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DEVELOPMENT OF SEAFOOD RETAILING IN ASIA
By Shirlene Maria Anthonysamy
The past decade has witnessed the revolution of food retailing globally and specifically including for seafood. Online retailing and shopping is now in vogue for getting access to fresher supplies and for the convenience of having seafood being delivered to your doorstep, thanks to the likes of apps and smartphones. Consumers are spoilt for choices ranging from whole fish to portions, steaks, etc and from commonly consumed species to the high-end exotic ones. This trend only goes to confirm that demand for seafood remains robust and continues to grow. The article discusses trends in Asia and how this new advent in food retailing is taking the seafood industry by storm.

ECUADOR – A VISIONARY LEADER IN SUSTAINABLE AQUACULTURE
By Jose Antonio Campesano
Ecuador has shot up in global rankings and is now the world’s second-biggest producer and exporter of shrimp. More importantly, the Ecuadorian shrimp industry has gained an enviable reputation as being fully sustainable, producing ASC-certified shrimp of premier quality. This remarkable rise is the result of an industry-led, technology-driven initiative called the Sustainable Shrimp Partnership (SSP) which aims to offer consumers tangible value and the confidence that they are consuming a premium, safe and pure product. Although current SSP members are domestic, international companies are also invited to join in the initiative.

THE EUROPEAN SHRIMP MARKET
By Mike Turenhout
The EU market for seafood is the biggest in the world, and specific to shrimp, more than 95% of the supplies in the EU originate from imports. The author gives a brief outline of the most important imported shrimp species, relevant exporting countries and EU measures and agreements that could affect trade. Additionally, an insight is given into the product presentation and certification requirements most commonly required in the EU regarding shrimp.

ACHIEVING SUSTAINABILITY IN FOOD SAFETY: AN ETHICAL CODE AS CORPORATE SOCIAL RESPONSIBILITY?
By Evelyne Nusalim
Consumers have the right to have safe and correctly processed food, and it is up to food regulators and food business operators to assure them of this. In fact, food fraud, with or without consequences on consumers’ health, should be considered as ‘crime against the community’. The author suggests that establishing an Ethical Code for food business operators based on Honour, Honesty and Order will help to combat fraudulent practices, particularly if the Code is implemented as part of corporate social responsibility.

SITUATION REPORT: COVID-19 AND ITS IMPACT ON SEAFOOD TRADE
By INFOFISH
Due to the emergence of the new coronavirus in Wuhan, flights in and out of China have been banned, and travel advisories have been issued by many countries on an international scale which is unprecedented. The fact that the virus made its appearance just before the annual massive Lunar New Year celebrations, amplified the disruptions to the seafood trade between China and exporters from other countries. This is a special INFOFISH report (as of mid-February 2020) on the impact of Covid-19 on China in relation to global seafood trade, with information culled from a variety of sources.

MILKFISH FARMING IN MALAYSIA
By INFOFISH
Widely consumed in Asia Pacific countries such as Philippines, Indonesia, and Taiwan, milkfish (Chanos chanos) is an ideal species for farming as breeding technology is available and the fish is able to grow in a range of salinities. It is sold in a variety of forms, with the most popular being deboned and with further value added to it. Malaysia is currently not known as a major milkfish producer, but a big step forward was taken with the launch of a new 200-acre farm in the northern part of the country. Milkfish ventures in other areas are in the meantime, receiving renewed interest from State authorities.

MARKETING
DEVELOPMENT OF SEAFOOD RETAILING IN ASIA
By Shirlene Maria Anthonysamy

THE EUROPEAN SHRIMP MARKET
By Mike Turenhout
Market Barometer
Commodity Market Update (Cephalopods)

AQUACULTURE
ECUADOR – A VISIONARY LEADER IN SUSTAINABLE AQUACULTURE
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FEATURE
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By Evelyne Nusalim

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Credit: Joelyn Sentina

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J. C. David SAS
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SeaDragon Marine Oil Ltd
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Sodefade Corretora Lda
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Songda Canning PCL
Southeast Asian Packaging and Canning
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SUN soc. cons. a r. l.
Tenpoint Manufacturing Corporation
Thinkgreen Natural Goods
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Tristan International LLC
Tropic Fishery (Pvt) Ltd
Tropic Frozen Foods Ltd.
Tunasen SA
UK Seafood Limited
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WORLD SUSTAINABILITY ORGANIZATION
From the traditionally slow start of the year, the seafood industry has picked up speed, fast filling up the calendar with international activities, meetings, conferences, and projects all aimed at moving people and products forward, while keeping an eye on sustainability. Here at INFOFISH too, the pace has been hectic as we gear up to do our bit in contributing towards these global initiatives.

In this Issue of the INFOFISH International, we are pleased to bring to you a range of topics. In the category of Markets we present two articles: an overview of the growing popularity of online seafood retailing in Asia, and secondly, shrimp imports and consumption in Europe. Sustainability, another important theme in the industry, is dealt with in another two articles: one suggesting the interesting proposition of having an industry-wide ethical code in food safety as part of the corporate social responsibility of companies, and the other highlighting the remarkable development of Ecuadorian shrimp farming as a successful example of an industry which has benefited from putting a premium on sustainable practices. A fifth article reports on a pioneering milkfish farming and processing facility in Malaysia, where the species is not traditionally consumed in large volumes.

In our regular Industry Profile section where we interview persons who are experts in their own right, and/or represent leading global organisations, this time the spotlight is on Roy Bealey, Fisheries Director of the International Pole & Line Foundation (IPNLF), which plays the important role of developing, supporting and promoting socially and environmentally responsible pole-and-line and handline tuna fisheries around the world.

Further, as we go to print, it has become clear that Covid-19 will be the worst epidemic in recent history, and for China in particular. While in no way minimising the human suffering connected to the virus outbreak, we felt that it was important to prepare a situation report on the mounting disruptions caused to seafood trade (please see pages 42-44 in this issue of the INFOFISH International). No one knows how long the virus will continue to wreak havoc on lives and livelihoods, but there may eventually be some lessons that can be learned from this.

Meanwhile, TUNA 2020, the 16th INFOFISH World Tuna Trade Conference & Exhibition, was scheduled on the 27 - 29th of May, 2020, in Bangkok. With the theme “Sustainability, Technological Innovation and Marketing”, the Conference had already (as of end-February) attracted confirmations of attendance from speakers and participants, and the exhibition booths had been fully taken up. However, due to the serious and on-going Covid-19 outbreaks worldwide, INFOFISH in consultation with the Thai tuna industry, the Thai government and Chairman of TUNA 2020, Mr Phil Roberts, have taken the decision to postpone the conference. This decision to reschedule was a most difficult one, driven by our collective sense of responsibility to ensure the best interests of all parties concerned. We are clear that our prime consideration must be the safety and wellbeing of TUNA 2020 conference delegates, exhibitors, co-organizers, sponsors, supporters, collaborators, visitors and all those who would otherwise have travelled to be at TUNA 2020 this year.

We are monitoring the situation closely and will be announcing the new dates based on global developments as they unfold. Please visit our website at www.tuna.infofish.org / www.infofish.org for regular updates.

Shirlene Maria Anthonysamy
Director
INFOFISH
Resúmenes de los principales artículos

DESVAROLLO DE LA VENTA MINORISTA DE PRODUCTOS PESQUEROS EN ASIA
Por Shirlene Maria Anthonysamy
La última década ha sido testigo de una revolución mundial en la venta minorista de alimentos, incluidos los productos pesqueros. La venta minorista y compras en línea ahora están de moda, gracias a aplicaciones, teléfonos inteligentes y similares, y permiten obtener acceso a una mayor oferta de frescos, con la conveniencia de que se entregue el producto en la puerta. Los consumidores tienen muchas opciones que van desde pescado entero hasta porciones, filetes, etc., y desde especies comunes hasta las más exóticas. Esta tendencia confirma que la demanda mundial de productos pesqueros sigue siendo sólida y continúa creciendo. El artículo analiza las tendencias en Asia y cómo este nuevo advenimiento en la venta minorista de alimentos está siendo muy beneficioso para la industria pesquera.

ECUADOR - UN LÍDER VISIONARIO EN ACUICULTURA SOSTENIBLE
Por José Antonio Camposano
Ecuador trepó en el ranking mundial y ahora es el segundo mayor productor y exportador de camarón. Más importante aún, la industria del camarón ecuatoriano ha ganado una reputación envidiable por ser totalmente sostenible, produciendo camarones con certificación ASC de calidad superior. Este notable crecimiento es el resultado de una iniciativa, impulsada por la tecnología y liderada por la industria, llamada Sustainable Shrimp Partnership (SSP) que tiene como objetivo ofrecer a los consumidores un valor tangible y la confianza de que están consumiendo un producto premium, seguro y puro. Aunque los miembros actuales del SSP son nacionales, las empresas internacionales también están invitadas a unirse a la iniciativa.

EL MERCADO EUROPEO DE CAMARÓN
Por Mike Turenhout
El mercado de productos pesqueros de la UE es el más grande del mundo y, específicamente para el camarón, más del 95% de la oferta en la UE proviene de las importaciones. El autor ofrece un breve resumen de las especies de camarón importadas más significativas, los países exportadores relevantes, y las medidas y acuerdos de la UE que podrían afectar el comercio. Además, se ofrece información sobre los requisitos de presentación y certificación del producto que se solicitan con mayor frecuencia en la UE.

LOGRAR LA SOSTENIBILIDAD EN LA SEGURIDAD ALIMENTARIA: ¿UN CÓDIGO ÉTICO COMO PARTE DE LA RESPONSABILIDAD SOCIAL CORPORATIVA?
Por Evelyne Nusalim
Los consumidores tienen derecho a tener alimentos seguros y procesados correctamente, y corresponde a los reguladores de alimentos y a los operadores de empresas alimentarias garantizarles esto. De hecho, el fraude alimentario, con o sin consecuencias para la salud de los consumidores, debe considerarse como un “delito contra la comunidad”. El autor sugiere que el establecimiento de un Código Ético para los operadores de empresas alimentarias basado en el Honor, la Honestidad y el Orden ayudará a combatir las prácticas fraudulentas, particularmente si el Código se implementa como parte de la responsabilidad social corporativa.

CULTIVO DE CHANO EN MALASIA
Por INFOFISH
Ampliamente consumido en países de Asia Pacífico como Filipinas, Indonesia y Taiwán, el chano (Chanos chanos) es una especie ideal para la cría, ya que la tecnología de cultivo está disponible y el pez puede crecer en una variedad de salinidades. Se vende en una variedad de formas, la más popular y de mayor valor agregado es la deshuesada. Malasia no es en la actualidad un productor importante de chano, pero dio un gran paso con el lanzamiento de una nueva granja de 200 acres en la parte norte del país. Mientras tanto, las empresas de chano en otras áreas tienen un nuevo interés por parte de las autoridades estatales.

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Résumés des articles de fond

DÉVELOPPEMENT DE LA DISTRIBUTION DE PRODUITS DE LA Mer DANS LE SECTEUR DE DETAIL EN ASIE
Par Shirlene Maria Anthonysamy

La dernière décennie a vu une révolution mondiale dans la vente au détail de produits alimentaires, y compris les fruits de mer. La vente au détail et les achats en ligne sont désormais à la mode. Et surtout avoir accès à des fruits de mer plus frais et par commodité, se voir livrer des commandes à devant sa porte grâce aux applications, aux smartphones et bien d’autres moyens informatiques révolutionnaires est un facteur catalyseur de cette dynamique. Les consommateurs sont à l’aise pour des choix allant du poisson entier, aux portions, aux steaks, etc, des espèces communes aux espèces exotiques haut de gamme. Cette tendance ne fait que confirmer que la demande mondiale de fruits de mer reste robuste et continue de croître. Ce présent article porte un regard sur les tendances actuelles en Asie et comment cette nouvelle méthode de vente au détail de produits alimentaires prend d’assaut l’industrie des fruits de mer.

EQUATEUR – UN LEADER VISIONNAIRE DE L’AQUACULTURE DURABLE
Par Jose Antonio Camposano

L’Équateur a fait un bon avant dans le classement mondial et est devenu actuellement le deuxième plus grand producteur et exportateur mondial de crevette. Situation encore plus remarquable est que l’industrie équatorienne de la crevette a acquis une réputation incontestable d’être entièrement durable, produisant des crevettes certifiées ASC de première qualité. Cette notoriété exceptionnelle est le résultat d’une initiative dirigée par l’industrie et qui est axée sur la technologie, appelée Partenariat pour une creveticulture Durable -Sustainable Shrimp Partnership (SSP), qui vise à offrir aux consommateurs une valeur tangible et la confiance lorsqu’ils consomment un produit premium, sûr et pur. Bien que les membres actuels du SSP soient nationaux, les entreprises internationales sont également invitées à se joindre à cette initiative.

LE MARCHÉ EUROPÉEN DES CREVETTES
Par Mike Turenhout

L’Union Européenne constitue le plus grand marché mondial des fruits de mer, et particulièrement des crevettes, avec plus de 95% de ses approvisionnements provenant des importations. L’auteur donne un bref aperçu des espèces de crevette les plus prises importées des principaux pays exportateurs y compris les mesures et les accords de l’UE qui pourraient affecter ce commerce. De plus, un aperçu est donné sur les exigences de présentation et de certification couramment requises pour les produits de pêche et particulièrement pour les crevettes afin d’avoir accès aux marchés de l’Union Européenne.

ATTEINDRE LA DURABILITÉ EN MATIÈRE DE SÉCURITÉ ALIMENTAIRE: UN CODE ÉTHIQUE COMME RESPONSABILITÉ SOCIALE DE L’ENTREPRISE EST-IL POSSIBLE?
Par Evelyne Nusailim

Les consommateurs ont le droit d’avoir des aliments sûrs et correctement transformés. Il incombe aux régulateurs et aux exploitants du secteur alimentaire de créer les conditions pour garantir la sécurité sanitaire des aliments. En fait, la fraude alimentaire, avec ou sans conséquence sur la santé des consommateurs, doit être considérée comme un « crime contre la communauté ». L’auteur suggère que l’établissement d’un code d’éthique pour les exploitants du secteur alimentaire fondé sur l’honneur, l’honnêteté et l’ordre aidera à lutter contre les pratiques frauduleuses et particulièrement, s’il est mis en œuvre dans le cadre de la responsabilité sociale des entreprises.

L’ELEVAGE DES CHANIDES EN MALAISIE
Par INFOFISH

Largement consommé dans les pays d’Asie-Pacifique tels que les Philippines, l’Indonésie et le Taïwan, le chanidé (localement appelés Chanos chanos) est une espèce idéale pour l’élevage car sa technologie d’élevage est disponible. Cette espèce peut se développer dans une gamme de salinité. Le chanidé est vendu sous diverses formes, les plus populaires étant désossées et avec une valeur ajoutée supplémentaire. La Malaisie n’est actuellement pas connue comme un important producteur de cette espèce, mais un grand pas en avant a été franchi avec le lancement d’une nouvelle ferme d’élevage de 200 acres dans le nord du pays. Entemps, les entreprises de production de chanidé dans d’autres régions reçoivent un regain d’intérêt de la part des autorités de l’État.
亚洲海鲜零售业的发展
Shirlena Maria Anthonysamy
过去十年见证了包括海鲜在内的食品零售领域的全球革命。网上零售和购物正变得越来越流行。借助应用程序，智能手机等，就可以获得新鲜的食材，并将海鲜送到家门口。无论是全鱼还是鱼块、牛排等，无论是常见的品种还是高端进口品种，都任由消费者选择。这种趋势证明世界对海鲜的需求仍然强劲并持续增长。本文讨论了亚洲的这一趋势以及食品零售业中的这种新潮流如何席卷了海鲜行业。

厄瓜多尔－可持续水产养殖的领导者
Jose Antonio Camposano
厄瓜多尔在全球排名中名列前茅，现在是世界第二大虾生产和出口国。更重要的是，厄瓜多尔虾业充分实现了可持续发展，生产出质量一流的ASC认证虾，赢得了令人羡慕的声誉。这一惊人的增长是一项由行业主导，以技术为驱动力，被称为“可持续虾伙伴关系（SSP）”计划的结果。该计划旨在为消费者提供实实在在的好处，并增强他们对消费优质、安全和纯净产品的信心。尽管SSP的现有成员是国内成员，但也欢迎国际公司加入该计划。

欧洲的虾市场
Mike Turenhout
欧盟的海鲜市场是世界上最大的市场，并且特定到虾而言，欧盟超过95％的供应来自进口。作者简要概述了最重要的进口虾类，有关的出口国以及可能影响贸易的欧盟措施和协议。此外，作者还深入介绍了欧盟最常见的对虾产品形态和产品认证的要求。

实现食品安全的可持续性：企业社会责任的道德准则?
Evelyne Nusalim
消费者有权获得安全且正确加工的食品，而食品监管者和食品经营者必须向消费者保证这一点。实际上，无论是否对消费者的健康造成影响的食品欺诈，都应被视为“危害民众的犯罪”。作者建议，建立基于荣誉、诚实和秩序的食品经营者道德守则将有助于打击欺诈行为，特别是如果该守则是作为企业社会责任的一部分而实施的话。

马来西亚的虱目鱼养殖
INFOFISH
虱目鱼（Chanos chanos）在亚太国家（如菲律宾、印度尼西亚和台湾）被广泛食用，是目前理想的养殖物种。这是因为这种鱼的育种技术已经成熟，并可以在多种盐度下生长。虱目鱼以多种形式出售，最受欢迎的是去骨，并增加了附加值。马来西亚目前还不是主要的虱目鱼生产国，但是已取得了很大进展，马来西亚已在该国北部启动了一个新的200英亩的养殖场。与此同时，其他地区的虱目鱼养殖也受到了州当局的重新关注。
خلاصة لأهم المقالات

تطوير المنتجات البحرية في أسايا
Shirlene Maria Anthonyasamy

بفضل العقد الماضي نشأ ثورة أوسع في التجارة والمنتجات البحرية، بما في ذلك المنتجات البحرية. أما المستورد的话 والبلدان المصدرة ذات الصلة ومكاتب الاتحاد الأوروبي والاتفاقيات التي يمكن أن تؤثر على التجارة. و فضلا عن الصناعة في شمال البلاد. وفي نفس الوقت، تتلقى الصين وتايوان فرصاً لتوسع في التجارة. و يقترح المؤلف أن إنشاء مدونة أخلاقية للفاعلين بالأعمال الغذائية.

 hộp الربيان الأوروبي
Mike Turenhout

سوق الربيان الأوروبي الأكبر على الصعيد العالمي، وبالتحديد الربيان. حيث أن أكثر من 95% من التزويد في الاتحاد الأوروبي تأتي من الواردات. و يقدم الكاتب توجيهات حول الربيان المستدام والأسماك، و ما إلى ذلك من الأنواع الشائعة و الأنواع الأخرى.

تحقق الإستدامة في الأسماك الفريدة
Evelyn Nasulim

يشتقت من المعجزات في وسائل الاتصال بـ "لايكيا للأسماك". تشير رحلات السفينة، والتي تهتم بالأسماك الفريدة، إلى اقتصاد العالم والشركات. و يقترح المؤلف أن إنشاء مدونة أخلاقية للفاعلين بالأعمال الغذائية.

استزراع أسماك السمك
Mike Turenhout

بعد وصول الاتحاد الأوروبي إلى منتدى البحريات في الصعيد العالمي، والتوقف عن رفاهة الرياح حيث أن أكثر من 95% من التزويد في الاتحاد الأوروبي تأتي من الواردات. يقترح المؤلف توجيهات حول الربيان المستدام والأسماك، و ما إلى ذلك من الأنواع الشائعة و الأنواع الأخرى.

ملحة من المعلومات
Aziza E Amghari

تعتبر الأسماك من المنتجات البحرية المنتشرة على نطاق واسع في بلدان أسايا، مع تطور تكنولوجيا الرياح. يقترح المؤلف توجيهات حول الربيان المستدام والأسماك، و ما إلى ذلك من الأنواع الشائعة و الأنواع الأخرى. و يقترح المؤلف إنشاء مدونة أخلاقية للفاعلين بالأعمال الغذائية.
DEVELOPMENT OF SEAFOOD RETAILING IN ASIA

By Shirlene Maria Anthonysamy

The past decade has witnessed the revolution of food retailing globally, including for seafood. Online retailing and shopping is now in vogue for getting access to fresher supplies and for the convenience of having seafood being delivered to your doorstep, thanks to the likes of apps and smartphones. Consumers are spoilt for choices ranging from whole fish to portions, steaks, etc and from commonly consumed species to the high-end exotic ones. This trend only goes to confirm that demand for seafood remains robust and continues to grow. The article discusses trends in Asia and how this new advent in food retailing is taking the seafood industry by storm.

Introduction

The way seafood is sold these days has changed worldwide with much of the changes attributed to new consumption patterns and lifestyles. Dubbed the “lazy economy”, the desired features include time-saving, labour-saving, convenience, and cost-cutting. Is it any wonder then, that although online shopping has been around the past two decades, it has in recent times, become a massive global buzzword?

In Asia, this increasing preference for online shopping is especially noticeable, facilitated by expanding internet usage and rising incomes. Statista Research Department (www.statista.com) states that as of January 2019, China ranked first with around 802 million internet users while India achieved second place with 560 million internet users. China and India were not only leading within the Asia Pacific region, but also worldwide. The Asia Pacific region had the largest number of internet users worldwide, reaching nearly 2.1 billion in 2018.

Internet penetration in Asia was still described as below global average in that year, but other studies indicate that it is envisaged to reach some 60% by 2025. In fact, a recent study by Google, Temasek Holdings Pte and Bain & Co reported that Southeast Asia’s internet economy is set to exceed US$100 billion in 2019. Driven strongly by the rise in internet retail and e-hailing services, the food delivery gross market value, which was US$400m in 2015, has surged by almost 15 times in just four years.

Clearly, consumers’ confidence in online seafood delivery is on the rise, but what this means (specific to seafood) is difficult to quantify. As long as consumers receive fresh
seafood, with the convenience of having their orders sent right to them, one can expect this trend to continue. In addition, apart from some species sold live (such as lobster), consumers have also come to place more attention on whether the fishery product was just hauled in from the water or not. They know that after all, most of the seafood sold as ‘fresh’ in supermarkets is actually product which has been thawed from their earlier chilled/frozen state, with no loss in their ‘freshness’ features. Either way, consumers are spoilt for choices ranging from whole fish to portions, steaks, etc and from the “common” species to the high end exotic ones like coral trout, salmon, cod, lobsters, scallops and mussels.

In a nutshell, “fresh fish for tomorrow” - that’s how Ms Wong Li Sian, a Malaysian homemaker and mother of two young children describes why she shops online for seafood. Ms Wong adds that she also gets to select the type of fish, the form (steaks, whole or fillet) besides being able to chat with the retailer through Whatsapp on any other enquiries. “It is really convenient especially since I am able to select the best options for my kids. If I purchase whole fish, then we would have it cut and cooked at restaurants”, Ms Wong added.

A range of trading platforms

The use of online trading platforms, and bidding through Facebook Live events, WhatsApp and similar apps is a small, but growing approach for retailers, fishermen’s organisations, and to a lesser extent, fishers themselves in Asia. Promotions focus on delivering the freshest seafood even directly from fishermen or from the docks to doorsteps. Often, they are offered on a daily or weekly basis which includes the prices of the fish by weight and service fee for cutting and handling.

A general review of these Facebook Live auctions in Malaysia indicate that viewership in each sales period is from 200, all the way up to nearly 10 000, depending on how established the sellers are. While they indicate that their profits have increased by 10-50%, online retailers also say that consumers benefit by paying a proportionally lower cost, even with transport and packaging charges. Some of the advantages cited by these retailers include:

- Convenience for both trader and consumer as neither party has to physically travel to where the supply and demand are
- The seller saves money by not having to maintain a physical premise or retail outlet, and is thus able to offer lower prices for the consumer while still selling product comparable in freshness to that found in markets

In Malaysia, a small group of retailers are making inroads into online sales of seafood, inspired apparently by successes of similar ventures in Taiwan. Their main consumers comprise those from below-60 age groups who want their fish to be packaged, sent to their homes, and costing less than they would if they went to a real market.
• It cuts out the role and commission of the middleman, albeit not fully, as many of those bidding are in fact, middlemen

• The fishery product often comes in sealed packages, which means the consumer can straightaway place it in the freezer without handling it.

Institutional retailers such as Tesco, JayaGrocer, and Cold Storage also offer the same service of online ordering and delivery. Another popular option for seafood consumers in Malaysia and other countries in Asia is through services such as Grab Food, and Food Panda which deliver cooked food ordered from restaurants and other retail outlets.

Companies take the same route, with the main difference being simply as a matter of scale. In Thailand last year, Thai Union Group PCL, one of the world’s biggest seafood leaders, signed an agreement with Shanghai Win-Chain Supply Chain Management Co., Ltd., to enlarge its presence in the huge Chinese market. Among other points agreed upon, Win-Chain agreed to connect Thai Union to the Chinese e-commerce giant Alibaba’s ecosystem of retail and food service channels, and help it set up a flagship store on the Tmall fresh online platform. Some 57% of Tmall’s online retail sales are controlled by Alibaba. Two years prior, Alibaba was reported as having agreed to sell Chicken of the Sea products through Tmall. Chicken of the Sea/Thai Union Managing Director of Emerging Markets, Faisal Sheikh, had said “Chinese consumers are increasingly discerning and demanding, putting a premium on safety and quality when shopping for fresh and chilled seafood, such as lobster, shrimp and salmon”.

Other main online platforms in China are Mr Fresh and GFresh (both managed by Alibaba), and Ewfresh. Online seafood commerce giants beyond Asia include AmazonFresh, Instacart, Great-Alaska-Seafood.com and Walmart To Go.

Meanwhile in most Asian countries, online promotions are announced in conjunction with festivities like the Chinese Lunar Year, such as Prosperity Sets or Fortune Sets comprising the species usually consumed during that time of the year. Innovation remains key, with options like steaks and cuts, child-size sets, combos etc. catered for working women, homemakers with young children, young adults, families etc.
Will the bubble burst?

Even a few years ago, freshness might be the last thing one would expect when purchasing seafood online but the fast expansion in the number of online seafood delivery options is certainly now telling us a different story. Although there aren’t any specific data available on the volume or at least on the value of seafood sold online and consumed through food delivery just yet, there is no denying that demand for seafood will continue to grow. The future is online and Individual traders and companies ignore this at their peril.

Seafood online retailer in Singapore, Tankfully Fresh, offers both imported species such as salmon as well as fishery products from the region.

Shirlene Maria Anthonysamy is Editor-in-Chief / Director, INFOFISH.

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SHRIMP

Supply: In general, farmed shrimp production in Asia is low until March as the seasonal peak is over. In Indonesia, supply of shrimp is decreasing as many farmers stopped harvesting towards the year-end. On the other hand, farmed *vannamei* production in Ecuador will continue to be good as the harvest season ends in February. Meanwhile, shrimp fishing in Argentina has already started and catches are good.

Japan: Overall consumer demand remained positive all throughout 2019 particularly during December due to the year-end festivities. There was good demand for large sizes *vannamei*, black tiger and Argentinean shrimp. The market remains steady in January; although there are less stocks, and demand is low as people choose to remain at home due to the severe cold weather.

Shrimp handlers at the end-user level concentrated on sales activities for the New Year holidays in anticipation of good consumption in hotels, family restaurant chains, sushi shop chains, Chinese restaurants, shrimp burger shops etc. These include ready-to-eat items, *sushi*, bread-battered shrimp at family restaurants, peeled IQF, and ready to eat shrimp products in supermarkets which usually show positive consumption during the New Year holidays.

Total shrimp imports in Japan improved in November. During January-November 2019, imports increased marginally at 200 079 tonnes (+0.85%) compared to the same period in 2018. Supplies increased from the top suppliers Vietnam (5.6%), India (3%), Indonesia (0.67%) and Argentina (+21.5%) but declined from Thailand and China. Meanwhile, the frozen raw shrimp category which comprised 70% of Japan’s total shrimp imports, declined marginally (-0.2%) to 140 605 tonnes during the review period. However, Argentinean shrimp continued to have positive growth in demand (21.5%) at 14 219 tonnes. Products from India, Vietnam and Malaysia in this category also recorded increases during this period.

Demand for shrimp is expected to be less in the upcoming months as overall consumer demand will likely drop due to severe cold weather conditions. Nonetheless, value-added products and ready to eat items like *sushi* shrimp will remain an option in the market.

USA: Consumer demand for shrimp in the US market continued to be good until the end of 2019 due to Christmas and New Year celebrations, in addition to lower prices in the domestic supply chain. The post-New Year consumption pattern for shrimp is seasonally low during January-February. In domestic and international trading, the situation is the same as marketers are waiting to meet at the Seafood Expo North America (Boston Seafood Show) in March.

Reportedly there is import demand, particularly for large sizes shell-on shrimp but US importers are unwilling to accept current prices offered by the producing countries. Total shrimp imports during January-November 2019 increased marginally by 0.57% at 638 445 tonnes compared to the same period in 2018. Top suppliers - India, Ecuador and Vietnam - have had positive growth in their exports while exports from Indonesia and Thailand were down. US domestic wild caught shrimp supplies continue to fall; landings in the US Gulf of Mexico during the first 10 months of 2019 were the lowest since 2002.

China: The outbreak of the coronavirus in China and subsequent cancellation of this year’s Lunar New Year celebrations in China affected consumption of seafood, especially shrimp in many areas in the country during the festival months of January-February 2020. Outdoor dining, which is otherwise brisk during this period, declined drastically this year with falling sales at restaurants and hotels all over China. This situation will certainly result in stockpiling of imported shrimp in the market and shrimp imports are likely to slow down in the incoming months (Editor’s note: For a special situation report on Covid-19 and its impact on seafood trade, please turn to pages 42-44).

Cumulative shrimp imports during January-November 2019 in China were already high at 625 421 tonnes (+176%). Among the top suppliers, imports from Ecuador increased by 313% at 284 685 tonnes and from India by 357% at 177 % from Vietnam. As predicted by the China Aquatic Products Processing and Marketing Alliance (CAPPMA), the annual imports in 2019 most likely crossed 700 000 tonnes.

TUNA

Fishing in the Western and Central Pacific remains poor. Raw material inventories at Thai canneries have fallen to moderate levels due to reduced carrier landings and an increase in orders, with finished goods customers taking advantage of the low raw material prices over recent months. However, skipjack prices are growing strongly, far above of the lows reached at the end of last year.

With a new yellowfin quota in the Indian Ocean, fishing vessels are back fishing. There has been little market activity so far. Skipjack prices remain stable, but are likely to increase in line with Bangkok prices. Yellowfin prices have increased.

Raw material inventories at local canneries in Ecuador are steady at healthy levels, topped up by carriers and containers arriving from other oceans. However, due to the low fishing vessel landings, skipjack prices have rebounded while yellowfin prices remain stable.

The 2-month FAD closure in the Atlantic Ocean started on 1 January, 2020 and catch volumes are expected to fall substantially. Meanwhile, raw material inventories at local canneries remain at moderate levels. Skipjack prices are...
stable while yellowfin prices continue to rise due to the poor catches.

Deals have been scarce on the European market due to the holiday season and prices for both skipjack and yellowfin remain stable. The market price for cooked, double cleaned yellowfin loins has fallen due to the arrival of duty free quota loins. As in 2019, the duty free quota for 2020 was set at 30 000 tonnes. This quantity is already fully allocated and as a result the price can be expected to rebound by February. (Source: FAO-Globefish)

Exports of canned tuna from Thailand have increased to 393 239 tonnes during January to September 2019 from 373 209 tonnes in the same review period of 2018, a gain of 5.37%. This is credited to exports to the US market in 2019, which has recovered with an increase of about 8% against the same review period in 2018. Secondly, tuna exports to the Middle East markets also increased although exports to the main market, Egypt, showed a decline of about 15%. Nonetheless, this was compensated for by the increased exports to Libya, Saudi Arabia, UAE, Syria, Kuwait, Qatar etc. Exports to Libya showed a sharp increase of 29 940 tonnes during this period from 278 tonnes in the same period of 2018. In Asia, particularly Japan, exports declined by 13% as skipjack prices dropped, leading to higher domestic production of canned tuna in Japan. Similarly, exports to Australia also declined due to the weakening of the Australian dollar.

Imports of canned/processed tuna have continued the positive trends in 2019 in the US market. During January to September, there was a 2% rise in imports at 153 085 tonnes. However, notably cheaper raw material prices, particularly for skipjack, resulted in 19% decline in the import value during this period. China, which mostly exported cooked tuna loins to this market, lost market shares due to the 25% import tariff on Chinese products.

Consumer demand for canned/pouched tuna remained stable in the EU markets during the first nine months of 2019. Imports increased by 1.6% during January-September 2019 as compared to the same period in 2018. Imports from Ecuador, Mauritius, and Seychelles to the western European markets such as the United Kingdom, France and the Netherlands, increased. Similarly, there were slight rises in imports in the Eastern European markets such as Poland, Croatia and Slovenia. Spanish and Italian imports increased, largely consisting of cooked loins.

Imports of canned and processed tuna in Japan in the first half of 2019 decreased marginally (-2%) compared to the same period in 2018. Among the top supply sources, imports fell from Thailand and Vietnam but increased from Indonesia, the Philippines and China. During the review period, the share of katsuobushi (cooked/dried skipjack) in total processed tuna imports was 7%.

Indonesia and Philippines were the main suppliers of katsuobushi to Japan. Micronesia is seen to be one of the new suppliers of katsuobushi to Japan following the recently opened katsuobushi (bonito) and feed meal plant in February in early 2018. Katsuobushi supplies also increased from China and Maldives during this period.

TILAPIA

USA: The import volumes of tilapia during January-September 2018 fell by 22.2% compared to 2017, and 31.9% in relation to 2016, the year with the highest volume of the species imported to the US, when 130 816 tonnes were registered. According to Urner Barry’s Winter Issue, stakeholders believe that shortages, especially in small size fillets, could continue until the summer of 2019. Some have started looking at other markets to bring in products faster, focusing on China.

However, due to the current trade war and the high tariffs, costs are still high and they continue working to compete with the Vietnamese product. Analysts understand that the pangasius market has probably already undergone through its worst period, and they wonder if, as other export markets increase in activity, Vietnam will continue to dominate the industry. It also remains to be seen how the trade war with China will continue to have an impact.

China: During the first nine months of 2019, total exports of frozen tilapia dropped by 4.57% at 304 000 tonnes from a year ago following less supplies into US. The 15% tax imposed on all Chinese tilapia exports to the US has prompted China to focus on other markets as well as the domestic market, thus leading to a decline in exports. The US market remains the leading market for frozen fillets however.

Farm gate prices have been relatively steady so far during the review period.

PANGASUS

EU: In the EU market, there was a 2.9% rise in imports of frozen pangasius fillets at 65 020 tonnes during January-September 2019 compared with 63 113 tonnes in the same review period in 2018. The EU remains the second largest market behind the dominant China market for Vietnamese pangasius fillets. Germany is currently the third largest importer of Vietnamese pangasius in the European Union (behind the Netherlands and the United Kingdom), and the European market with the highest export growth in the period January-September 2019. Vietnam exported 5 739 tonnes, valued at US$21.1 million pangasius to Germany, up by 17.7% and 30.36% respectively compared to the same period in 2018. More than 15 Vietnamese companies exported pangasius to Germany, particularly frozen whole, frozen fillet and frozen organic loins products.
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Tight supplies of octopus and squid

Supplies of octopus have been tight for a while, and the situation is not improving in the medium term. While landings are up in the US and Canada, the squid fishery around the Falkland Islands (Malvinas) started well but tapered off towards the closing of the season and the end result was disappointing. Main markets imported less squid during the first half of 2019.

Octopus

Octopus landings have been down in the most important supplier countries, Morocco and Mauritania. This influences the supply situation greatly. Both countries have been more restrictive about octopus fishing in an effort to protect the resource.

In July, the EU28 ratified a fishing agreement with Morocco. The agreement will run for four years and it will allow a total of 138 vessels to fish in Moroccan waters. However, this does not mean that octopus supplies will increase, as there are restrictions on this fishery. The EU28 is expected to sign similar agreements with Mauritania and Senegal in due course.

Trade

During the first half of 2019, Japan imported about 20 500 tonnes of octopus, the same amount as 2018, but 27% less than in 2017. The main supplier, Morocco, reduced shipments in 2018, but increased slightly again in 2019. The other major suppliers were China and Vietnam.

Octopus imports into the Republic of Korea were up by 3.6% during the first half of 2019 compared with the same period in 2018. Total imports amounted to 35 100 tonnes and the main suppliers were Vietnam (14 300 tonnes, 40.6%), China (13 400 tonnes, 38.3%) and Thailand (3 300 tonnes, 9.3%).

Squid

Global catches of Illex squid have fallen from 850 000 tonnes in 2014 to just 200 000 tonnes or less in the years since then. The Argentine squid fishery started well at the beginning of 2019 but ended with poor catches and total landings at the same level as in 2018. Total landings of Illex squid are estimated at about 100 000 tonnes. In 2018, landings climbed above the 100 000-tonne mark for the first time since 2015. The poor catches reduced hopes of a recovering stock. The season ended on 31 August and will not open again until later in 2020.

In June, prices of Argentine Illex squid were about US$4 195–4 410 per tonne. However, by August, prices had fallen to US$3 300–3 700 per tonne, depending on size.

In Peru, the Ministry of Production (PRODUCE) estimates that the landings of squid will reach record levels in 2019. The Chinese market has opened to Peru, and thus larger volumes may be exported. The authorities expect exports to grow to about 30 000 tonnes within two years. Until now, Brazil has been the main export market for Peruvian squid, accounting for 40% of the country’s squid exports, followed by Japan (39%) and the Republic of Korea (8%). Peru expects China to become the major export market for Peruvian squid in the future. Landings of Japanese flying squid (Todarodes pacificus) have been good in 2019, after some years of declining catches. Most of this species is caught in the Yellow Sea and the Sea of Japan, and reports are that landings are significantly better than last year. Even so, prices are high, which is perhaps normal, since prices tend to be high in the beginning of the season and then lower at the end.

It appears that the squid stocks in US waters are in good shape. For the third year in a row, the quota has been caught in full, and many consider this a sign that there are ample supplies of squid in the ocean. The National Oceanic and Atmospheric Administration (NOAA) imposed limitations on the catch as of 21 August. Vessels are prohibited from landing more than 4.5 tonnes per trip through 31 December, and vessels are only allowed to make one trip per day. At the end of August about 95% of the 24 000-tonne quota had been landed.

Consumer demand for squid in the United States of America is increasing. Industry observers are now saying that Illex squid has moved away from being bait squid to becoming food squid.

Squid landings in the Canadian province of Newfoundland and Labrador have increased by 40% by volume and 50% by value during the first half of 2019 compared to 2018. This increase is attributed to changing ecosystem conditions.

Squid processors in the provinces of Newfoundland and Labrador are in a dispute with the fishers over price. Processors claim that the squid contains as much as 10% of water, and they do not want to pay for this water content at CAD 0.75 per lb. They demand that the water weight should be deducted when determining how much to pay for the squid.

Trade

Argentine exports of squid during the first six months of 2019 fell by 13% to 93 800 tonnes, mostly shipped to China. Chinese vessels are also very active just outside the Argentine 200-mile EEZ, but in 2019, many of them left for other fishing
The Falkland Islands (Malvinas) may face a difficult situation if the UK leaves the European Union. At that point, the Falkland Islands (Malvinas), as part of the UK, would lose its preferential market access to the EU28, and will therefore have to look for other markets, especially for *Loligo* squid. As many Falkland Islands companies have joint ventures with Spanish companies, most *Loligo* catches are currently exported to Spain, while *Illex* squid are shipped mainly to Asia. Chinese, Taiwanese and Republic of Korea vessels have shown great interest in the squid resources around the Falkland Islands and may take over the EU28’s role as the main market for the product.

Spain experienced a major drop in imports of squid and cuttlefish during the first half of 2019, from 153 600 tonnes during this period in 2018 to 136 800 tonnes in 2019 (-11%). The main supplier, the Falkland Islands, shipped 42 900 tonnes, almost 14% more than in the first half of 2018; however, the second largest supplier, Peru, exported 20 100 tonnes or 26% less than in the same period in 2018.

Japan’s imports of squid and cuttlefish continued to decline during the first half of 2019, from 89 600 tonnes in the first half of 2017, to 76 800 tonnes in the same period in 2018 and to 71 700 tonnes in 2019.

US imports of squid and cuttlefish have fallen by 27% since 2017, from 38 900 tonnes to just 28 500 tonnes in the first half of 2019. China is by far the largest supplier with 48% of total imports.

China’s imports of squid and cuttlefish increased massively during the first six months of 2019, from 113 600 tonnes during this period in 2018 to 189 400 tonnes in 2019 (+67%). The main supplier was Peru, which accounted for 55 300 tonnes of that total.

Meanwhile, China’s exports of squid and cuttlefish fell from 131 100 tonnes in the first six months of 2018 to 107 500 tonnes during the same period in 2019 (-18%). The main markets for Chinese squid and cuttlefish were Japan and the Republic of Korea.

**Outlook**

The supply situation is changing, with improved catches in North America and in Asia, where catches of Japanese flying squid have been good. However, the outlook is bleak off Argentina at the moment, and an undersupply situation will occur in the coming months. Prices have fluctuated slightly, but in Europe they are on a slow but steady upward trend.

The Brexit situation has caused a lot of uncertainties in the cephalopods market. If the UK leaves the European Union, the structure of the trade may be seriously changed, as squid from the Falkland Islands may lose its access to the Spanish market.

*Source: FAO-Globefish.*
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Congratulations on having recently joined the International Pole & Line Foundation (IPNLF). Your background mentions involvement in a lot of regional fishery projects in coordination with private donors, NGOs, international and regional organisations, as well as community groups. What do you specifically hope to achieve on behalf of the IPNLF?

Thank you, it’s a broad and interesting role through which I hope to highlight that there are better and more sustainable ways to operate and manage fisheries and their resultant trade. The damage still caused by some fishing gears and methods to critical ecosystems, and as a consequence their reliant communities, is simply unacceptable in modern times. I also hope to promote greater humanity in fisheries through improving equity in fisheries management decision making processes, improving labour practices, promoting recognition of community support and tackling issues of manipulation and slavery head on. We need to shift the public narrative towards more holistically responsible seafood sourcing. The current focus on biological sustainability of fisheries is of course important, but glosses over many shocking social issues persisting mostly among large industrial fisheries.

The IPNLF made a call ahead of the December 2019 meeting of the Western & Central Pacific Fisheries Commission (WCPFC) to strengthen the management framework for sustainable and equitable tuna fisheries in the region. From all accounts, the meeting did not address some major points listed in the IPNLF’s Position Statement. What were the IPNLF’s biggest unresolved concerns in the Position Statement? How does the IPNLF intend to raise awareness on these concerns before the next WCPFC meeting?

It was disappointing to see that more industrial concerns were prioritised at that meeting. Priority issues for me included improved recognition of the socio-economic importance of tuna fisheries for local communities in regional management decision making processes, as well as greater accountability of purse seine fleets when FADs are lost at sea and cause ghost fishing or damage coastal ecosystems.

Countries such as Indonesia and the Philippines have large populations of small-scale fishing communities that critically rely on these tuna fisheries for subsistence, and their livelihood needs should never become collateral damage as multinational fleets affect the shared tuna stocks and ecosystems. We do work closely with various governments in the region and will aim to leverage successes from our many projects to ensure that raised concerns can’t again be ignored during future meetings.

At the Our Oceans 2018 Conference, a side event on “Building Equity into Sustainable Seafood Sourcing” was hosted by IPNLF, Asosiasi Perikanan Pole & Line dan Handline (AP2HI), Yayasan Masyarakat dan Perikanan Indonesia (MDPI), and Blue Ventures. The clear message was that with the right support, small scale fisheries can grow. Soon after that, it was reported that the first Indonesian skipjack pole-and-line tuna fishery was awarded MSC certification, a process in which the IPNLF had worked together with the Ministry of Marine Affairs and Fisheries (MMAF). Could you give us an update on the fishery, including future plans (if any)? What are some lessons that other countries can derive from this collaborative process to jumpstart their own small scale tuna sectors?

Being new to IPNLF, I was very pleasantly surprised to see how well we’re already doing at enabling small scale fisheries to meet international standards and improve their competitiveness among international seafood markets. We’ve recently initiated MSC certification processes for eight more Indonesian fisheries, with plans to incorporate at least four more in coming years.
Suitably enabling small scale fisheries, and one-by-one fisheries in general, provides opportunities to maximise the value of their catch through achieving premium harvest quality, effective management and traceability while also alleviating many of the economic or market barriers they typically face. Combining these gains with the more widespread and equitable support these fleets provide to coastal communities needs to be better communicated to the increasingly concerned general public.

Merging the improved quality of individually harvested fish, with the intrinsically more sustainable one-by-one fishing methods, these fishers have the ability to outperform even the largest industrial fleets in quality and equity. In this respect, governments should proactively emphasise and support initiatives which can help their fishers make the most socio-economically beneficial use of shared tuna resources by engaging in one-by-one fishing methods. IPNLF has a unique ability to provide the local and international support required in this space.

The IPNLF (www.ipnlf.org) works on enabling small scale fisheries and one-by-one fisheries in general.

Related to the previous question but in a somewhat converse manner, how do you counter the argument that MSC certification of sustainability largely benefits the big players in the industry rather than the smallscale sector to which more than 90% of fishers throughout the world belong? Would it be better in social terms for smallscale fishers to opt for a different certification process such as Fair Trade USA?

This is not an argument that I typically counter, because in most cases MSC certification isn’t a viable option for small scale fisheries. Many just don’t achieve the economies of scale required to justify the cost of becoming certified. If buyers only rely on MSC certification to tick their sustainability boxes, it could lead to small-scale fisheries being marginalised in global markets, with serious impacts on the viability of intrinsically sustainable fisheries as well as the livelihoods of fishers and the communities connected to them. While MSC might recognise this disconnect and increasingly works with organisations like IPNLF to help small scale fisheries achieve certification and reap benefits, there remains much to be done in this space.

The Sustainable Development Goals (SDGs) provide a very good framework for governments and businesses to understand the wider impacts of their policies or procurement decisions, and following such an approach can ensure that the sustainability attributes of one-by-one tuna fisheries and their contributions to coastal communities are adequately recognised. Other steps that should be taken include economic feasibility analyses informing certification initiatives, and differentiation in the market place for seafood products that originate from small-scale fisheries. Fair Trade assessments can also be too costly for many small scale fisheries, but we must also recognise that MSC and Fair Trade weren’t initially designed for these types of fisheries.

From my experience, at-sea labour issues are more common among industrial tuna fleets which are more frequently dependent on international migrant workers to improve the financial bottom line for investors. Spending long periods out at sea, with infrequent changes of crewmembers, also provides more opportunity for manipulation among these fleets. In contrast, one-by-one fisheries usually have relatively short fishing trips and local community involvement in fishing and value chain operations. Many fishery stakeholders are asking questions about the applicability of certification schemes for small-scale fisheries and I believe alternatives might appear in coming years, building from critical lessons learnt among the current options.

Together with other global stakeholders, the IPNLF is of course working to improve traceability and transparency throughout the tuna supply chain, through the use of technology. What are some of the initiatives that are being carried out in countries which have a one-by-one sector?

We’re engaged in many of these projects to ensure our member fleets can meet the increasing demands of consumers globally. We support fit-for-purpose improvements in each geography we work in, while the methods and technologies used vary greatly according to the scope of the fishery, the improvements we seek to make, and the current systems already employed by our members. Data is power in many instances, and we are also increasingly able to leverage improvements to have traceability systems carry the sustainability and community support messages from our fishers to their end consumers.

I’m actively encouraging our members to lead by example in further improving the transparency of their at-sea operations, to highlight the typically better performance of one-by-one fisheries in this space. We’re working with many governments to promote enabling policies while using onboard observers and technologies such as time-lapse cameras, electronic
logbooks, and even tracking devices on very small vessels to transparently evidence the benefits of one-by-one tuna fishing.

Referring to the IPNLF’s Social Sustainability Manifesto for One-by-One Tuna Fisheries, how does it specifically aim to employ and empower women?

You’ll notice on our website that IPNLF has a strong history of recognising the critical roles women play within fishing industries. Recognising this and providing credit where it tends to be sorely lacking is one thing, but I’m looking forward to better tracking our improvements in this space while actively promoting further opportunities for women throughout seafood supply chains.

Especially in small scale fisheries, women often do already hold prominent positions in managing trade, but there remains much room for improvement and I hope to see more female fishery representatives in high level meetings, making decisions on how fisheries should be managed.

We will continue empowering more women to have consistent and equitable employment opportunities throughout our members supply chains. To do this we will capitalize upon the opportunities many women have on shore while men tend to be at sea and thus unable to engage in employment that supports improvements in the overall seafood trade system. The baseline data being collected will help us better track and evidence our ongoing successes in this space.

And finally, as the only non-profit that is solely committed to promoting responsible one-by-one tuna fisheries and supply chains, and as an UNCTAD observer, what is on the IPNLF’s wish list for the Asia Pacific in 2020?

Of course to see the rights and needs of small scale one-by-one fisheries being more formally recognised and accommodated through the regional fishery and trade management processes that currently tend to focus on larger industrial fleets operations. I expect we will implement more successful operational and trade improvement projects with an increasing number of functional and strategic partners in the region over coming years.

I overall aim to further increase the global seafood market competitiveness of these fleets while ensuring that their functional benefits are more effectively communicated to end consumers, utilising tailor made initiatives as required by regional and local contexts.

The IPNLF’s Position Statement presented to the WCPFC meeting in 2019 urges progress in the following areas:

- Continue progress of harvest strategies for all major tuna stocks to ensure sustainability while also recognizing the social and economic dependence of coastal communities on fisheries harvesting shared tuna stocks. To this end, we expressly encourage the adoption of harvest strategies with equitable reference points and control rules for all target tuna stocks;

- Strengthen the management of tropical tunas, in line with advice from the Scientific Committee(SC), to avoid overfishing and secure continued opportunities for one-by-one fisheries (e.g. pole and line, handline and troll), coastal fisheries and communities in accordance with the UN Fish Stock Agreement and the UN Sustainable Development Goals;

- Improve the monitoring and regulation of fish aggregating devices(FADs) and purse seine supply vessels to better understand their impacts on fishing efficiency and inform future management. Regularly submitted information should include set history data, while a transparent, independent and harmonized control of operational (dFAD) buoy numbers should be implemented;

- Reduce marine pollution, including plastics and ghost fishing impacts associated with FADs which wash ashore and damage coastal habitats, by setting a strict time-frame for implementing fully biodegradable materials in drifting FAD construction.

Also, ensure that FAD owners recover drifting FADs while at sea, prior to beaching events, and use available information to inform aligned mitigation initiatives. Independent verification of the materials used in FAD construction should be part of the process;

- Adopt measures that will effectively reduce bycatch and protect endangered, threatened, or protected species, including sharks, seabirds, cetaceans, and sea turtles. A comprehensive shark measure, as recommended by the SC, should be adopted this year and at minimum include: a rebuilding plan for oceanic whitetip sharks, require harvest strategy developments for all overfished shark species, and require sharks to be landed with fins naturally attached. Additionally, prohibit the intentional setting around, or retention of mobulid rays. Furthermore, setting a time-frame to transition to FADs which do not use netting materials in their construction will greatly reduce impacts of ghost fishing on sharks and sea turtles; improve Monitoring, Control, and Surveillance in relation to longline fishing activities to reduce illegal, unreported and unregulated (IUU) fishing through the introduction of 100% observer coverage, either electronic or human, and strengthening at-sea transhipment measures;

- Address effort creep by imposing strict monitoring and control on the use of any aerial means to search for tropical tunas, including aircraft, drones, helicopters or any other types of unmanned aerial vehicles.
ECUADOR – A VISIONARY LEADER IN SUSTAINABLE AQUACULTURE

By Jose Antonio Camposano

Ecuador has shot up in global rankings and is now the world’s second biggest producer and exporter of shrimp. More importantly, the Ecuadorian shrimp industry has gained an enviable reputation as being fully sustainable, producing ASC-certified shrimp of premier quality. This remarkable rise is the result of an industry-led, technology-driven initiative called the Sustainable Shrimp Partnership (SSP) which aims to offer consumers tangible value and the confidence that they are consuming a premium, safe and pure product. Although current SSP members are domestic, international companies are also invited to join in the initiative.

Introduction

Aquaculture activity started more than half a century ago in Ecuador, with the first shrimp farm built in El Oro province in 1967. Despite initial limitations in knowledge, periodic disease outbreaks, several national economic crises, and the change of its currency to the US dollar, the domestic shrimp industry has grown steadily. This was in part, due to farmers opting for extensive, low density farming systems and developing generations of disease-resistant shrimp instead of the trend towards intensification as seen in other countries. The establishment of the National Chamber of Aquaculture (CNA) in 1993 representing the entire industry from end to end, was a major step forward in achieving a coherent vision for all stakeholders.

After 2006, the industry was able to recover from severe WSSV outbreaks, and currently, shrimp aquaculture in this South American country is being carried out in approximately 3,875 farms over an area of 215,000 hectares.

By 2005, Ecuador’s shrimp exports to Europe were about 45,000 tonnes. In that year, a technical mission from the EU which had visited Ecuador to assess its food quality and assurance standards, came up with recommendations for the industry to implement. This led to the establishment of the National Control Plan, which defined the food safety standards that had to be adhered to. In 2019, Ecuador exported a record high of 1.4 billion pounds of shrimp worth more than US$3.7 billion, and representing a growth of 19% compared to 2018 (Figure 1).

The sector generates more than 261,000 direct and indirect jobs locally, representing more than 3% of Gross Domestic Product. Ecuador is the second largest shrimp exporter worldwide, after India, and in 2018 its share of the region’s shrimp exports exceeded 50% (Figure 2).

Figure 1: Shrimp exports from Ecuador (US$ million)
Aiming for the highest industry standards

In an environment filled with commodities but with no clearly differentiated products, Ecuador, through the CNA, decided to lead a sustainable global shrimp production initiative called the ‘Sustainable Shrimp Partnership (SSP)’, with the support of the Aquaculture Stewardship Council (ASC), the World Wildlife Fund (WWF), and the Sustainable Trade Initiative (IDH).

The SSP is made up of leading Ecuadorian companies committed to producing top quality shrimp, with the highest standards, without causing a negative impact on the environment and that is traceable, and free of antibiotics. This initiative was launched on March 12th 2018 in Boston, United States.

SSP companies include:
- Agromarina, Lebama and Salmos farms (Songa - Sociedad Nacional de Galápagos)
- Cachugran farm (Omarsa)
- Produmar farm (Produmar)

Ecuador invites worldwide shrimp producers to become part of the SSP and to commit to producing a first class product that meets all social and environmental standards (Figure 3).

One of the important features of the SSP for member companies is that it confers ASC certification for more than 150 indicators (the ASC is widely recognised as the most demanding and strict certification scheme for aquaculture). Being ASC-certified means:
- There is zero use of antibiotics throughout the production to ensure a healthy and clean product for consumers;
- Total traceability and transparency throughout the production process;
- Best practices to minimise environmental impact;
- Responsibility: Ensuring that SSP actions are focused on obtaining concrete and measurable results, demonstrating commitment to continually improving environmental and social performance;
- Transparency: Providing access to information on production practices in order to give SSP customers up to date information for making buying decisions;
- Inclusion: Working in collaboration with other companies and organisations to develop a significant change in the industry, improving environmental and social practices;
- Leadership: Looking forward to the future of the industry, and identifying where and how change can be promoted; taking the lead to ensure that shrimp farming is a clean, sustainable and successful practice for the world.

Towards a completely traceable industry

Food fraud is increasing. With complex supply systems and a lack of global transparency, we are seeing too many examples of incorrect labeling and low quality products in the market.
It time for us to change that - consumers have the right to know where their food comes from and how it was produced. As Executive President of the Aquaculture Chamber of Ecuador, the author believes that improving the future of the aquaculture industry goes beyond good practices. Rather, change in the global shrimp industry should be driven by a vision of commitment and values. It is a way of telling the industry to raise all standards and not to continue betting on the game of commodities.

A major determinant is full traceability: all products go through approximately six stages before reaching the consumer’s table: production, processing, packaging, storage, transportation and sales. Unlike many other initiatives, the SSP constitutes a platform where producers, exporters, traders and consumers are able to access traceability information at all stages in the value chain. In this regard, Ecuador aims to be the first shrimp producing nation in the world to incorporate blockchain technology for traceability, in collaboration with IBM, as was announced on May 6th 2018 in Brussels, Belgium by SSP executives.

Through the IBM Food Trust blockchain platform provided by International Business Machines Corporation, information will be available at any distribution site worldwide; i.e. for the first time, consumers can have full confidence in what they are buying. Through a QR code, consumers will get to know in a few seconds, the origin of the product. Where was it harvested? How was it processed and packed? How many hours did it travel from the shrimp farm in Ecuador to the supermarket or retail outlet? How many days was it on the shelf?

Pamela Nath, Director of the SSP Program, said that the IBM Food Trust will allow the local industry to be part of an ecosystem and be connected to internationally renowned companies that share the same values, because it all comes down to giving the final consumer tangible value. “Ecuadorian companies already have a traceability system, because they need it to export. What IBM Food Trust offers us is to be able to provide the same information but in a safer, inviolable and real-time way. We believe that traceability is the future of responsible aquaculture”, she stated.

The Food Trust enables immutable traceability data in real time from an end-to-end food product to verify the history of the supply chain; and provides verification that the shrimp is qualified as SSP, including confirmation that it is a zero-antibiotic shrimp, approved and certified under the ASC (Aquaculture Stewardship Council) standard. It provides a secure platform on which data can be uploaded and shared, and can help verify the authenticity of product claims. The technology is accessible to buyers, retailers and consumers, and will allow authorised parties to view key information for each food.

At present, three Ecuadorian companies: Agromarina, Lebama and Salmos farms (Songa – Sociedad Nacional de Galápagos); Cachugran farm (Omarsa); and Produmar farm (Produmar) are working on implementing the new system. As there are approximately 10 000 hectares of farm area in Ecuador classified as SSP - which means that they have the ASC certification, produce antibiotic-free shrimp with no negative impact on the environment, and offer complete traceability – more companies are expected to adopt the technology. Ultimately, it is important for the country to be at the forefront of technology and to offer consumers tangible value and the confidence that they are consuming a premium, safe and pure product.

With this process, the SSP seeks to differentiate itself in international markets, providing consumers transparent information about Ecuadorian shrimp production and the export process until the shrimp reaches their tables.

It should also be mentioned that the CNA also manages an effective global communication strategy (www. thebestshrimpintheworld.com) which positions Ecuadorian shrimp as being ‘First Class’.

Conclusion

Lessons learned from Ecuador on shrimp production indicate that survival rates increased from 45% in 1998 to 65-75% in 2016. Similarly, best growth rates which averaged 0.7-0.9 g/week in 1998 rose to 1.2-1.6 g/week in 2016, and the optimal feed conversion ratio was 2.0-2.4 in 1998 versus 0.8-1.6 in 2016.

By adopting a multiphase system, the 2.5 cycles/year in 1998 increased to 3-9 cycles/year in 2016, and the average yield shot up from <275 kg/ha in 2000-2001 to 1 800-1 950 kg/ha in 2018.

Ecuador aims to consolidate its position as a leader in shrimp production worldwide through the Sustainable Shrimp Partnership, strengthening its commitment to supply consumers with the best shrimp in the world, as well as issuing a call to its competitors to join in the initiative.

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Mr José Antonio Camposano is the Executive President of the National Chamber of Aquaculture of Ecuador, a private institution acting on behalf of the Ecuadorian shrimp industry, the most important exportable non-oil product, registering nearly US$3 billion in exports and sustaining 230 000 jobs. He has been the link between the private sector and governmental and non-governmental entities for more than 8 years, aiming to promote a sustainable business model through which aquaculture can generate growth and well-being for the local communities in his country. He was selected by IntraFish as one of the 100 most influential seafood executives in 2014 and member of the Under-40 Ranking of top young seafood leaders in 2015.
<table>
<thead>
<tr>
<th>Species</th>
<th>Price</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coldwater shrimp</td>
<td>£ 9.20/kg</td>
<td>1%</td>
</tr>
<tr>
<td>Atlantic cod</td>
<td>€ 3.75/kg</td>
<td>1%</td>
</tr>
<tr>
<td>Barents sea haddock</td>
<td>$ 3,350/t</td>
<td>0%</td>
</tr>
<tr>
<td>Skipjack tuna</td>
<td>$ 1,600/t</td>
<td>10%</td>
</tr>
<tr>
<td>Yellowfin tuna</td>
<td>€ 2,350/t</td>
<td>0%</td>
</tr>
<tr>
<td>Tilapia</td>
<td>CNY 6.7/kg</td>
<td>3%</td>
</tr>
<tr>
<td>Vannamei</td>
<td>INR 370/kg</td>
<td>0%</td>
</tr>
<tr>
<td>Vannamei (China)</td>
<td>CNY 76.2</td>
<td>6%</td>
</tr>
<tr>
<td>Alaska pollock</td>
<td>$ 3,500/t</td>
<td>4%</td>
</tr>
<tr>
<td>Atlantic salmon</td>
<td>NOK 73.85</td>
<td>26%</td>
</tr>
<tr>
<td>Rock lobster (Australia)</td>
<td>AUD 62.22</td>
<td>1%</td>
</tr>
<tr>
<td>Fishmeal (Shanghai)</td>
<td>CNY 10,600</td>
<td>0%</td>
</tr>
</tbody>
</table>

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THE EUROPEAN SHRIMP MARKET

By Mike Turenhout

The EU market for seafood is the biggest in the world, and specific to shrimp, more than 95% of the supplies in the EU originate from imports. The author gives a brief outline of the most important imported shrimp species, relevant exporting countries and EU measures and agreements that could affect trade. Additionally an insight is given into the product presentation and certification requirements most commonly required in the EU regarding shrimp.

Introduction

The EU is the largest trader of fishery and aquaculture products worldwide. On its own, domestic supply cannot fulfil consumer demand, neither in volume nor in species diversity. It is therefore not surprising that the EU seafood market is highly dependent on imported materials and has an import dependency rate which fluctuates at around 62-63% of total seafood supply. For some product categories, such as shrimp, the import dependency is even higher.

The total seafood consumption (Whole Fish Equivalent, WFE) in the EU reached 12.852 million tonnes in 2018 (Figure 1). The most important imported fish species are tuna (1.391 thousand tonnes WFE in 2018), salmon (1.223 tonnes WFE in 2018) and some whitefish species like cod (1.095 thousand tonnes WFE in 2018) and Alaska pollock (911 thousand tonnes WFE in 2018). Shrimp species are another important import product, comprising 906,000 tonnes in that year.

More information about the EU seafood market can be found in a finfish study produced in 2019 by the European Fish Processors Association (AIPCE) and the European Federation of National Organisations of Importers and Exporters of Fish (CEP), or AIPCE-CEP. The study contains information on finfish, shrimp as well as other important imported seafood species.

Shrimp imports into the EU

There are some small aquaculture producers in the EU and a fishing fleet targeting brown shrimp (Crangon crangon) mainly in north western Europe, but in general, shrimp production in the EU itself is low and over 95% of the shrimp supply comes from non-EU countries. In 2018 the total shrimp imports from third countries increased by 5% when compared to 2013, with an increase of 3% in 2018 alone.

The EU imports shrimp from all over the world. In 2018, most of the shrimp came from Vietnam (15%; 139 thousand tonnes WFE), Ecuador (14%; 125 thousand tonnes WFE), Greenland (11%; 99 thousand tonnes WFE), Argentina (11%; 96 thousand tonnes WFE), India (88 thousand tonnes WFE) and Canada (5%; 47 thousand tonnes WFE).

It is worth mentioning that imports from Vietnam and Ecuador have increased substantially in recent years (Figure 2). Between 2013 and 2018, the import share from
Vietnam increased from 7% to 15%, while the share from Ecuador increased from 11% to 14%. In absolute numbers, shrimp imports from Vietnam increased by 79 thousand tonnes WFE between 2013 and 2018, while those from Ecuador increased by 27 thousand tonnes WFE in the same period. Other countries which have proven themselves to be important as shrimp suppliers are Bangladesh, China, Norway and Indonesia.

### Fig 2: Imports of shrimp into the EU in 2018 (by country of origin)

Most of the shrimp exported to the EU in 2018 were Pacific white (*Panaeus vannamei*), with Vietnam, Ecuador, India and Indonesia being the most important exporting countries for this species. Other important shrimp species exported to the EU were black tiger (*Panaeus monodon*), Northern prawn (*Pandalus borealis*) and Argentine red shrimp (*Pleoticus muelleri*). Bangladesh and Vietnam were responsible for most of the export of black tiger shrimp (*Panaeus monodon*) to the EU. Canada, Greenland, Norway and Iceland exported mainly Northern prawn (*Pandalus borealis*) and from Argentina, the Argentine red shrimp (*Pleoticus muelleri*) was the main export product.

Different EU measures and/or agreements to reduce or eliminate import tariffs make importing shrimp to the EU more attractive than other markets. Since the EU market is price-driven, products that are governed by such measures and/or agreements have a competitive advantage. Three measures or agreements are important for exporting shrimp towards the EU:

- Free Trade Agreements (FTAs): The EU has FTAs with individual third countries throughout the world. These FTAs reduce regulatory barriers and provide preferential tariff treatment between countries. Relevant shrimp countries with which the EU has a FTA are Norway, Canada, Ecuador and Iceland. The EU and Vietnam signed a FTA on 30th of June 2019, which will enter into force once it is ratified.
- Generalised Scheme of Preferences (GSP): The GSP system is a preferential tariff system which provides tariff reduction or elimination for least developed countries. Shrimp producing countries having GSP mechanisms in place are Bangladesh, India, Indonesia and Vietnam.
- Autonomous Tariff Quotas (ATQs): The ATQ system is specifically designed to permit the EU industry access to its raw materials and semi-finished goods or components in a way that stimulates growth, employment and investment. ATQs reduce or eliminate tariffs on specific products instead of countries which makes a switch to other sources simple and smooth without losing beneficial tariffs. The 2020 ATQs for shrimp products are shown in Table 1.

### Table 1: Levels of EU Autonomous Tariff Quotas for shrimp products, 2019-2020

<table>
<thead>
<tr>
<th>Order No</th>
<th>Description</th>
<th>Annual amount of quota (tonnes)</th>
<th>Quota duty</th>
</tr>
</thead>
<tbody>
<tr>
<td>09.2794</td>
<td>Shrimps and prawns of the species <em>Pandalus borealis</em>, <em>Pandalus montagui</em> and <em>Pandalus jordani</em>, cooked and peeled, for processing</td>
<td>10 000</td>
<td>0%</td>
</tr>
<tr>
<td>09.2798</td>
<td>Shrimps and prawns of the species <em>Pandalus borealis</em> and <em>Pandalus montagui</em>, in shells, fresh, chilled or frozen, for processing</td>
<td>3 000</td>
<td>0%</td>
</tr>
<tr>
<td>09.2802</td>
<td>Shrimps and prawns of the species <em>Panaeus vannamei</em> and <em>Peneus monodon</em>, whether in shell or not, fresh, chilled or frozen, not cooked, for processing</td>
<td>30 000</td>
<td>0%</td>
</tr>
<tr>
<td>09.2826</td>
<td>Shrimps and prawns of the species <em>Pleoticus muelleri</em>, whether in shell or not, fresh, chilled or frozen, for processing</td>
<td>2 500</td>
<td>0%</td>
</tr>
</tbody>
</table>

Source: EU Legislation (No) 2018/625

### Main product forms, by region and market segment

Most of the shrimp are brought into the EU by specialised importers, coming in as frozen products. Only a small volume is imported fresh. The most important EU market segment for shrimp products consists of retailers (supermarkets, specialised fish mongers and street market stalls), followed by wholesalers and foodservices.

EU consumption of shrimp mainly consists of products made of *Panaeus shrimp* (especially *Panaeus vannamei*). In southern Europe, shrimp products are sold as chilled, “Head On Scale On” (HOSO) or as frozen peeled or HOSO products.
In northern Europe, there is a higher demand for convenient shrimp products, comprising mainly chilled peeled or marinated shrimp, whereas in the frozen market, both peeled and HOSO shrimp products are popular.

Northern prawn (Pandalus borealis) are mostly imported as peeled frozen or brined product by Denmark and re-exported to other EU countries (especially Sweden and the UK). The species is generally sold in the EU as salad and cocktail shrimp.

Argentine red shrimp (Pleoticus muelleri) are popular in southern Europe, where they are seen as premium product due to their dark red colour and strong taste. Argentine red shrimp competes with warmwater shrimp such as Pacific white shrimp (Panaeus vannamei) and black tiger shrimp (Panaeus monodon).

Some importers add value to the shrimp products that they import, and then sell the products in chilled form to, for example, supermarkets. In southern Europe, there are about 10-20 companies that have their own cooking facilities where they further process HOSO shrimp before supplying it to the ready-meal industry or supermarkets. Most of the Ecuadorian shrimps find their way to this market segment.

In north western Europe, there are another 10-15 companies which import peeled products in bulk to further process it into chilled products for industry and supermarkets. As raw material for these companies, peeled shrimp products from Vietnam and India are popular.

Ecolabels

Especially for the retail market in northern Europe, having an ecolabel is of high importance. For farmed products the Aquaculture Stewardship Council (ASC) is the leading ecolabel. Wild caught shrimp products need to be accompanied by the Marine Stewardship Council (MSC) ecolabel. There is another accepted ecolabel (EU organic), specific for organic certified shrimp products sold in northern EU.

In southern Europe, consumers seem to be less focused on ecolabels and more on other parameters. However, this is likely to change in the future as the market for fish products with an ecolabel is growing.

Mike Turenhout studied Aquaculture and Fisheries at Wageningen University in The Netherlands. After completing his MSc, he started his career in a Dutch trading company for exotic fish species. In 2013, he returned to Wageningen University to work on economic performance studies and value chain analyses in the seafood sector. Since 2017, he has been working for the Dutch fish processors and trade association Visfederatie, where he is responsible for markets and resources, and is also active as a board member of the European Processors and Trade Association (AIPCE-CEP).
ACHIEVING SUSTAINABILITY IN FOOD SAFETY: AN ETHICAL CODE AS CORPORATE SOCIAL RESPONSIBILITY?

By Evelyne Nusalim

Consumers have the right to have safe and correctly processed food, and it is up to food regulators and food business operators to assure them of this. In fact, food fraud, with or without consequences on consumers’ health, should be considered as a ‘crime against the community’. The author suggests that establishing an Ethical Code for food business operators based on Honour, Honesty and Order will help to combat fraudulent practices, particularly if the Code is implemented as part of corporate social responsibility.

Introduction

In 1820, German chemist Friedrich Accum (1769 – 1838) was the first to raise the issue of food safety, linking it with food fraud as explained in his book: ‘A Treatise on Adulterations of Food and Culinary Poisons’. He described, among others, ‘coffee’ adulterated with potato flour, roasted wheat and chicory to increase weight; colouring red cheese with red lead; and adulteration of cream with rice powder or arrowroot.

Years later, while working at the Department of Agriculture, American chemist Harvey Washington Wiley (1844-1930) launched a revolutionary experiment which came to be known as ‘poison-squad trials’. The ‘poison squad’ comprised young, healthy men who consumed capsules of borax, formaldehyde, and other common food preservatives alongside their daily meals. The shocking results of the trials led to the 1906 Pure Food and Drug Act and eventually to the creation of the U.S. Food and Drug Administration (FDA).

There have been many instances of food fraud throughout the world, for example: in 1981 in San Diego (USA), horse meat was found in imported Australian beef, and the following year, kangaroo meat was discovered in boxes of beef which a company in Melbourne had intended to export to the USA.

Then in 2008, kidney stones and renal failure found in thousands of babies and children in China revealed the adulteration of dairy products with the nitrogen-rich industrial chemical, melamine, and cyanuric acid.

However, it was the ‘horse meat scandal’ in 2013, when the Food Safety Authority of Ireland (FSAI) reported that 37% of hamburger ‘beef’ meat tested positive for non-beef DNA, that led to the war against food fraud being declared globally. At that time, Prof. Alan Reilly, Chief Executive, FSAI, was quoted as saying “Whilst there is a plausible explanation for the presence of pig DNA in these products due to the fact that meat from different animals is processed in the same meat plants, there is no clear explanation at this time for the presence of horse DNA in products emanating from meat plants that do not use horsemeat in their production process. In Ireland, it is not in our culture to eat horsemeat and therefore, we do not expect to find it in a burger. Likewise, for some religious groups or people who abstain from eating pig meat, the presence of traces of pig DNA is unacceptable. We are working with the meat processing plants and the Department of Agriculture, Fisheries and the Marine to find out how horse DNA could have found its way into these products”.

Food safety and economic fraud

The incidences mentioned above demonstrated the failure of food safety management in detecting food fraud for consumers’ protection: in other words, the contamination of food by known ingredients, organisms, mishandling, or processing that can lead to public health risks.

Whether impacting on public health or not, common fraudulent practices include adulteration, added weight, colouring with harmful substances and tampering of food, all of which have taken place for more than 200 years and till today, they remain a significant challenge for regulators and food business operators. Unfortunately, detection of food fraud can be done only after the fraud is committed and does not prevent it.
The European Union has four criteria to determine food fraud: Violation of EU Food Law; Intention; Economic Gain; and Deception of Customer (Fig 1).

Although some practices such as the use of carbon monoxide as a colouring agent are not harmful to health, they are nevertheless prohibited. Others, such as the addition of water to increase weight of the product, are allowed to an extent.

Figure 1: The EU Food Fraud Network and the System for Administrative Assistance - Food Fraud Annual Report 2018

**Regulations on addition of water**

To increase weight, product is often mixed with salt and phosphates or non-phosphates to allow it to soak up water before freezing, and by glazing the product with a layer of water while freezing. This is allowed as long as the substances used are in the list of permitted additives. If more than 5% water is added, this should be indicated on the ingredient list, and must be clearly stated in the name of the product; for example, ‘shrimp with water’. With regard to glazing, EU regulations do not specify a limit, but the weight with glaze may not be put on the label, only the nett weight.

CBI, the Dutch Centre for the Promotion of Imports from developing countries, wrote that mislabelling of added water is widely practised in Europe, taking advantage of the insufficient regulatory framework for practices which are not considered as being harmful for the health of consumers. In its newsletter, CBI notes that EU regulations permits up to 5% water to be added without being mentioned on the label as an ingredient. Consequently, all processed food contains 5% added water without any mention, with consumers paying for the added weight to the product. Furthermore, 20% glaze labelled in packaging of shrimps and, under-declaration of glazing (usually more than 20%) is common practice in the wholesale markets of Europe.

However, according to Seafish’s ‘Glazed Seafood Weight Indication Guidance’, only 10% glazing is needed to prevent dehydration. Overglazing with unnecessary ‘content’ of 20% more water, demonstrates intention of fraud, especially as it goes parallel by implementing the ‘frozen count’ implying that the count of shrimps is inclusive of 20% water. and not ‘actual count’ as stipulated in the Codex Alimentarius: ‘When declared on the label, the count of shrimp shall be determined by counting the numbers of shrimp in the container or a representative sample thereof and dividing the count of shrimp by the actual deglazed weight to determine the count per unit weight.

In the Netherlands, product is commonly labelled with content (inhoud) in (kilo)grams, indicating weight (with glaze) in addition to net weight without glaze.

In personal communication (January 2015) with the Directorate-General for Health and Food Safety of the European Commission on the question of labelling of net weight and overglazing, clarification was given as follows:

‘With regard to pre-packed glazed foods, Regulation (EU) No 1169/2011 introduces a new provision in relation to the indication of the net weight compared to the previous Directive 2000/13/EC. In particular, in its Annex IX, point 5, it requires that “Where the food has been glazed, the declared net weight of the food shall be exclusive of the glaze”. This provision applies regardless of the quantity of the glaze and was particularly introduced in order to prevent the fraudulent practices in relation to the indication of the net weight for glazed foods. It should also be clarified that under the new Regulation in case of glazed foods it is not allowed, even on a voluntary basis, to declare the weight of the glazed food inclusive of the glaze (total/gross weight), in addition to the indication of the net weight exclusive of the glaze. Therefore, the calculation of the net weight inclusive of glazing, and even of over-glazing, is in breach of applicable labelling rules’.

For method analysis where there is no harmonised EU regulation, the DG Health and Food Safety clarifies it as follows:

‘However it is worth reminding that the absence of a EU harmonised method of analysis does not prevent official controls from being carried out. In the absence of such harmonised method, article 11 of Regulation (EC) No 882/20041 indicates that the methods of sampling and analysis used should comply with internationally recognised rules or protocols, or, in their absence, with other methods fit for the intended purpose or developed in accordance with scientific protocols. At international level, Codex standards have already been adopted for several commodities, and a Guide for the verification of drained weight of prepacked food has been elaborated by the European Cooperation in Legal Metrology (WELMEC).’
According to CBI, although it is illegal to mislabel, these practices are not a threat to human health. They are considered to be economic crimes and are therefore less of a priority for the authorities. The CBI states that it is mainly up to the industry to act against these practices and that action, led by European industry bodies, is expected soon.

Similarly, investigation by Belgafood, the association of Belgian food importers, revealed that 50% of the frozen shrimp imported into Northern Europe from Southeast Asia is short-weighted because of over-glazing. However, it should be added that the overglazing, frozen count and short-weight is always done following the instructions of the importers – a 2013 Belgafood survey clearly demonstrated that the brands found with overglazing and short-weight are mostly importers’ own brands. In such cases, the processors in third countries do not gain economically by misleading European consumers. Here, the fraud is committed in Europe – it is not only the labelling, but also the information provided by the sellers in Europe that is purposely misleading.

This should be regarded not as ‘economic fraud’, but a criminal offence, because it is explained as if the processors in Asia set out to mislead not only consumers, but also importers and the authorities. Rather, it may be their ignorance of the General Food Law and Criminal Law applicable in the European Union that leads them to accept orders that do not comply with the EU regulations.

Time for an ethical code

In a 2015 publication ‘The Significance of Food Fraud in Australia’, food fraud is described as being caused by the conduct of fraudulent business operators. Combatting food fraud is generally divided into three steps: detection of the fraud, investigating the (infra)structure and prosecuting those responsible. Detection of fraud can be done only after it has happened, and the focus is only the material used which carries food safety risks. However, ways to prevent the conduct of fraud are not thoroughly investigated.

As the first priority of the European Commission is to combat fraud that harms the health of consumers, we can take a look at the role of others such as medical doctors, who also deal with the health of the patient.

Medical doctors are bound by an ethical code loosely based on the oath of Hippocrates and adapted to values in different countries. Medical ethics are based on a set of values that Tom Beauchamp and James Childress (‘Principles of Biomedical Ethics, 1993’) have described as a “four principles” approach: autonomy, non-maleficence and beneficence, as well as justice (fair treatment) for everybody. It gives guidance on self-determination, on not harming the patient, and promoting the well-being of the patient, and justice. Furthermore, to be a doctor requires some level of accreditation before they can practice, and this certificate could be withdrawn in the case of fraud. Food business operators and food handlers should be treated similarly; for the present, committing food fraud does not always lead to withdrawal of business licences. Operators can just file for bankruptcy after the fraud is detected, and begin again the next day, eventually in another country. The biomedical ethics model could therefore be applied to food business operators, requiring them to possess the integrity to provide safe and correctly processed food.

According to Barbara Killinger, a Canadian psychologist and writer: “Integrity is a personal choice, an uncompromising and predictably consistent commitment to honor moral, ethical, spiritual and artistic values and principles”. In other words, ‘doing the right thing for the right reason’. But ‘doing the right thing’ is subjective. Establishing an Ethical Code, based on a convention of norms and values, to reach agreement on the definition of ‘doing the right thing’ could contribute to correctly processed and safe foods so that consumers are getting what they paid for.

If food business operators take the example of the medical field and establish a professional Ethical Code acknowledged by national and international law as the code of conduct for everyone in the food business, it could work in the same way as for medical doctors, reducing incidents, conflicts and fraud.

The Ethical Code should consider well-defined norms and values, including:

Honour (self-respect): a respect for principles and morals when selling food to feed other human beings and being truthful, with a sense of duty as a reflection of their honour;

Honesty (respect toward others): Honesty is indispensable in ensuring the safety of food in order to protect the health and lives of those consuming the food;

Order (respecting laws and regulations): Consumers’ protection is established by rules and regulations. Food business operators should therefore behave in an orderly fashion, respecting and implementing these rules and laws;

Honour, Honesty and Order (H2O – the formula of water): As water is a necessity for life, food safety is too.

An Ethical Commission that has the power to evaluate the conduct of business operators and recommend remedies and/or withdrawal of the business licenses, could monitor
the implementation of the Ethical Code. Decisions of the Commission should be binding and respected by all parties concerned to protect consumers’ well-being and rights and to ensure fair competition among food business operators.

Food business operators should also be required to obtain personal certification and/or a diploma, which will demonstrate their ability. It will also raise awareness on the importance of their actions, and motivate them to do the right thing for the right reasons in providing safe food.

Conclusion

In his book ‘Treatise on Adulteration of Food’, German chemist Frederick Accum (1769 – 1838) writes: The man who robs a fellow subject of a few shillings on the high-way, is sentenced to death; while he who distributes a slow poison to a whole community, escapes punishment.’

Establishing an Ethical Code would help to ensure that those who take actions (even unintentionally) for unfair gain and which impact negatively on consumers’ health, can be brought to account. This Code would ideally be part of the Corporate Social Responsibility for food business operators. Furthermore, requiring operators to possess a diploma or certification regarding food safety and food law as well as an Ethical Code should be considered to sustain a high level of protection for consumers. Abusing consumers for economic gain should also be considered a crime against community.

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AQUACULTURE

Major barramundi (seabass) merger

Singapore - Barramundi Asia (BA), which operates the largest barramundi farms in Singapore and Australia, is acquiring Allegro Aqua, a startup by scientists from the Temasek Life Sciences Laboratory (TLL). The latter was set up to commercialise Asian seabass, which they claim can be bred in 30% less time, is less susceptible to diseases, and is more nutritious and tasty. BA’s filleted fish is marketed under the trade name Kühlbarra and the seabass is marketed under its registered name St John’s Sea Bass.

BA is the only farm in Singapore with 4-star Best Aquaculture Practices rating, although other farms stand to benefit as well. Andrew Kwan, director of Barramundi Asia, was quoted as saying: “What will be truly industry transforming is the plan to supply superior vaccinated barramundi fingerlings to other farmers in Singapore.”

Meanwhile, BA is considering an initial public offering (IPO) in order to help it scale up production to 50 000 tonnes a year by 2030.

AI to help farmers tackle shrimp diseases

India - Aquaconnect, an Chennai-based aqua technology start-up; the Sustainable Trade Initiative, IDH; and the University of Liverpool’s Professor Kenton Morgan, are partners in a project to predict shrimp diseases. The project aims to benefit 13 000 ha of farm area in India in the next two years by helping shrimp farmers to manage their farm operations efficiently and improve productivity by using artificial intelligence. Through a FarmMOJO mobile app, machine learning technology analyses feed and growth patterns, and suggests appropriate advice for better disease management.

The MOJO mobile app helps farmers to improve shrimp health

“We found out that the revenue of farmers increased by around 5% after using the app. It has also reduced the occurrence of diseases in 120 ponds by assisting farmers in taking corrective actions, thereby minimising losses,” notes Rajamanohar Somasundaram, Co-founder and CEO, Aqua Connect.

Low-cost pangasius culture to be developed with FAO

Indonesia - The Maritime and Fishery Ministry of Indonesia and the Food and Agriculture Organization of the United Nations (FAO) will go on to develop low-cost catfish (pangasius) culture in Indonesia after a pilot project in South Sumatra last year yielded a positive result. Under the “Supporting Local Feed Self-Sufficiency for Inland Aquaculture in Indonesia” project, the Ministry and FAO will impart training to pangasius farmers in order that they can become self-reliant in producing low-cost, high-quality fish feed. The project, costing US$257 000, aims to boost the production of pangasius in Indonesia.

Pilot projects for vannamei farming

Bangladesh - Shushilan, a non-government organisation in the south west district of Khulna, and Agri Business Enterprise in the south-east district of Chattogram have been given official approval to launch two separate pilot projects for vannamei culture, under the close supervision of the Department of Fisheries (DoF) and the Bangladesh Fisheries Research Institute (BFRI). P. vannamei is a non-native shrimp species in Bangladesh.

The country’s shrimp exporters have been demanding for more than a decade to allow the culture of vannamei to remain competitive in the export market as the earnings from the local variety of black tiger shrimp have decreased due to high prices and lower production. The government had however been reluctant to approve this as activists had claimed that vannamei culture would be harmful for biosecurity. The former president of the Bangladesh Frozen Foods Exporters Association, Md. Golam Mostafa, welcomed the government approval for the pilot projects, saying that vannamei comprises some 80% of the total global shrimp exports whereas the share of black tiger shrimp has decreased to only 10%. Furthermore, the production of vannamei shrimp is usually about 20...
tonnes per hectare while the production of tiger shrimp is one tonne per hectare.

**First artemia production centre opens in Latin America**

**Ecuador** – The shrimp farming sector in Ecuador has largely depended on imports of artemia from the US and Russia, but now with the opening of its first production centre (also the first in the Latin American region), the supply chain looks more assured. The plant was opened by Ecuador’s Vice President, Otto Sonnenholzner.

The centre, sited in Santa Elena, is being managed by Codemet and the Belgian company I&V BIO. Scientists produce the artemia through a process called cryptobiosis, which takes advantage of its ability to enter a stage of suspended animation where metabolic processes stop. The first sales of artemia are expected by end-February, and by the end of this year, the centre is expected to be able to supply nearly 70% of local demand. The long term goal is to produce up to 450 kg of product per day.

**Major agreement signed for 2020**

**EU/Norway** - The EU and Norway have signed three fisheries arrangements for 2020, making this the largest fishing agreement in the north of Europe.

The parties signed two bilateral arrangements and a neighbouring arrangement. The arrangement covers catches of nephrops, blue whiting and almadraba anchovy by vessels from Norway and the EU. The parties also signed an additional agreement on management and conservation measures for herring in the North Sea.
arrangement, the former covering the North Sea and the Atlantic, and Skagerrak and Kattegat, and the latter for the Swedish fishery in Norwegian waters of the North Sea. Quotas have been agreed for the jointly-managed fish stocks in the North Sea (cod, haddock, plaice, whiting, herring, and saithe) and Skagerrak (cod, haddock, whiting, plaice, shrimp, herring and sprat), as well as an exchange of reciprocal fishing possibilities.

In the North Sea, five out of six stocks jointly-managed with Norway have been set in line with the ICES’ scientific advice at maximum sustainable yield (MSY) levels. This results in quota reductions in 2020 for saithe (-15%) and whiting (-13%), but increases in haddock (+23%) and plaice (+17%). A roll-over was set for herring. Concerning the North Sea cod stock, the EU had advocated for a strict application of the MSY approach for 2020, which would have resulted in a 61% TAC decrease. However, the TAC was set at 17 679 tonnes (50% less than in 2019), a less ambitious decrease than the EU had hoped for. The two parties have however agreed to implement a range of additional measures, such as closures of areas and measures to protect adult and juvenile cod during the year. The EU will also implement a specific control and inspection programme to further reduce catches of juveniles.

**Tri Marine awarded third certification**

**Solomon Islands** - Tri Marine, which already holds MSC certification for pole-and-line and purse-seine skipjack and yellowfin in the region, has been awarded a third certification for its longline-caught albacore and yellowfin tuna from the Solomon Islands. The pre-assessment was followed up by a fisheries improvement project (FIP) in 2015, and the full MSC assessment of the longline fishery began in 2018. The tuna from these three fisheries will be processed at SolTuna, NFD’s sister company in Noro, Western Province.

Elsewhere, Tri Marine is engaged in Indonesia’s first purse-seine tuna FIP and is a member of Indonesia’s pole-and-line and handline FIP. It is also a participant in a purse-seine tuna FIP in the Eastern Pacific.

**Blacklisting for distant-water criminals**

**China** - As China’s distant-water fishing fleet has grown considerably over the past 20 years, so too has the challenge of overseeing its operations to check on IUU activities. The government has begun implementing a system of blacklisting for offenders, which results in sanctions on companies such as the removal of subsidies and bans on distant-water operations. Some captains have already been banned entirely from the fishing industry such as the skipper of the ‘Fu Yuan Yu Leng 999’, apprehended in the Galápagos marine reserve carrying thousands of illegally caught sharks. The national Fisheries Law, the main document regulating China’s fishing industry, will be revised to include the blacklist system. This law is expected to come into force later this year.

**Cod fishing banned in the Baltic**

**EU** - From 1 January 2020, the cod fishery in the Baltic Sea is banned both for commercial and recreational purposes. This proposal was made by the EC based on scientific advice from the International Council for the Exploration of the Sea, having assessed the extremely poor state of almost all fish species in the Baltic Sea.

Meanwhile, Baltic herring fishing opportunities for Lithuania have been reduced by 10%, sprat by 22%, Central Baltic salmon by 5%, Western Baltic cod by 60%, as well as fishing bans and restrictions on fishing during the spawning period.

**Praise for reforms, but government under pressure**

**Thailand** – In December 2019, several thousand Thai fishermen took part in separate rallies in 22 provinces over the strict anti-IUU regulations enforced by the government. According to the Bangkok Post, they submitted an eleven-point request to the government through their local authorities, threatening to scale up their protest and march in Bangkok if their demands are not heard. Mongkol Sukcharoenkana, president of the National Fisheries Association of Thailand (NFAT), said the reforms and costly fines had caused many fishermen to lose their jobs. Fishermen forced to abide by the stiff laws and regulations have seen their operating costs soar, while prices fetched by their catch have fallen as imported fish floods the local market, he said. “If the government won’t fix the problems for us, we’ll just oust them,” he continued.

Meanwhile, the government continues to receive support for its tough stand against IUU fishing and wider reforms in its fishery industry. In December 2019, fifteen supermarkets and buyers in the US, UK and EU sent a letter to the Thai Ministry of Agricultural and Cooperatives, conveying praise for the Thai government’s stand. The fifteen
supermarkets and buyers are Albertsons Companies, Aldi Nord, Aldi South, Cargill, EDEKA, Ethical Trading Initiative (ETI), Kroger, Lidl International, Morrisons, REWE Group, Sainsbury’s, SEA Alliance, Tesco, Waitrose, and Whole Foods.

Not surprisingly, the situation has resulted in huge stockpiles of imported seafood particularly high value species like shrimp, lobster, crab, crayfish, salmon, etc., given that a high surge of imports had been recorded during the end of 2019. In fact, China’s imports of seafood in 2019 had increased by 19.7% at 6.261 million tonnes compared to 2018; imports in December alone were 0.601 million tonnes in preparation for the festivities in January/February 2020.

MARKETING

Coronavirus impact on Chinese seafood industry

China – The outbreak of coronavirus has inevitably had negative impacts on food businesses in China, including the seafood sector. Lunar New Year celebrations were cancelled in China with instructions from the authorities for families to reduce outdoor activities. This resulted in falling sales in restaurants and hotels following numerous cancelled trips, dinners and even reduced shopping frequency.

The impact of the cancelled celebrations is already being felt in the global seafood trade. Following airport shutdowns, Canada is scrambling to figure out what to do with live lobster which had been intended for export to China. With regard to salmon, with China being the UK’s third-largest overseas market for the fish, producers fear a dramatic shift of export flows. Chilean salmon producers have stopped shipping their products to China and are now looking to other markets. For Ecuadorian and Indian shrimp, China is their key market, but in the upcoming months, any new orders are most unlikely as their inventory during the holidays did not sell. Exports of Australian crayfish to China for the expected Lunar New Year celebrations also did not materialise.

Editor’s note: A special INFOFISH report on Covid-19 and its effect on trade with China can be read on pages 42-44.

Record export year for shrimp

Ecuador – The National Chamber of Aquaculture (CNA) estimates that in 2019, exports of Ecuadorian shrimp achieved a record figure of over 1.4 billion pounds valued at US$3.6 billion, confirming the country’s place as the world’s second largest shrimp exporter after India. The good performance was in
part due to the resumption of exports to China in October – December, after the Chinese authorities rescinded the ban on some of the country’s major exporters. In October alone, shrimp exports to China were 34 000 tonnes, up 13% compared with September.

(Editor’s note: An article by Jose Antonio Camposano, CNA President, is on pages 22-24 in this issue of the INFOFISH International).

**Shrimp production expected to increase in 2020**

**Thailand** - Due to increase in production, the Thai Shrimp Association is hoping for a recovery in shrimp exports which are forecasted to grow 20% in 2020 at 192 000 tonnes from 160 000 tonnes in 2019. Thai shrimp farmers have been hit by disease in their breeding programmes and protectionism from the US in the last two years, leading to lower prices. However it is envisaged that domestic shrimp production in 2020 will fare better than the past two years because of enhanced aquaculture technology and more effective shrimp disease control implemented in the country.

Meanwhile, Thailand’s annual fishery exports for 2019 have dropped to about 1.19 million tonnes (-1.03%) compared to 2018; the US, Japan and China were the top three markets. The share of canned/processed tuna was 44.5% in total exports. Exports of frozen shrimp and prawn decreased (-5.64%) from 71 257 tonnes in 2018 to 67 238 tonnes in 2019. China is the leading market for shrimp and prawn, surpassing the US market.

**Farmed exports in 2019 lower than expected**

**Vietnam** – According to the Vietnam Association of Seafood Exporters and Producers (VASEP), farmed seafood exports were worth US$58.6 billion (EUR 7.7 billion) in 2019, down by 2.2% year-on-year. The export goal set for the year was US$10.5 billion (EUR 9.4 billion), which marks the second consecutive year that the country has been unable to achieve its goal. In 2018, the export value was US$8.79 billion (EUR 7.87 billion), against the target of US$10 billion (EUR 8.96 billion). Nevertheless, in 2020, Vietnam has set a goal of US$10 billion (EUR 8.96 billion) from its seafood exports, up 16.3% from 2019.

**Mixed performance for pangasius exports**

Vietnam – According to the Vietnam Association of Seafood Exporters and Producers (VASEP), as of the first half of August 2019, the total export value of pangasius to the German market reached US$20.4 million, up 35.4% over the same period in 2018. Of this, a small volume comprises organic pangasius fillets from a few companies in the An Giang area of Vietnam, which are sold at an average export price of between US$9.6 - 9.78/kg. Currently, Germany is the third largest exporter of Vietnamese pangasius within the EU (after the Netherlands and the UK).

However, in the same period, pangasius exports to the US market were US$175.9 million, down 38.7% compared to the same period in 2018. This was due in part to an overall drop in pangasius imports into the US, and at the same time, increased purchases from two new suppliers, Taiwan and Spain. Nevertheless, Vietnam still accounted for about 96% of total US imports of pangasius.

**More shrimp to the EU in 2020**

**Vietnam/EU** - Vietnam will be focusing on the EU market for shrimp in 2020, given the free trade agreement (FTA) which was signed in June 2019. This agreement reduces the tariffs on most raw shrimp including fresh/chilled and frozen products imported from Vietnam from 12-20% to zero. Currently, the EU accounts for about 31% of total world shrimp exports, 22% of that being Vietnam’s share.
With those tariffs, Vietnam has many advantages in exporting its shrimp products to the EU, according to the Vietnam Association of Seafood Exporters and Producers (VASEP). The plan for the immediate and long-term is to create a certified shrimp supply with competitive prices and to build a Vietnamese shrimp brand.

Lower import tariffs on additional seafood

China – Effective 1 January 2020, the import duty on some fishery imports entering China has been cut. According to the tariff-reduction list, the import duty on frozen Atlantic salmon has been reduced from 7% to 5%, while those on tunas came down to 1%. Those on herring and codfish have decreased to 2%, and that on pollock has reduced to 5%. The rock lobster tariff has also been reduced to 5%. Some other seafood products like abalone will also have reduced tariffs, but to a different extent.

There will be further tariff reductions in imports from several countries, namely New Zealand, Peru, Iceland, Australia and Chile.

Fish export trends

Malaysia - During January to October 2019, total fishery exports (excluding live fish) from Malaysia increased by 21.61% to 199 329 tonnes from 163 907 tonnes in the same period in 2018. China dominated 23% of the market shares while Thailand and Singapore made up 18% of the total exports during this review period. The majority of these fishery products species (including tuna, shrimp, eel and catfish) are exported as frozen. Exports of frozen shrimps have increased to 23 776 tonnes during this review period (+27.34%).

Pioneer fish maw exports

Uganda/China – A memorandum of understanding was recently signed between Uganda and China. According to the agreement, fish products, including the dried swim bladders (“fish maw”) of Nile perch, will be exported from Uganda to China. The fish maw fetches up to US$1000 per kg, as they are believed to be an aphrodisiac by many Chinese.

Uganda’s Minister for Fisheries, Hellen Adoa said that the estimated annual exports to China will be 520 tonnes of fish maw and about 36 000 tonnes of Nile perch, headless gutted.

More exports from Fiji

Fiji - Exports of fish and fishery products from Fiji increased in the first nine months of 2019 from 13 929 tonnes to 15 632 tonnes, +12% over the same period of 2018. Supplies of canned tuna to the USA, however, declined by 7.23% during this period. Interestingly, exports of live ornamental fish to Australia continued its steady growth since 2017. Exports of frozen tuna to Thailand increased to 1 700 tonnes during January-September 2019 compared with 690 tonnes during the same period in 2018.

Positive growth in Q3-2019

Maldives - The fisheries industry of Maldives showed positive development during the third quarter of 2019, including increased fish purchases by the export processing industry. Fishery exports during the reviewed quarter improved strongly as well.

According to the Maldives Monetary Authority (MMA), following the marginal upturn during the preceding quarter, purchases by processing companies accelerated to 15% in annual terms. The volume of fish exports grew by 18% at 14 925 tonnes compared to the same period in 2018. This was mainly attributed to the rise in the volume of frozen skipjack and yellowfin tuna exports. However, exports of high value fresh tuna declined. Exports of canned/pouched tuna products were also lower compared with the same period in 2019.
Import ban lifted on Fukushima seafood

The Philippines - According to the Japan Times, the Philippines has lifted import restrictions on seafood from the area around Japan’s Fukushima nuclear power plant. Previously, seafood from the surrounding prefectures of Fukushima, Ibaraki, Tochigi and Gunma had to undergo radiation tests before being admitted for import to the Philippines. However, the threat of radiation poisoning is now believed to be sufficiently negligible for imports from the region to no longer require additional testing. There are 20 countries that still have trade restrictions on edible products from the region, down from the original figure of 54.

Fourth WSI video competition now open

The WSI ‘women in the seafood industry’ video competition is open for the fourth time and is accepting entries from 1 November 2019 to 1 July 2020. Entrants have six months to shoot a short and sharp video and highlight the contribution of one or several women in any segment of the seafood industry. The competition has been made possible thanks to the technical support of MATIS in Iceland and the sponsorship by the French Development Agency (AFD).

As before, an international jury from five continents will select the three best videos. Three winners will receive a cash reward: 1000 euros for the top winner, and 500 euros each for the second and third videos selected. Furthermore, considering the high quality of most entries, WSI has decided to designate four additional winners who will receive a non-monetary prize. The winners will be announced in the first week of September 2020. Full details of the video competition can be found at the WSI website.

In 2019 the first prize was awarded to Spanish film Women of the Arousa. Second prize went to Oyster Farming in Wadatar, a film made in India, and the third prize went to Peruvian film The Aquaculture Women of Lake Arapa. The FAO utilised five of the WSI videos during the world Fisheries Sustainability Symposium in November 2019 to illustrate the role of women in the seafood industry.

Pre-competitive collaboration brings benefits to all

A new report by WWF makes for interesting reading, highlighting as it does the advantages of pre-competitive collaboration in key areas to improve its sustainability and profitability. Citing the Global Salmon Initiative (GSI) as an example, the report notes that there have been clear progress in areas such as non-medicinal treatment methods for sea lice, and feed efficiency, which individually, companies would have found it hard to achieve so quickly.

For example, according to the report, “for years, the salmon farming industry had been criticised for having a high FCR, with ratios quoted anywhere from 1.5:1 to 3:1. Prior to the timing of formation of the SAD and GSI, FCR ratios were even higher, often quoted at 4:1 or more, numbers that often got cited past the timing of their reality due to misinformation. Today the feed conversion ratio has dropped to around 1:2:1, while the goal is to get down to a 1:1 ratio.”

The GSI has 14 members, representing 50 percent of global salmon aquaculture tonnage. Established in 2013, its members are committed to voluntarily reporting on the key indicators of sustainability performance, including metrics on fish escapes, antibiotic use, and marine ingredients in feed, among others. The report concedes that while “it is unlikely the GSI will meet the target of full ASC certification by 2020 (current estimate is approximately 75 percent), the progress towards certification is still considerable and significant. Several members have pointed to certification progress and collective problem-solving on sustainability issues as one of the main drivers for considering the GSI as a successful collaboration and optimal use of resources.”

Fisheries management is actually working

Nearly half of the fish caught worldwide are from stocks that are scientifically monitored, and which are on average, increasing in abundance. Effective management appears to be the main reason these stocks are at sustainable levels or successfully rebuilding. That is the main finding of an international project led by the University of Washington to compile and analyse data from fisheries around the world. The results were published January 13, 2020 in the Proceedings of the National Academy of Sciences.

The project builds on a decade-long international collaboration to assemble estimates of the status of fish stocks or distinct populations of fish around the world. The team’s database includes information on nearly half of the world’s fish catch, up from about 20% represented in the last compilation in 2009. However, most of the fish stocks in South Asia and Southeast Asia do not have scientific estimates of health and status available. Fisheries in India, Indonesia and China alone represent 30% to 40% of the world’s fish catch that is essentially unassessed.
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SITUATION REPORT: COVID-19 AND ITS IMPACT ON SEAFOOD TRADE
By INFOFISH

Due to the emergence of the new coronavirus in Wuhan, flights in and out of China have been banned, and travel advisories have been issued by many countries on an international scale which is unprecedented. The fact that the virus made its appearance just before the annual massive Lunar New Year celebrations, amplified the disruptions to the seafood trade between China and exporters from other countries. This is a special INFOFISH report (as of mid-February 2020) on the impact of Covid-19 on China in relation to global seafood trade, with information culled from a variety of sources.

Background

The advent of the novel coronavirus (Covid-19), while terrible in itself, could not have chosen a worse time to have hit China. First reported on 31 December 2019, the virus gathered pace and by the 20th of January when hundreds of millions were preparing to move cross-country to spend a few precious days with their families to celebrate the Lunar New Year, the situation had become serious. On the 30th of January, the World Health Organisation declared the coronavirus a global health emergency.

The Chinese government took unprecedented swift action, placing the city of Wuhan in Hubei province, where the virus originated, under lockdown mode on the 23rd of January. This prevented the wider spread of the virus beyond Wuhan borders although by the first week of February, every other province in China was reporting cases of infection. Other cities in the province – Huanggang, Ezhou, and Chibi – also went into isolation mode.

The busy streets of Wuhan became eerily quiet, traditional reunion dinners were held indoors, while restaurants and supermarkets were forced to scale back or cancel their food orders, including from overseas. The same scenario played out to a lesser degree in the other provinces. Many markets, schools, and businesses in the affected areas, which had been closed since January 23 for the Lunar New Year holiday, were not allowed to reopen until the 10th of February while the authorities dealt with the outbreak. Western chains such as McDonald’s were considering closing their doors in the interim period.

Furthermore, several countries either barred entry of visitors from Wuhan and/or suspended flights to and from the province. These included US airlines Delta and United Airlines which suspended their Chinese routes after the US State Department raised its travel alert to level 4 (the highest), also Virgin Atlantic, Air Canada, British Airways, Air France, and Lufthansa. Meanwhile the US, and governments in Europe and Asia are enforcing strict monitoring (and even banning) visitors from China, and isolating citizens returning from China.

As of 13th February, the number of infected persons worldwide had risen to 45 174, with 1 115 deaths, almost all in China. It must be stated that the coronavirus, for now, does not appear to be as deadly as the Severe Acute Respiratory Syndrome (SARS), which had killed about 10% of the people who caught it as compared to about 2% of the people infected with this new virus. However, the contagion effect is more widespread; furthermore, the impact of Covid-19 on the consumer market in China is expected to be much deeper than the SARS era which happened about 20 years ago simply because in the interim period, China has risen to leading global market status.
Shockwaves for exporters to China

Orders by Chinese authorities to stay at home, limit travel, and cancelled international flights could be considered drastic measures, though understandable. Nevertheless, they became the cause of great consternation amongst exporters worldwide, who had banked on being able to ship seafood to China during this once-a-year occasion. Supplies were plentiful, but because international flights had been cancelled, these stocks could not be sent.

By the end of January, the Tasmanian, Australian and New Zealand red rock lobster industry, which usually sells almost all its product to China, was looking for alternate markets, including trying to promote its consumption in the country. Exporters reported that their tanks were full of stock which had been saved for the Lunar New Year celebrations in China, and it seems possible that thousands of live lobsters held in tanks might have to be returned to the sea. Their predicament was shared by exporters of live lobster from Canada: from August to October 2019 (due to the US-China trade war), China had overtaken the US as the largest market for Nova Scotia live lobster; in the first 10 months of 2019, sales of Canadian lobster to China were worth US$384 million as compared to US$428 million for the US. Due to the suspension of flights from Skylease, a cargo carrier which used to fly lobster directly from Canada to China about three times a week, no shipments have taken place from Nova Scotia, and the same situation was seen for flights from Halifax Stanfield to the Chinese market.

In India, informal sources reported that live (red) mud crab shipments from India were affected by import restrictions in China, leading to a back-up of supply and loss of income for the local fishermen in the coastal belts, as well as the middlemen who supply the crabs to exporters of product to that market. Many of these fishermen carry out crab rearing (both the red and green species) in traditional shrimp farms and other water bodies in Kerala, Kollam, Kannur, and Malappuram. Crab exporters in other countries, e.g. the US (Dungeness crab) and Scotland (brown crab) are expressing similar difficulties in their own supply chains. In Russia, the fall in Chinese demand for live king crab was said to have halved prices from US$15-18/kg last year to US$7/kg currently. This will likely have a significant effect on export revenue.

Seafood exporters (e.g. live lobster, live coral trout, abalone) in Australia have voiced out how serious the impact of the closure of the Chinese market has been on their business, and their main worry is how long this will continue (according to the Export Council of Australia, China is the country’s largest export market for seafood). Most of their product, which had been timed for the Lunar New Year, cannot now be sent to mainland China, or through Hong Kong. Further, the fact that few tourists from China are visiting Australia in this period has meant that sales of live product to local Chinese restaurants have also been very low. There are voices being raised in the industry for some kind of government assistance.

Salmon exports to China were also hugely impacted. In Scotland, salmon exporters are trying to find alternate markets (the US, and Europe) due to the cancellation of British Airways flights. Chilean producers, through trade organisation SalmonChile, reported that sales to China are suspended indefinitely due to lack of demand from Chinese buyers. SalmonChile represents some of the country’s largest salmon farmers, industry suppliers, smolt producers, laboratories, and feed manufacturers. In 2019 Chile had shipped around 35 000 tonnes (US$274 million) of salmon products to China, making it their fifth most important market after the US, Japan, Brazil, and Russia. In Norway, the more established exporters say they are not in dire straits yet, and are waiting to see how the situation is panning out. China in any case, is not currently the main market for Norwegian salmon, partly due to previous trade policies. One exporter said that the market for Norwegian salmon, normally sold fresh and in bigger sizes, find profitable markets only in China, Korea and Vietnam, so it appears likely that Norway will turn to the latter two markets as well as look elsewhere for the time being.

Shrimp exporters in Ecuador and to a lesser extent, India, are concerned, as China is one of the biggest markets for their shrimp. Nevertheless, in an 11th February press release from Ecuador’s National Chamber of Aquaculture (CNA) entitled “Do not underestimate the resilience capacity of the Chinese market”, its Executive President José Antonio Camposano said domestic trade in China will soon show signs of recovery, and that what happened in China will undoubtedly generate more attention from consumers concerning the conditions of the food they buy. The press release also said: “Regarding Ecuadorian shrimp, Chinese consumers can have the
“Short term impact for shrimp industry, as well as other seafood items, will likely be oversupply due to drastically curtailed consumption in China. Ecuador sales to China are already very quickly slowing down. Sales from India same. There is also supply from Vietnam and Thailand in which Chinese traders buy directly from farms and ship directly to China as fresh (mostly from Vietnam) or do basic freezing in basic processing facilities. So this production will also need to find a home.

The oversupply will certainly soften prices. To what degree, it is too early to tell. Ecuador will be the most impacted in the short term as they are in their production season. India, Vietnam and Thailand prices will be less impacted as all three countries are currently in a very low production period.

Longer term impact, farmers in most producing countries will hold off seeding ponds as much as possible so we can expect shortages once the China situation normalizes and prices moving back up, very possibly further than they moved down.”

*(Personal communication with North American industry source)*

certainty that they are buying not only the best shrimp in the world, but the safest, the healthiest, the only one with reliable traceability and the most natural one.” In India, farmers have been advised to delay new culture cycles, but in the meantime, shrimp is still being exported to the country’s other main markets, the EU, US, and Japan. Vietnamese shrimp farmers are not as concerned for now as their farming season has just begun. Global shrimp prices have dropped as supply outweighs demand.

_Pangasius_ exporters from Vietnam say that as of 9th February, they were waiting for Chinese importers to confirm whether they are able to take shipments. Vietnam exported pangasius worth US$728.6 million (EUR 656.5 million) to China (including Hong Kong) last year, up 37 percent from 2018. In 2019, China was in fact the biggest importer of Vietnamese pangasius. With the virus outbreak, the first quarter of this year is expected to show a sharp drop as compared to the same period last year. Main exporters are already looking at alternate markets (Dubai, the US, and Brazil, for now).

More Vietnamese pangasius may be sent to countries other than China

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**Chinese exports also affected**

In terms of Chinese product (tilapia, shrimp, squid, crab meat, etc) supplied to other countries, importers say that it has been difficult to conduct business as normal, and that they expect shortages of Chinese product for an indefinite time.

Meanwhile, on 4th February, Indonesia announced that it will temporarily stop imports of all live animals from China to prevent the introduction of the virus into the country (as of 10th February, no cases of the new coronavirus have been reported in the country). The Jakarta Post reported that the Chinese Ambassador to Indonesia had expressed concern over the ban, saying that there is no evidence that the virus could spread from imported items.

**Some takeaway points**

As we go to print (mid-February), the situation is still unfolding and the full impact on the global seafood trade is yet to be assessed in financial and social terms. But as mentioned above, the virus outbreak has already greatly affected both exports and imports of seafood into China. It has also brought into focus the extent of the over-dependence of international exporters on the Chinese market, which might possibly be a lesson to be learned.

Another point of interest is that seafood e-commerce sales have shot up as more Chinese rely on home delivery rather than going out to eat during this period. Within the first two weeks after the outbreak, JD.com, one of China’s largest e-commerce platforms, recorded a huge spike in the number of orders for seafood such as shrimp and salmon. In an interesting piece, SeafoodSource reports that Yu Guo Tian Qing restaurants, one of China’s fastest-growing seafood restaurant chains and also a big (Vietnamese) pangasius buyer, is pushing its home deliveries and promising customers “real-time monitoring” of the body temperatures of delivery staff.

Meanwhile, a few analysts have said that the epidemic might bring about institutional changes in the production and consumption of food, including in wholesale outlets like the Huanan wholesale market in Wuhan where the virus likely originated from. This new deadly Covid-19 is the result of animal-human cross-species infection, with some researchers pointing to bats as the origin and others to snakes, both of which have been common sights at the Huanan market through the years (although called a seafood market, Huanan also sold wild animals). Calls have been made that China must act to stop the sale of wild animals and exotic bushmeat, including preventing illegal trade of these species, and that the emphasis should be increasingly on food safety and hygiene for not only seafood but all foods.
In accordance with its mandate as an intergovernmental organization, INFOFISH Member States comprise several countries in Asia and the Pacific.

We also invite any legal entity in Member States as well as non-Member States related to the Fisheries, Aquaculture and Seafood Industry to join us as an Associate Member. These include:

- Aquaculture companies
- Animal health companies
- Seafood processors
- Certification agencies
- Academia
- Equipment and supplies companies
- Fishing technology companies
- Packaging and printing companies
- Investors
- Innovators
- Business forums and professional associations
- Others

For further details, please visit www.infofish.org or contact info@infofish.org.
TIL Biosciences
(The Animal Health Division of Tablets (India) Limited)
72, Marshalls Road, Chennai - 600 008

Tablets (India) Limited is a leading research based Nutraceutical and Probiotic formulations manufacturing and marketing company. Drawing on more than 125 years' experience in the human and animal healthcare market, Tablets (India) Limited offers a wide range of solutions. Originally a British company which was sold to be promoters of Mr. Sri Krishna Jhaever by the year 1894, over the years Tablets (India) Limited has grown, thanks to its involvement in research and development. Today, the firm employs 6500 staff and offers a wide range of solutions and products. Tablets (India) Limited has received many prestigious International & National awards for its commitment to high standards of Research and Quality. Tablets (India) Limited was awarded with “GIL 2011-India” by Frost & Sullivan for New product innovation in Probiotics & Nutraceuticals.

“In 2004, TIL Biosciences (The Animal Health Division of M/s Tablets (India) Limited) was born. We developed good range of products for aquaculture (shrimp and fish) and companion animal health care. All the products are eco-friendly and as such are devoid of steroids and hormones. We in principle do not manufacture or promote any antibiotics for animal health. Instead, our key focus is to expand our animal health care product market globally and improve the status of livestock farming. The world is in need of animal protein and the requirement will drastically increase in the upcoming future. In order to supply the global need, livestock production must increase. Thus, we ensure that our product serves the purpose.

Today there are team of experts to support about 3000 users of TIL Biosciences products. We feel that we are responsible for the safe and sustainable future for Animal Health and working hard to conserve animal life. As such, we work with consultants, farmers, pet breeders, dealers, agents and distributors all across India and in several countries. This overseas network is expanding each day and we are proud to be working with so many experts to make the world a better place for animals of every species.”

“As a company, we are highly concerned about the safety of animals and we emphasize on sustainable farming practices. Hence, we supply products to the animals that are free from steroids and antibiotics. We have registered our products in the appropriate bodies. Our staffs are provided with safety gears while processing the products and were also provided with proper health insurance to the staff and their family members.”

“Looking ahead, we are developing a selection of unique products for livestock, and a number of these are already in the development stage and a selected few are at the trial stage. We expected to launch these innovative new products in future and this will benefit the market as there are many reports on emerging and re-emerging diseases. As such, we foresee even greater success for our company over the years to come.”
Our range of Aquaculture Products

- Ecoforce
- Exorich
- Ecotrax
- Ecomask
- ECOTRONIL
- XL Bind
- ECOCLEAN
- Ecoleef
- Extramin
- FRESMIN F
- NOVIB
- Bloomax
- Rhodomax
- Ecomonil
- MUNE45
- MEA

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GMP
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UKAS QUALITY MANAGEMENT
HALAL CERTIFIED
GMP
GLOBAL 100 WINNER
MILKFISH FARMING IN MALAYSIA

By INFOFISH

Widely consumed in Asia Pacific countries such as Philippines, Indonesia, and Taiwan, milkfish (Chanos chanos) is an ideal species for farming as breeding technology is available and the fish is able to grow in a range of salinities. It is sold in a variety of forms, with the most popular being deboned and with further value added to it. Malaysia is currently not known as a major milkfish producer, but a big step forward was taken with the launch of a new 200-acre farm in the northern part of the country. Milkfish ventures in other areas are in the meantime, receiving renewed interest from State authorities.

Introduction

Milkfish (Chanos chanos) is a euryhaline species found in the Indo-Pacific region. It is known locally as bangus or sabalo in the Philippines, bandeng or bolu in Indonesia, shi mu yu in China, pua awa or awa in Hawaii, sabahii in Japan and ikan susu in Malaysia. Milkfish is one of the important fishery species in Southeast Asia and some Pacific Islands. Widely cultured in the Philippines, Indonesia, and Taiwan and in the Pacific since 700 years ago, milkfish is particularly important as a protein source in the Philippines and Indonesia, where it is eaten in a variety of ways: steamed with seasoning, pressure cooked, smoked, as fish balls, fish floss, in canned form, or even eaten raw. In common with other species, milkfish is marketed as a delicious fish with many health benefits, being rich in vitamin D, calcium and phosphorus, omega-3 fatty acids (DHA), potassium (K), Vitamin B12, Vitamin A, and selenium.

Milkfish farming is carried out in freshwater, brackish and marine water with water temperature greater than 20°C around islands and along continental shelves at depths of 1 to 30m. They frequently enter estuaries and rivers and can grow up to 1.8m but are most often no more than 1m long. They can reach a weight of about 14.0 kg and have a lifespan of up to 15 years. Breeding of the species has been made possible due to the development of commercial milkfish hatching and breeding technology by Taiwan in the 1990s and later on followed by Indonesia, Philippines and Thailand. Milkfish nurseries have densities of about 2000/L. The preferred market size for milkfish in Asia is about 400-500 g, meaning fish of less than one year old. It is mainly sold whole, fresh or frozen.

Perhaps the only drawback to this ubiquitous fish is the fact that it has many fine bones, which limits its appeal beyond a few traditional markets, and makes deboned milkfish undoubtedly the most popular among all other value-added products. Deboning is however, a tedious process involving the removal by hand of more than 170 inter-muscular bones. Once deboned, the fish is sold as fresh-chilled, smoked, marinated and chilled, individually packed and frozen. Some are made into fish balls, fish chips, fish floss and fish cakes while others are canned, bottled and quick-frozen whole milkfish or in prime cuts for the export market.

According to FAO Fishstat 2017, global milkfish production has increased by almost 40% in 2017 compared to 2014. The main producers and exporters of milkfish in the world are Indonesia (also the biggest source of fry), the Philippines (whole fresh and processed products both for domestic and export markets), and Taiwan (fry, value-added products). However in Malaysia, where milkfish consumption is much lower than in the Philippines and Indonesia, production is growing very slowly at an annual average of 3-4%, with a sharp decline noted in 2017 (119.59 tonnes). There are a few farming enterprises in Sabah and Sarawak, but none of any consequence in peninsular Malaysia until recently when a new farm was launched by Usaha Fadzilat Industries in the northern state of Kedah.
Known as ikan susu in Malaysia, milkfish is not as widely consumed in the country as in the Philippines and Indonesia.

**Annual target of 3 000 tonnes**

Hon. Datuk Seri Haji Salahuddin Ayub, Minister for Agriculture, officially inaugurated the first milkfish (*Chanos chanos*) farm in peninsular Malaysia on 9 January 2020. Some 300 participants from the aquaculture industry, including hatchery owners, farmers, feed millers, processors, experts and academicians, were present at the occasion.

Owned and managed by Usaha Fadzilat Industries Sdn Bhd, the farm and its processing operations are located in the district of Sungai Petani, in the northern State of Kedah. The site consists of approximately 200 acres of land, with 31 ponds fully utilised for the culture of marine shrimp, seabass, and milkfish. Usaha Fadzilat is part of the Hoi Huat Group, which has more than 30 years’ experience in the farming of these species.

**INFOFISH spoke with Mr. Ching Kok Ying, General Manager and Ms Eubhe Totong, Consultant.**

**Why milkfish, not other finfish or crustaceans?**

Our Company has about 32 years of aquafarming experience focusing on the cultivation of marine shrimp and seabass. About 4-5 years ago, there was a huge production failure due to an outbreak of Early Mortality Syndrome (EMS) in our farm. We tried in many ways to recover from the setback, but eventually, taking into account the environmental conditions (water pH of 8, salinity of 15-34 ppt, and an average pond size of 1.2 hectares), as well as fluctuation in the prices of tilapia and seabass, we decided to go ahead with milkfish farming. We aim to be the country’s first large-scale milkfish farm and our target is to produce 3000 tonnes annually.
What is your source of milkfish fry and do you maintain biosecurity measures?

We are now importing the milkfish fry from Taiwan, maintaining all biosecurity measures.

Are you planning to establish your own hatchery?

We have a technical collaboration with University Malaysia Terengganu to develop breeding and hatchery techniques for milkfish. Hopefully, we can establish our own hatchery by next year. For the moment, we prefer to focus on the grow-out farm and processing.

How is the milkfish being farmed?

At present, we are farming milkfish in earthen ponds at a fry stocking density of 25-35 pieces (0.04-1 cm in size and RM 0.3-0.4/ piece) per square metre in monoculture systems. We also have milkfish polyculture with Pacific white leg and tiger black shrimp which is still under trial, so we cannot share with you the exact stocking density. Milkfish fry survival rate is found to be 70-80% which is quite satisfactory in our farm. We are now using commercial diets e.g. Pre-starter (32 % CP), Starter (30 %CP) and Grower feed (25% CP) to feed the fishes. We use auto feeders and all feeding is monitored by the control panel. We don’t use any additives or vitamin supplements, nor even antibiotics in our farm. We are actually a ‘green’ farm. The fish is harvested when it reaches a weight of 0.5-1kg, after about 5 – 6 months of grow-out. At this size, the price at the farm gate is quite high (RM 12.5/kg).

How much do you produce now and what is your expectation in future?

Production now is about 105-120 tonnes per hectare, or 4-6 tonnes per day, averaging 2000-2500 tonnes annually. This year we are expecting to almost double the figure to 8-12 tonnes per day, targeting approximately 3000 tonnes in 2020.

What about your workforce?

The total workforce is about 50 people, including five technical experts. At the farm site, all our workers are men, but almost all those in the processing plant are women. The majority of the workers are from the local community.

In your promotional material, it is mentioned that Usaha Fadzilat is the first in Malaysia to utilise deboning technology for milkfish. Could you elaborate?

Yes, we are the ever first milkfish farm in Malaysia using deboning technology, and this encouraged us to go for large scale milkfish production for the local and international markets. Milkfish has a high nutritional profile and would be beneficial for all people, including children, elderly persons and pregnant women, but it has many fine bones which affect its demand. Therefore in addition to investing five years of time and effort in securing a successful if not efficient and effective way of growing milkfish in Malaysia, we decided to invest in the R & D necessary to produce deboned fish.

We developed this technology with the help of experts from the Philippines, where it has already been in practice for 30 years. Six months ago we achieved our goal of having our own successful milkfish deboning system.

What is the drawback of this technology?

Well, from 100kg of milkfish we receive 65-70kg of manually deboned fish and the rest of the amount is considered as byproducts of milkfish processing. Nevertheless, these ‘wastes’ are being utilised to produce fishmeal in our farm and neighbouring fish farms. We also use the milkfish scales to produce fish floss.

What certification standards have been awarded to the company so far?

The farm has a MyGAP & Fish Quality Certificate (FQC) from the Department of Fisheries, Malaysia. Our processing plant is expecting to receive a HACCP certificate very soon.

In terms of markets, what are you looking into?

We are targeting both local and export markets. We are supplying about 1 tonne of fresh frozen and deboned fillets monthly to the local market now, and are now working on different value added products made from milkfish.
milkfish e.g. fish floss, fish chips, fish balls and fish cakes. We conducted a consumer trial for fish chips/fish balls in other States like Johor Bahru and Penang and the consumer feedback has been very positive. Many really liked the fish chips and mentioned that it tastes like chicken. All these products are sold under our brand, Fishco.com. As soon as we receive the HACCP certificate we will start exporting to China, ASEAN and the Middle East. We already have some orders from China.

Do you have any competitors in the market and what is your plan to promote Fishco.com?

So far we have no competitors in the domestic market but globally, there are countries like the Philippines and Indonesia which have already established themselves, supplying deboned chilled fillets and other value added products. We feel that our strength is that we are able to produce milkfish in bulk and in regular quantities. We need support from INFOFISH for brand promotion.

One of the major reasons why milkfish farming has declined in SE Asia is said to be the low market price levels, which may not make it profitable as compared to high input costs (feeds, labour, infrastructure). What are your thoughts on this?

If we consider the local ex-farm price of milkfish, the price is always higher (RM 12.5/kg for 0.5-1kg size) than fishes like tilapia (RM 7-8/kg) and seabass (RM 8.80/kg for 400-700g, RM 9/kg for 700-900g, and RM 10/kg for 900g-2.8kg). Furthermore, milkfish is less prone to diseases, except in cases where dissolved oxygen is constantly low. The main constraint we found here is the scarcity of labour.

Conclusion

With a growing population and a high consumption of fish and fishery products in Malaysia, the annual demand for fish is expected to increase to 1.7 million tonnes in 2011 and 1.93 million tonnes by 2020. Aquaculture is therefore important to help cover the gap caused by declining landings from the capture sector. Currently, the main cultured species are (freshwater or inland) tilapia, catfish, and carp, as well as coastal and marine seabass, grouper, snapper, shrimp/crustaceans, bivalves, and seaweed. Malaysia is now looking to add milkfish to that list, bearing in mind its successful culture in Indonesia, the Philippines, and Taiwan and its role in domestic consumption as well as for export.
Bioremediation using algae

A modular system of clay tiles, inlaid with algae, has been produced by the Bio-Integrated Design Lab at the Bartlett School of Architecture, UK. These tiles, called Indus, are said to be able to filter toxic chemical dyes and heavy metals out of water (bioremediation). Each fan-shaped tile has small ravines filled with micro-algae which are suspended within a seaweed-derived hydrogel which keeps the algae alive. Another point of interest is that anyone can prepare the hydrogel, which is supplied in powdered form and simply requires the addition of water. After continuous use, the hydrogel can be replaced when saturated.

Once filled, the tiles are assembled into a wall and water is trickled into the system through inlets at the top. As it flows over the algae, the water is purified of pollutants. The algae benefit by capturing the heavy metals into their cells, without which they would be unable to grow.

Sustainable and biodegradable bioplastics

There are a few products involving red algae which are currently being developed or are market-ready, and which aim to be sustainable, biodegradable alternatives to single-use packaging. In one example, Chilean designer Margarita Talep has come up with a process where red algae is boiled to obtain agar, to which natural dyes (from fruits and vegetables), a plasticiser and an additive are added. The agar mixture is boiled to around 80 degrees celsius, before the liquid is transferred to a mould.

When the liquid drops to a temperature below 20 degrees celsius, it takes on a gel-like consistency. This is then left to dry until it becomes similar to paper or thin plastic. Talep says that by altering the proportions of polymer, plasticiser and additive in the mixture, it is possible to generate bioplastics which are more rigid and others more flexible. The packaging is designed to biodegrade in around two to three months, depending on the thickness of the material and the temperature of the soil.

Another interesting product is the MarinaTex, which won the James Dyson Award in the UK round of its 2019 competition. MarinaTex was developed by University of Sussex graduate Lucy Hughes, who used fish wastes (scales and skin) to produce a translucent and flexible single-use packaging material which will break down in home composts or food-waste bins within four to six weeks. As in the Chilean case mentioned above, the binding agent is agar from red algae. Hughes says the waste from just one Atlantic cod is enough to produce 1 400 MarinaTex bags, and that a separate waste collection infrastructure would not be required for its disposal.

New tool to measure sustainability

The Sustainable Seafood Data Tool has been launched online and is available for public use. Developed by the Seafood Certification & Ratings Collaboration (a collective group of five NGOs — The Monterey Bay Aquarium Seafood Watch Program, Sustainable Fisheries Partnership (SFP), the Aquaculture Stewardship Council, the Marine Stewardship Council, and Fair Trade USA), the Tool measures the environmental and social sustainability of seafood, along with a more detailed look at eight priority seafood sectors.

Information available through the tool includes rating and certification status where applicable, whether a fishery or seafood farm is improving through a targeted project, and whether or not sustainability improvements are needed in a specific fishery or seafood farm. Users can filter the data by wild or farmed, region or country.

Desert in bloom

Algae producer SuSeWi aims to create “the largest algae farm on earth” spanning over 6 000 hectares in the Moroccan desert to provide a source of protein and long-chain omega-3s for the aquafeed sector. A second potential
location in the future is in Oman, where the government has said it will allocate 3,200 hectares for the purpose.

The company says that the algae chosen will be local to each area. In Morocco, 1,600 different strains of algae were sampled before finally selecting *Chaetoceros* and *Thalassiosira*, both of which contain high protein, EPA and DHA content and high lipid content respectively. The algae grows exponentially first in the laboratory, then in the greenhouse and finally in large outdoor ponds where algal-bloom conditions are replicated.

Feed trials on both salmon and trout were said to have supported good growth performance and demonstrated excellent feed conversion ratios compared to conventional fish feeds containing fishmeal.

Submersible cages

The AKVA group, Sinkaberg-Hansen and Egersund Net, all of which together comprise Atlantis Subsea Farming, is working on a new concept for submersible cages in large-scale salmon production. The prototype ‘Atlantis’ submersible salmon farming pen has been tested, with promising results. It can be lowered in the water column by filling the plastic collar with water, and raised again by replacing the water with air.

The company believes that the salmon will benefit from being well below the surface, it will be easier to feed the fish, growth will be better, and last but not least, infection by sea lice is greatly reduced.

Producing algae at low cost

Live algae, which is used in intensive larval shellfish culture costs a lot to produce, some 30% of a hatchery’s operating costs. Sander Hazewinkel, founder of Dutch firm LGem, said that the cost price per kilogram of algae, at around 300 to 900 euros, is too high.

The company, which designs and manufactures turnkey microalgae photobioreactors, has a new product on the market called GemTube, a glass tubular helix system that offers extreme durability and a more simplified, cost-effective form of algae production.

“Air moving through the glass tubes removes oxygen and supplies carbon dioxide evenly over the whole tubular helix at 100 watts per 1,000 litres of culture, or one-tenth of the energy input of conventional tubular systems,” said Hazewinkel. “No centrifugal pumps are needed because the moving air propels the entire system. This means that we can also operate our system with just an air source and without any moving parts. This is particularly interesting for aquaculture because it often produces fragile species like *Rhodomonas* and *Isochrysis*. These perform very well in the GemTube.”
Compact shrimp peeler

The Jonsson Compact Peeler 42 is designed for use in restaurants, seafood markets, and other food service operations with limited floor space. Since the machine adjusts to every individual shrimp, it can peel raw headless shrimp from as large as 10 count (10 shrimp per pound) to as small as 71/90 count, and up to 3,000 shrimp per hour. It takes up less than 4 square feet of space, and has low electric, water, and drainage needs.

Manufacturer: Gregor Jonsson Inc, USA (www.jonsson.com)

Cage cleaning robot

Kraken Power GmbH, a subsidiary of Kraken Robotics Inc, has signed a multi-year supply agreement with Multi Pump Innovation (MPI) of Norway. Under the agreement, MPI will purchase RIM-driven thrusters and control systems for use in MPI’s new JetMaster automated cage cleaners used for fish farming.

Features of the JetMaster include:

- Fully thruster driven with RIM-thrusters and, with additional water jets, does away with the need for any belts to help it climb and adhere to the cage meshes
- Ability to wash from the outside of the nets and wash lice skirts and other structures outside the pen itself
- As a result of its extra jets, the JetMaster also carries the ability to easily clean marine growth at the waterline (and above) line of the cage
- Remote monitoring of software updates and service and maintenance log
- Steerable in all directions

Each RIM-thruster provides 54kg of thrust but with total electricity requirement of 17kW. Each JetMaster will come equipped with seven T160 rim driven thrusters from Kraken Power.

Manufacturer: Kraken Robotics Inc, Newfoundland, Canada (sales@krakenrobotics.com)

Camera keeps track of sea lice

The SpectraLice camera counts and classifies sea lice on farmed salmon to provide farmers with better tools for decision-making on how to prevent sea lice and when to delouse the salmon. “It gives farmers a better overview of lice...”
concentrations with less handling of the fish,” said Ivar Erdal, director and founder. “It also makes it possible to implement and time the necessary measures on lice-infestation preventions and treatments.”

The camera takes a hyperspectral image of the salmon which reveals the sea lice in seconds and also identifies their growth stage. Data is sent to the SpectraLice database where results are extracted and submitted to clients. It can capture images between 300 and 2 000 salmon in a 24-hour period. Ecotone will formally launch the SpectraLice in January 2020.

*Manufacturer: Ecotone, Norway*

### Easy and portable assay method for histamine

Histamine is a very effective marker for ensuring food safety and quality in fish. If histamine is detected at levels above those established by legislation (between 100 and 200 ppm according to the European Community, EC No 2073/2005), it indicates poor quality or inappropriate processing and/or handling conditions, which poses a risk to the consumer.

The BIOFISH 700 HIS was developed as a portable means to measure the concentration of histamine in fish such as tuna, raw or cooked, at any point in fishery and fish processing, and whether at sea or in the laboratory.

*Manufacturer: Biolan, Spain (info@biolanmb.com)*

### Keeping fish fresh, longer

The sub-chilling concept is to chill the fish down below freezing point of water, where the core temperature of the fish gets close to -1.5°C/29.5°F in only one hour, depending on species. Although the temperature of the fish is below the freezing point of water, the fish remains fresh and unfrozen in a sub-zero state. In this way, the fish itself becomes the cooling refrigerant, eliminating the need to use ice to store and chill the product.

Skaginn3X's SUB-CHILLING™ technology offers a wide range of aquaculture processing solutions. Using the equipment allows processors to:

- Eliminate Ice - No ice means up to 20% less transport weight and significant savings on fuel and labour
- Extend shelf life up to 7 Days- Lower bacterial counts and considerably longer shelf lives
- Better processing yield- Firmer product that holds up better during processing
- Stronger fillets-The process has also been shown to reduce gaping in the final product
- Controlled flow- First-in, first-out (FIFO) process ensures that all product receives identical treatment and delivers consistently superior quality
- High ROI - Low CO2- A quick return on investment while also reducing the operation's carbon footprint.

*Manufacturer: SKAGINN 3X, Iceland (www.skaginn3x.com)*
**SEAFOOD CERTIFICATIONS GUIDE**
*Published online by SeafoodSource.*

The world of certification and eco-labeling remains a confounding one. Scores of certifications overlap, compete, and sometimes contradict one another. Eco-labels often do the same. Figuring out how they work, what they cover, who operates them, and how robust their standards are can be a time-consuming, and sometimes nigh-on-impossible task.

SeafoodSource’s updated 2020 Seafood Certifications Guide answers these questions, and more. Much like its now-retired 2019 predecessor, this guide is designed to be a comprehensive encyclopedia of seafood ratings systems, certifications, and eco-labels that touch the world of seafood.

The 2020 Seafood Certifications Guide also includes a lengthy, research-based report intended to give a real-world take on how certifications are perceived in the retail, marketing, and production realms. The report takes a deeper dive into how certifications and eco-labels can be used effectively and creatively, and what other issues should be taken into account when considering the adoption of a label or certification.

*The publication is available only as a download from seafoodsource, at a price of US$495.*

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**SKIPPERS’ GUIDEBOOK TO POLE-AND-LINE FISHING BEST PRACTICES**
*Published by the International Pole & Line Foundation (IPNLF) and the International Seafood Sustainability Foundation (ISSF), July 2019*

While the environmental and social benefits of pole-and-line are widely lauded, like any fishing method, they can be improved further. This Guidebook focuses on tuna and livebait fishing operations, from capture to handling and storage methods, all of which can reduce unnecessary waste of both tuna and baitfish harvested within these fisheries. It details best-practices for maximising catch value and also minimising the environmental impacts of pole-and-line tuna fisheries.

The Guidebook can be downloaded at no cost from the IPNLF website.

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**MYCOTOXINS IN AQUACULTURE**
*By Rui Gonçalves and Michele Muccio*
*Published by Biomin, August 2019.*

With the current trend for the replacement of the fishmeal content of aquaculture feeds, the issue of antinutrients contained in plant-based materials is of growing concern in aquaculture production. Mycotoxins are known antinutrients; however, their role in aquaculture feeds has still to be fully elucidated. ‘Mycotoxins in Aquaculture’ is a comprehensive guide, commencing with a chapter covering general concepts, to help the reader to become familiar with the topic. The book then covers the potential implications of the presence of mycotoxins, with chapters on aquatic species defense mechanisms, mycotoxins in aquaculture and in feeds, the analysis of mycotoxin content in commodities and feeds, and fighting mycotoxins. This important book brings together the authors’ experience from work with terrestrial animals to identify the targets of these antinutrients in aquatic species. It offers a new tool to whoever is approaching aquaculture in this era of finite resources.

*More information on the publication is available through: office@biomin.net.*
GUIDELINES FOR INCREASING ACCESS OF SMALL-SCALE FISHERIES TO INSURANCE SERVICES IN ASIA

The purpose of these insurance guidelines is fourfold, i.e.:

- to increase awareness about the needs of small-scale fishers for better risk management, disaster preparedness and insurance services
- to guide policy and decision makers to help introduce insurance services to small-scale fishers, with the ultimate objective to strengthen the sustainability and ecological and economic viability of these fisheries;
- to build capacity among insurance providers, fisherfolk organizations, NGOs, and concerned government agencies, to design and implement insurance programmes that suit the needs of small-scale fishing communities and enhance social protection;
- to promote insurance services that incentivize and reward a responsible and sustainable conduct of fishing operations and a better preparedness for natural disasters including climate change related challenges.

This publication can be viewed at no charge from the FAO website.

TECHNICAL MANUAL ON BROODSTOCK MANAGEMENT OF COMMON CARP AND CHINESE HERBIVOROUS FISH

This technical manual provides technical information on broodstock management and identifies the main problems and challenges for the application of modern techniques for breeding management of the broodstock of common carp and Chinese herbivorous fish in the Central Asia and the Caucases.

The above mentioned technical manual can be downloaded at no cost through FAO website: http://www.fao.org/3/ca5827en/CA5827EN.pdf

HILSA: STATUS OF FISHERY AND POTENTIAL FOR AQUACULTURE

‘Hilsa: Status of Fishery and Potential for Aquaculture’ is a proceedings book, which is edited by an international team of experts and authored by 10 international expert teams working on different disciplines of the hilsa shad. Hilsa is a widely distributed fish within the Bay of Bengal region and harvested in the waters of Bangladesh, India and Myanmar. There has been a growing interest in understanding the status of hilsa stock within the region and exploring its potential for aquaculture with hatchery produced seeds. Several attempts have been made on domestication, breeding and raising of juveniles in brackish water ponds in both India and Bangladesh, but success has been very limited so far. This book presents 10 review chapters that include the biology and ecology of hilsa; status of the hilsa fishery in India and Bangladesh; hilsa fishery management; seed production and rearing; food, feeding and nutritional requirements; status of aquaculture; population genetics; market trends; nutritional values; consumption and utilisation as well as its social, cultural and religious importance.

The above mentioned proceedings book can be downloaded at no cost through the following link: Proceedings_2019_16_Hilsa_Status_of_Fishery_and_Potential_for_Aquaculture_FA.pdf
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The FISH INFONetwork (FIN) consists of seven independent partners who cover all aspects of post-harvest fisheries and aquaculture. Fifty national governments have signed international agreements with the different FIN services and are using the expertise of these services to develop the fishery sector worldwide.

The FIN pages are a regular feature in the four network magazines:
- INFOFISH International,
- INFOPESCA Internacional,
- EUROFISH Magazine
- INFOSAMAK Magazine

They present the FIN-wide spectrum of activities, showing actions and results.

The FIN has more than 70 full-time staff and works with more than one hundred international experts in all fields of fisheries. Through its link from FAO GLOBEFISH to the FAO Fisheries Department, it also has access to the latest information and knowledge on fisheries policy and management issues worldwide.

The execution of multilateral and bilateral projects is one of the main activities of the network. It is also widely known for its range of publications and periodicals as well as for the organisation of international conferences, workshops and training seminars. All eight services offer different possibilities for co-operation with the private sector, institutes, government offices and donors.

For more information on the FISH INFONetwork visit the website www.fishinfonet.org.

EVENTS

First Latin American Summit on Food Loss and Waste

The Food and Agriculture Organization of the United Nations (FAO) and the Inter-American Development Bank (IDB), in coordination with the National Planning Department of Colombia and the partners of the #SinDesperdicio platform, organized the First Latin American Summit on Food Losses and Waste, which took place at the Ágora International Convention Center of Bogotá, Colombia, during 10-11 October, 2019.

According to FAO data, 1.3 billion tons of food per year (1/3 of the food produced for human consumption) are lost and wasted globally. In Latin America and the Caribbean, figures are no less worrying, estimating levels of loss and waste close to 34% of the food produced. These data represent 127 million tons or 223 kilograms per person per year. This phenomenon takes place throughout the entire value chain: production 28%, processing: 6%, handling and storage: 22%, distribution and market: 17%, and consumption: 28%.

The causes and solutions were discussed at this summit, a space created for dialogue and exchange of experiences between the public and private sectors that will accelerate the implementation of a food waste loss and waste reduction agenda throughout the region.

EUROFISH Governing Council hosts a record number of participants

The 19th session of the EUROFISH Governing Council was held on 6 and 7 February 2020 in Copenhagen, Denmark. This annual meeting brought together a record number of representatives from the organisation’s member countries (Albania, Croatia, Denmark, Estonia, Hungary, Italy, Latvia, Lithuania, Norway, Poland, Romania, Spain, and Turkey), observer countries, and institutions like the FAO, Baltic Sea Advisory Council, GFCM, and the Nordic Council of Ministers to review the activities conducted by the organisation in 2019 and to approve the work programme proposed for 2020.

The event was chaired by Romania and held presentations on recent trade agreements and market access by Marcio Castro de Souza, an FAO expert; on the implementation of a traceability system in Latvia by Normunds Riekstins of the Latvian Ministry of Agriculture; and on Croatian experiences with the digitalisation of systems for fisheries control and traceability, presented by Mirta Novak of the Croatian Ministry of Agriculture.
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