



Responding to our critics

Does production of fishmeal and fish oil reduce the amount of fish available for human consumption?

The fishmeal industry is subject to negative and sometimes mistaken criticism. To help our members defend themselves against this, Update is including a series of articles giving you the science-based facts with which to respond.

This third article in the series addresses the assertion that the fish used for producing fishmeal and fish oil should be used directly for human consumption. The November article was on 'Whether finite supplies of fishmeal and fish oil were limiting the growth of aquaculture' and December's was on the 'Fish In: Fish Out ratio (FIFO)'.

Q. What exactly are we charged with here?

A. The critics claim that the practice of producing fishmeal and fish oil for aquafeed is morally wrong because it reduces the amount of fish available to feed mankind, notably the poor. As such, it should be stopped or curtailed.

Q. Why do the critics believe this?

A. First, they have been told that more than 20 million tonnes of fish are used to produce fishmeal and fish oil each year, and that most of the meal and oil is used in aquaculture feed. That sounds like a lot of nutritious fish not going directly for human consumption, especially in a world where many are already hungry and the population is forecast to increase by 2 billion by 2050.

Second, they believe that it takes 5 kilos of wild feed (industrial) fish to produce 1 kilo of the best known farmed fish, salmon. So they extrapolate that more than 20 million tonnes of wild feed fish yields not much more than four million tonnes of farmed fish. That does not sound an efficient way of maximising marine protein available to feed the world.

Finally they assume that every tonne of feed catch could find an alternative market for human consumption.

Green activists, and the wider public, are further prejudiced against feed fisheries and aquaculture by the language often used to describe the process – "Industrial" fishing fleets "hoover" millions of small fish out of the sea, "grind them into powder" and "send them half way round the world" to be used as feed for "luxury seafood" to be served "on the plates of the rich nations". Such words add to the sense that our industry is part of a wasteful process.

Q. That explains why the critics are against production and use of fishmeal and fish oil. But how can we respond?

A. IFFO responds vigorously and at every opportunity with facts – there are some serious errors in the figures and assumptions above:

1. The critics have ignored the fact that the industry does not use all whole fish but also recycles waste and trimmings back into the food chain in the form of fishmeal and fish oil.
2. The figures on efficiency of conversion are wrong.
3. The critics mistakenly assume that all the feed fish landed are edible and attractive to eat and that timely human consumption markets are readily available for all the catch.

Q. What are the facts on use of trimmings?

A. IFFO calculates that the total raw material going into fishmeal and fish oil production is indeed about 21 million tonnes per annum. However, about 25% of that total, or 5 million tonnes and rising, is the recycled waste from the whole fish and crustaceans landed for human consumption. Less than half of each fish is usually eaten while the remainder, the head, guts, trimmings etc often go for fishmeal and fish oil production. For this proportion there is therefore no suggestion of waste or inefficiency. Quite the opposite, production of fishmeal is adding to the world's food resources and avoiding the environmental and financial costs of disposal.



Q. And on efficiency of conversion?

A. The too often quoted 5:1 conversion rate from wild fish to farmed salmon (so-called FIFO) is drastically wrong. The real conversion rate for salmon is 1.7 (2008) and falling. In other words, only 1.7 kilos of feed fish were used to produce each kilo of farmed salmon. Salmon is just one farmed species. For the whole of fed aquaculture the ratio is 0.5 wild fish used in feed: 1 farmed fish produced.

Global aquaculture is therefore producing nearly twice as much fish (farmed seafood) as it uses feed or industrial fish (via fishmeal and fish oil). This is a TENFOLD better actual ratio of fish used to fish produced than that implied by many of the industry's critics when they quote 5:1.

This issue was covered in depth in an article of the December 2010 issue of IFFO Update.

Q. What do you say about human consumption markets for feed fish?

A. Some of the fish can actually be eaten but far from all, and, even the fish that can be eaten seldom finds a market of willing consumers. The fishermen would obviously prefer to sell fish for human consumption, as that would give them a higher price for the fish. There are several reasons why this does not happen.

First of all, several of the species, including menhaden and sand eel, are not generally accepted for human consumption. They are small, bony and not very attractive. Then, when fishing species suitable for human consumption, some of the fish is either damaged or too small to be used for human consumption.

Add to this that many consumers prefer not to eat bones, heads and guts even on smaller fish, the edible part of the fish species used in fishmeal production can be as low as 40 percent. In fishmeal production 100 per cent of the fish is utilised.

Finally, feed fish are caught in seasons, with high peaks in fishing volumes, not synchronised with market needs. Excess volumes of fish, which find no buyers, are then used for fishmeal production. Given the large quantities that are landed over a short period of time in countries such as Peru, other preservation methods such as freezing or canning are not an alternative due to limited processing capacity. It should also be noted that freezing or canning followed by shipping add considerable cost and the resulting products cannot be considered a cheap source of protein by the time they arrive in distant markets. In contrast the production of fishmeal removes

water which comprises around 70% of the harvest weight and produces a stable product which can be economically shipped to distant markets where it can be used to produce local food including fish, chicken and pigs.

The UN's food and agricultural organisation (FAO) has estimated that only 10 percent of the forage fish has a market for human consumption. The fishing industry continuously invests in processing capacity and marketing drives to maximise the proportion of the catch which can achieve a human consumption market, for example in:

- Norway and Denmark – for Herring and Blue Whiting
- Denmark – for Capelin, Herring and Blue Whiting
- Chile – for Jack Mackerel & Horse Mackerel
- Peru – in 2009 approximately 190,000 tonnes of anchovy went for human consumption (3% of the catch)

Q. So is production of fishmeal reducing fish for human consumption?

In a 2009 report for FAO, Wijkström* said that feeding fishmeal and fish oil to farmed fish and crustaceans increases the effective supply of fish for human consumption by 7-8 Mt per year. He added: "Halting industrial fishing would lead to an immediate loss of fish for food."



Those on the receiving end of ethical criticisms of aquaculture can take encouragement from Wijkström's conclusions. He says: "Given that overall:

- the amount of fish available as food is larger when fish is used as feed than when it is not;
- that the price of fish globally is reduced because of aquaculture;
- that employment is larger with the practice than without it;
- and that reduction fisheries can be, and increasingly are, managed effectively -
- the practice of using fish as feed is viable, that is, is capable of surviving as a practice within the coming decades."

Q. What else can we say to critics?

A. Critics in Europe and elsewhere have a high awareness of mixed fisheries where there is high by-catch which is discarded and wasted; and of fishing pressure on species which live for many years and reproduce slowly. They may not be aware how farmed fish compare in efficiency with farmed land animals as a route to convert feed ingredients into protein.

So, it is useful to remind critics, politicians and the consumer that:

- There is almost no by-catch in most dedicated feed fisheries.
- The small pelagic fish which make up the majority of the industrial or feed fish catch are fast reproducing, making sustainable harvesting a reality. Even when greatly diminished by natural disaster like El Niño, stocks can recover within 18 months. Longer lived species like swordfish, or even cod, can struggle to recover numbers over many decades.
- Fish are much better converters of feed into animal protein (measured using the so-called Feed Conversion Ratio or FCR) with salmon at 1.2:1, than cattle at 8.7:1, pigs at 5.9:1 and poultry at 1.9:1.

**Wijkström, U.N. 2009. The use of wild fish as aquaculture feed and its effects on income and food for the poor and the undernourished. In M.R.Hasan and M. Halwart (Eds). Fish as feed inputs for aquaculture: practices, sustainability and implications. Fisheries and Aquaculture Technical Paper. No. 518. Rome, FAO. pp. 371–407.*

KEY POINTS

- Feeding fishmeal and fish oil to farmed fish and crustaceans increases the effective global supply of fish for human consumption.
- Globally aquaculture is producing nearly twice as much fish as it uses.
- 25% of raw material for fishmeal production is recycled waste.
- Only 10 percent of industrial fish has a market for human consumption.
- Production of fishmeal does not divert fish from human consumption – it makes good use of fish not in demand for human consumption.