



# IFFO

THE MARINE INGREDIENTS ORGANISATION

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# UPDATE

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During the USA Presidential Election campaign, and since the election of President Trump, a new concept has entered the modern

language – fake news. The appetite for news, preferably sensational, and the “more clicks means more adverts means more money” trend has led to whole communities of fake news writers, like the one reported in [Macedonia](#). Or was this also fake?

It’s hard to know who to believe anymore but the first question should always be “How can you know that”? Well, at least for the IFFO statistics we produce for members, we can answer that question. Our Business Information department, headed by Dr Enrico Bachis, has spent several years building up a network of sources which can be cross-referenced and compared. We recognise this is one of the key services to IFFO members and will continue to develop the range of reports we offer.

Alternative feed ingredients were featured by the industry news site Intrafish during February, including a letter from IFFO reminding buyers that consumers have views on how fish should be fed. We want to see the aquaculture industry continue to grow and accept that additional feed ingredient sources are required. However, the alternatives should be as well as, not instead of, fish based products. Another media event in February was coverage of a report claiming millions of tonnes of fish were being used for fishmeal and fish oil that could be used for direct human consumption. The authors confused the idea of this catch being food grade (due to the investment by the industry in good fish handling systems) and suitable for human consumption, with being in demand for human consumption. Some interesting figures from Peru showed that, despite all the efforts to promote eating Anchoveta, direct human consumption

is falling, particularly since the Peruvian Army were not forced to buy canned Anchoveta for their troops – too many complaints apparently. We agree fish should go firstly for direct human consumption but if there is a surplus catch from a well- managed fishery, the benefits of using marine ingredients to feed fish and other animals are perfectly justifiable. You can see our letter to a journalist about this report later in this newsletter.

Our program for the Barcelona Members Meeting is coming together, with some great speakers who will present the latest news from our industry. Registrations are off to a good start and, at 11 weeks out, were the third highest ever (no fake news here). Places are limited so, if you haven’t already registered, don’t delay.

Andrew Mallison  
*Director General*

## ANNOUNCEMENTS

### IFFO Members’ Meeting—Registration now open



Monday 1 May - IFFO Management Board meeting  
Tuesday 2 - Wednesday 3 May - IFFO Members' Meeting

To date 57 delegates have registered from 13 countries and a pdf list is available at [www.iffoevents.com/files/iffo/DelegatesList.pdf](http://www.iffoevents.com/files/iffo/DelegatesList.pdf).

A reminder that the **deadline for ACCOMMODATION and EARLY BIRD registration is Friday 24 March** and rooms are available on a first-come first-served basis, but subject to availability.

More information on the programme, venue and registration is available via [www.iffoevents.com](http://www.iffoevents.com).

## IFFO responses to recent press articles



### [The Huffington Post blog: Can we go on farming salmon?](#)

IFFO, The Marine Ingredients Organisation represents the global fishmeal and fish oil industry. We regularly represent the industry at international fora, as well as holding observer status at the UN Food and Agriculture Organisation (FAO), and the EU Commission and Parliament. Our remit covers some of the points addressed in the blog, i.e. those that relate to the feeding of farmed salmon.

Having spent many years in Scottish Aquaculture, the description you provide of a Salmon farm is unlike any farm I have ever seen in my career and I would question if it exists. No commercial farm would be allowed, or could sustain, operation like this. The information presented on fishmeal production completely misses the point that the (fishmeal) industry is highly regulated, heavily engaged with sustainability agenda, and is a sector where annual volumes of certification of the product is at a high level relative to other feed ingredients. The global annual production is relatively stable at approximately 5 million tonnes of

fishmeal and 1 million tonnes of fish oil, outside of years where El Nino events occur in the South Pacific. Our industry is engaged with the fish farming sector and NGOs to raise standards and communicate to consumers which are the better

choices available.

Your reference to there being no wild fish left by 2048 is based on a 2006 paper that the lead author (Boris Worm) later complained was misrepresented to grab headlines. The extrapolation projected catches in the last century forward to 2048 and did not take into account improving fishery science and management regimes that are now restoring many major fishery stocks.

Fishmeal and fish oil are vital feed ingredients used in the production of pig, poultry and fish. They are therefore central to the production of protein across the world, and global food security with its implications for humanity in the 21st Century. The small pelagic fish species used for fishmeal and fish oil production typically do not have direct human consumption markets, and the harvesting of these fisheries supports the economies of coastal communities in countries across the world. Because the fisheries are pelagic, any impact of fishing operations on marine habitat is negligible, and bycatch is often very low. Often the fisheries operate through stock management approaches based on

science, including the setting of annual or seasonal quotas. As well as whole fish used in the production of fishmeal and fish oil, byproducts from the seafood processing sector are also used, and IFFO estimates that approximately 35% of fishmeal and fish oil is produced from this raw material currently with efforts being made to further increase this percentage.

The reference in the text to a shortage of anchovies and the implication that this is a direct result of overfishing and the growth of aquaculture is a completely false statement. The opposite is actually true as the “shortage” has been the result of careful fishery management.

The Peruvian anchovy is the most important of anchovy species for the production of fishmeal and fish oil globally. Stocks of Peruvian anchovy fluctuate according to environmental conditions and these are taken into account in the stock management process undertaken by the Peruvian government. El Nino events, in particular, can affect stock, and it appears that environmental conditions may have more impact on stock populations than the level of fishing effort.

Aquaculture is a growing industry, and that growth is essential to meet the protein requirements of a growing human population. The volume of fish oil produced annually is finite. Aquaculture growth has been facilitated through a reduction in the feed content of fish oil.

Yours sincerely,  
Neil Auchterlonie

**The Salt: [90% of fish we use for fishmeal could be used to feed humans instead](#)**

Thank you for your article on the use of fish for direct human consumption (DHC) or as ingredient for animal feed. As you mentioned, the types of fish that are caught but not used for DHC are usually the unwanted varieties (for good reason) and I agree “unwanted” can and does change.

I read the paper you quoted, which estimates the amount of fish caught for Direct Human Consumption (DHC) and for conversion into Fishmeal and Fish Oil (FMFO) and questions whether the percentage of fish for DHC could be increased. Due to the basic assumption that fish is better consumed directly than indirectly (e.g. the use of fishmeal in farmed animals, including farmed fish, diets) and that much of the fish is of a quality suitable for DHC, there is a prima facie case raised for increasing the quantity of global catch used for DHC.

However, this question has been asked many times and is well researched. In reality, free market forces regulate the ratio between uses. Returns for the fishers are typically greater when selling to DHC and this trend is acknowledged in the paper, quoting 30% of catch in the 1990’s going for FMFO reducing to around 18% by 2010, a trend we expect

to continue. The reduction in whole fish entering FMFO production has been offset by an increased recovery of processing by-product, to the extent that around 35% of the total raw material used to produce FMFO is now from recycled waste products. Many companies that process FMFO also produce products for DHC where possible, allowing a rapid response to divert raw material to DHC as markets emerge.

Markets for DHC can also decline. The North Atlantic Herring was a staple of the British diet in the post war era, but fell from grace as other more convenient choices of protein became available. Landings were then used for fishmeal production until another market swing around 2000, when West African, East European and Russian markets opened and landings switched again into DHC production.

However, experience has shown that, even with subsidies or other market distortions, the many choices of convenient fish and non-fish proteins available today makes it exceptionally difficult to persuade consumers to change eating habits in favour of those small bony fish mainly used for FMFO production. After many years and dollars of promoting the consumption of

Anchoveta in Peru, and with local communities in need of good nutrition, the percentage of the catch used for DHC is still less than 3% at around 150,000 tonnes. It would be interesting to know how much Anchoveta, Menhaden or Sand Eel is eaten by the authors of the paper.

A significant factor not considered by the paper is the capacity of the market to absorb the high and peaking volumes of catch. In Peru, the Anchoveta fishery is well managed but by nature is seasonal, with millions of tonnes being landed in two seasons each of approximately 3 months. The local DHC market is unable to absorb this quantity fresh, and preserving e.g. through freezing, adds costs and distribution requirements that make this option non-viable. This situation is similar in other small pelagic fisheries which are seasonal, where the cost of landed fish is low, the relative cost of preservation high and conversion into ambient stable, dried protein and oil is the only option.

The paper recommends “..greater steps towards the efficient use of our limited ocean resources to feed humans directly, instead of indirectly via fattening farmed fish, chicken and pigs” but does not support this with a comparison of the health benefits



arising from increased fish consumption resulting from aquaculture, or the economic contribution aquaculture makes in developing world countries and rural economies. Marine feed ingredients have allowed the modern aquaculture industry to develop and become established, which is now recognised as a great contributor to global food security and rural and developing world economies.

It is also likely that the health of many consumers who prefer not to eat fish and instead take Omega 3 Fish Oil supplements would be prejudiced if Fish Oil production declined.

The position of IFFO and its members is that marine products like Fishmeal and Fish Oil have a significant role to play in human nutrition, whether directly via Fish Oil supplements or indirectly via use in feed to produce farmed animals for which there is clear demand. We believe markets should be allowed to operate freely to allocate raw materials for processing to markets that offer the best returns for the producer, whether for DHC or indirect use.

Yours sincerely,  
Andrew Mallison

[Intrafish: Article series on marine ingredients and aquaculture industries](#)

Thank you for the thought provoking series of articles on Intrafish recently covering the role of fishmeal and fish oil in aquaculture diets, and the

alternatives available. I appreciate the balance you have provided in showing the different aspects of the subject and wanted to pass on some thoughts about where we go from here.

Firstly, let's state the givens:

- 1) Aquaculture is vital to future global food security.
- 2) To continue growing, aquaculture needs a good supply of quality feeds made from responsibly sourced ingredients.
- 3) There is not enough fishmeal and fish oil to maintain the levels of inclusion in feed used in the past. Supplies are finite and do not meet all demand.
- 4) Alternatives to fishmeal and fish oil are needed and are becoming increasingly available.

This last one might surprise you, coming from an organisation dedicated to marine ingredients, but we believe in (1), (2) and (3) so must accept (4).

I am not going to complain about the unfortunate tendency for those selling the alternatives to confuse sustainability with continuity of supply. Sustainability, or lack of, is cited as a justification for moving away from marine ingredients to their proposed new solution, whereas the real issue is providing continuity of supply for the future. As regards actual sustainability, the marine ingredients industry has an excellent record and can claim a far higher percentage of independently certified, responsibly produced sources than any of the

alternatives. At the last count, over 40% of global production of marine ingredients is independently certified to be from responsible raw materials, safe, legal and traceable with more in the pipeline.

What I am going to ask is that we now move on from idea that fishmeal and fish oil have to be automatically replaced. Your series of articles did a great job of explaining the options available to, and needs of, the industry. However, the industry is not best served by the trend for the accepted need for more feed ingredients to somehow morph into a campaign to substitute instead of supplement.

A perfect example of this is the Fish Free Feed (F3) Challenge, a cash prize for producing a feed that has no marine ingredients, even if the marine ingredients are from recycled waste materials, or from a certified sustainable fishery without a human consumption market. The F3 organisers would not allow us to attend a recent meeting to explain why marine ingredients could and should continue to be used and have not responded to our offer to work with them on a position for the future. Driving the debate towards Either / Or does no-one any favours, surely it should be As Well As, Not Instead Of?

Consumers and retailers have little time to study and assess this debate. The danger here is that snappy-titled campaigns like F3 can give the wrong



impression to the market – retailers then put pressure on farmers and farmers put pressure on feed companies. The result is that the best ingredients from a nutritional point of view i.e. marine, are squeezed out, taking momentum away from existing projects to improve fishery management and recovery of waste fish trimmings.

After the Mad Cow / BSE disease scare of the 1990's in Europe, I believe consumers have a preference for farmed animals to be fed on what they would eat in the wild. The phrase "You are what you eat" has been extended to "You are what you eat has eaten". There may be no scientific logic to this but the recent decision by Carrefour to de-list Pangasius is a possible example of how retailers protect their brands from perception and emotion that is not always based on fact. Consumers have many choices of farmed protein and are

easily spooked.

Fish has an enviable image of being healthy and wholesome. Although there is now more farmed fish than wild, the wild imagery still colours consumers' minds. The farmed fish industry should be ready (and proud) to declare what has been used in the feed – some of the possible alternative ingredients would be more acceptable to consumers than others and the industry should take great care about which feed ingredients it chooses.

The marine ingredients industry also has to step up and earn its place in feed formulations. We need to offer better ingredient solutions for specialised diets e.g. hatchery or finishing, making the most of the volume available at the same time as trying to increase the sourcing of raw materials. The board of IFFO has approved an increase in spending on product research and

development projects for our members, in addition to existing work in fishery management. Although it is an intensely competitive area, marine ingredient producers want to work with feed companies to develop the products further and invest in the future. IFFO's role as the industry trade association is to provide a platform for producers and feed companies to agree where to put effort and resources.

We trust that the feed companies who make the decisions about formulation, and their customers who express preferences, will look at the bigger picture. Not just what is available but also what makes sense to the consumer and, to adapt another adage, that no prawns are thrown out with the pond water.

Yours sincerely, Andrew Mallison

## INDUSTRY NEWS

### Global fisheries lose more than USD 80 billion a year, according to study



**THE WORLD BANK**  
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A new report by the World Bank confirms that overexploitation is not a good strategy to manage a renewable natural resource like fish stocks, for steady profits, reliable jobs and long-term growth. The study, *The Sunken*

*Billions Revisited: Progress and Challenges in Global Marine Fisheries* (Revision of *The Sunken Billions: The Economic Justification for Fisheries Reform*) indicates that for global fisheries as a whole, about USD 83 billion were lost in 2012, compared to a more optimal scenario, largely because of overfishing. The report, which uses a bio-economic model developed by Professor Ragnar Arnason of the University of Iceland, explicitly quantifies the potential economic benefit lost in global marine fisheries.

The World Bank, stressed that the organization together with partners have worked with numerous countries to help put fisheries on a more sustainable. Some examples of its actions include the case of the Peruvian anchovy, which supplies fish oil rich in omega-3 and fishmeal for livestock and aquaculture around the world. Since farmed fish now accounts for more than half of all seafood production, the abundance of the anchoveta is critical for food security.

In 2009, the Bank partnered with the

Government of Peru through a series of environmental development policy loans to ensure the sustainability of anchovy resources, strengthen the management of the sector and reduce overcapacity in the fishing fleet, while easing the transition of people employed in the sector into other economic activities.

In Morocco, the institution has supported the country's 'green growth' vision by providing financing in the form of development policy loans, investment projects, and technical assistance, as well as tools to fight illegal fishing (IUU).

The World Bank's report also highlights that fisheries in the Western and Central Pacific provide over half of the world's tuna, a prized source of protein, worth some USD 5.8 billion per year at first sale. However, tuna are migratory species and the fate of the stock depends on actions taken by a number of countries and foreign vessels, throughout their biological range.

Therefore, in the purse seine tuna

fishery - the region's largest tuna fishery in volume -, the Parties to the Nauru Agreement (PNA) introduced the Vessel Day Scheme in 2010, to allow them to cooperate to limit fishing within sustainable levels across their waters, and to increase jointly the access fees each charged for access by distant water fishing nations. In this context, the World Bank, with support from the Global Environment Facility (GEF), is investing in capacity building and technology to strengthen the sustainable management of fisheries and particularly the next generation of the vessel day scheme.

The financial institution noted that it is also empowering small-scale fishers to fight illegal fishing in West Africa. The Bank's West Africa Regional Fisheries Program (WARFP), launched in 2010, aims to increase the economic contribution of marine resources through strengthened fisheries management and governance, reduced

illegal fishing, and increased local value added to fish products.

With regard to the situation in Sultanate of Oman, the fishing sector, which is mostly artisanal, is now lagging behind. Oman requested the Bank's help in devising a plan that would make the sector a viable engine of growth and employment, while improving the livelihoods of an estimated 40,000 to 50,000 individuals who depend on fishing and related activities.

The technical assistance, provided in the form of reimbursable advisory services, brought international best practices and stakeholders at all levels, from ministers to fishers to tribal elders to build a shared vision of revitalized fisheries. According to the Bank's report, allowing fish stocks to bounce back to healthier levels would cut losses and create revenue for long-term growth, while helping fisheries adapt to climate change and meet global demand for seafood.

Source: [FIS.com](http://FIS.com)

## Vietnam's pangasius industry nears crisis

Rough weather and a credit pinch have hurt production cycles of farmed pangasius in Vietnam, resulting in sky-high prices, to the point where some processors have even stopped giving quotes to retailers. The estimated farm production for pangasius in Vietnam in 2017 is 500,000 metric tons (tonnes) live weight. With a fillet yield of 30%, this will only cover 40% of last year's market demand.

The shortfall is due to a calamitous series of events, commencing at the beginning of the year, when rainy, cold weather killed off many juveniles across the country's pangasius farms. Recently, a tightening of credit has also hurt aquaculturists in Vietnam. Independent farmers are having trouble retaining the

support of the country's banks, which will not give loans to buy feed and cover the cost of juveniles that have to be purchased at the start of the growing season. For a larger farm, these costs could run to USD 1 million (EUR 953,000) to be paid in advance; there is no credit available from the feed producers either.

As a result, pangasius prices have shot upwards. Top-grade, 100% net weight pangasius with five percent glaze and no chemical treatment is now sold at about USD 3.70 (EUR 3.50) per kilo CnF. A year ago, the same specification could be sourced for about USD 2.90 (EUR 2.70) per kilo.

However, pangasius farmers may not benefit from the higher prices. According to media reports, Vietnam's pangasius

exporters do not know how to service the contracts they agreed to last year. Processors who had factories running continuously last year can now only produce one day in the week because of the lack of raw material. They are also worried that workers in the Mekong Delta will look for other jobs – meaning even if the supply situation improves, there may be a shortage of workers to process the fish.

Some supermarket buyers have stated that if the price for the fish cannot be kept at the same level as last year, they simply will not sell it anymore – a possibly massive setback for the pangasius industry in Vietnam.

Source: [Seafoodsource.com](http://Seafoodsource.com)

## ENFEN 15th February Statement



### State of alert: Warning of Coastal El Niño

The Multisectoral Committee ENFEN foresees the continuation of the weak coastal El Niño event until at least and including the month of March, associated with a high probability of heavy rain in the middle and lower zones of Tumbes, Piura and Lambayeque. Its occurrence will depend on the presence of favourable local atmospheric conditions. Therefore, the Multisectoral Committee ENFEN maintains a status of "Warning of Coastal El Niño", during which it will rigorously monitor the conditions, updating on the outlook every fortnight.

For the next few weeks, up to and including March, it is expected that the SST off the northern coast will continue

presenting values of up to 28°C contributing to the high probability of very heavy rain in the middle and lower areas of Tumbes, Piura and Lambayeque. However, its occurrence depends on the presence of favourable local weather conditions.

This outlook is associated with the likely persistence of the secondary band of the ZCIT observed off the northern coast and the abnormalities of northern and westerly winds, due to the feedback oceanic-atmospheric processes in the Eastern Pacific. This is consistent with the majority of international climate models.

In the next few days a period of anomalies of westerly winds from the eastern equatorial Pacific is expected, which could augment the warming off the coast of Ecuador and Northern Peru, associated with the warm Kelvin wave that is expected to arrive in late February.

According to wave simulation models, the pulse of easterly winds in the Central Pacific at the beginning of February

would have formed a cold Kelvin wave, the arrival of which at the coast would occur in the course of the second half of March. However, its impact will be insignificant due to the persistence of anomalies of westerly winds in the Eastern Pacific, in which case warm sea conditions will continue until the month of April.

According to international agencies' climate models, warm conditions will continue in Niño regions 1 + 2 until at least autumn, while for Niño region 3.4 neutral conditions will continue until the month of May, then evolve to warm conditions. It should be noted that the forecasts for autumn onwards are not as reliable because of the barrier of predictability.

Taking into account the results of the international agencies' models, the ENFEN Multisectoral Committee foresees the continuation of an El Niño event of weak magnitude until at least March, keeping the state of "coastal El Niño alert".

Source: ENFEN

## Extreme fluctuations in forage fish populations

California sardine stocks famously crashed in John Steinbeck's "Cannery Row." New research, building on the pioneering work of Soutar and Isaacs in the late 1960s and others, shows in greater detail that such forage fish stocks have undergone boom-bust cycles for centuries, with at least three species off the U.S. West Coast repeatedly experiencing steep population increases followed by declines long before commercial fishing began.

Natural population fluctuations in Pacific sardine, northern anchovy and Pacific

hake off California have been so common that the species were in collapsed condition 29 to 40 percent of the time over the 500-year period from A.D. 1000 to 1500, according to the study in the journal *Geophysical Research Letters*. Using a long time series of fish-scales deposited in low-oxygen



offshore sedimentary environments off southern California, the authors from

NOAA Fisheries and the University of Michigan described such collapses as "an intrinsic property of some forage fish populations that should be expected, just as droughts are expected in an arid climate."

The findings have implications for the ecosystem, as well as fishermen and fisheries managers, who have witnessed several booms, followed by crashes every one to two decades on average and lasting a decade or more, the scientists wrote. Collapses in forage fish can reverberate through the marine food web, possibly causing prey limitation among predators such as sea lions and sea birds.

"Forage fish populations are resilient over the long term, which is how they come back from such steep collapses over and over again," said Sam McClatchie, supervisory oceanographer at NOAA Fisheries' Southwest Fisheries Science Centre in La Jolla, Calif. "That doesn't change the fact that these species may remain at very low levels for periods long enough to have very real consequences for the people and wildlife who count on them."

Downturns in sardine and anchovy linked to changing ocean conditions have contributed to the localized stranding of thousands of California sea lion pups in recent years.

## Looking back in time

Scientists traced the historic abundance of sardine, anchovy and hake by examining deposits of their scales collected on the floor of the Santa Barbara Channel from A.D. 1000 to 1500. While previous studies had shown that forage fish exhibited collapses prior to commercial fishing, the new research used methods developed by climatologists to examine the frequency and duration of the fluctuations in finer detail.

"The Mediterranean climate of California with wet winters and dry summers produces a sediment layer we can pull apart like pages in a book" says Ingrid Hendy, Associate Professor at the University of Michigan in Ann Arbor. "Although these sediments have been studied before, we are using new technology to examine them in unprecedented detail."

The scientists described a collapse as a drop below 10% of the average peak in fish populations, as estimated from the paleo record. Anchovy took an average of eight years to recover from a collapse, while sardine and hake took an average of 22 years.

The record also showed that sardines and anchovy fluctuated synchronously over the 500 year study period. Combined collapses may compound the

impact on predators and the fishery, the scientists said. The finding runs counter to suggestions that the two species' cycles alternate.

## Variable fishing responds to change

Sardines and anchovy have at times been the most heavily harvested fish off Southern California in terms of volume. Hake, also known as Pacific whiting, spawn off California but are harvested in large volumes off the Pacific Northwest and Canada. The new study concludes these forage fish are well-suited to variable fishing rates that target the species in times of abundance, "while recognizing that mean persistence of fishable populations is one to two decades, and that switching to other target species will become a necessity."

Collapses last, on average, "too long for the industry to simply wait out the return of the forage fish."

The study authors concluded that "well-designed reserve thresholds" and adjustable harvest rates help protect the forage species, the fishery and non-human predators for the long term. However, they added that "reserve thresholds only protect the seed stock for recovery, and cannot prevent collapses from occurring."

Source: [Sciencedaily.com](http://Sciencedaily.com)



## Are corn-fed fish less healthy to eat?

A large portion of the seafood consumed in North America is farmed. But the food those fish eat increasingly includes more crop-based ingredients, like corn, soy, and wheat. Until recently, this manufactured feed was typically composed of high levels of fishmeal and fish oil derived from wild fish—but it has become unsustainable to catch more wild fish to feed growing numbers of farmed fish.

The shift has been hailed by some as a positive change in light of the increasingly depleted oceans and the rapidly expanding aquaculture industry. But the shift may have some unintended consequences, experts say.

“Farmed fish get their health-promoting omega-3 fatty acids, EPA and DHA, from their feed, and specifically from fish oil,” says study leader Jillian Fry, a faculty member at Johns Hopkins Bloomberg School of Public Health. “Our review found that increasing plant-based ingredients can change the fatty acid content in farmed fish, which can affect human nutrition.”

Using vegetable oils instead of fish oil also changes the fatty acid content of fish and nutritional value for human consumption, the researchers say. Considering Americans are encouraged to consume seafood high in omega-3

fatty acids, which promote improved cardiovascular health and neurodevelopment, this has large implications for dietary recommendations and the aquaculture industry.

Fry and colleagues reviewed aquaculture and public health literature, and conducted a new analysis to estimate the environmental footprint for the top five crops used in commercial aquaculture feed. But they say more research is needed to better understand the effect. While fish-based ingredients are seen as acutely limited, so are the resources such as land, water, and fertilizer used to produce feed crops.

Aquaculture’s environmental footprint likely now includes increased nutrient and pesticide runoff from the industrial crop production needed to supply fish food. This runoff is a key driver of water pollution globally, and can negatively impact public health. Depending on where and how feed crops are produced, plant-based fish feed could be indirectly linked to negative health outcomes for agricultural workers and nearby communities due to exposure to air, water, or soil contaminated by nutrients and/or pesticides.

“Currently, only a small fraction of terrestrial agriculture is used to feed



farmed fish. However, the aquaculture industry is growing rapidly. A clearer picture is needed of where and how these crop-based feed ingredients are produced so we can assess the implications of this growing industry for agriculture and the environment,” says Graham MacDonald, an assistant professor of geography at McGill University.

Fry says these new findings may raise more questions than they answer. “The nutritional content of farmed fish should be monitored,” Fry says. “The aquaculture industry should assess the environmental footprint and public health impacts of their crop-based feed ingredients and seek those produced using sustainable methods.”

The findings appear in the journal *Environment International*.

Source: [Knowridge.com](https://www.knowridge.com)

## UN Environment launches global campaign to end ocean plastic

UN Environment launched an unprecedented global campaign to eliminate marine litter, including microplastics in cosmetics and single-use plastic by 2022. UN Environment’s #CleanSeas campaign – which was announced at the Economist World Ocean Summit in Bali – seeks to put an

end to the more than 8 million tonnes of plastics that enter oceans each year. Around 80% of all litter in our oceans is made of plastic – which has devastating effects on wildlife, fisheries and tourism; costing an estimated \$8 billion in damage to marine ecosystems.

The campaign appeals to governments to

pass plastic reduction policies, manufacturers to minimise plastic packaging, and consumers to alter unsustainable behaviours. Erik Solheim, Head of UN Environment, said, “It is past time that we tackle the plastic problem that blights our oceans. Plastic pollution is surfing onto Indonesian beaches,



Environment and Energy of Costa Rica, said: "Costa Rica recognises the risks and damage caused by the effects of single-use plastic and non-recoverable micro plastics on the marine environment. We strongly favour the engagement of all relevant stakeholders, including civil society,

settling onto the ocean floor at the North Pole, and rising through the food chain onto our dinner tables. We've stood by too long as the problem has gotten worse. It must stop."

Ten countries have already committed to plastic reduction targets as a result of the campaign. Indonesia has committed to reduce its marine litter by an impressive 70% by 2025, while Costa Rica has pledged to dramatically reduce single-use plastic through better waste management and education.

Edgar Gutiérrez Espeleta, Minister of

private sector and all citizens to support national and global efforts. Only through a real and active engagement of all of us, with the help of dynamic partnerships, we will be able to effectively combat marine litter."

In addition, an increasing number of global brands are coming out in support for the campaign, for example Dell Computers. On 22 February, Dell announced the technology industry's first shipment of ocean plastics packaging, the result of an innovative, commercial-scale pilot program. The plastic collected from

waterways and beaches was recycled to make the new packaging tray for the Dell XPS 13 2-in-1.

In 2017, Dell's ocean plastics pilot programme seeks to prevent 8 tonnes of plastic from entering the ocean – the programme supports the Dell Legacy of Good goal of 100% sustainable packaging by 2020.

Piyush Bhargava, Vice President for Global Operations at Dell, said: "Dell is committed to putting technology and expertise to work for a plastic-free ocean. Our new supply chain brings us one step closer to UN Environment's vision of Clean Seas by proving that recycled ocean plastic can be commercially re used."

This issue of ocean plastic has also spurred innovation, for example the invention of a laundry bag capable of preventing shedding microfibers polluting oceans.

Source: [Climate Action Programme](#)

## ASEAN Fish Production to Rise; Policies, Technology Needed to Ensure Sustainability



A new report from WorldFish projects that fish production in ASEAN countries will reach 24% of global output by 2030. Fish to 2050 in the ASEAN Region says that policies to promote sustainable aquaculture expansion and law

enforcement in fisheries management are critical to ensuring sustainable growth in both sectors.

For ASEAN countries fish is a hugely important source of nutrition, also providing income, opening up employment opportunities and alleviating poverty. By volume, fish production is four times that of poultry and 20 times that of cattle in the ASEAN region. Fish trade

represents an important source of foreign currency earnings for many developing countries.

Fish to 2050 in the ASEAN Region produced in collaboration with the International Food Policy Research Institute (IFPRI) shows that aquaculture is expected to supply more than half of the fish for consumption in the region. "The presence of strong institutional networks and private sector investment has played an important role in supporting the development of the aquaculture sector. However investment in research is essential to advance

sustainable aquaculture technologies to improve efficiency gains, reduce production costs and mitigate environmental risks,” says Michael Phillips, Director of Aquaculture and Fisheries Science, WorldFish. “In addition to continuing to support the rise of sustainable aquaculture in ASEAN and the Asian region, WorldFish aims to scale this learning in Africa, a region where aquaculture remains a huge opportunity for income, employment and food and nutrition security.” The report concludes that future efforts to enhance national data within ASEAN will

provide better foresight for fish sector policy development.

The rise of Association of Southeast Asian Nations (ASEAN) countries’ fish production can be attributed to the rapid growth of aquaculture in Southeast Asia and its large offshore fishing fleet. Fisheries and aquaculture are increasingly becoming a primary source of animal protein, micronutrients, foreign exchange, livelihoods and wellbeing for the population in the region.

The majority of fish production occurs in developing countries in the South where

competition for natural resources is high. Future fish supply and demand in ASEAN faces a number of challenges, especially climate change, which will cause disruptions in ocean and aquatic ecosystems. Other global challenges such as increasing demand for fishmeal and fish oil and the associated price increases of fish will also become key drivers of change in technologies and management.

Source: [The Fish Site](#)

## New Innovation Roadmap Outlines Pathway for Scottish Aquaculture Growth

A new report on the innovation needs of the Scottish aquaculture sector has been launched at the first meeting of the Industry Leadership Group (ILG) in Inverness, attended by Fergus Ewing MSP, Cabinet Secretary for the Rural Economy and Connectivity.

The report – ‘Scottish aquaculture: a view towards 2030’ – follows a six-month scoping study into the innovation needs of the sector, commissioned by the Scottish Aquaculture Innovation Centre (SAIC) with support from Highlands and Islands Enterprise, and conducted by independent consultants Imani Development in partnership with SRSL.

The study used a combination of desk research, data from two key industry events, and targeted interviews with industry leaders and regulators to inform an innovation roadmap that sets out the needs of the sector according to urgency and impact, and recommends a pathway of actions through to 2030.

Addressing these actions will, in turn, help achieve the recommendations of the industry-led ‘Aquaculture Growth to

2030’ strategic plan that was published in 2016.

Commenting on the launch of the report, Stewart Graham, Managing Director of Gael Force Group and co-Chair of the ILG said: “I welcome this work which is

complementary and supportive of the industry strategy set out in ‘Aquaculture Growth to 2030’. With a focus on innovation, it captures the current state of the industry, supports the strategic priorities to 2030 and outlines how to achieve them through innovative R&D. The resulting roadmap gives a clear and unified picture of what’s needed and by when.”

Heather Jones, CEO of SAIC added: “Several of the issues highlighted by the report as being urgent and high-impact, such as disease, feed, licencing and regulation, and spat availability closely mirror SAIC’s own priority innovation



areas which were identified by the industry during our initial engagement with the sector. We look forward to collaborating with existing and new partners alike on additional innovative R&D in these areas, and playing a core role in helping the industry achieve its growth ambitions.”

The ILG, which will meet quarterly from February 2017, is co-chaired by Jim Gallagher, Managing Director of Scottish Sea Farms, and Stewart Graham, Managing Director of Gael Force Group.

Source: [TheFishSite.com](#)

## Alltech unfazed by threat of omega-3 from GM canola



Genetically modified (GM) alternatives to fishmeal and fish oil may face regulatory

obstacles and a consumer backlash handing the advantage to other alternatives being developed, according to Alltech's chief innovation officer. Aidan Connolly, who is also VP at Alltech, also said larvae-based aquatic feed isn't a viable alternative because of high costs, while he estimates Chinese manufacturers still require ten years before they match solutions by Western companies given current technological know-how.

Last year, Cargill, threw down the gauntlet when it revealed to Undercurrent News it aims to mass-produce omega-3 from GM canola by 2020. The US giant will do this by genetically modifying canola with algae genes which are responsible for producing docosahexaenoic (DHA) and eicosapentaenoic (EPA) fatty acids -- the chemical name for omega-3 fatty acids. Omega-3 is currently only ingested by fish raised on fishmeal and fish oil.

Alternatives to omega-3 from fishmeal and fish oil are highly sought-after given the huge market promise they hold in the context of rising prices for fishmeal and fish oil. But according to Connolly, DHA produced using GM methods "may face regulatory and market pushback,

particularly in Europe but increasingly in other parts of the world. Alltech DHA is grown without the need to use genetically modified organisms (GMO) and so it should appeal to a larger group of consumers, specifically 'prosumers' who seem to express a dislike for GM products quite vocally through social media, blogs and other outlets,".

"In addition, with limited exceptions algae will not require regulatory approval where a genetically modified canola obviously will." Connolly added he is not aware the GMO technology has been used in animal trials, meaning there could be differences between DHA extracted from GMO versus DHA from algae or fish.

Source: [Undercurrentnews.com](http://Undercurrentnews.com)

## Canadian approval for insects in salmon feed



Enterra Feed Corporation has received approval from the

Canadian Food Inspection Agency (CFIA) to sell its Whole Dried Black Soldier Fly Larvae as a feed ingredient for salmonids, including farmed salmon, trout and arctic char.

With this approval, the company is now the first to market and sell this sustainable, natural product to aquaculture feed manufacturers in Canada. This is the first Canadian approval of an insect-based aquaculture feed ingredient, and follows the CFIA's approval using this same product in feed for chicken broilers last year. Enterra received a similar US approval for use in salmonid feeds in 2016.

Enterra uses the larvae of the black

soldier fly, a beneficial insect species that is highly efficient at upcycling complex nutrients in pre-consumer waste food into an excellent source of protein and fat, perfect for inclusion in feed for fish, poultry, pets and zoo animals. These innovative products offer a sustainable alternative to resource-intensive feed ingredients like fish meal, fish oil, soybean meal, palm kernel oil and coconut oil.

Source: [AllAboutFeed.net](http://AllAboutFeed.net)

## Investor launches new fund for aquaculture feed technology

Aquaculture investor David Tze has launched the Search Fund for an Alternative Aquafeed Technology, which is focused on aquaculture feed technology. "The new fund will do entrepreneurship through acquisition," said Tze, who directed a venture fund for aquaculture, Aquacopia Ventures I.

From its first investment more than ten

years ago, Aquacopia helped create a wave of aquaculture companies--the offshore farm Open Blue, equipment innovation firm InnovaSea, and the feed ingredient technology firm and affiliated Chinese joint venture iCell/Nutrinsic. Those companies put more than \$200 million in capital to work in the growing aquaculture industry sector.

Tze is evaluating four alternative proteins for aquaculture feeds. The pool of ingredient technology prospects includes genetics, primary nutrient production, and value-added processing. One is a distressed patent portfolio, two are companies, and one is a solo inventor.

Source: [Undercurrentnews.com](http://Undercurrentnews.com)

## BUSINESS



**Aker BioMarine has awarded a contract to VARD to build a state-of-the-art krill fishing vessel that will fish in the Antarctic.** Construction is planned to begin in May this year — and the vessel is expected to complete at the end of 2018. The total value of the contract is 1 billion NOK, including buyer's supplies. "This is the largest single contract VARD has ever received for a fishing vessel, and we are very happy to have entered a shipbuilding contract with them. This will also contribute to securing Norwegian jobs in the future," says Webjørn Eikrem, EVP Production and Supply Chain at Aker BioMarine.

"Aker has, since Aker BioMarine was established in 2006, focused on sustainable krill fishing. From day one, we have worked with WWF Norway. The krill fishery in the Antarctica is one of the most sustainable fisheries in the world, and Aker BioMarine hopes to yet again set a new bar for sustainable harvesting with this new vessel. Norwegian skills and new technology will help us reduce our carbon footprint even further with this vessel," says Matts Johansen, CEO at Aker BioMarine.

The new 130-metre-long krill vessel will be equipped with the latest and most advanced eco-friendly technology. All plans and specifications are developed in cooperation with fishermen from Aker BioMarine and engineers from VARD. The vessel's operations will be energy efficient, with a production and processing facility capable of processing raw krill material in the Antarctic. Source: [Aker BioMarine](#)



**OmegaVeritas changes name to Orivo. Increasing interest from the fishmeal industry made name change a natural next step.** When OmegaVeritas was founded in 2013,

the target was, as the name quite accurately describes, to certify the origin of omega-3 oils. As for many startup companies, a need to adjust the original business idea soon arose, and this caused the once so precise name to become less accurate. Quite quickly, clear signals from both the pet food and feed industry made the company expand the application areas of the technology from only marine oils, to including both

meal and oil. Adulteration of Peruvian fishmeal in China and cheap raw materials mixed into salmon meal for dog food in the US were some of the specific challenges the market relied on OmegaVeritas to solve. In some parts of the industry, OmegaVeritas has also too often been associated with the company DNV-GL, known just as "Veritas". This mix-up was unfortunate both for DNV-GL and OmegaVeritas.

Based on an overall assessment, the company has therefore decided to go into the next development stage with a new name. The new name is less descriptive and more unique, but it is still strongly linked to why the company was originally founded, which was "Origin Verification of Omega-3s". We are proud to present ORIVO! Our new name and our new Orivo seal can hopefully soon be seen on an omega-3 supplement or a pet food product in a store near you. Source: [Orivo](#)



**Marine Harvest's Scottish feed plant was granted planning permission for construction of a £93 million plant, starting by the end of March, to be**

**completed during 2018.** The feed plant will employ 55 people in a range of permanent jobs. Recruitment will start soon for its feed expansion. "I'm delighted with the positive decision from the local authority and even more heartened by the overwhelming support we have had from the local community. We will do our utmost now to ensure that this large construction project is managed in a sensitive way," Ben Hadfield, chief operating officer for reed and managing director of Marine Harvest Scotland, said in a release.

Marine Harvest also announced it would start to investigate the business case for the construction of a small scale fish meal and fish oil plant in Scotland as part of a drive to utilize all edible by products from salmon processing and, at the same time, provide a more sustainable solution for salmon mortality. "We are seeing rapidly increasing demand for salmon meal and salmon oil in sectors such as pet food and human nutrition, due to the health benefits associated with omega-3 fish oils," said Bjorn Erik Flem, managing director of Marine Harvest Ingredients. Source: [Undercurrentnews.com](#)

## BUSINESS



Diana Aqua was recently awarded the IFFO Global Standard for Responsible Supply, Chain of Custody (IFFO RS CoC) certification. This award fully supports Diana Aqua's ambitions to become a leader for sustainable functional marine ingredients for the aquafeed and aquaculture sector. A new milestone in Diana Aqua sustainable development based on a solid and long term partnership with TC Union Agrotech (IFFO RS).

Since 2010, Diana Aqua and TC Union Agrotech, a Thai leader in producing and supply aqua-industrial by products, have joined forces in a long standing partnership with the common mission to valorise co-products into performing solutions. Thanks to unique know-how and scientific expertise, Diana Aqua has developed a leading position to deliver traceable, responsibly sourced and standardized marine ingredients with high functional value to aqua feed and aquaculture industry players. On January 10th 2017, Diana Aqua Thai subsidiary (SPF Diana Thailand), was awarded of the IFFO Global Standard for Responsible Supply, Chain of Custody (IFFO RS CoC) certification. This certification recognizes the full commitment of Diana Aqua of providing its partners and customers with responsibly sourced raw materials, pure and safe marine ingredients with full traceability back to their source. It also reinforces its positioning as sustainable reference partner in functional marine ingredients for the aqua feed and aquaculture sector based on responsibly managed factories and supply-chains. Source: [Diana Aqua](#)



BioMar Group has set a comprehensive agenda for its research activities in the Chilean aquaculture research centre ATC Patagonia. Focus is set on innovative R&D projects

of interest for the global aquaculture industry with regards to fish nutrition and health. In October 2016 BioMar Group signed an agreement with Aqualnovo to purchase and utilise 30% of its aquaculture research and development centre situated in Lenca, Chile. This initiative has now been formalised and the new name of the centre is Aquaculture Technology Centre Patagonia (ATC Patagonia).

Håvard Jørgensen, global director of R&D of BioMar, said: "We look forward to innovating aquaculture and aquaculture feeds by utilising the research resources that are available, in Chile as well as elsewhere in the world. We have set a comprehensive agenda of research projects and our agenda for 2017 is made up of research related to nutrition for fresh water and sea water species, focusing on raw material knowledge, feed model building and health aspects, mainly on Salmon Rickettsial Septicaemia (SRS) which has caused significant losses to the salmon farming sector, and not only in Chile.

Jørgensen emphasised the value of ATC Patagonia: "The work that BioMar is going to carry out at ATC Patagonia will be transversal and cover diverse requirements for different species and farming conditions where our feed is utilised." Source: [AllAboutFeed.net](#)

## COUNTRY



Chile will maintain for five years its participation in the jack mackerel (*Trachurus murphyi*) fishery, at 64% of the total allowable catch, which this year showed an increase of 33,000 tonnes for the entire area covered

by the Convention of the South Pacific Regional Fisheries Management Organisation (SPRFMO). In this way, the country obtained a quota of 317,300 tonnes, representing an increase of 6.8% compared to the 297,000 tonnes of 2016.

The decision was taken during the last meeting of the SPRFMO Commission, held between 18 and 22 January in the city of Adelaide, Australia, which was preceded by the 4th Meeting of the Technical and Compliance Committee (TCC) between the 14th and 16th of the same month. The Chilean delegation was composed of directors of the Undersecretariat of Fisheries and Aquaculture (Subpesca) as well as representatives of the Directorate of Environment and Ocean Affairs of the Ministry of Foreign Affairs, National Fisheries and Aquaculture Service, Secretariat of Maritime Territory and Merchant Marine, Institute of Fisheries Promotion and the private sector. The head of the Fisheries Administration Division of Subpesca, Maria Angela Barbieri, explained that this time a historic agreement was reached to maintain these percentages for five years including the 2017 season. Source: [FIS.com](#)

## COUNTRY



South Koreans have been found to be the top seafood consumers out of 24 countries with high demand for the product, reports Yonhap News. A report by the UN Food and Agriculture Organization showed South Koreans

consumed an average 58.4 kilograms of seafood a year per person in the 2013-2015 period. Norway came next with 53.3 kg, followed by Japan with 50.2 kg, China 39.5 kg and Vietnam 35.4 kg. For the United States, the average yearly consumption was 23.7 kg, and for the European Union, it was 22 kg.

The average consumption for members of the Organization for Economic Cooperation and Development was 24.7 kg. In the 1960s, the global average was 9.9 kg. According to the report, the rising demand will boost the volume of fisheries demand by 18.4% in 2025, to 46.36 million tons, from 39.15 million tons in 2014. Asia will account for the biggest chunk of seafood exports, about 67% coming from the region, the report said. Source: [Undercurrentnews.com](http://Undercurrentnews.com)

**Peru: The president of the National Fisheries Society (SNP), Elena Conterno Martinelli, said that her sector would grow up to 40%, driven by the increased catch of anchovy, in line with the estimates of the Central Reserve Bank. As she explained, the fishing activity of her sector is already normalizing its production and in**



that sense, "a good year" is expected.

Conterno said, "We agree with the projection of the Central Reserve Bank and different specialists who place between 30-40% the growth that must have the fishery in this year, mainly explained by the anchovy that already is in normal conditions."

In that sense, the executive stressed that the fishing union is confident that they will have "two good fishing seasons", whose production will lead to the creation of more jobs, more exports and bring dynamism to all the ports of the country. "This 2017, we started in January with what corresponds to the end of the season that began last year, in which we have caught 500,000 tonnes of anchovy, which is the main Peruvian fishery, so this is a good beginning," she highlighted.

She also emphasized that as weather conditions continue to normalize, horse mackerel is expected to return to the Peruvian sea, a species that has been absent in recent seasons, Agencia Andina reported. "Horse mackerel that is so appreciated by housewives for being a valuable, versatile protein, some say it is the 'sea chicken', and therefore, we expect it to come back in abundance to bring this type of fish to Peruvian households with competitive prices," Conterno concluded. Source: [FIS.com](http://FIS.com)

that blocks airflow. Unlike other anti-inflammatory drugs, the specialized agent used in this study reduced inflammation in the lungs of mice without suppressing the ability to clear the bacteria.

## RESEARCH



Compounds derived from omega-3 fatty acids might be the key to helping the body combat lung infections, according to researchers at the University of Rochester School of Medicine and Dentistry.

The omega-3 derivatives were effective at clearing a type of bacteria called Nontypeable Haemophilus influenzae (NTHi), which often plagues people with inflammatory diseases like chronic obstructive pulmonary disease (COPD).

COPD, which is most often caused by years of smoking, is characterized by inflammation and excessive mucus in the lungs

In fact, it could actually hasten the process of clearing bacteria. Phipps and his colleagues believe they are the first to show that this special compound can improve lung function in the face of live bacteria. While these results are encouraging, further study is needed to understand how these compounds can be used in humans. A similar compound in the form of an eye drop solution was recently tested in a clinical trial for dry eye syndrome and was well tolerated. Source: [Knowridge.com](http://Knowridge.com)

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# CALENDAR



# 2017

7-9 March	12th North Atlantic Seafood Forum (NASF)	Bergen, Norway
23-24 March	4th IFFO/JCI Fishmeal and Fish Oil Conference	Sanya City, Hainan Province, China
25-27 April	<a href="#">Seafood Expo</a>	Brussels, Belgium
1 May	<a href="#">IFFO Board meeting</a>	Barcelona, Spain
2-3 May	<a href="#">IFFO Members' meeting</a>	Barcelona, Spain
31 May—4 June	<a href="#">World of Seafood - Thaifex 2017</a>	Bangkok, Thailand
5-7 June	<a href="#">SeaWeb Seafood Summit</a>	Seattle, U.S.A.
27-30 June	<a href="#">World Aquaculture 2017</a>	Cape Town, South Africa
3-6 October	<a href="#">GOAL 2017</a>	Dublin, Ireland
11 October	Humber Seafood Summit	Grimsby, U.K.
23-25 October	IFFO Annual Conference	Washington DC, U.S.A.



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