

**CAUTION!**

*The of dark side*  
**AQUACULTURE**



# REDUCTION FISHERIES

**BLOOM** dived into the opaque world of ‘reduction fisheries’, which catch fish close to the bottom of the food chain — such as sardines and anchovies — to reduce them into fishmeal and fish oil to support the farming of fish, pigs and poultry.

Throughout this report and a scientific study conducted simultaneously,<sup>1</sup> we found that the overall pattern of reduction fisheries was highly questionable as industrial fishing fleets are engaged in a global process of ‘fishing down marine food webs’, i.e. overexploiting one stock and moving on to the next. Fishing vessels have therefore been expanding into the distant waters of developing countries where fishing for small pelagic fish directly competes with the availability of local food supply and acts as a serious threat to food security. Investigating the final use of the product created by reduction fisheries (i.e. ‘fishmeal’), we found that reduction fisheries fueled a mostly unsustainable aquaculture scheme of predatory fish farming and otherwise provided an unnecessary input into the diet of species such as pigs, poultry or mink (farmed for their fur) that do not naturally eat fish and for which marine proteins are thus completely superfluous.

## WHY DID WE DEVELOP REDUCTION FISHERIES?

Reduction fisheries were developed as a result of our inability to manage abundant traditional fish stocks (such as cod) in a sustainable manner. A recent fundamental study shows that the global fish catch decreases by 1.2 million tonnes per year since the mid-1990s, despite an increase in fishing effort (larger, more advanced vessels).<sup>2</sup> Aquaculture has been promoted as a way to fill the gap between a rising demand in seafood and declining catches of wild fish. As traditional fish populations were overfished, fishers started to target smaller, less desirable species, situated closer to the bottom of the food chain<sup>3</sup> in order to turn them into fishmeal and fish oil, notably by expanding their activity into more distant waters of developing countries. There, they started to directly com-



- Since 1950, **25% of wild fish ever caught were reduced into fishmeal and fish oil**
- 90% of the ‘reduction’ catch is **perfectly fit for direct human consumption**
- In the late 2000s, it was estimated that **about 57% (and increasing) of the global production of fishmeal supplied the aquaculture sector, 22% supplied the pig farming sector, and 14% the poultry-farming sector.** Other uses include pet food and feed for mink (farmed for their fur)
- In Europe, **reduction fisheries represent 12% of the total catch** since 1950. Denmark is the main fishing country.

pete with local subsistence fisheries. The ongoing targeting of species ever lower in the food chain is now even occurring within reduction fisheries themselves, and new species such as boarfish, lanternfish and krill are being targeted nowadays.

## WHY IS IT A PROBLEM?

Small ‘pelagic’ fish (those that live midwater) such as anchovies, sardines and sprat are called ‘forage fish’ because they are close to the bottom of the food chain and form crucial food items for predatory fish (marlin, tuna, cod etc.), seabirds and marine mammals. Forage fish are also an essential component of the developing world’s diet and are thus indispensable for the food security of local populations. Catching them in large quantities can thus have dramatic implications for the functioning of marine ecosystems and coastal populations.

<sup>1</sup> Cashion *et al.* (2017) Most fish destined for fishmeal production are food-grade fish. *Fish and Fisheries*.

<sup>2</sup> Pauly and Zeller (2016) Catch reconstructions reveal that global marine fisheries catches are higher than reported and declining. *Nature Communications* 7. 10244.

<sup>3</sup> Pauly *et al.* (1998) Fishing down marine food webs. *Science* 279: 860-863.

The entire cycle of reduction fisheries, from initial targeting of food-grade fish to the end use of fishmeal in aquaculture, pig and poultry farming, is contrary to the Code of Conduct for Responsible Fisheries established by the Food and Agriculture Organization of the United Nations, which specifically states that fisheries should directly contribute to food security, and

that the use of food-grade small pelagic fish for fishmeal and fish oil production should be limited to non-edible species.

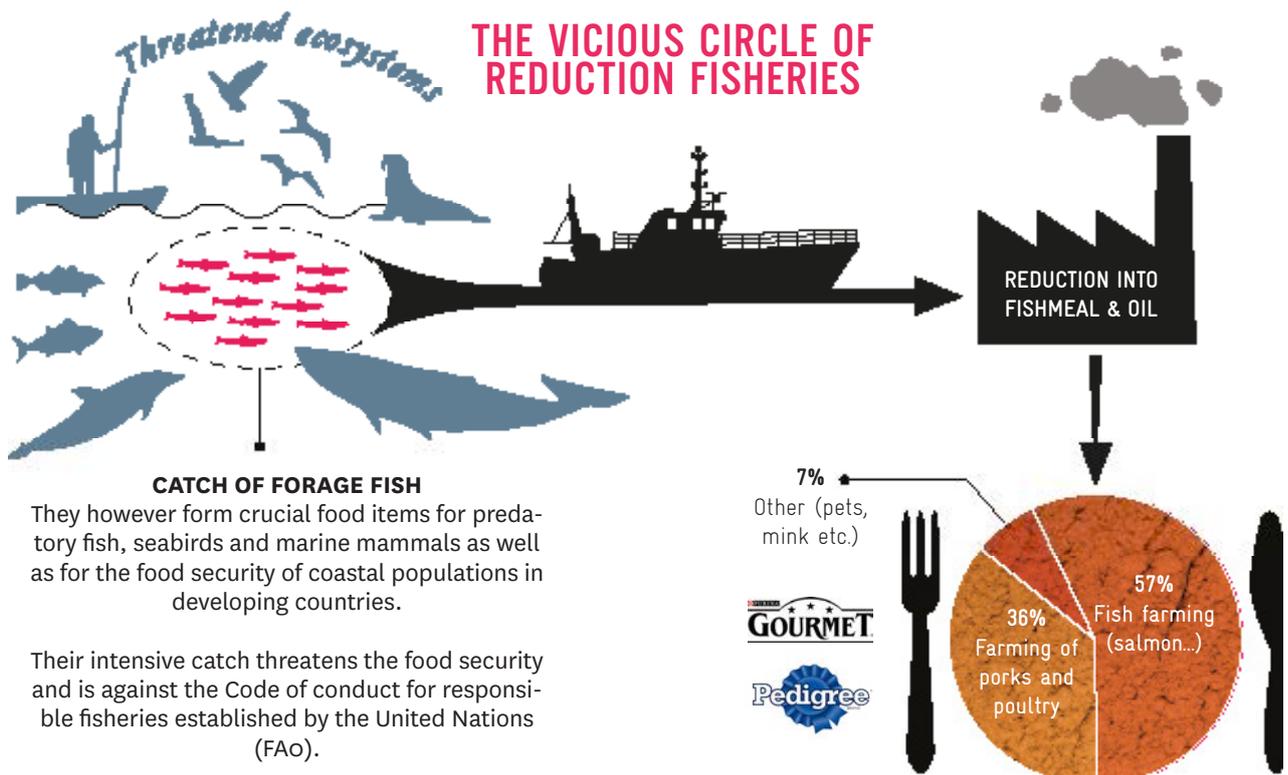
## THE FISHY BUSINESS OF LABELS

How an 'market solutions' promoted by NGOs can actually encourage bad practices and accelerate the 'fishing down' logic down to the very first links of the food chain...

A senior official of the Worldwide Fund for Nature (WWF), the NGO behind the controversial 'sustainable seafood' MSC label (Marine Stewardship Council) and the Aquaculture Stewardship Council (ASC label), said that fishmeal used by ASC-certified aquaculture should only come from fisheries that are themselves MSC-certified.



The increasingly controversial MSC label already certifies 7% of the world's reduction fisheries. Thus greenwashed, MSC-certified reduction fisheries can then enter unsustainable aquaculture schemes of carnivorous fishes, which are then poised to obtain the MSC's sister aquaculture label, the ASC. In other words, labels that have redefined sustainability reinforce each other by cross-referencing, promoting their weak standards and controversial certifications.



Their intensive catch threatens the food security and is against the Code of conduct for responsible fisheries established by the United Nations (FAO).

## AQUACULTURE: IS THE FUTURE SOLUTION FROM THE PAST?

Intensive aquaculture is fast-growing and produces species that match the taste and demand of wealthy consumers. However, it is also the most problematic one with the highest impact on the ocean, ecosystems and humans. Therefore, alternatives need to be urgently developed.

The aquaculture that first developed in China thousands of years ago is what we today call 'integrated multi-trophic' aquaculture, i.e., a farming scheme by which fish grow on waste in ponds or rice paddies, themselves fertilizing plants by releasing nutrients. 'integrated multi-trophic aquaculture' schemes and bioconversion initiatives could set forth a fully beneficial cradle-to-cradle recycling scheme allowing us to eliminate the presence of forage fish in fishmeal without replacing them with other problematic sources of protein (e.g. soybean, palm oil). Virtuous examples include processing plants that use blood collected from slaughterhouses or organic waste to feed insect larvae, which are then turned into feed.

## SHOPPING TIP



Ideally, we all need to reduce our consumption of animal proteins. A diet that is rich in animal proteins is unsustainable for both our planet and our health.

If you decide to buy meat at your local supermarket, choose e.g. pork or poultry that were fed with a 100% plant-based diet.

## BLOOM'S RECOMMENDATIONS

- **Decrease our demand** for carnivorous fish species, pigs and poultry;
- **Use edible fish species (anchovies, sardines etc.) for direct human consumption** and not for reduction into fishmeal and fish oil;
- **Forbid any certification as "sustainable fisheries"** for reduction fisheries ;
- **Develop cradle-to-cradle solutions** such as insect farming, which would result in waste problem management and protein production;
- **The EU must become a model** by refusing to reduce wild fish to feed farmed animals. A law forbidding the use of fishmeal to feed animals should be promulgated.

## TO LEARN MORE ABOUT REDUCTION FISHERIES

You can read our full report<sup>3</sup>, as well as the scientific paper that we co-signed<sup>4</sup>.

**Contact:** Frédéric Le Manach – Scientific director  
 fredericlemanach@bloomassociation.org | +33 (0)6 52 52 79 14



<sup>3</sup> Le Manach *et al.* (2017) The dark side of aquaculture. BLOOM, Paris (France). [www.bloomassociation.org/wp-content/uploads/2017/02/Reduction-fisheries-BLOOMs-report.pdf](http://www.bloomassociation.org/wp-content/uploads/2017/02/Reduction-fisheries-BLOOMs-report.pdf)

<sup>4</sup> Cashion *et al.* (2017) Most fish destined for fishmeal production are food-grade fish. *Fish and Fisheries*. Doi: 10.1111/faf.12209