ANIMALS | WILD FISH

"…there is as much evidence that fish feel pain and suffer as there is for birds and mammals…''

(Victoria Braithwaite, Do Fish Feel Pain? Oxford: Oxford University Press; 2010)

Introduction to the problem and scale

- In 2018, 82 million tonnes of fish were caught from the wild (1), three quarters of which are for human consumption – around 20% were ground down to fishmeal and oil [2]
- It is estimated that annual fish catches represent between 790 billion and 2.3 trillion individual fish (3) This compares with around 77 billion terrestrial animals slaughtered for food each year (4) (5)
- Wild-caught fish are typically likely to die from asphyxiation in air, on ice or in iced-water (6) and they may be bled by the gills without pre-stunning. These are all methods which, according to OIE, "have been shown to result in poor fish welfare." For farmed fish, OIE goes on to recommend that these methods should not be used where other methods, including electrical and mechanical stunning and spiking, are feasible (7)
- Many wild fish are processed, for example, gutted, whilst still alive. One Dutch study which examined fishing for herring, cod, whiting, sole, dab and plaice, showed that the fish took 55-250 minutes to die from asphyxiation. Those which were gutted first remained sensible for 25-65 minutes (8)
- Traditional methods of humane slaughter of wild fish include mechanical stunning (e.g. a blow to the head) or spiking (where the brain is destroyed with a sharp instrument) (9). The latter is used in the production of sashimi since the reduced stress to the fish results in better flesh quality.
- Modern methods of humane fish slaughter include automatic percussive stunning and electrical stunning (semi-dry or in water).Some modern trawlers use electrical stunning for health and safety reasons (fish which are not struggling are safer to process), for higher quality and for more accurate filleting (10). Their systems could easily be adapted to ensure a humane stun (11)
- Cephalopods such as octopus and squid and decapods such as lobster, crabs and prawns are also caught in enormous, but as of yet unestimated, numbers. According to EFSA, there is good evidence for sentiency in these creatures (12). Cephalopods may be left to die en masse in a net or other container, sometimes chilled; or killed with blunt trauma, mantle inversion or through damage to the brain (13).
- Nearly 94% of fish stocks are overfished or fully exploited. According to FAO, 34.2% of fish stocks were exploited at biologically unsustainable levels in 2017, up from 10% in 1974 (14). A further 59.6% were fully exploited.

Link to intensive animal farming

- Wild fish live free, but the methods of capture and processing are often industrial, with no concessions made towards their welfare needs; the potential for suffering is therefore huge.

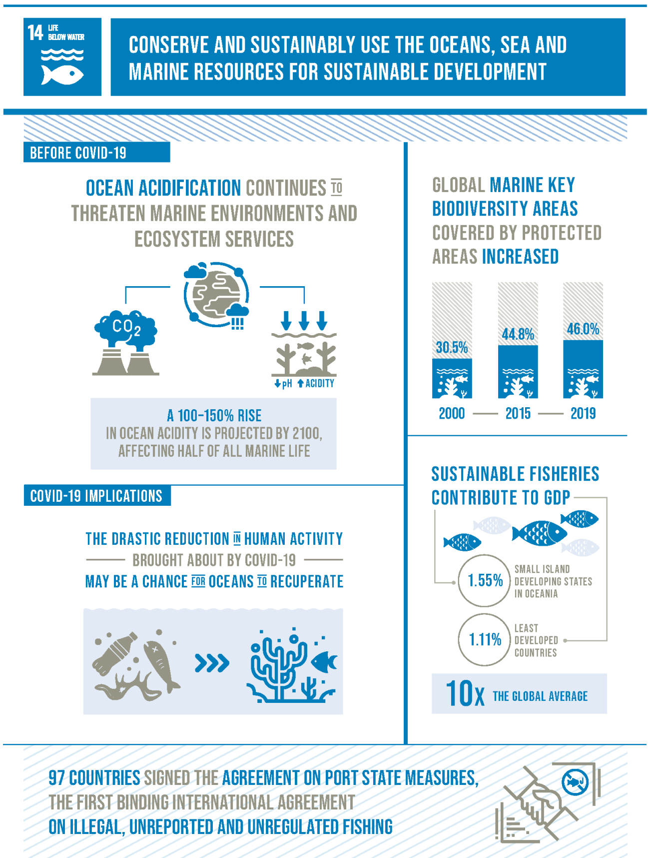
- Feeding wild fish to farmed animals and fish is a major driver of the sheer numbers of wild-caught fish from our oceans.
- Approaching 18 million tonnes of world fisheries production in 2018, 18% of the total, was landed specifically for reduction to fishmeal and oil, the great majority of it used for farm animal feed (14). The actual number may be higher, since many fisheries are indiscriminate in their catches (15)
- It is estimated that between 460 billion and 1.2 trillion fish are caught each year to be reduced into fishmeal and oil (16) which likely represents more than half the wild fish reported to be captured each year.
- According to industry figures, 75% of fish oil is used in aquaculture feeds (17) 70% of fishmeal is used in aquaculture, while over 22% is used in pig feed and 6% in chicken feed (18)
- When fishmeal is fed to farm animals, 60-86% of the protein content is likely to be lost to the human food chain. According to one study, only 28% of the protein fed to farmed salmon ends up in human-edible food. The study also calculated figures for chicken (37%), pigs (21%), trout (22%), whiteleg shrimp (22%), Pangasius (17%) and giant tiger prawn (14%), all of whom may consume fishmeal in their diet, especially the fish and crustaceans. (19)
- A 10g Peruvian anchovy containing 19.1% protein (20) provides half a gram of farmed salmon protein, around 1% of the daily protein requirement (21)
- 90% of fishmeal and oil comes from food-grade species (22) which can be, and are, eaten by people. Farm animals, including farmed fish, are competing with people for food and wasting valuable resources
- Fishmeal production is mainly sourced from forage fish species that play a vital role in ecosystems, competing for food with large fish, marine mammals and seabirds, putting their populations at risk (23)
- The expansion of anchovy fishing in the second half of the last century is associated with a reduction in seabird populations from 20 million to 5 million (23) Researchers found a strong correlation between these reductions and the number of anchovies available due to fishing and other environmental factors. "Today, many of the bird islands of Peru are largely devoid of seabirds" (23)
- Increasing demand for fishmeal and oil from intensive farming may encourage the development of the yet unexploited mesopelagic fishing. These fish swim deep in the middle of the ocean and are small. Use of fine nets (with a mesh size of less than 1cm, catching fish unselectively), requiring considerable energy (24) (with implications for carbon emissions) will have a high impact on biodiversity.
- The forage fish in the mesopelagic play an integral role in carbon sequestration and thus climate regulation (25) (26) and are a key food resource for marine mammals and fisheries stocks such as tuna, billfish and sharks (27) (28) thereby influencing and maintaining biodiversity.
- The potential biomass of this fishery has been estimated between 2 and 19.5 billion tonnes (29). Key target species include: the lanternfish *Gymnoscopelus braueri* (weighs up to 20g); *Krefftichthys anderssoni*, (weighs up to 4-5g)(30); The pearlside, *Maurolicus muelleri*, (weighs around a gram and up to 2g at maturity)(31)(32) Up to a quadrillion fish[1] are therefore at risk.
- **The use of wild-caught fish as a source of food for farm animals is harmful to the biodiversity of our oceans and removes food which people could be eating**

[1] A quadrillion is 1,000,000,000,000,000 – a million billion or a thousand trillion

- The inclusion of fishmeal and oil in the diet results in the transfer of toxic substances such as PCBs, dioxins and pesticides into farmed fish. PCBs and, to a lesser extent organochlorine pesticides, have been detected in farmed salmon and in the fishmeal and oil they are fed on (33). Reducing fish oils in the diet reduces the levels of PCBs and dioxins in the salmon (34). Though levels are below legal limits for moderate consumption, this issue could be reduced by replacing fishmeal with other proteins and fish oil with algal oils.
- ARGs (antibiotic resistance genes) and human potential pathogenic bacteria have been found in 5 fishmeal samples widely used in aquaculture in China and imported from Peru, Russia, Chile or China (35).
- Fish feed contaminated with microplastics may be a risk to aquaculture. Fishmeal is commonly produced from whole fish and large numbers of small pelagic fishes, at risk of direct uptake of microplastics mistaken for food items, which may pass into the processed fishmeal (36)
- Reducing over-fishing can have the following benefits
    - Allows fish stocks to recover, allowing marine life to thrive as well as the communities that depend on them
    - Will permit lower levels of fishing effort per tonne caught, lowering future fishing carbon emissions
    - Allowing fish to grow larger before they are caught means less animal suffering per tonne of fish caught
- Avoiding catches off Africa leaves more fish for small-scale fishers and provides nutrition where it is needed most
- Supporting the development of humane capture and slaughter techniques is likely to improve the quality of the product by reducing stress and injury and prevents suffering during killing for thousands of fish, and through innovation may benefit, in future, hundreds of billions of fish per year
- Supporting sales of plant-based foods including fish alternatives would
    - Reduce fishing pressure
    - Reduce pressure for deforestation and other habitat destruction (by reduced demand for farmed fish feeds containing soya)
- Reducing use of fishmeal and oil, excluding that from trimmings, in farm feeds, especially in aquaculture, reduces pressure on fisheries and leaves more for direct human consumption. Policies to avoid use of any fishmeal and oil from mesopelagic fisheries may help to prevent the development of an industry which could impact badly on oceanic food chains and the welfare of massive numbers of fish
- Supporting the development of alternatives to fishmeal and oil such as algae oils and microbial proteins, in addition to increased use of trimmings to make fishmeal and oil, could ultimately
    - Improve human nutrition, especially for the more widespread availability of long-chain omega-3 fatty acids (as direct human food as well as via animal foods)
    - Reduce pressure for deforestation and other habitat destruction, release land for rewilding and sea-space for marine reserves
    - Enable seabird populations to recover as well as providing additional food supplies for predatory fish and sea mammals
    - Protect hundreds of billions of forage fish from suffering during capture

Link to the relevant SDG(S)

- **SDG 14:** Life below water: Conserve and sustainably use the oceans, sea and marine resources for sustainable development



Source: https://unstats.un.org/sdgs/report/2020

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