



IFFO

THE MARINE INGREDIENTS ORGANISATION

April 2017

Issue 291



www.iffo.net

UPDATE

CONTENTS

IFFO NEWS

- 3 Editorial
 - SAIC Partner Workshop on Alternative Protein Sources for Feed
- 4 IFFO RS holds events in South America
 - Codex Committee on Fats and Oils 25th Session
- 5 EC SafeSeafood project meeting (Brussels)
- 6 The benefits of fishmeal and fish oil in swine and poultry diets
- 7 New IFFO applicant members
- 8 4th IFFO/JCI Fishmeal and Fish Oil Forum
 - PICES/ICES Symposium on Small Pelagic Fish
- 9 FAO's Regional Consultation on Responsible Production and Use of Feed and Feed Ingredients for Sustainable Growth of Aquaculture
- 10 IFFO at the North Atlantic Seafood Forum and at the UN FAO
- 22 Calendar

INDUSTRY NEWS

- 11 When salmon go vegetarian, watch the vitamins
- 12 You probably need more fish oils, but is pill or food the best option?
- 13 Norway Royal Salmon: Iceland can hit 100,000t production
- 14 Danish Sandeel, Norway Pout and Sprat fishery achieves MSC certification
- 15 Are corn-fed fish less healthy to eat?
- 16 Omega-3 Fatty Acids Give Pregnant Women Important Health Advantages
 - North Atlantic Seafood Forum: Excerpts from Intrafish Blog
- 17 ENFEN Statement
- 18 Alternatives and innovation
- 19 News in Brief



It was pointed out by a seafood buyer, with many years' experience, that the fish industry should stop all the in-fighting and get better at working to increase seafood

consumption. In the article published in Intrafish on 10th March, Bob Field, retiring from Walmart owned Sam's Club, compared the seafood industry to other proteins and we didn't do well. As a buyer, the beef industry would be working with him to promote beef in general whereas the seafood industry were more occupied with claiming wild was better than farmed, or this origin was better than some other.

Why is this? Is it because the fish industry has historically been incredibly diverse, both in the number of species handled but also the location and methods of catch or production? Is it because fishermen are independent sorts, often at sea because they don't want to be organised and supervised so closely as land farmers? Whatever the reason, Bob has a point.

When I look at the calendar of conferences for the fishing industry, there is GAA's GOAL for the fish farmers, IFFO's Annual Conference for the marine ingredient producers, Seawebs Seafood Summit for the environmentalists, the Groundfish and Pelagic Fish Forums for those types of fishing, and NFI's conference for the USA fisheries and markets. None of these focusses on comparing the many benefits of seafood with our competition – beef, pork and chicken.

The retail buyers I have met are often not fish experts but are tasked with buying a range of

proteins from land and sea. Are we doing enough to help them make decisions in favour of seafood (no matter where from or how produced) when they can very easily see first-hand how beef, pork and chicken are produced? If the answer to that is "no", then we should be working with our friends at GAA, NFI and the other bodies a little more closely. Please let me know what you think.

Our Members Meeting in Barcelona is only a month away, registrations have been at a record high with 134 delegates registered from 24 countries. If you haven't already booked, please don't delay as numbers are limited. I hope to see you there.

Andrew Mallison
Director General

SAIC Partner Workshop on Alternative Protein Sources for Feed

Neil Auchterlonie attended the Alternative Protein Sources for Feed Workshop organised by Prof. Brett Glencross of the University of Stirling. Prof Glencross is a fish nutritionist with both a commercial and academic background, and is the project lead on the study. The workshop is a deliverable within a SAIC-sponsored project that looks at the potential for avian protein sources to provide nutritional value in Scottish salmon production.

Several presentations were provided on the need for alternative protein sources to meet the volume of feed required to satisfy a growing salmon sector. The discussion acknowledged the use of avian protein sources in other geographic regions (e.g. Australian

salmon production), and went on to look at whether it is possible that the same situation may arise in Scotland. There was a lot of discussion about the perceived premium quality of Scottish salmon, and although it is clear that marine ingredients in Scottish feeds have been declining over time, there was wide acknowledgement in the audience that the level is still higher than in salmon feeds in other countries. Other presentations included the use of GM product, an overview of the UK animal rendering industry, and an analysis of salmon aquaculture by LCA. An interesting presentation on consumer perspectives to alternative protein sources was provided by Prof. Dave Little of Stirling University, with a report on a study that had surveyed a

consumer sample in the UK. Feedback from that work showed that there is a lack of understanding in general on issues around marine ingredient sourcing, as the alternatives were regarded as beneficial to marine environmental improvement (but many of the respondents did not know or understand that salmon are farmed in the initial part of the survey discussion!). Ultimately the workshop was an endorsement of the "as well as, not instead of" message, as both fishmeal and fish oil are regarded as essential, at least in small volumes, as the basis of a successful and nutritious salmon feed. Anyone interested in copies of the presentations, should contact Neil at nauchterlonie@iffo.net, who will supply these on request.

IFFO RS holds events in South America



IFFO RS V2.0 Auditor Training (Peru)

IFFO RS held a training course for auditors in Lima from 21st to 22nd February focusing the new IFFO RS V2.0 standard. The training consisted of the revised clauses, including the new fishery assessment methodology, and the new environmental and social sections. In order to maximise the understanding of the objectives of the new version, as well as the consistency and effectiveness of the IFFO RS audits, the course was given

entirely in Spanish, the first language of the auditors in attendance. Auditors from three different Certification Bodies (CB) including auditors from Peru, Chile and Ecuador attended the course securing greater accessibility to the standard once the new version is launched, estimated to be in July of 2017.

IFFO RS IP Workshop (Ecuador)

On 1st March 2017 IFFO RS held a second workshop on the IFFO RS Improvers programme in Guayaquil, Ecuador with the objective of creating more awareness of the IFFO RS standard as whole and to provide some guidance on how they can start to produce a Credible Fishery Improvement Project (FIP), the initial part of the acceptance process into the IFFO RS Improvers

Programme, with the end goal of becoming IFFO RS certified in a defined period of time.

IFFO RS V2.0 Workshop (Chile)

IFFO RS held a workshop regarding the developments of the new IFFO RS V2.0 standard in Concepcion, Chile, on 7th March 2017. The main objective of this workshop was to communicate to all stakeholders and interested parties about the progress of the implementation of the new version of the standard. The workshop encouraged in depth discussions with participants giving their views and recommendations about the relevancy and practicalities of the new areas of the IFFO RS V2.0.

The next RS workshop will be held on 1st May in Barcelona, visit [here](#) to find out more.

Codex Committee on Fats and Oils 25th Session



The 25th session of the Codex Committee on Fats and Oils (CCFO) met recently in Kuala Lumpur, Malaysia on the 27th February – 3rd March 2017. IFFO was represented by Dr Gretel Bescoby (Technical Manager) who participated in

sense of achievement that the committee approved the draft standard for Fish Oils to be adopted at the next Codex Alimentarius Commission meeting that will be held in Geneva in July. The adoption is the final formality before the

meeting which was particularly relevant with regards to the proposed

Codex Standard for Fish Oil. Work on a Codex Standard for Fish Oil was initially

proposed at the CCFO meeting in 2009 and it was with a

standard will be made official. While Codex Alimentarius standards are not mandatory regulation, many countries base their national regulations and standards on the Codex standards.

However, wrapping up the fish oil standard was preceded by many hours of discussions during the meeting. A physical working group (pWG) on the draft fish oil standard met on Saturday 25th February prior to the CCFO 25th session in order to provide sufficient time to discuss any requests and concerns in detail. The pWG meeting started at 9h30 and continued until 19h00 which demonstrates the interest in the fish oil standard as well as the varied opinions that were raised during the discussions. It was stressed at the start of the meeting that the Standard for Fish Oil applies to fish oils intended for human consumption that is used as

ingredients in food and in food supplements. The pWG considered all the replies that had been submitted on concerns of the standard in response to the two circular letters that had been distributed beforehand. A revised draft Codex Standard for Fish Oil was prepared by the Switzerland Chair of the pWG which was presented to the 25th session of the CCFO for discussion.

The main discussion topics and amendments made to the draft fish oil standard are detailed in brief.

- It was noted that any new named fish oil made from farmed fish should have a separate entry into the fatty acid profile table as well as a clear specification on the label that the origin is from farmed fish in a manner similar to oil from farmed salmon.
- Once again, the fatty acid table prompted prolonged discussions whether fatty acid profiles can be used as a measure to determine compliance of fish oil to the Standard since variation in raw material can result in fish oil with questionable identity based on the fatty acid profile. It was generally felt that food authenticity and integrity does not fall within the remit of the commodity standards and the Codex Committee on Food Import and Export Inspections Certification Systems (CCFICS) will be informed of the concerns raised by the CCFO at

their recent meeting. In addition, a Circular Letter will be sent out to Codex members to monitor the application of the fish oil standard with the intention to determine whether actual fish oil samples conform to the fatty acid profiles provided by the Codex Fish Oil Standard and whether trade is affected. The work will be co-ordinated by Chile and Switzerland and the results will be presented at the next CCFO meeting in 2019.

- It was agreed that additional data is needed before a minimum astaxanthin content of 0.01% could be specified for krill oil.
- The committee will inform the Codex Committee on Contaminants in Foods (CCCF) to consider the allocation of maximum levels for lead and arsenic in fish oil while taking into account that arsenic is predominantly present in fish in the non-toxic organic form instead of the toxic inorganic form.
- A NMR-based method for the determination of phospholipids is being validated by the AOCS and at the same time the AOCS will consider work on establishing a conversion factor which will allow the use of an alternative method.
- The fatty acid ranges for anchovy oil,



krill oil and wild salmon oil had been adjusted based on additional information received on these oil's fatty acid compositions.

- The following "Other labelling requirements" had been agreed on:
 - ⇒ "For fish liver oils (Sections 2.3 and 2.4) the content in vitamin A and vitamin D, naturally present or restored, shall be given if required by country of retail sale."
 - ⇒ "For all fish oils covered by this standard the content of EPA and DHA shall be given if required by country of retail sale."

The updated draft Codex Standard for Fish Oil that will be sent for final approval to the CAC in July can be downloaded [here](#) and the Codex report of the 25th CCFO meeting held in Kuala Lumpur, Malaysia 27 Feb 2017 - 03 March 2017 can be found [here](#).

ECSafeSeafood project meeting (Brussels)

Neil Auchterlonie attended the stakeholder event and open science meeting of the ECFish project meeting in Brussels on the 26th-26th January 2017. The ECFish project (<http://www.ecsafeseafood.eu/>), title: "Priority environmental contaminants in seafood: safety assessment, impact and public perception", is a European FP7 project, with a total value of more than €5m,

which addresses safety issues in seafood resulting from environmental contaminants. Coordinated by the Portuguese Institute of Sea and Atmosphere (IPMA) it is a very large project with 18 partner organisations in the consortium from 10 different countries. The project is potentially important as it was designed to provide additional scientific evidence that could be used to inform food, public health and

environmental policies.

As well as the stakeholder event on the first morning, the subject matter in the science meeting was divided into various sessions, including: Seafood Safety Knowledge Transfer; Safe Seafood the Consumers can trust; Marine toxins in seafood; Toxicity and modelling; Rapid detection tools for seafood safety. It will be no surprise that much of the

discussion at the conference focused on the issue of micro- (and nano-) plastics. Interesting presentations covered the use of new methods for identifying contaminants in seafood, and with a risk-based approach being the way that regulators tend to approach these issues in Europe, using ever increasing amounts of data in risk assessments. Contaminant-level differences in contaminants between seafood pre-cooking and post-cooking were presented, and the

implications for policy discussed (currently contaminants are regulated in raw seafood). Relevant to fishmeal and fish oil were discussions around the subject of heavy metal contamination, and the broad range of persistent environmental contaminants that have arisen from the electrical sector, especially including flame retardants.

The micro-plastics discussions were extensive, and some interesting results presented but it is clear that the science

is at a very early stage in the subject and there is a long way to go before we have enough data to understand impacts, if any, in the seafood supply chain.

An interesting meeting, and well worth attending, but overall the consensus coming out of the scientific discussion was that the levels of contaminants being identified are generally well below thresholds of concern for human safety, and so there are no implications for policy change at the current time.

The benefits of fishmeal and fish oil in swine and poultry diets

The following was written by IFFO's Technical Director Neil Auchterlonie for [Milling and Grain magazine](#), published in February 2017



feed ingredients for pig and poultry does have large potential advantages, not least of which relate to farmed animal health and welfare. Their high quality is reflected in the market price, but least cost formulations may not always produce higher profit margins once the production benefits are taken into account.

Strategic ingredients

Once regarded as commodities, fishmeal and fish oil are now rightly positioned as strategic ingredients in the marketplace. Increasingly they have been used to meet the more demanding nutritional needs of the juvenile or maternal animal, or in customised diets for specialised products. Their high value in animal feeds extends beyond the immediate contribution to the growth performance of the animal, with some of the micronutrients in particular known to support good physiological function. The bioavailability of the essential amino acids high, and fishmeal is particularly rich in lysine and methionine. A broad range of minerals is also provided by fishmeal including calcium, phosphorus, magnesium, potassium, selenium, as well as vitamins such as B1, B2, B6 and B12 as noted by the FAO, and Windsor and Barlow (1981). This is a comparatively wide and rich nutritional spectrum for a feed ingredient, supporting growth

and optimal physiological function at the most sensitive stages of the life cycle.

Fishmeal – more than just protein and fat

The original reason for using fishmeal in feeds for pig and poultry was based on the ability of fishmeal to provide high levels of protein, with a good amino acid profile, in a highly digestible format for the animal. Cho & Kim (2011) compare fishmeal with other animal feed ingredients such as rendered meat meal, poultry byproduct meal, blood meal and soybean meal, illustrating that it is the balanced amino acid profile of the fishmeal (and especially being rich in methionine and lysine) that provides fishmeal with nutritional advantages. Those authors also point out the role that lysine has in farmed animal immune-competence. Fishmeal provides a very favourable nutrient profile for terrestrial animal feed, and it does not suffer from some of the drawbacks often seen with vegetable-based meals, such as anti-nutritional factors.

It is not merely the contribution that fishmeal provides in relation to the macronutrients, however, and this high performance ingredient is rich in a number of other vitamins and minerals. Again, it is important to look at these factors in comparison to other feed ingredients. One aspect is that least cost

Summary

Decades ago fishmeal and fish oil were the mainstay of pig and poultry production, but with the growth of aquaculture from the 1960s onwards these materials have been diverted largely towards feeding fish. With a very broad nutritional profile their use as

formulations based on crude protein may require the addition of synthetically produced amino acids to meet the precise nutritional requirement of the farmed animal (Beski, Swick, & Iji, 2015). This situation is particularly relevant to lysine, but also to some of the other amino acids such as methionine and tryptophan.

Appetence and palatability of the feed are also important factors in the nutrition of young animals and getting them onto the feed quickly can be one of the most important aspects of husbandry. This has been highlighted as of great importance in weaning pigs by Dong & Pluske (2007) where the weaning period imposes nutritional, psychological and environmental stresses on piglets. Those authors reviewed the literature highlighting several studies where the inclusion of fishmeal in the feeds indicated improvements in feed intake and growth. Fishmeal has also been shown to have advantages in palatability (and hence feed consumption) with broiler chicks (Karimi, 2006).

Like fishmeal, fish oil also carries wider benefits than the calorific or energetic contribution to the diet.

Omega-3 fatty acids and health benefits

There is a broad body of literature on the benefits to humans of consuming omega-3 fatty acids, and the evidence

base continues to grow. IFFO's partner organisation GOED[6] (the Global Organisation for EPA and DHA Omega-3) reports that in the region of 30,000 scientific papers or more have been published to date with 80% indicating positive benefits of the consumption of EPA and DHA (in Nichols, et al., 2016). There is therefore a considerable weight of evidence in support of the benefits of fish oil relating to EPA and DHA, and especially to its anti-inflammatory properties. Those benefits to humans are wide-ranging and include positive effects on cardio-vascular health, immune function, neural development and mental health, and may well be based on a requirement that stems from our evolutionary past and relates to the large brain size in Homo sapiens relative to other primates and land animals (Bradbury, 2011).

In an attempt to improve consumption rates of EPA and DHA in the population, there has been some research on the use of fish oil in feeds to achieve an enhancement of omega-3 content in both pig (Leskanich, et al., 1997) and poultry (Rymer and Givens, 2005) meat. Studies have also looked at the influence of omega-3 fatty acids in the maternal diet on suckling pigs (Fritsche, et al., 1993). Although there are very real drivers to improve the consumption of omega-3 fatty acids in the human population, there are also important farmed animal health and production

reasons to use these ingredients in feed. Similar to humans, omega-3 fatty acids have been shown to provide direct benefits to pigs and poultry. Key amongst those benefits relates to immune system functionality (Murray et al., 1991; Murray, et al., 1993; Wang, et al., 2002), and at a time when the use of antibiotics in animal production systems is widely criticised due to the possible impact on human medicine and regarded as "one of the biggest threats facing mankind" (O'Neill, 2015), there is a need to optimise the farmed animal's resilience as far as possible and reduce the reliance on chemotherapeutants. There may also be benefits in how the farmed animal copes with stress (Carroll, 2004), which also relates to immune-competence and the ability of the farmed organism to deal with pathogens. Those benefits have the potential to reduce stress, reduce disease and improve survival rates in farmed populations, and so have great value in these farming systems.

Overall, the benefits to the use of fishmeal and fish oil in terrestrial animal feeds extend well beyond the obvious contribution of crude protein, fat and dietary energy supply. From that perspective their value is greater than the majority of other ingredients in their potential contribution as functional ingredients to the growth and health of the farmed animal.

New IFFO applicant members (awaiting Board approval in May)

Country	Company	Category
China	China National Township Enterprise Corporation	Non-Producer
Chile	DERIS S.A.	Producer

4th IFFO/JCI Fishmeal and Fish Oil Forum



The 4th IFFO/JCI Fishmeal and Fish Oil Forum was held in Sanya City (China) on 24th March 2017, with over 400 delegates in attendance. The event included presentations from Andrew Mallison (Director General, IFFO), Diego Balarezo (Commercial Manager, Hayduk), Hualang Wang (Technical Director, Evergreen Feed) and Shuiquan Zhuang (King Max Trade of Grobest). The presentations from this event are available in the Members' Area of the IFFO website.

Hanver Li, Chairman of JCI, closed the event and shared the following insights on the market:

Compared with traditional suppliers (i.e. Peru), European fishmeal is more attractive to Chinese buyers now while Vietnam and Thailand are seeing fast growth in terms of fishmeal exportation to China. Meanwhile farming of tilapia, pangasius and shrimps

are also expanding quickly in both Vietnam and Thailand.

Fishmeal output is growing at a rate of 35-40% annually in western Africa. There are already 18 Chinese enterprises producing fishmeal and fish oil out of China. Total production is expected to be 30,000- 50,000 tons this year in southern, western and eastern Africa. This number is expected to exceed 80,000-100,000

tons next year, and reach 350,000-400,000 tons in 5 years' time, when the total fishmeal production by Chinese enterprises out of China would be more than China's domestic output.

China's fishmeal consumption was 1.35 million tons in 2015, which grew to 1.5 million tons in 2016. Domestic shrimp production varies between 600,000-800,000 tons a year and 1.5 million tons a year. Demand by pig sector remains flat due to the low inventory. With animal nutrition technologies progress, demand towards premium quality fishmeal in China is moving down.



PICES/ICES Symposium on Small Pelagic Fish

Neil Auchterlonie attended the International Symposium on Drivers of Dynamics of Small Pelagic Fish Resources¹ organised by PICES and ICES, and held in Victoria, British Columbia, over the 6th-11th March 2017. The Symposium was attended by 230 participants from 30 countries, with IFFO as one of several co-sponsors. The days were split into 10 plenary and 6 theme sessions, with a total of 190 presentations and over 20 posters. The 11th March was dedicated to 7 different workshops that explored the subject matter of the Symposium in more scientific detail.

Needless to say, with such a lengthy

programme as well as a large academic audience, the symposium was a reflection of the enormous scientific effort that is going in to understand the causes of the variability in small pelagic fish populations around the world. Practically every aspect of the drivers of change in these fisheries was covered. Fisheries around the world were represented in the discussion, from those in Peru, Chile, California, Alaska to Angola, South Africa, the North, Barents and Baltic Seas as well as the North West Pacific with Japanese and Russian fisheries. The species covered included anchovy and sardine (predominantly), menhaden, chub and jack mackerel,

sprat, herring, blue whiting and others. A wide suite of environmental and biological parameters that could affect fisheries productivity was discussed, including temperature, climate change, wind and current, salinity, continental shelf, phytoplankton abundance, zooplankton abundance, ENSO², PDO³, AMO⁴, NAO⁵, dissolved oxygen levels, fishing pressure, predator species and population density, and even land-based effects such as river inputs and dam construction. In addition, a breadth of techniques for assessing the state of the stocks were provided as well as various approaches to stock management and the setting of Harvest Control rules.

There was even some presentation on jellyfish and the role that they may play in some ecosystems as potential prey, predators and competitors to small pelagic fish species. It is fair to say that the topic coverage of the symposium was extensive.

This was the first of these types of meetings since 1983, and it was clear that many doubts remain about the best way to manage these fisheries, largely down to a continuing lack of good quality data on the reasons why they are so variable, and the fact that the analyses involve so many different parameters that defining true relationships between those that have a direct effect on fish production are difficult to tease out. Variability associated with the biomass of these fisheries is an inherent part of their management, and unfortunately

this leads in many instances to a precautionary approach in setting TACs and quotas. Throughout the 5 days of presentations and the day of workshops, no startling developments in the science were presented, and the consensus in the summary of the sessions is that improvements in the process will be made slowly in a step-wise manner through continual investment in the scientific effort. Opportunities for the industry to become involved in data capture were mentioned, and overall, references to the fisheries and fishmeal industries were neutral.

It is intended that the outputs of the Symposium be published in the scientific press, and with a deadline for submission of the 31st May that is likely to occur before the end of the year. Anyone with specific queries should

contact Neil (nauchterlonie@iffo.net) to discuss further.

Link to presentations:

- <http://meetings.pices.int/publications/presentations/2017-Pelagics>
- <http://www.ices.dk/news-and-events/symposia/Pages/Symposium-on-Drivers-of-dynamics-of-small-pelagic-neritic-fish-resources.aspx>
- https://en.wikipedia.org/wiki/EI_Ni%C3%B1o%20%80%93Southern_Oscillation
- https://en.wikipedia.org/wiki/Pacific_decadal_oscillation
- https://en.wikipedia.org/wiki/Atlantic_multidecadal_oscillation
- https://en.wikipedia.org/wiki/North_Atlantic_oscillation

FAO's Regional Consultation on Responsible Production and Use of Feed and Feed Ingredients for Sustainable Growth of Aquaculture

IFFO's China Director Maggie Xu recently presented at the Food and Agriculture Organization of the United Nations (FAO) Asia Pacific Regional Consultation on Responsible Production and Use of Feed and Feed Ingredients for Sustainable Growth of Aquaculture. Held in Bangkok (Thailand) from 7th to 9th March, Maggie gave a presentation on certification of fishmeal and fish oil in aquaculture feed production and utilization during the in Asia-Pacific.

IFFO RS was relatively unknown to delegates and the 16 country presentations once again highlighted the complexity of fishery and aquaculture management as each country has unique situation/demand and hence requires tailored strategies. Overall China still plays a leading role in terms of governance or technologies among Asian countries. Fishmeal and fish oil replacement was widely discussed, but

the consensus was that few research programmes have reached commercialization successfully.

The feed safety and quality regulation framework of Thailand is very similar with that of China, with such compulsory requirements as license and even filing of feed formulas. In total, there are 66 fish or shrimp feed plants registered with over 6500 shrimp feed formulas and 1900 catfish feed formulas. This was challenged by Professor Silva of Deakin University in Australia on the necessity. Fishmeal accounts for 22% of all aqua feed ingredients consumption while fish oil takes a small share of 1% only. IUU fishing is a big issue with Thai production so majority of fishmeal consumption relies on imports.

Most of aquaculture production in South Korea does not need feed. Fed marine fish culture is concentrated on Chejudo

Island, where 20% of the feeding uses compound feed, but 80% still relies on "farm-made" (i.e. feeding fish to fish directly). Although trash fish feeding brings the problems of pollution, waste and non-inspection, it is hard to stop because of the lower cost compared with compound feed. Inclusion rates of fishmeal and fish oil in aqua feed formula are being lowered in order to cut down compound feed price for promotion.

Pangasius is a major farmed species in Vietnam, accounting for 32% of all fish farming output. Almost all fish/shrimp farms in Vietnam use compound feed. Due to the demand for high protein in pangasius feed (ranging between 22% and 30%), feeding takes up 79% of costs in pangasius farming. The Vietnamese government is calling for reduced reliance on imported fishmeal to lower the costs.

IFFO statistics were repeatedly cited by Professor Silva of Deakin University, who admitted that omega-3 is the only bottleneck in fishmeal and fish oil replacement technically. He blamed the researchers for not having taken into consideration the industry's needs leading to the unsuccessful commercialization of substitution research. IFFO's views on the potential for fishery by-product to be used in fishmeal and fish oil production, the growth of aquaculture not being limited by fishmeal and fish oil supply, as well as making fishmeal and

fish oil strategic ingredients to be applied only at certain stage of fed animal's life cycle ("economically optimizing dietary proportion") were echoed by Professor Silva.

South East Asia Fisheries Development Center (SEAFDEC) shared some interesting results on trials of feeding performance using fishmeal from tuna/milk fish by-products. SEAFDEC is also carrying out projects funded by the Network of Aquaculture Centers in Asia-Pacific (NACA) to build up statistics database of fishmeal and fish oil

replacements. However, it was admitted that the feeding performance of fishmeal and fish oil is still better than that of alternatives, which faces the challenges of stable supply, bigger environmental impacts, etc.

In summary, it was good to see that the Asian market is paying greater attention to aqua feed sustainability and traceability, but more communication is needed around the nutritional consequences of replacing fishmeal and fish oil.

IFFO at the North Atlantic Seafood Forum and at the UN FAO



At the beginning of March, IFFO's Market Research Director Dr Enrico Bachis attended the NASF in Bergen. During the Pelagic Session, he gave a presentation on the latest trends within the marine ingredients sector confirming the projections presented at the IFFO Annual Conference in Bangkok that the year 2016 would be remembered as one of the least performing years for our industry. More precisely, he reported that total fishmeal production in 2016 is likely to have been at around 4.4 million metric tonnes, while fish oil output should have been short of 900,000 metric tonnes. These numbers were still provisional and will be updated at the next IFFO Members' Meeting in May in Barcelona. As per the year 2017, the projection is of a strong rebound on the

back of optimistic projections around the world, in particular in South America and Europe: 5 million metric tonnes of fishmeal and 950,000 metric tonnes of fish oil appear as achievable.

Several other presentations were given during the 3-days programme. From the FAO we learnt that tonnage-wise aquaculture production surpassed captures for food in 2014 and it is set to overtake total captures in 2021. Per capita fish consumption is expected to grow around the world in the next 10 years, although at a lower rate, and by 2015 should be at around 22 kg/per capita against today's 20 kgs.

Cargill's presentation seemed very much in line with IFFO's position that feed alternatives are going to be "as well as" not "instead of" our marine ingredients. The search for alternatives at the moment has in fact the objective of providing a ceiling for fishmeal and fish oil prices. Limiting price fluctuation is seen by feed producers as a priority due to their "costs plus" model and low margins.

Finally from Rabobank we learnt that at

the current fishmeal price levels an additional supply of 500,000 metric tonnes of alternative high quality feed proteins similar to fishmeal could be produced by 2022. Not all alternative proteins currently in the pipeline are expected to be a direct replacement of fishmeal given the different properties they possess, but they might have a different role in the feed formula. It remains to be seen whether many of these projects will be sustainable in the long run given that an important price correction has already occurred on the back of the augmented supply in Peru during the second north/centre fishing season.

Then on 23rd and 24th March Dr Enrico Bachis attended the annual meeting of the OECD-FAO agri commodities working group in Rome. IFFO has been taking part in this project for many years since the addition of the fishing sector to the already existing model run by the OECD and including cereals, oilseeds, sugar, meat and dairy products. The objective of these workshops is to agree the current status of the various agri-commodities markets and estimate the next-10-years performance both in terms of prices and production. The report will be released in the last quarter of 2017.

When salmon go vegetarian, watch the vitamins

Plant ingredients are being increasingly used in farmed fish diets. But what does this mean for the nutritional value of the diet? Norwegian researchers looked at whether vitamin B supply needs to be adjusted when plant ingredients are used in the diet of Atlantic salmon.

Many fish diets are moving away from having high levels of fishmeal and fish oil in them. From an environmental perspective, alternative protein sources for fishmeal are applauded as this will reduce the pressure on wild catch fish for production of fishmeal.

Often, fishmeal is replaced by plant based ingredients. However, Atlantic salmon (*Salmo salar*) diets with a high inclusion of plant ingredients deviate substantially in nutrient composition from diets based on fishmeal. There could be an issue with the amino acid profile for example and plant based ingredients can have anti-nutritional factors.

New diets cause lack of B-vitamins

Very essential nutrients, such as B-vitamins, can be reduced to a great extent when fishmeal is replaced. General symptoms for B-vitamin deficiency are reduced growth and appetite. It has been concluded in other studies that both level and form of B-vitamins and some of the indispensable amino acids, are significantly different in plant ingredients versus fishmeal.

Previously, when fishmeal was the main protein source, B-vitamins were in surplus, thus diminishing the consequences of B-vitamin degradation caused by feed production processes. However, since plant protein ingredients contain lower levels of B-vitamins and/or chemical forms with lower bioavailability, knowledge on recommended B-vitamin levels added to feed prior to processing is needed. Based on available information, the level of riboflavin (B2), vitamin B12 and niacin (B3) are low in plant protein materials compared to fish meal. Corn gluten is low in pantothenic acid and pea meal is low in vitamin B6; all these plant ingredients are readily used in fish diets. In addition, plants are low in methionine and lack taurine. Taurine is not regarded as an indispensable amino acid, but is present in large quantities in marine feed ingredients and considered important in the prevention of fatty liver in animals.

Trials with different nutrient levels

For many of the B-vitamins, no recommendations exist for Atlantic salmon, including lack of data of B-vitamin levels in feed and hence organs. This is why a group of Norwegian researchers from the National Institute of Nutrition and Seafood Research (NIFES), Biomar and GIFAS conducted trials, aiming to re-evaluate current recommendations for nutrient supplementation when Atlantic salmon

are fed diets based on plant ingredients. They looked at the B-vitamins biotin (B7), folate (B9), niacin (B3), pantothenic acid (B5), pyridoxine (B6), riboflavin (B2), thiamine (B1) and cobalamin (B12) in plant ingredient based diets for Atlantic salmon.

This study is part of the larger EU-funded Arraina project, which has the aim to establish updated micronutrient recommendations for several farmed fish species, when fed diets with high plant ingredient levels. This study is based on two full regression studies: one with Atlantic salmon parr in freshwater (trial 1), and one with Atlantic salmon post-smolt in seawater (trial 2). Both studies were designed in a dose-response manner with the exact same diet-design, using seven diets with graded levels of a nutrient package (NP) added to a basic diet high in plant ingredients. The NP contained essential vitamins, minerals, cholesterol and amino acids (25 nutrients in total). ONP had no addition of the micronutrient premix, then the NP was added in graded amounts to the six diets called 25NP, 50NP, 100NP, 150NP, 200NP and 400NP. The general idea was that the 100NP diets should contain 100% of the assumed requirement (based on available data, primarily for rainbow trout (NRC, 2011) for each nutrient. The 25NP would cover 25% and 400NP would cover 400% of earlier estimated



requirement for salmonids.

Vitamins in feed and body tissue

In parr (trial 1), growth, health and welfare parameters responded on NP additions, but this was not observed in the seawater stage (trial 2). During three months of feeding, parr tripled their weight. They grew from an initial weight of 18.3 grams to a range of 78.6 – 87.3 grams.

Parr given diets added the NP above NRC (2011) showed improved protein retention, and reduced liver and viscera indices. Post-smolt fed the same diets during five months showed a doubling of weight, but did not respond to the variation in NP to the same extent as parr. Significant regressions were obtained in body compartments for several of the B-vitamins in the premix. Whole body biotin concentration was unaffected by micronutrient premix level, and mRNA expression of the enzymes dependent of biotin showed only weak increases with increased biotin. Muscle thiamine plateaued at a diet level similar to NRC (2011) recommendation in freshwater, and showed stable values independent on premix addition in seawater.

Niacin showed a steady increase in

whole body concentrations as feed niacin increased. Muscle riboflavin peaked at a diet level of 12.4 mg / kg. Sufficient riboflavin is important to avoid e.g., development of cataract. Cataract was not registered to be any problem, neither in fresh- nor in seawater. Cobalamin (B12) in muscle and liver was saturated at 0.17 mg / kg diet. Muscle pyridoxine showed a dose-dependent level in muscle, and peaked around 10 mg / kg diet. There was also a dose response effect (improved performance) seen for niacin (at a dietary level of 66 mg / kg), riboflavin (at a level of 10-12 mg / kg), pyridoxine (10 mg / kg) and pantothenic acid (22 mg / kg). Survival was high in both trials, close to 100%, and with no difference between diet groups.

Above NRC recommendations

Farmed fish are becoming more vegetarian and the change in diet ingredients where the majority of proteins and lipids come from plants will need adjusted micronutrient premix additions to secure optimal growth and metabolism. Due to faster growth, with a four-fold increase of weight in the parr stage, and doubling of weight in the post-smolt stage, the data from the studies presented here are based on a short

period of the production, but indications for both life stages are similar regarding body levels of the B-vitamins. Based on these results, recommended B-vitamin supplementation in plant based diets for Atlantic salmon should be adjusted. Biotin and thiamine levels were sufficient in plant based diets, as no addition beyond the feed ingredients seemed to be necessary. The other B-vitamins are recommended to be added at or above NRC (2011) recommendations for salmonids to optimise growth, hinder change in liver lipid deposition, and saturate biomarkers specific for each vitamin. Therefore, based on current data updated recommendations for Atlantic salmon parr and post-smolt stages, the researchers suggest the following adaptations. Niacin inclusion of around 65 mg / kg diet (now 1 -10 mg / kg), riboflavin at 10 – 12 mg / kg diet (now 4 -7 mg / kg), cobalamin at 0.17 mg / kg diet (now 0.02 mg / kg), folate at 3.3 mg / kg diet (now 1 – 2 mg / kg), pyridoxine at 10 mg / kg diet (now 2 – 16 mg / kg), and pantothenic acid at 22 mg / kg diet (now 20 mg / kg). The researchers' advice to be aware of confounding effects due to the multi-approach design.

Source: AllAboutFeed.net

You probably need more fish oils, but is pill or food the best option?



If you eat fish regularly, or pop a fish oil or omega-3 supplement on a fairly daily basis, odds are you're aware that doing so is good for your health. And for good reason. Omega-3s are essential to our overall health and have many established health benefits. "They're also important for neurological development, good eyesight, new nerve growth, reducing your risk

of blood clots and fatal heart attacks, and are anti-inflammatory," Professor Barbara Meyer, director of the Lipid Research Centre at the University of Wollongong, tells SBS. "Even though omega-3s are fats, they're healthy fats, and we need more of them in our diet. As a country, we're heading towards a deficiency of omega-3s; our levels are sub-optimal."

Whether you decide to increase the amount of omega-3s in your diet, or take a daily supplement, you need to include

it in your diet in some form. “Our bodies cannot make omega-3s, so getting enough in your diet is incredibly important,” Chloe McLeod, an Accredited Practising Dietitian, tells SBS.

A short study conducted by Dr Michael Mosley for SBS's Trust Me, I'm a Doctor (watch the episode 7.30pm Monday 13 March, then on SBS on Demand) took a closer look at the best way to get more omega-3s.

But do supplements have the same benefits as fresh fish? Mosley reports that an eight-week trial conducted for

Trust Me I'm A Doctor found that eating fish at least twice times a week, or taking a daily omega-3 supplement of at least 250mg were both conducive to raising individual omega-3 levels. “There’s no doubt that eating two portions of oily fish a week is a good option for getting your omega 3,” says Mosley, “and it’s packed with other healthy nutrients too.”

“A supplement is a concentrated form of omega-3s,” says Meyer. “However, taking it on its own won't stimulate your fat digestion (the release of bile from your gall bladder). Take it with a fatty

meal, such as full-fat milk, eggs, meat, chicken, fish, nuts or avocado.”

What's important, says Meyer, is that you include omega-3s in your diet in whichever form suits you. “If you're between 50 and 70, supplement during those years to offset or delay age-related illnesses, such as dementia, heart disease or arthritis,” she says. “Omega-3s are the most likely way you can prevent or reduce your risk of ill health, now and in the future.”

Source: sbs.com.au

Norway Royal Salmon: Iceland can hit 100,000t production

Iceland’s burgeoning salmon farming sector can hit as much as 100,000 metric tons of production, taking it past the Faroe Islands, said Charles Hostlund, CEO of Norway Royal Salmon (NRS). NRS is assuming 80,000-100,000t of production will be possible in Iceland, in the future. This is somewhat more bearish than the country’s aquaculture association, which is guiding for 50,000-90,000t of future production. However, the industry is already encountering challenges at the early stage of development, which is only going to increase, said Hostlund, during the North Atlantic Seafood Forum last week.

Iceland has the benefit of being able to learn from mistakes made in Norway and the Faroe Islands, its near neighbours, he said. Also, “it is much better to tackle these challenges now, at this level of production”, said Hostlund, whose NRS invested in 50% of Iceland’s Arctic Fish last year. The challenges include a lack of farming infrastructure, wellboat and harvest capacity, as well as feed and service vessels, he said. Already, lice problems are starting to emerge, as well as opposition from anti-aquaculture environmental groups.

The government lacks knowledge of the sector, said Hostlund, while there is also

limited capacity on the smolt side. But, the blank canvas means the five players in operation – four of which have taken investments from Norwegians -- have the chance to work together and get it right from the beginning. The aim is to run areas in a “generation model, all-in all-out, with a good distance between sites, work with government to secure a regulation for the industry”, said Hostlund. “We need a solid regulation.” The development of the industry is not going to come overnight, but gradually, he said. “It’s important that we are not growing too fast.”

This is clear from the projections in NRS’s recent fourth quarter report. In the report, the company cited Kontali Analyse data that shows Iceland’s production will be 12,500t in 2017, up from 8,100t in 2016. For 2018, production could go to 20,000t.

Arctic Fish, the company that NRS bought 50% of last year from Polish entrepreneur Jerzy Malek, has licenses in three fjords in the Westfjords that would



give production of 9,000t, he said. It also has a hatchery that will have annual capacity of 7m smolt, when fully operational. NRS feels it can help develop the industry in Iceland as farming conditions in the Westfjords are similar to Finnmark, where the Norwegian firm has operations.

The four other players in the industry are Arnalax, which Norway’s SalMar has invested in, and Hradfrysthusid-Gunnvor in the Westfjords, with Laxar Fiskeldi and Fiskeldi Austfjarda, or Ice Fish Farm, in the eastern fjords. Norwegian farmers Midt-Norsk Havbruk and Masoval Fiskeoppdrett have invested in Ice Fish Farm and Laxar, respectively.

Source: Undercurrentnews.com

Danish Sandeel, Norway Pout and Sprat fishery achieves MSC certification



[The Danish Fishermen's Producers' Organisation \(DFPO\) and The Danish Pelagic](#)

[Producers Organisations \(DPPO\) sandeel, Norway pout and sprat fishery](#) has achieved certification to the Marine Stewardship Council (MSC) Fisheries Standard. The MSC Fisheries Standard reflects international best practice in sustainable fishing and requires a full science-based assessment of a fishery's operations, as well as stakeholder input. These low trophic level fisheries play an important role in sustaining marine ecosystem and it is therefore vital that they are managed sustainably. The certification verifies that these fisheries operate in a way which will preserve marine habitats, ecosystems and fish stocks for the future.

Camiel Derichs, Regional Director for Europe at MSC says: *"The certification of these North Sea fisheries marks a milestone for the Danish fishing industry. By investing in effective management, research and science, Danish fisheries are ensuring the sustainability of their catch, safeguarding seafood supplies and preserving marine environments. The certification of the reduction fishery means that they can now also support responsible aquaculture production."*

The average Danish landings between 2012 and 2016 was 123,000 tonnes for sandeel, totalled 155,000 tonnes for sprat and 26,000 tonnes of Norway pout. Denmark's total MSC certified catch is around 580,000 tonnes, coming from 20 different stocks and amounting to approximately 88% of its total wild seafood landings*.

Sustainable management

The third-party assessment team, employed by [MRAG Americas](#), found that

stocks of sandeel, Norway pout and sprat in the North Sea are sustainably managed. Stocks of these small fish species can fluctuate significantly, in response to environmental factors such as food availability and predation. Therefore, the fishery has introduced more robust management measures, with clear scientific advice to reduce or even close the fisheries when stocks become low. These measures also limit fishing when stocks are high to prevent overfishing. This scientific advice has been followed carefully resulting in significant reductions in catch over the last decade.

Recognising that further improvements are still possible, the fishery will need to deliver several improvements as conditions of certification. The action plan agreed by the DFPO/DPPO is expected to deliver well-defined harvest control rules these species, further improving management of these important stocks.

Esben Sverdrup-Jensen, CEO of the DPPO says: *"This MSC certification recognises the great efforts and commitment that the fisheries organisations in cooperation with scientists and authorities have put into attaining sustainable and well managed fisheries for sandeel, sprat and Norway pout. We target 13 different fish stocks – with this certification 95% of all DPPO landings are now MSC certified. We will continue to work on strengthening the cooperation between the fisheries, managers and scientists to provide a better foundation for the management of fish stocks and ultimately reach our target of 100% MSC certification."*

Fishmeal and fish oil production

The sandeel, Norway pout and sprat caught by the DFPO and DPPO are almost exclusively processed, through a process known as reduction, into fishmeal and fish oil. With the growing role of

aquaculture in meeting the world's protein needs, finding sustainable sources of feed for farmed fish is of growing importance. This is reflected by growing demand for sustainable raw materials to supply responsible fish farms certified to the [Aquaculture Stewardship Council's \(ASC\)](#) standards. This certification increases the volume of MSC certified reduction catch by around 22% to approximately 1,600 million tonnes.

Jonathan Broch Jacobsen, Sustainability Manager at DFPO says: *"With the current rapid global growth in aquaculture, it is paramount that the environmental footprint of aquaculture is sustainable. By having our large reduction fisheries MSC certified, we contribute our part to this - and we raise the bar. Not only for our colleagues in other reduction fisheries around the world, but also for the producers of land based ingredients for aquaculture feeds."*

[Read more about reduction fisheries and the MSC's requirements for low trophic species >](#)

[Read the certification report for this fishery >](#)

IFFO's Neil Auchterlonie said *"IFFO is happy to see the recent results of the assessment of the DFPO/DPPO North Sea, Skagerrak and Kattegat sandeel, sprat and Norway pout, confirming the sustainable management of these fisheries. The fishmeal and fish oil from this fishery will make an important contribution to the market at a time when there is increasing interest in certification in seafood production, and this material is likely to hold an important position in the supply chain. Fishery certifications like MSC allow automatic acceptance of raw material into the IFFO RS scheme for responsible fishmeal and fish oil producers."*

Peruvian Anchovy Fishery Launches a FIP

One of the most important fisheries in the world, the Peruvian anchovy fishery, launched this week its Fisheries Improvement Project (FIP) to get a “certifiable status” according to the guidelines of the Conservation Alliance for Seafood Solutions (CASS).

This purse seine fishery accounts for up to 6 million tonnes in a regular year, which are mostly used to make fishmeal and fish oil. These products, at the time, are used to elaborate aquaculture feed, thus farming other species highly valued by consumers.

The FIP was launched after the signature of a memorandum of understanding between the Peruvian National Fisheries Society (SNP) and the Center for Development and Sustainable Fisheries (CeDePesca). This FIP will be developed in parallel (and coordinated) with another one for the direct human consumption part of the fishery.

“The industrial anchovy fishery is very well managed and controlled: a recent report by OECD highlights the controls of the fishery and the World Bank has recently issued a report and video putting this fishery as an example. Of course, we have some challenges, which we will address with this FIP”, said Elena Conterno, chairperson of the SNP. “We are very happy of launching this project together with CeDePesca”.

The Action Plan for the FIP includes an update of the former pre-assessment against the MSC standard, an evaluation of the trophic impacts of the fishery, the improvement of controls for the small-scale fleet and a better understanding of the direct impacts on other species, through a private on board observers program.

“CeDePesca is very proud of being called by the SNP to implement this FIP. This has confirmed our organization as the main FIPs implementer in Latin America,” said Ernesto Godelman, CEO of CeDePesca. “I am really optimistic

that in the short term we will achieve our common goal and I feel that all of our partners have the firm decision to improve whatever the gap analysis reveals as a weakness in the fishery”, affirmed Godelman.

The Vice ministry of Fisheries (PRODUCE), through its top authority, Admiral Hector Soldi, committed its full support to the project and a joint committee, conformed by PRODUCE, SNP and CeDePesca is starting to coordinate the work.

At the same time, feed producers Skretting and Cargill Nutrition have stated its strong support to the FIP and will participate in the steering committee.

Steven Rafferty, Managing Director of Skretting, said: “Skretting has long valued its excellent relationship with Peru’s anchoveta fishery and the country’s feed ingredients industry. The fishery has always been an important source of high-quality, sustainable marine ingredients for the aquaculture sector. We are therefore delighted to be supporting this fishery improvement project, which builds upon the responsible management systems already in place in order to successfully fulfil the future demand for these raw materials while also meeting the highest sustainability assurances required within the global market.”

“The Peruvian fishery is one of the most important fisheries which we use in aquaculture, but also it has great significance for global ecosystems. It has been well managed by the Government of Peru, but in this age of globalization there is increased requirements for transparency, especially for issues concerning environmental and social sustainability.



Cargill Aqua Nutrition applauds SNP for leading the formation of this Fisheries Improvement Program (FIP) and building the coalition which will work with key stakeholders to work to improve the status of the fishery and transparency of its management. This will enable it to meet the highest standards of fisheries management demanded to ensure that the fishery is sustainable now and for future generations,” commented Einar Wathne, President Cargill Aqua Nutrition.

According to the Memorandum of Understanding, the FIP will follow the guidelines of the Conservation Alliance for Seafood Solutions (CASS) and its activities and outcomes will be publicly available for review and comments at CeDePesca and FisheriesProgress.org websites.

Source: [SNP](#)

Omega-3 Fatty Acids Give Pregnant Women Important Health Advantages



In response to a research letter, “Seven-year Follow-up of Children Born to Women in a Randomized Trial of Prenatal DHA Supplementation,” published

online today in JAMA, the Council for Responsible Nutrition (CRN), the leading trade association for the dietary supplement and functional food industry, issued the following statement:

Statement by Duffy MacKay, N.D., senior vice president, scientific & regulatory affairs, CRN:

“Every human has a basic nutritional need for omega-3 fatty acids, and pregnant women are no exception. In fact, pregnant women are an at-risk

population for which shortfalls of any nutrient, including omega-3s, can lead to devastating effects. The benefits of omega-3 fatty acids for overall health of both mother and child are numerous, but first and foremost, they are critically important for brain and eye development. Recommendations for pregnant and breastfeeding women to consume adequate levels of DHA, a type of omega-3 fatty acid, by the March of Dimes and the American Academy of Pediatrics, respectively, reinforce the importance of this nutrient.

Unfortunately, the null conclusion of this research letter may leave people questioning, rather than confirming, the valuable role of omega-3s during pregnancy. Before jumping to conclusions that may mislead consumers, it is important to take into account the many limitations hindering this study. For instance, we do not know the overall nutrition status of the women—during pregnancy and breastfeeding—or of the children. We also do not know the omega-3 status of the women and children in the placebo group in comparison to the treatment group.

Finally, the authors do not consider factors that could be relevant to the children’s IQ and other measures of cognition, such as socioeconomic status and level or quality of education. Without factoring in these key measurements, people should not make decisions on omega-3s based on the authors’ conclusion.

For the general population to obtain adequate levels of omega-3 fatty acids, two to three servings of fatty fish per week are recommended. For the many people who don’t eat fatty fish, such as salmon, anchovies, or sardines, multiple times per week, omega-3 fatty acid supplements fill this nutrient shortfall. For women of childbearing age, we recommend talking to your doctor about the need for a prenatal multivitamin in addition to an omega-3 supplement in order to ensure you are getting enough of the nutrients that are essential to the health and well-being of you and your baby.”

Source: crnusa.org

North Atlantic Seafood Forum: Excerpts from Intrafish Blog

When it comes to feed, stick to fixed prices

Helene Ziv, risk management and sourcing director at feed giant Cargill, told her audience at the North Atlantic Seafood Forum that in the salmon industry – as in other animal feed categories – fixed prices are more beneficial in the long run and can help reduce the impact of volatility. “Long-term fixed price opportunities are the way to go if you want a better balance between risks and reward,” Ziv said.

“That is why we offer fixed salmon opportunities for salmon producers.”

Expect more anchovy, better fishmeal quality

The future of fishmeal and fish oil looks very good, and demand is not going anywhere, said Rosana Ortiz, CEO of Peruvian fishmeal and oil producer Pesquera Exalmar. In addition to a better outlook for anchovy landings, higher rains and stronger currents are causing ocean upwelling, which is bringing nutrients that will improve the quality of

the raw material, increasing EPA and DHA levels in the fish, Ortiz said.

This will put the industry back to its levels, she said, in terms of prices -- which were a bit low because of the lower quality of the product last year-- and participation, as demand stays strong for aquaculture. “Anchovy will always be an essential ingredient in aquaculture, there will be a market rationalization, but fishmeal and fish oil will play a strategic role in very important stages of the fish farming

process," she said.

Aquaculture certification is still in its youth

George Chamberlain, president of the Global Aquaculture Alliance (GAA), gave attendees insight into GAA's Best Aquaculture Program (BAP), highlighting the development of the standard and the group's mission of not only improving the sustainability of the sector, but taking the next step: communicating to consumers and

buyers about these standards.

"How can the market be sure these challenges are being met?" Chamberlain asked. The volume of BAP-certified farmed seafood has grown dramatically, Chamberlain noted, and now spans an incredible number of species and geographies. Still, BAP certifies just 1.77% of the world's aquaculture production -- reaching out to the smaller farmers is critical.

"We're almost insignificant, we have a

long way to go," Chamberlain said. "What about the great majority of farms?" One interesting initiative to meet this need for certification to grow is GAA's online responsible aquaculture foundation, a kind of Khan Academy for the world's aquaculturists. MyGAA, a "LinkedIn for the aquaculture industry," was recently launched, along with a new website, another strategy for bringing the industry closer together.

Read more: Intrafish.com

ENFEN Statement: 30th March

Alert System Status: Coastal El Niño Alert



The ENFEN Multisectoral Committee foresees the continuation of the moderate magnitude Coastal El Niño event, which is defined according to

the anomaly of sea surface temperature, at least until May. However, the probability of very heavy rains in the middle and lower areas of the coast, mainly between Tumbes and La Libertad, will decline during the month of April as the rainy season progresses. Therefore, the ENFEN Multisectoral Committee maintains the status of "Coastal El Niño Alert," during which intense monitoring of the conditions will continue, with biweekly forecast updates.

In the Central Pacific region (Niño 3.4 region), the sea surface temperature (SST) anomaly continued to present values in the neutral range. In the Western and Central Pacific there were anomalies of easterly winds, while in the Eastern Pacific the anomalies of the westerly winds recovered in the last

week, after a partial weakening in the first half of March.

In the Niño 1+2 region, which covers the northern Peruvian sea, SST values of 28°C continued to be observed, but in the last week there was a withdrawal of the warmer waters towards the north of that region (Figure 1). The weekly SST anomaly reached a maximum of + 2.6°C from March 12 to 18, decreasing to +2.2°C in the following week (Figure 2).

The estimated values of the Coastal El Niño Index (ICENTmp) for February and March, using data from NCEP 01 55T v2, correspond to moderately warm conditions.

Forecast

For the next few weeks, the SST off the northern coast is expected to decline, but its positive anomalies could persist until at least May, extending the duration of the Coastal El Niño.

Nonetheless, the probability of very heavy rains in the middle and lower coastal areas between Tumbes and La Libertad will decline during the month of April.

The forecast is based on: 1) the ocean-atmosphere coupling observed off the coast of South America (between coastal warming, the secondary band of the ITCZ and the north wind anomalies) will

decline throughout April, both due to the SST and rainy season and to the possible persistence of intense southerly trade winds. 2) The possible persistence of westerly wind anomalies in the Eastern Pacific, fed by the greater warming of this region in relation to the Central Pacific, generating more warm Kelvin waves.

Although some observational data and the results of the linear oceanic models show a cold Kelvin wave moving along the equatorial line towards the South American coast, this would not be enough to dissipate the warm anomalies.

The information presented above is consistent with that of most international climate models over the next two months. Although several of them predict a continuation of warm conditions in the Eastern Pacific and the start of El Niño in the Central Pacific some time before year's end, their medium-term forecasts are not as reliable because of the "predictability barrier" in the austral autumn.

Taking into account monitoring and expert analysis of the ENFEN Multisectoral Committee, as well as the results of the models of international agencies, the continuation of the moderate magnitude Coastal El Niño event is foreseen until at least May.

Joint venture to develop omega-3 fatty acid products from Algae



Royal DSM and Evonik have their intention to establish a \$200 million joint venture for producing crucial omega-3 fatty acid products from Schizochytrium species of algae. “Interest [from aquafeed manufacturers and salmon producers] is very high. Evonik and DSM have been extensively working with the entire value chain, including fish feed producers, fish farmers and retailers,” a spokesperson from Evonik told The Fish

Site.

Evonik and DSM added that their algal oil will contain more than 50% by weight of the vital long chain fatty acids EPA and DHA and will be aimed at initial applications in salmon aquaculture and pet food. The companies will together build a commercial-scale production facility in the United States.

DSM Nutritional Products and Evonik Nutrition & Care will each hold a 50% share in the joint venture and co-own the production facility, which will be built at an existing site of Evonik and is expected to come on stream in 2019. The joint

venture plans to invest around US\$ 200 million in the facility (USD 100 million by each party over circa 2 years). The initial annual production capacity will meet roughly 15% of the total current annual demand for EPA and DHA by the salmon aquaculture industry. The set-up of the joint venture, to be named Veramaris and headquartered in The Netherlands, will be finalized subject to regulatory approvals and other customary closing conditions.

Source: [The Fish Site](#)

Salmon sector seeks avian opportunities

A meeting to discuss the viability of including avian proteins in salmon feeds – which also covered the potential offered by a variety of other possible alternatives to the use of fishmeal – took place in Dunblane earlier this month.

Chaired by Professor Brett Glencross, Director of Research at Stirling’s Institute of Aquaculture, the workshop was attended by a broad range of delegates, including fish producers, aquafeed manufacturers and representatives of the UK retail sector.

Avian proteins have been included in the diets offered to the Canadian, Chilean and Australian salmon farming sectors for more than a decade. Although they are permitted to be used in the EU, concerns persist about consumer acceptance of the idea and they have not been used by British salmon producers since 1997, in the wake of the BSE scare, when feed producers were encouraged to remove land animal proteins (LAPs) from their raw material options.

The Dunblane workshop marked the

initial phase of a project – set up last year by companies including Biomar and Morrisons, and part-funded by the Scottish Aquaculture Innovation Centre (SAIC) – that was designed to gauge, and perhaps help enhance, consumer acceptance of the idea of their reintroduction into feeds used by the salmon industry in the UK.

Source: [TheFishSite.com](#)



BUSINESS



Based on the significant growth Aller Aqua has experienced throughout recent years, the company now establishes a dedicated group management team. The team will be based in

Christiansfeld, focussing on the company's global growth. The management in the individual factories will continue to focus on growth on the local markets. The group management team will be dedicated to continue the development, globalisation and growth in Aller Aqua. Transverse functions such as Purchase, Finance/IT, R&D and Supply Chain will be integrated in the group management. Consisting of Hans Erik Bylling (Group CEO), Carsten Jørgensen (Group CFO), Henrik Halken (Group CPO/CCO) and Dr Hanno Slawski (Group R&D Director). Additionally, the company will initiate the search for a Group Supply Chain Director.

On the individual factories, we have strong management teams in place. In Denmark, Lars Rahbæk will step up as CEO, whilst the other local management teams will stay in place and continue to work dedicated on expanding and strengthening the home markets.

The new management structure will be effective from the 1st April 2017. The group management team will focus 100% on strengthening Aller Aqua globally, and implementing the

company values of local presence, customer focus, quality, flexibility and knowledge sharing. Source: [AllerAqua](#)

Tecnologica de Alimentos (Tasa) CEO Carlos Pinillos has resigned, ending a 15-year career with Peru's largest fishmeal and oil producer and fishing company. Pinillos plans to continue in his role for the next few months as the company searches for a new CEO and completes succession planning, Pinillos said in a letter to customers seen by Undercurrent News.



"My decision is something that has been carefully planned for some time and known to shareholders," he wrote. "Now that I have finally decided to make this decision official during the current year...I will close a professional stage of my life that has been not only the most important but also the most enriching of my whole career."

Pinillos' successor will take over a company with global implications. With 26% of Peru's anchovy quota, Tasa is among the nation's largest holders of anchovy — a massive fishery and one of the most important sources of fish oil and fishmeal in the world. Source: [Undercurrentnews.com](#)

COUNTRY



Food and Agriculture Organization of the United Nations

FAO and Norway have today launched a new, state-of-the-art marine studies vessel, among the most advanced of its kind — and the only research ship on the globe that flies the UN flag. Its mission: To investigate some of the planet's least-explored oceans, using cutting-edge technology and sophisticated equipment to help developing countries assemble scientific data critical to sustainable fisheries management and study how a changing climate is affecting our oceans.

The new Dr. Fridtjof Nansen — the 3rd ship to bear that name during an ongoing 40-year partnership between FAO and Norway — houses seven different laboratories packed with high

tech gadgetry.

This includes new-generation acoustic gear for biomass assessments and ocean floor mapping, a ROV (remote underwater vehicle) control centre, "manta trawls" that collect plankton and microscopic plastic particles, and a laboratory specifically designed for climate studies - making the Dr Fridtjof Nansen one of the world's most advanced marine research facilities. Source: [FAO](#)

The Faroe Islands is currently considering the overhaul of key fishing legislation, including a provision to eliminate foreign ownership of the Faroese fishing industry, according to a brief by the Faroe Islands' ministry of fisheries. Fishing industry stakeholders are currently consulting the bill, which has been drawn up in preparation for when all fishing licenses in the Faroe Islands expire on Jan. 1, 2018. The term-limit on fishing licenses

COUNTRY

was set into law by the Faroese parliament in 2007, following big trades in fishing licenses. Key proposals currently in the bill include:

- New fishing rights, including increased pelagic quotas which the Faroe Islands have set in recent years.



- Shift to a quota-based fisheries system, as opposed to the current fishing days (days at sea) system.

- That all fish is brought to shore and all by-products such as liver, guts and heads are either processed on board or landed.

- The aim to eliminate foreign ownership in the Faroese fishing industry over a period of four years.

The bill has been proposed on the desire for "a new and durable system for the Faroese fisheries industry", according to the briefing. This includes moves towards a "more market-based" system, whereby new fishing rights will in the future "have to be purchased on an auction by companies which want to fish", it said. The briefing also includes key principle objectives. The consultation period will end on March 27, after which it will be submitted to parliament. Source: Undercurrentnews.com

Sri Lanka has announced it is to receive a LKR 75 million (\$2.4m) grant from South Korea with which to develop its aquaculture sector. The move comes as a result of discussions held by fisheries and aquatic resource state minister Dilip Vedarachchi, with the Korean ministry of ocean and fisheries, said the Sri Lankan government. Korea's National Federation of Fisheries Cooperatives has agreed to donate two fisheries technical colleges, one in the north and one in the south of Sri Lanka. In addition, Korea has agreed to construct multipurpose fisheries harbors, intended for Udappuwa, Chalai, Madagal, Delft and Tangalle. They have agreed to do the feasibility studies, as well as the planning, free of charge, and a high level team will be in Sri Lanka, the country said. Source: Undercurrentnews.com

Scotland: A £1 million pilot programme to boost innovation in aquaculture in the Highlands and Islands is set to go ahead. Highlands and Islands Enterprise (HIE) has approved the funding package and will run the programme in conjunction with the Scottish Aquaculture Innovation Centre (SAIC).

The 30-month pilot is expected to attract a similar level of funding from the private sector. It is targeted at helping small to medium enterprises (SMEs) achieve greater commercialisation of new innovative products and services, which will have a positive and sustainable economic and social impact.



Projects supported will have clear commercial outcomes. Together they are expected to boost industry turnover in the region by around £8 million and create up to 50 jobs, including many in fragile areas.

Aquaculture is a priority sector for HIE and of growing importance to Scotland's economy. It is estimated to contribute as much as £1.8 billion turnover a year to the Scottish economy and support around 8,000 jobs. The Aquaculture Growth Strategy 2030, 'A Strategic Plan for Farming Scotland's Seas', states the industry has potential for this to increase to £3.6 billion and 18,000 jobs by 2030. Source: Scottishaquaculture.com

EU must maintain continuity of markets for livestock and feed products during UK/EU BREXIT negotiations. FEFAC draws attention to the sensitivity of the Article 50 discussions for agricultural markets and warns for potential



impacts on the livestock and feed chain, both in the UK and the EU-27. FEFAC stresses the need to implement effective safeguard measures during the entire negotiation period to maintain fully functioning and accessible agricultural markets, in the interest of all European consumers, livestock farmers and market partners.

FEFAC members are convinced that a comprehensive free trade agreement between the UK and the EU-27, based on EU standards, would be the best outcome for the EU and UK feed & livestock sector. FEFAC has set up a dedicated Brexit Task Force to analyse potential trade impacts of the Brexit negotiations on the EU feed & livestock sector. Source: FEFAC

RESEARCH



Fewer contaminants in farmed salmon. A major study in Norway has found that wild salmon contains more contaminants than farmed salmon, reversing a popular held view that it was the other way around. But neither are harmful to

health, it is being stressed. IFES carried out the extensive study, led by senior researcher at NIFES, Professor Anne-Katrine Lundebye. The team studied differences in contaminants and nutrients between the two types of salmon. These include dioxins, PCBs, brominated flame retardants and most pesticides, as well as differences in what the fish were eating.

Lundebye told forskning.no that 100 wild salmon caught off northern Norway and a similar number of farmed salmon were used in the experiment. The results were quite clear and show that farmed salmon had lower levels of organic pollutants than their wild counterparts. It was also pointed out that fish farms control what their salmon can eat, but nature decides what wild fish consume.

Lundebye believes the development of fish feed is one of the reasons for the relatively low level of organic contaminants in farmed salmon. She stressed that both types of salmon provided healthy omega-3 oils and were quite safe to eat. Salmon from the Norwegian Sea were used in the trial because it is the main nursery area for this species of fish.

The last major study carried out in this field was in the United States more than 12 years ago and it came to the opposite conclusion to this latest NIFES research, sparking off a major debate at the time. Lundebye pointed out that the 2004 US study involved comparing wild Pacific salmon with farmed Atlantic salmon, two different species with two different types of fat cell content which do not bear comparison. Source: FishUpdate.com

Fish oil supplements may help prevent death after MI but lack evidence of CV benefit for general population. Omega-3 fish oil supplements prescribed by a healthcare provider may help prevent death from heart disease in patients who recently had a heart attack and may prevent death and hospitalizations in patients with heart failure, but there is a lack of scientific research to support clinical use of these supplements to prevent heart disease in the general population, according to a new science advisory from the American Heart Association.

The advisory's writing group reviewed all randomized clinical trials that evaluated a potential role for fish oil supplements to prevent cardiovascular diseases, including two studies published before 2002 and 13 published since 2002, when the association last issued a scientific statement focused on fish and omega-3 fish oil supplements. The studies rigorously assessed the clinical impact of omega-3 fish oil treatment on outcomes such as heart attacks, strokes, atrial fibrillation (a heart rhythm disorder) and others.

"Scientific findings from the past two decades that focused on the prevention of cardiovascular diseases continue to show that among people who are at risk of dying from heart disease, the potential benefit of omega-3 fish oil supplements is still useful for people who have had a recent heart attack, which is consistent with the 2002 statement," Siscovick said. "What is new is that people with heart failure also may benefit from omega-3 fish oil supplements," Siscovick said. Heart failure occurs when the heart cannot adequately pump blood.

The scientific evidence for the heart failure recommendation comes from a large, randomized, clinical trial that showed a low dose of omega-3 fish oil supplements reduced death and hospitalization by 9% in patients with heart failure, which led the authors to determine that healthcare providers could consider omega-3 fish oil supplements reasonable for these patients. Source: Sciencedaily.com



CALENDAR



2017

25-27 April	Seafood Expo	Brussels, Belgium
1 May	IFFO RS Workshop	Barcelona, Spain
1 May	IFFO Board meeting	Barcelona, Spain
2-3 May	IFFO Members' meeting	Barcelona, Spain
31 May—4 June	World of Seafood - Thaifex 2017	Bangkok, Thailand
5-7 June	SeaWeb Seafood Summit	Seattle, U.S.A.
27-30 June	World Aquaculture 2017	Cape Town, South Africa
3-6 October	GOAL 2017	Dublin, Ireland
11 October	Humber Seafood Summit	Grimsby, U.K.
23-25 October	IFFO Annual Conference	Washington DC, U.S.A.



Contact Us

IFFO, Unit C, Printworks, 22 Amelia Street
London, SE17 3BZ, United Kingdom
Tel: +44 (0)2030 539 195
Fax: +44 (0)2030 539 196
e-mail: secretariat@iffo.net
www.iffo.net