**	**99.99**

Harbour-wise landings

The total fish catch reported from each of the selected harbours during the month are presented in Table 3.

Of the 95 harbours, the Veraval harbour in Gujarat recorded the maximum fish landing, which was to the tune of 12364.95 tons (11%) and it was followed by the New Ferry Wharf harbour in Maharashtra with 8803.78 tons (8%) and Malpe harbour in Karnataka with 7815.12 tons (7%).

The least quantity of marine fish catch was recorded from Munakkakadavu harbour in Kerala (5.0 tons).

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

Sl. No.	State	Harbour	Quantity (tons)	No: of boat arrivals
1	West Bengal	Petuaghat Deshpran	3195.66	985
2		Digha Sankarpur	2581.91	871
3		Namkhana	1749.80	402
4		Kakdwip	1361.77	751
5		Fraser Ganj	1059.43	509
6		Raidighi	1022.59	382
7		Soula	883.73	332
8	Odisha	Paradeep	1318.40	560
9		Balramgadi	814.19	462
10		Dhamara	725.90	286
11		Bahabalpur	599.57	200
12		Balugaon	137.76	462
13	Andhra Pradesh	Visakhapatnam	1208.41	277
14		Pudimadaka	138.71	365
15		Nizampatnam	505.60	184
16		Machilipatnam	295.26	147
17		Kakinada	290.91	149
18		Vodarevu	210.36	307
19	Tamil Nadu & Pondicherry	Chennai	2438.67	528
20		Nagapattinam	2253.79	561
21		Thengaipattinam	1113.38	709
22		Colachel	1004.71	571
23		Tharuvaikulam	943.10	365
24		Karaikal	835.33	295
25		Pazhayar	360.10	504
26		Yanam	269.74	146
27		Pondicherry	178.21	163
28		Cuddalore	162.05	374
29		Poompuhar	135.52	486
30		Tuticorin	114.61	322
31		Chinnamuttom	78.80	306

32		Mudasalodi	55.00	131
33		Kodiyakarai	45.21	524
34		Mandapam	45.18	183
35		Rameswaram	44.67	100
36		Pulicat	32.19	451
37		Mallipatnam	10.20	141
38		Jagathapathi-nam	5.59	61
39		Kottaipatnam	3.35	38
40	Kerala	Munambam	2284.52	709
41		Ponnani	1208.48	164
42		Sakthikulangara	587.41	343
43		Cheruvathur	417.94	345
44		Mopla Bay	408.60	268
45		Kayamkulam	403.97	384
46		Neendakara	355.45	400
47		Azheekkal	325.43	166
48		Vypin	278.65	77
49		Beypore	233.06	111
50		Chellanam	228.84	407
51		Thoppumpady	216.75	142
52		Thangassery	119.11	219
53		Koyilandi	97.80	53
54		Thottappally	93.46	328
55		Vaadi	88.70	197
56		Vizhinjam	52.42	386
57		Chettuva	46.80	34
58		Munakkakadavu	5.00	9
59	Karnataka	Malpe	7815.12	1192
60		Mangalore	6657.48	1022
61		Honnavar	1049.13	437
62		Karwar	696.52	352
63		Gangolli	408.44	506
64		Bhatkal	390.83	346
65		Amdalli	363.25	232
66		Tadri	180.84	381
67		Belekeri	135.76	113
68	Goa	Malim	1529.53	247
69		Cutbona	495.64	157
70		Vasco	427.37	170
71		Chapora	11.73	58
72	Maharashtra	New Ferry Wharf	8803.78	1280
73		Sasoon Dock	2662.53	576
74		Ratnagiri	1835.80	775
75		Harne	1503.70	1061
76		Arnala	1064.67	1461
77		Alibagh Koli-wada	864.37	1030
78		Uttan	837.67	280
79		Satpati	653.31	561
80		Vasai	488.36	462
81		Versova	476.18	327
82		Sakharinate	472.98	545
83		Onni Bhatti Dabhol	234.26	513
84		Dahanu	172.86	536
85		Malvan	110.43	765
86		Taramumbri, Devgad	43.49	752
87	Gujarat	Veraval	12364.95	2963
88		Porbandar	6071.48	1433
89		Mangrol	5490.02	2558
90		Vanakbara	3992.95	1486
91		Jafrabad	1986.83	530
92		Kotada	740.43	199
93		Ghoghla	393.67	269
94		Diu	284.27	120
95		Chorwad	213.05	685

State-wise landings

The state of Gujarat recorded the highest marine landings during the month, which was to the tune of 31537.65 tons (29%) (Fig. 3). Maharashtra in the second position had contributed 20224.37 tons (19%) and it was followed by Karnataka with a total landing of 17697.36 tons (16%). The state which reported least landing during the period was Goa, with a contribution of 2464.27 tons (2%).

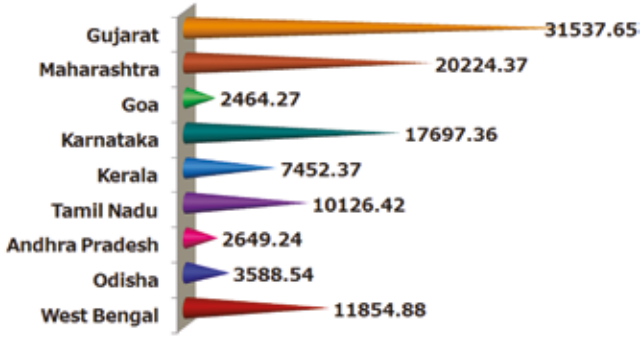


Fig. 3. State-wise fish landings (in tons) during October 2020

II. Estimations on boat arrivals

The number of boat arrivals recorded during October 2020 totalled to 45640 nos. The highest recording was from Veraval harbour in Gujarat (2963 nos.), and it was followed by Mangrol harbour with 2558 numbers of boat arrivals and Vanakbara harbour with 1486 boats. The Munakkakadavu harbour in Kerala had registered the least boat arrival (9 nos.) during the period. The harbour-wise details of boat arrivals are enlisted in the table 3 and state-wise total boat arrivals for the month is given in fig. 4.

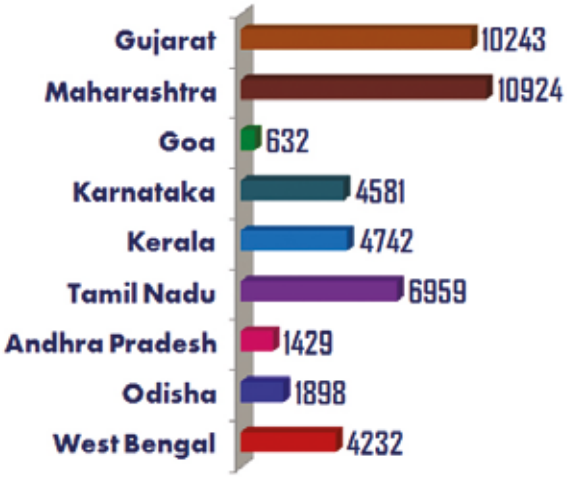


Fig. 4. State-wise boat arrivals (nos.) during October 2020

Summary

In October 2020, a total of 107595.10 tons of marine landings and 45640 nos. of boat arrivals were reported from 95 major fish landing sites of India. The Pelagic finfishes were the major contributors to the landings and Coastal shrimps were the most landed fishery item.

The state of Gujarat had recorded the maximum landing during the period and the Veraval harbour in the state reported the highest fish landing as well as the highest number of boat arrivals.

Marine Products Export Performance During April-November 2020

Shrimp exports to China, our second largest market after the US, remained sluggish due to the prevailing uncertainty amid COVID-19

As per the provisional estimates collected from the field offices, the export of marine products during November 2020 showed a decline of 14.12% in quantity 18.84% in Rupee value and 22.84% in US$ earnings, compared to November 2019.

The cumulative export during April to November in FY 2020-21 has also showed a decline of 21.90% in quantity, 15.36% in rupee value and 17.69% in US$ earnings compared to the same period last year.

Table 1. Marine Products Export Performance: November 2020*

	November 2019	November 2020 (PROVISIONAL)*	GROWTH (%)
Qty. in Ton	130322	111916	-14.12
Value in Rs. Cr.	4869.54	3952.05	-18.84
US$ (Million)	689.65	532.16	-22.84

Table 2: Marine Products Export Performance: April to November 2020

	APRIL- November 2019-20	APRIL- November 2020-21 (PROVISIONAL)*	GROWTH (%)
Qty. in Ton	914324	714096	-21.90
Value in Rs. Cr.	33497.71	28354.12	-15.36
US$ (Million)	4816.61	3964.5	-17.69

**April – September 2020: MPEDA HO Module ported data, October & November 2020: Provisional export figured from field offices*

The details are given in the table 3 below.

Table 3. Marine Products month - wise Export Performance: April to November 2020

Qty in MT, Value Rs. in Cr, US$ in Million

Month	Unit	2019	2020*	Growth %
April	Qty	114413	62636	-45.25
	Rs.	3344.55	2142.43	-35.94
	US$	490.14	300.43	-38.71
May	Qty	108507	76667	-29.34
	Rs.	3633.61	3207.16	-11.74
	US$	525.54	428.43	-18.48
June	Qty	98059	78461	-19.99
	Rs.	3589.95	3632.32	1.18
	US$	521.74	494.09	-5.30

July	Qty	100782	75132	-25.45
	Rs.	4123.59	3408.89	-17.33
	US$	605.34	498.27	-17.69
August	Qty	96121	71396	-25.72
	Rs.	4230.40	3223.44	-23.80
	US$	609.93	456.07	-25.23
September	Qty	121623	110408	-9.22
	Rs.	4561.54	4386.62	-3.83
	US$	644.86	656.78	1.85
October	Qty	144497	127480	-11.78
	Rs.	5144.54	4401.22	-14.45
	US$	729.42	598.27	-17.98
November	Qty	130322	111916	-14.12
	Rs.	4869.54	3952.05	-18.84
	US$	689.65	532.16	-22.84

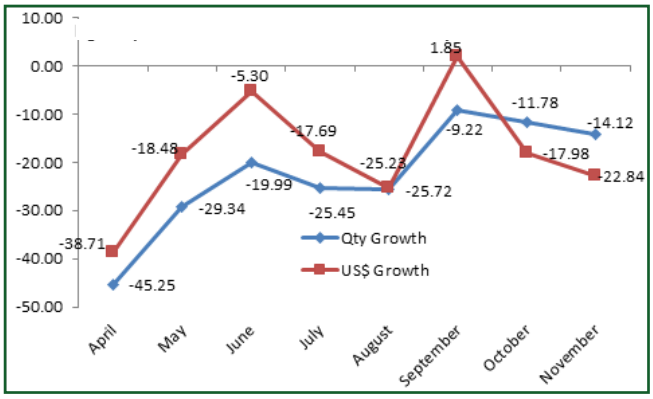
** April – September 2020: MPEDA HO Module ported data, October & November 2020: Provisional export figured from field offices*

Month-wise percentage decline in terms of quantity was on reducing trend till September, but in the last two months, the percentage decline has increased as illustrated in Fig. 1.

This is also evident from the percentage reduction in exports in terms of quantity during April was 45.25% and the same has reduced -9.22% in September and further increased to 14.12% in November 2020.

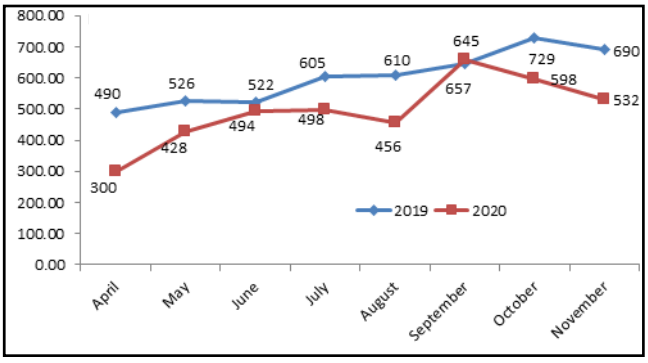
Similarly, exports in terms of US$ was also improved till September, as the month-wise percentage decline in terms of US$ is having an improving trend from 38.71% in April to +1.85 in September but again declined to 22.84% during November 2020.

Fig. 1. April-November 2020/V/s 2019: Quantity & US$ Growth%



If we look at the exports in terms of US$ value, the export was showing an increasing trend till September but the growth declined in October and November as indicated in Figure-2. Overall indication is that an export of marine products has improved gradually from April 2020 to November 2020.

Fig. 2. April-November 2020 Marine Products Exports: Value US $ Mln.



Inference:

The field reports indicate that the shrimp exports to China, our second largest market after the US, are sluggish due to the prevailing uncertainty and detection Covid-19 virus in imported packaging material.

The outbreak of COVID-19, and its impact has resulted in a drop in demand as well as price in our major markets. The shortage of containers experienced during October and November months has also slowed down the pace of exports. In the west coast, fishing started from August 2020 and the cumulative landings from August to October has shown a reduction of 17% in landings.

Scarcity of labours at processing plants, vessels and the above factors has affected the exports during the month.

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RAINBOW IN A BOWL

The Showstoppers

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.

Being attractive, cichlids are very popular among hobbyists. Due to their speciation, unique feeding habits and diverse characteristics in mating, the Cichlids have been a subject of research for the last few decades. They are native to Africa and South America. Cichlids of Lake Tanganyika and Malawi of Africa, represent the most specific examples of speciation within a single family. They exhibit bi-parental care, with both male and female being involved, and uni-parental mouth brooding. Both parents display territoriality and engage in mutual cooperative care of the young ones.

The colouration in Cichlids is extremely variable and, as a rule, depends on the environment and the state of health of the fish. Young ones are somewhat more brightly coloured. In some species, the pelvic, anal and caudal fins are brightly coloured. In juveniles, it is impossible to distinguish the sexes and only in fully-grown fish, is it possible to identify the gender of the fish. During the spawning season, the colouration also helps to distinguish the sexes.

Spawning is not difficult in Cichlids and they pair up normally on their own. Male Cichlids establish their territory by digging up the substratum and many of the species show dimorphism in breeding colours with males exhibiting intense nuptial colourations during the breeding season while females retain the same colouration throughout. Males usually build the nest and also protect the eggs while the female partner carries out all other defence.

Mouth brooding

In mouth brooding Cichlids, the female takes the eggs into her mouth. She also attempts to take in the "egg spots" or dummies which the male has on his anal fin. By doing so, she sucks the sperm released by the male, which ensures fertilisation of the eggs in her mouth. The developing eggs are kept by the female inside her mouth until they hatch. She then releases the fry once they are free swimming, but continues to protect the young ones when she feels insecure or senses danger or intrusion, by swallowing them into her mouth for safe keeping. The eggs laid by the Cichlids that are not mouth brooders, are demersal. These Cichlids have eggs that sink to the substratum and they show some degree of parental protection. Some of these species clean a suitable spawning site and lay their eggs on it while some species build a nest, which could be a simple excavation, instead of cleaning a suitable spawning site. The parents care for their offspring until they reach the free swimming stage and are left to go free after a fortnight.

Preparing the aquarium for Cichlids

It is advisable to have soft substratum in the aquarium, which would enable the fish to transform the aquarium landscape. It is also suggested to have a few cave-like hiding places which would not only serve as a hiding place but will give aesthetic sense to the environment. Only plants with stiff and tough foliage, which are preferably planted in a flowerpot are recommended for decoration of the aquarium. The aquarium should not be brightly lit which would make the fish nervous and have a tendency to remodel the environment constantly. With respect to the water quality parameters, the pH could be from 7 - 7.5 with temperature ranging from 21 – 25°C and water hardness of 8 - 12oGH, a moderate carbonate hardness. Cichlids normally take any live, dry, frozen or other foods that are offered in sufficient quantity. However, it is suggested to have flake food to start with and later feed with pellets supplemented occasionally with shredded shellfish, chopped earthworms etc as they grow. Most of the Cichlids bred and reared now in Asia are mouth brooding Cichlids from Africa.

Vallisneria: Bring a Slice of Nature into Your Aquascape

The genus is widely distributed in tropical and subtropical regions of Asia, Africa, Europe, and North America.

Vallisneria is a genus of freshwater aquatic plant, commonly called eelgrass, tape grass or vallis. It is named in honour of Antonio Vallisneri, an Italian medical scientist, physician and naturalist. The genus is widely distributed in tropical and subtropical regions of Asia, Africa, Europe, and North America.

Vallisneria is a submerged plant that spreads by runners and sometimes forms tall underwater meadows. Leaves arise in clusters from their roots. The leaves have rounded tips, and definite raised veins. Sometimes it is confused with the superficially similar Sagittaria when grown submerged. Vallisneria produce flowers when conditions are favourable.

This plant should not be confused with Zostera species, marine seagrasses that are usually also given the common name "eelgrass". Vallisneria has arched stems which cross over small obstacles and develop small planters at their nodes.

Use in Aquaria

Various strains of Vallisneria are commonly kept in tropical and subtropical aquaria. These include dwarf forms such as Vallisneria tortifolia, a variety with leaves around 15 to 20 cm in length and characterized by having thin, tightly coiled leaves. A medium-sized variety, Vallisneria spiralis is also very popular, typically having leaves 30 to 60 cm in length.

The largest variety is called *Vallisneria gigantea* and this giant variety is only suitable for very large tanks, having leaves that frequently exceed 1 m in length, but they are quite hardy and will do well in tanks with big fish that might uproot more delicate aquarium plants. *Vallisneria americana* is another commonly found species. A dwarf variety Vallisneria nana is also a popular mid ground species.

With few exceptions, the commonly traded Vallisneria are tolerant and adaptable. While they do best under bright illumination they will do well under moderate lighting as well, although with slower growth rates. They are not picky about the substrate, and will accept plain gravel provided an iron-rich fertiliser is added to the water periodically. Once settled in, they multiply readily through the production of daughter plants at the end of runners. Once they have established their own roots, these daughter plants can be cut away and transplanted if necessary.

Vallisneria will accept neutral to alkaline water conditions (they do not like very acidic conditions) and do not require carbon dioxide fertilization. They are also among the few commonly traded aquarium plants that tolerate brackish water, provided the specific gravity does not exceed 1.003 (around 10 percent the salinity of normal sea water).

General Characteristics & Taxonomy

Type:	Rosulate
Origin:	Asia, Africa, Europe, and North America
Growth rate:	Medium to High
Environment:	Submerged
Height:	20 – 100+ cm
Light demand:	Medium (2.5-3 watts)
Temperature:	Medium (23-28°C)
CO2 :	Low
pH:	Neutral - 7
Order:	Alismatales
Family:	Hydrocharitaceae
Subfamily:	Hydrilloideae
Genus:	Vallisneria
Plant position:	Background/ Mid ground

Planting and Propagation

Vallisneria can be easily planted and replanted by placing the plant's roots under the substrate, and the crown where the leaves grow out should be just above the substrate.

The most common form of propagation for Vallisneria is through runners. These will grow all over the aquarium and each new plant will quickly start sending out runners of its own. They can very quickly take over the entire tank this way.

An important part of growing Vallisneria is controlling it by pulling out and pinching it or clipping off the main plant which can be either planted elsewhere or disposed of responsibly. The runners can also be contained using pots or other barriers.

One of the more interesting aspects of Vallisneria plants is something that isn't seen often in the aquarium, and that's their flowering and seed production.

Vallisneria produce both male and female plants. The female plants produce flowers that float on the water surface, and the male plants produce hundreds of flowers under water that, when released, float to the surface.

Vallisneria americana

Vallisneria nana

Vallisneria asiatica

These are carried by wind and waves to the floating female flowers, which they pollinate. After pollination the female plant produces the seeds.

Vallisneria is a great beginner's plant, a fast grower, and comes in a variety of leaf sizes, some with lovely twists. Its tall graceful ribbon-like leaves have graced aquariums for many years, and these easy-to-grow plants have a truly well-earned reputation as an aquarium classic.

Getting to know aquaculture diversification through experiential learning

MPEDA's three-day training programme for farmers put special emphasis on Asian Seabass

The diversification of aquaculture will allow us to cope with future changes and challenges in the sector. It is extremely important for farmers to remain updated on scientific approaches to diversification in aquaculture, BMPs in shrimp farming, disease management and water quality management.

To achieve this objective, MPEDA Regional Division of Mangalore organized a 3-day hands-on training programme on 'Diversified Aquaculture with special emphasis on Asian Seabass' at Anagalli Village, Kundapura Taluk, Udupi District from 10th-12th November 2020.

The training was a combination of theory and practical classes and was organized near to the Seabass demonstration programme initiated by the regional Division at the same village, which were attended by 20 farmers.

Participants attended the training programme

Mr. Shankar Poojary, a leading farmer of Angalli village, inaugurated the programme. During the inaugural address, he appreciated the steps taken by MPEDA to educate the farmers about the latest technological advancement in aquaculture. He also raised concerns about increased production cost and also on other factors which need to be addressed at a higher level.

Mr. Shankar Poojary inaugurates the training programme

During the three-day programme, various topics related to diversification and BMPs in aquaculture were discussed. This was followed by practical sessions on water quality monitoring, seabass cage fabrication, feeding practices, morphometric measurement and biomass estimation.

Mr. Ravi Gouda, NaCSA State Coordinator, delivered a lecture on 'Advanced techniques in shrimp farming'. Mr. Savin K. V., Field Manager and in-charge of Aqua One Center of NaCSA, demonstrated water quality monitoring in aquaculture. He also explained the infrastructure and capabilities of AOC lab opened by NaCSA-MPEDA at Kundapura. The trainees were

taken to the demonstration farm site to show the method of cage fabrication, feeding and water quality management in the seabass demonstration farm.

Trainees during exposure visit to seabass demonstration farm

On the second day of the training programme, Dr. Ganesh K., Assistant Director, delivered a lecture on Asian Seabass aquaculture, Mr. S. Arulraj, Junior Technical Officer, explained about Mud Crab aquaculture and Dr. Vishnudas R. Gunaga, Junior Technical Officer spoke on 'BMPs in aquaculture & disease management in shrimp farming'.

Mr. Dinesh G., demo farmer, took a class on step-by-step activities in aquaculture, starting from pond preparation to first grading after the 14th day. After the class, the participants attended a demonstration on morphometric measurement of Asian Seabass to assess the growth performance.

Mr. Dinesh G., demo farmer explains the step by step activities at the farm

On the third day, Mr. Manju Billava, a leading farmer of Kundapur, delivered a talk on the importance of pond preparation in aquaculture with special reference to shrimp farming. Addressing the farmers, Mr. Premdev K. V., Deputy Director, MPEDA, cautioned the farmers against export rejections and requested them to be more careful while using any aquaculture inputs without proper labelling. He also emphasized the need to follow COVID-19 guidelines in aquaculture farms and the need for farm enrolment for traceability.

The three-day training programme concluded with the valedictory session in which Mr. Premdev K. V. distributed certificates to participants and Dr. Ganesh K. proposed the vote of thanks.

Mr. Premdev K. V., Deputy Director, Regional Division, Mangalore distributing certificates to the participants

A day to remember the contribution of fisheries in feeding the world

A day to remember the contribution of fisheries in feeding the world

World Fisheries Day is observed annually on November 21 across the globe to highlight the importance of the fisheries sector

World Fisheries day is celebrated every year on November 21 throughout the world to highlight the importance of the fisheries sector and to demonstrate solidarity with fishers, fish farmers and other stakeholders.

Fishing communities worldwide celebrate this day by organizing rallies, workshops, public meetings, cultural programs, exhibitions and demonstrations to remind the rest of the world about the need to protect the oceans, marine ecosystems and the fishing communities. The

day is also an important reminder of the need to stop over exploitation of the ocean's resources.

A recent United Nations study reported that more than two-thirds of the world's fisheries have been overfished or are fully harvested. More than one third is in a state of decline because of factors such as the loss of essential fish habitats, pollution, and global warming. The World Fisheries Day helps in highlighting the importance of water and the lives it sustains. Water forms a continuum, whether contained in rivers, lakes, or oceans.

Fish as Food

Apart from being a life-giver and a means of transportation, water is also an important source of fish and aquatic protein. Fish forms an important part of the diets of people around the world, particularly those that live near rivers, coasts and other water bodies. A number of traditional societies and communities are rallied around the occupation of fishing. This is why a majority of human settlements, whether small villages or mega cities, are situated in close proximity to water bodies. But this proximity has also led to severe ocean and coastal pollution due to domestic and industrial activities. This has led to depletion of fish stocks in the immediate vicinity, requiring fishermen to fish farther and farther away from their traditional grounds.

Besides, overfishing and mechanization has resulted in yet another crisis - fish stocks are depleting due to the use of 'factory' vessels, bottom trawling, and other means of unsustainable fishing methods.

Unless we address these issues collectively, the crisis will deepen. The World Fisheries Day helps us to highlight these problems and move towards finding solutions to the increasingly interconnected problems we are facing.

World Fisheries Day celebrations serve as an important reminder that we must focus on changing the way the world manages global fisheries to ensure sustainable stocks and healthy oceans ecosystems. Last month, the United Nations General Assembly called on countries that have not yet done so to become a party to the Law of the Sea regarding jurisdiction over national and international waters, as well as the seabed, and to maintain sustainable fisheries.

Fisheries Day & India

Apart from contributing to the food security of the country, fisheries provide employment to millions of people in India. The country has over 8,000 km of coastline, and an Exclusive Economic Zone (EEZ) of over 2 million sq km and extensive freshwater resources. Thus, fisheries play a vital role in the economy by contributing about 1.1 percent to the GDP. The contribution of the seafood sector to the agriculture GDP is 5.15 percent.

India's freshwater resources consist of:

- Rivers and canals (197,024 km)
- Reservoirs (3.15 million hectares)
- Ponds and tanks (235 million hectares)
- Oxbow lakes and derelict waters (1.3 million hectares)
- Brackishwaters (1.24 million hectares) and
- Estuaries (0.29 million hectares)

According to the CMFRI Census 2010:

- There are 3,288 marine fishing villages and 1,511 marine fish landing centres in 9 maritime states and 2 union territories
- The total marine fisher-folk population was about 4 million comprising in 864,550 families
- Nearly 61 percent of the fishermen families were under the BPL category
- The average family size was 4.63 and the overall sex ratio was 928 females per 1000 males
- Almost 58 percent of the fisher-folk were educated with different levels of education
- About 38 percent marine fisher-folk were engaged in active fishing with 85 percent of them having full-time engagement
- About 63.6 percent of the fisher-folk were engaged in fishing and allied activities
- Nearly 57 percent of the fisher-folk engaged in fish seed collection were females and 43 percent were males
- Among the marine fishermen households nearly 76 percent were Hindus, 15 percent were Christians and 9 percent were Muslims.
- The overall percentage of SC/ST among the marine fishermen households was 17.

Importance of World Fisheries Day

The World Fisheries Day explores solutions for the increasingly interconnected problems that the world is facing in following the sustainable models. Despite the growth of aquaculture, small-scale capture fisheries will continue to supply most of the fish consumed in much of the developing world in the coming decades. The majority of these fisheries are small-scale, operating in rivers, lakes, wetlands, coral reefs and estuaries in coastal seas, and provide livelihoods for millions of people. Yet small-scale fisheries are frequently overlooked in discussions around the sustainable and equitable use of oceans, seas and inland water bodies.

One in ten people on the planet rely on fisheries and aquaculture to support their livelihoods. While the fisheries sector has made great strides in recent years in ensuring environmental sustainability of the fish that is caught, less attention has been given on how to ensure the sector is socioeconomically sustainable – guaranteeing that all workers along fisheries' long and complex value chain have access to decent employment.

The 33rd session of the FAO Committee on Fisheries, held in July in Rome, provided FAO with the mandate to draft these guidelines, which was discussed in the 17th Session of the FAO Sub-committee on Fish Trade, held in Vigo, Spain, from 25 to 29 November 2019.

The Sub-Committee took note of the market outlook of international trade of fish and fishery products, particularly involving current global themes, the work of FAO with other international organizations, market access issues (including quality and safety, small-scale fisheries, product legality and transparency, biodiversity conservation, trade agreements and traceability), within the overall framework of international trade as an important tool to achieve the Sustainable Development Goals (SDGs).

In addition, social responsibility in fish value chains, trade in fish-related services, and the analysis of the implementation of Article 11 of the Code of Conduct for Responsible Fisheries (CCRF) were also addressed in the session.

Fish diversity determines the health of the water body including lakes, ponds and rivers. However, with growing threats and pollution, mass fish mortality has been taking place in various rivers and lakes every year.

On the occasion of this World Fisheries Day, let us all join hands to stop overfishing, illegal and unregulated fishing practices, overexploitation of resources and pollution, thus safeguarding our own future.

Marine mammal protection: training on identification, data collection

The training programmes were aimed at familiarizing state co-ordinators and data collectors with species identification and data collection methods

In recent years, with increasing fishing activity and extension of fishing to oceanic waters, the encounters between fishing gear and marine mammals are on the rise. The Central Marine Fisheries Research Institute (CMFRI) with the financial assistance of MPEDA has initiated a research project to assess the status of 27 species of marine mammals and five species of sea turtles in Indian waters to safeguard the marine lives and to match US laws of imports which forbid import of wild caught shrimp from countries that harvests shrimps affecting sea turtles & marine mammals. The project aims to address the crucial information gap on the status of stocks of marine mammals and sea turtles and their by-catch & stranding.

Role of NETFISH & Harbour Data Collectors

NETFISH, the extension arm of MPEDA in the capture fisheries sector, is identified as one of the key partners for implementing this project at field level. The Harbour Data Collectors (HDCs) appointed at around 100 major fishing harbours/landing centres of the country are identified as the field enumerators for this project to collect the by-catch & stranding data from the locations where they are placed. The HDCs will be conducting interviews and surveys among the fishermen to collect the data on by-catch of marine mammals & sea turtles as per the proforma provided by CMFRI.

Also they will have to visit the stranding site as soon as they receive information from fishermen/ volunteers/officials/media and collect the information of the stranded animal based on the CMFRI proforma. The data obtained will have to be submitted to the Coordinator as soon as it is completed, along with images/videos for further processing and reporting. The State Coordinators of NETFISH will have to impart timely training to the Harbour Data Collectors and to monitor and review the data collection.

Training for NETFISH State Co-ordinators and HDCs

Training was conducted by the CMFRI for the State Coordinators of NETFISH on 15th & 16th October 2020 to familiarize them with species identification and data collection methods. Subsequently, the Coordinators had conducted the first phase of training to the Harbour Data Collectors (HDCs) under their jurisdiction to equip them for the project.

A total of 95 HDCs, placed at various harbours across the coastal states of India, were provided 2 days' training, covering the two main topics 1) Species identification of marine mammals and sea turtles of Indian waters 2) Data collection on by-catch and stranding of marine mammals and sea turtles.

Brief introduction about the project, its objectives, its importance, activities to be undertaken and the role of HDCs were explained to the participants. On the first day of the training, they were introduced to key identification characters of 5 species of Baleen whales, 5 species of Toothed whales, 14 species of Dolphins, 1 species of Porpoise, 1 species of Dugong and 5 species of Sea turtles. The second day of the training was on the data collection procedures to be followed in the field for obtaining information on by-catch & stranding.

The State Coordinator explained each of the proforma provided from CMFRI in detail to the HDCs. The proforma prepared for interviewing the fishers to collect information on by-catch of marine mammals and turtles while fishing was explained point-by-point and then their doubts were clarified. The procedure for dealing with a stranded animal and the data to be obtained from the site as well as from secondary sources were then explained showing the formats. After completion of each day's classes, discussions on the subjects taught were carried out by the State Coordinators and the doubts raised by the participants were cleared. The slides provided by CMFRI and the field guides published by CMFRI & IOTC for the identification of marine mammals were provided to the trainees for further study and reference.

All the training programmes were conducted through virtual mode, except the trainings conducted for the

HDCs of Karnataka & Goa, where 6 HDCs were trained by arranging a full day training at the meeting hall of Department of Fisheries office, Gangolli FH on 23rd October and the rest of the 7 HDCs were trained on 27th October at the meeting hall of Department of fisheries office, Karwar FH.

Sl. No:	State/Region	Date of Training	No: of HDCs attended the training	Mode of Training
1	West Bengal	27th and 28th October 2020	7	Virtual
2	Odisha	27th and 28th October 2020	4	Virtual
3	Andhra Pradesh North	28th & 29th October 2020	4	Virtual
4	Andhra Pradesh South	26th & 27th October 2020	3	Virtual
5	Tamil Nadu North	23rd & 29th October 2020	9	Virtual
6	Tamil Nadu South	29th & 30th October 2020	9	Virtual
7	Kerala South	21st and 22nd October 2020	10	Virtual
8	Kerala North	21st and 22nd October 2020	10	Virtual
9	Karnataka & Goa	23rd & 27th October 2020	13	Onsite
10	Maharashtra	29th & 31st October 2020	15	Virtual
11	Gujarat	22nd October 2020	11	Virtual

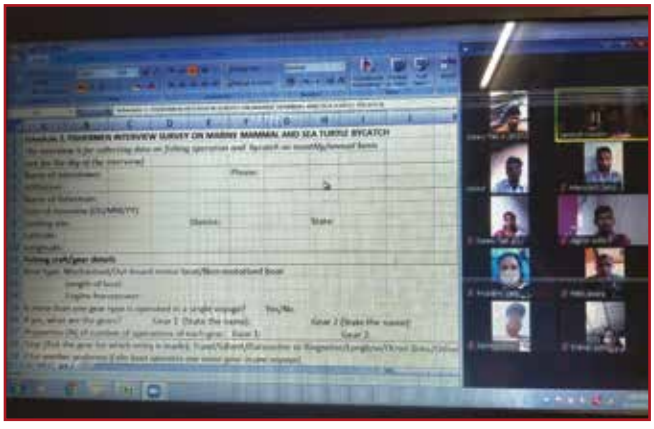
One week after the training, an evaluation of the HDCs was also conducted through online mode. All the HDCs were made to answer a few questions provided in the Google Form, based on the topics covered. Majority of them have scored a minimum of 75% marks during the evaluation. The second phase of the training will be conducted in November to make the HDCs more familiar with the subject and data collection methodology.

Discussion with HDCs during the training conducted at Gangolli, Karnataka

State Coordinator briefing on Identification of marine mammals

Marine mammals and turtles identification & data collection training held at Karwar

A view of the virtual training on Marine mammals identification conducted for the HDCs of Andhra Pradesh



Describing the data collection proforma during the training held in Maharashtra

Ensuring safety of seafood: MPEDA conducts audits in processing plants

Field offices of MPEDA undertook regular visits to plants to ensure compliance with COVID-19 guidelines

With an aim to ensure adherence to COVID-19 guidelines laid down by MPEDA by seafood processors and exporters, officials of the Regional Divisions of MPEDA carried out inspections at various plants.

The following is a report of the inspections undertaken by Regional Divisions of Bhimavaram, Tuticorin, Veraval and Mumbai.

SRD BHIMAVARAM

The officials of Sub-Regional Division Bhimavaram office inspected M/s. Welcome Fisheries Ltd. on 22th October 2020, M/s. Blue Park Sea Foods on 29th October 2020, M/s. AVR Aqua Products Pvt. Ltd. and M/s. Asvini Fisheries Pvt Ltd. on 28th October 2020. During the visit, it was found that the above units have maintained maximum precautions to prevent the contamination by COVID-19. The visiting officials had instructed them to maintain vigil continuously.

RD VERAVAL

Officials from MPEDA's Veraval Regional Division visited M/s. Rameshwar Cold Storage on 26th October 2020 and M/s. Real Exports on 29th October 2020. During the visit, it was observed that the plants have been implementing the COVID-19 guidelines prescribed by MPEDA properly. Few minor deficiencies noticed were instructed to be rectified.

RD MUMBAI

Officials from the Mumbai Regional Division visited M/s. Zeal Aqua Ltd. on 13th October 2020 and M/s. Mindhola Foods LLP on 14th October 2020. During the visit, it was observed that the units properly implemented the COVID-19 guidelines. Awareness messages were regularly passed on to all workers and staff by the supervising teams by them. Units had their own SOPs and it was implemented.

RD KOLKATA

Officials of MPEDA's Kolkata Regional Division visited M/s. Rupsha Fish Pvt. Ltd. and M/s. S.S Seafood Pvt. Ltd. on 9th October 2020 and M/s. Digha Seafood Exports Pvt. Ltd. (Unit-7) on 28th October. During the visit, it was found that the above plants are implementing the COVID-19 guidelines prescribed by MPEDA without fail.

Social distancing of processing workers in M/s. S.S Seafood Pvt. Ltd.

CIBA partners with Fisheries dept in Kerala to increase brackish water fish production

Chennai-headquartered ICAR-Central Institute of Brackish Water Aquaculture (CIBA) has partnered with the Fisheries Department in Kerala to set up a multi- species fish hatchery under the aegis of the government to increase brackish water fish production in the state.

An MoU was signed between CIBA and Agency for Development of Aquaculture (ADAK) of the Kerala Government to set up the hatchery at Odayam in Thiruvananthapuram district, following the initiatives taken by Fisheries Minister J. Mercykutty Amma, a CIBA release said here on Friday.

CIBA will provide scientific and technical support to the government for developing captive breeding and seed production technology of commercially important brackish water fishes - Asian sea bass, milk fish and Keralas state fish pearl spot. The hatchery will target seed production of these species throughout the season, enabling continuous seed production.

The partnership also aims to support critical human resources development in the niche area through regular and continuous hands-on training programmes. CIBA Director Dr. K. K. Vijayan described CIBAs linkage as knowledge partner with the Kerala government a "game-changer" in the states brackish water aquaculture sector as it would become an ideal model for transfer of technologies in a farmer-focused manner.

The establishment the hatchery would provide a stimulus for augmenting brackish water fin fish production in the state, along with enhancing the livelihood generation during every step of the fish production process, he said. "Kerala is endowed with rich brackish water resources to the tune of 1.26 lakh ha. Since timely availability of fish seeds in sufficient quantity is still a major constraint, the brackish water aquaculture is yet to explore its potential resources. Timely availability of seeds in a farmer-friendly way will help develop the sector", Vijayan said.

Tinku Biswal, Secretary, Department of Fisheries and Chairperson of the AADK Executive Committee, said the proposed hatchery would help boost sustainable brackish water fish production in Kerala as it addresses the critical issue being faced by fish farmers-inadequate seed availability of brackish water fishes. Dr. M. Kailasam, Principal Scientist & Head-in-Charge of Fish Culture Division of CIBA, fish species such as sea bass, milk fish and pearl spot are ideal for Kerala, considering the resilient nature of the species to changing salinities and their market demand in the state.

Dr. Dinesan Cherida, ADAK Executive Director, hoped that the agency could build up more technology partnerships in areas like hatchery, indigenous feeds, aquatic animal health and stock improvement.

-www.outlookindia.com

New shrimp species found in Indian coral reef

Scientists associated with the National Bureau of Fish Genetic Resources have identified four species of shrimps hitherto not found in Indian waters.

The species were found in the coral reef in the Lakshadweep islands and have since been studied. The findings have been published in Zootaxa, an international peer-reviewed journal.

The species, Hippolytoid shrimps, were found at a depth of 0.5-2 m from the intertidal region of Agatti Island of Lakshadweep group of islands.

T.T. Ajith Kumar, Principal Scientist at the National Bureau of Fish Genetic Resource at the Indian Council of Agricultural Research (ICAR), said they discovered the species during exploratory surveys in the reefs.

"We discovered two shrimp species, which are new to science. We named one Periclimenella agatti after the Agatti island where it was found and another as Urocaridella arabianesis, after the Arabian Sea," Mr. Ajith explained.

The Department of Biotechnology has funded the development of germplasm resource centre for marine ornamental invertebrate, aiming to conserve the biodiversity.

Export business

"Business in ornamental fish is as much as US $500 million across the world but India has no share," said Mr. Ajith, a native of Nagarcoil, who had worked at Annamalai University till 2014. He is currently working at NBFGR, Kochi.

Kuldeep Kumar Lal, Director of ICAR, said the discovery offered an opportunity to develop ornamental fish trade in India besides supporting the livelihood of the coastal and island communities. The NBFGR has since collected three species of marine ornamental shrimps and raised them in captivity.Since March, 20 women from the island had been trained to raise the shrimps. The aim is to develop hatcheries to enable sustained income for the beneficiaries, who will establish rearing units in their backyard.

The DBT would also create marketing channels and link them directly to enable them sell the captive reared ornamental shrimps and sea anemones, he explained.

-www.thehindu.com

Andhra Pradesh to set up 4 harbours, 25 aqua hubs to promote fishing

The Andhra Pradesh government is set to begin work on four fishing harbours and 25 aqua hubs to encourage fishing activity, provide livelihood and employment to fishermen and to prevent them from migrating to other states in search of work.

The four harbours will be constructed at an estimated cost of Rs 1,510 crore at Juvvaladinne in Nellore district, Uppada in East Godavari district, Nizampatnam in Guntur district, and Machilipatnam in Krishna district. The aqua hubs, meanwhile, will be set up in each of the state's 25 Parliamentary constituencies.

Chief Minister Y S Jagan Mohan Reddy laid the foundation stones for the fishing harbours and aqua hubs virtually, and the construction work is scheduled to begin from December 15 after the bidding process is complete.Jagan said that despite having the second-longest coastline in India, there is a large migration of fishermen from Andhra Pradesh to other states. He also noted that at times, fishermen from Andhra have been jailed in other countries — he pointed to the recent release of fishermen from Srikakulam and Vizianagaram districts, who were working in Gujarat and were caught in Pakistani waters and subsequently jailed in that country.State Fisheries Minister S Appalaraju said that the enhanced facilities will boost marine catch by over 3 lakh ton and will provide direct and indirect employment to 50-80,000 people.

The state will invest around Rs 3,500 crore to develop the four harbours and aqua hubs. The government will also encourage aqua culture, fresh water fish farming, aqua product bazaars, and storage and marketing facilities. Four other fishing harbours are proposed to be developed at a later stage and they will cater to over 7 lakh fishermen in the state.

-www.indianexpress.com

FSSAI re-operationalises regulations on formaldehyde in fish

The Food Safety and Standards Authority of India (FSSAI) has issued an order to re-operationalise the regulations on standards prescribing the limits of naturally occurring formaldehyde in freshwater and marine fish.

According to the FSSAI, the process of notifying the draft regulations is taking some time and also in the meantime the food authority reviewed the list of the fish species and incorporated other species of fish in the list.The regulations were re-operationalised with immediate effect and food businesses were asked to comply with the regulations.

The regulations were called FSS - Food Products Standards and Food Additives-Amendment Regulations 2020 and were first operationalised in February this year and operationalised subsequently in September.

The regulations specify the limit of naturally occurring formaldehyde in freshwater and marine fish and also hygienic conditions to be followed while handling, processing, manufacturing, packing, storing, distribution and transporting and retail of fish and fish products.

The marine fish were divided into two categories; Group 1 has 7 fish species, one more than previous list and the formaldehyde limit is set at 8mg per kg max, Group 2 have 28 fish species against 22 in the previous list wherein the limit of formaldehyde is set at 4mg per kg max. The third category is Group III having names of freshwater fish species including all major exotic and minor carps, all other freshwater fishes, catfishes, crustaceans and molluscs. The limit of formaldehyde for this category is set at 4mg/kg max. The FSSAI has also added that the limits were subjected to revision on the basis of data collected over different seasons and geographical locations.

“Upon analysis and recommendations by the scientific panel, the limit can be reviewed,” said an official with the FSSAI while adding that for fish and fish products of marine origin other than those mentioned in the table at Group I and II, the limit of naturally occurring formaldehyde shall not be more than 100ppm.

-www.fnbnews.com

Researchers discover new snakehead fish species in Meghalaya hill stream

Researchers have discovered a new species of the colourful snakehead fish — 'Channa aristonei' — in a small hill stream at Puriang in East Khasi hills of Meghalaya. The new species has a different colour, teeth pattern, morphological character and DNA sequence from all other snakeheads found in the Northeast, Western Ghats, Eastern Ghats, Central India and Sri Lanka, said Aristone Manbha Ryngdongsngi from Lewmawlong village of Nongpoh in Ribhoi district, after whom the new variety has been named by the team of researchers. The research has been authored by Jayasimhan Praveenraj, Tejas Thackeray, Sadokpam Gogendro singh, Arumugam Uma, N. Moulitharan and Bankit K Mukhim. It has been published in the 'Copeia' journal of the American Society of Ichthyologist and Herpetologist recently.

"The fish possesses unique maroon coloured clover-shaped blotches all over its blue body, which is an unique and distinguishable character from all other snakehead fish species. It is further supported by comparative DNA sequencing," Ryngdongsngi, a fisheries graduate from St Anthony's College, Shillong, and a progressive young fisheries entrepreneur, explained.

The researchers said many of the colourful snakeheads live in hill streams, swamps, wetlands and lakes of the northeastern as 11 such species have been discovered from the region. "The habitat where we discovered the new species of the snakehead fish is a small hill stream at Puriang, where the water temperature is about 18 degree celsius. The stream partially dries in summer, and this fish hides in the crevices under submerged rocks," Ryngdongsngi added. The size of snakehead fishes usually ranges between 10 cm and 180 cm. They have a head shape resembling that of a snake and have specialized air breathing organs in their gills which enables them to take in oxygen. They are valued as edible and ornamental fishes.

Recollecting the genesis of the discovery, J Praveenraj, Scientist at Fisheries Science Division in ICAR-CIARI, Port Blair, said it was in the 2019 that a photo of a beautiful blue snakehead was shared to him by fish-hobbyist Ryndongsngi from Meghalaya. "We predicted it to be a new species and conducted field trips to the East Khasi hills of Meghalaya to get a sample for official description. We collected the samples and conducted morphological and DNA studies and found it to be a species new to science. To honour the discoverer and for his immense support during our field trip, we named the species 'Channa aristonei'," Praveenraj said.

He added, "The Eastern Himalayan region, which extends from eastern Nepal across the northeast and Bhutan, and stretches till Myanmar, is rich in biodiversity, comprising many endemic species. In recent years, six new colourful snakehead fishes have been discovered from here." Tejas Thackeray, son of Maharashtra chief minister Uddhav Thackeray, was elated after their discovery was recognized by the American journal. "Channa aristonei is indeed a spectacular species, probably one of the prettiest that I have seen to date. Describing this has been an honour and an experience I will cherish for the rest of my life," he added.

- www.timesofindia.indiatimes.com

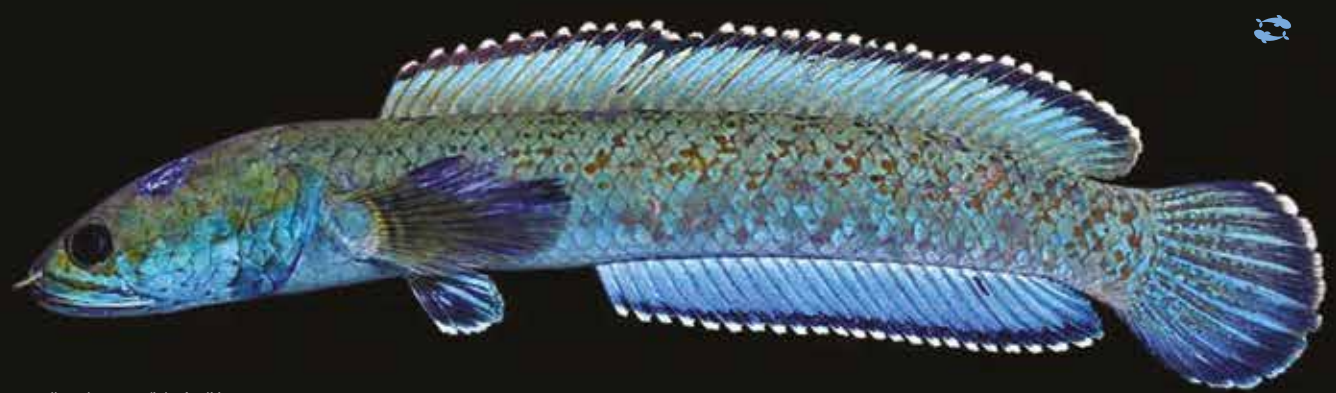


Photo credit: twitter.com/IchsAndHerps

CIFT launches seaweed-based nutraceuticals and sanitisers

Central Institute of Fisheries Technology (CIFT) has introduced seaweed-based nutraceuticals and sanitisers in the market. To commercialise the product, the Kochi based research organisation has tied up with Bodina Naturals Pvt Ltd, an ayurvedic manufacturing company.

CIFT Director C N Ravishankar said that seaweeds are good source of anti-oxidants, dietary fibre, essential amino acids, phytochemicals, vitamins, and minerals. The bioactive compounds present in seaweeds have scientifically proven health promoting properties like anti-diabetic, anti-inflammatory, anti-oxidant, dyslipidemia, bone-health, heart-health and mental-health benefits. It is found that seaweeds along Indian coastline have immense nutritional potential.

In the harvest and post-harvest fisheries sector, he said CIFT has been working on seaweeds and has developed and commercialized many aqua-nutraceuticals from seaweeds. These products are in line with the regulatory compliances to meet the demand of the consumers.

The nutraceuticals such as FucoidanExt, FucoTeaExt, Nutridrink, cookies, yoghurt are some of the promising seaweed-based products developed by the institute, and is in the process of deriving more and more effective products from seaweeds with its research capabilities.

The popularisation of seaweed products in the domestic market is a new venture initiated by CIFT which is more relevant in the pandemic situation to get sanitised from viral attack and also to enhance immunity by natural means, he added.

-www. trendypedia.in

facebook

- Page followers - 21.5k
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- Reach - 225k
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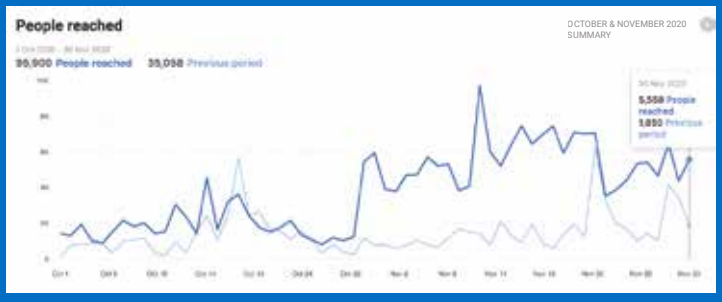

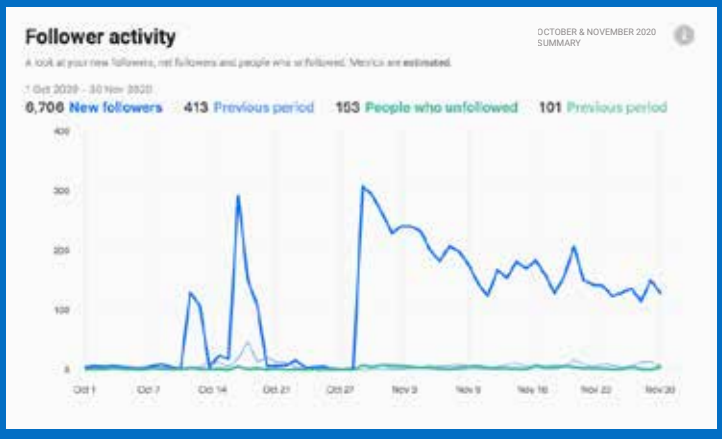

twitter

- Engagement - 2.4%
- Link Clicks - 100
- Retweet - 137
- Likes - 706

Instagram

- Followers - 2,235
- Reach - 4.4K
- Interactions - 6K
- Impression - 78 K
- Profile Visits - 191
- Web Tap - 42

YOUTUBE

- Total Views - 4.4K
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- Total Watch Time - 166 hr
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