

Slide 1



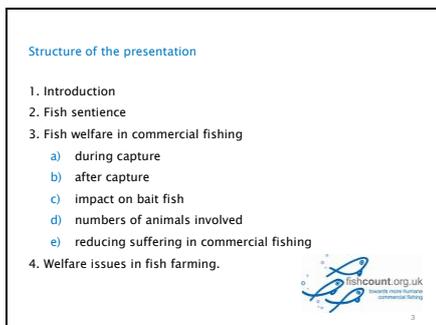
The purpose of this presentation is to make the case that fish suffer hugely at the expense of man and that they need our protection not just as resources or endangered species but above all as sentient beings with the capacity to suffer

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This presentation has been largely prepared by Alison Mood who has developed the fishcount website to draw attention to this huge but neglected area of animal protection and animal welfare

Slide 3



In this presentation we shall discuss the evidence that fish are sentient beings capable of suffering pain and argue that during commercial fishing they suffer enormously and in huge numbers.

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Structure of the presentation

1. Introduction
2. Fish sentience
3. Fish welfare in commercial fishing
  - a) during capture
  - b) after capture
  - c) impact on bait fish
  - d) numbers of animals involved
  - e) reducing suffering in commercial fishing
4. Welfare issues in fish farming.



fishcount.org.uk  
Invertebrate sentience  
commercial fishing

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Let me introduce the basic case

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Introduction - animal welfare impact



Commercial fishing causes suffering that is both severe and of long duration



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Methods of capturing fish cause immense distress over long periods of time. Imagine being trapped painfully like this and struggling for hours.

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Introduction - numbers of animals affected



Huge numbers of fish are caught each year



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And you can multiply the pain of those individuals by the huge numbers caught each year.

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Introduction - numbers of animals affected

Estimated numbers of wild caught & farmed fish:

Caught from the wild: ?  
Caught to make fish meal & oil: ?  
Farmed fish killed for food: ?

Estimates exclude unrecorded deaths e.g. bycatch



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The fishcount website has estimated those numbers which include

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Introduction - numbers of animals affected

Estimated numbers of wild caught & farmed fish:

Caught from the wild: 970,000,000,000 – 2,700,000,000,000  
Caught to make fish meal & oil: ?  
Farmed fish killed for food: ?

Estimates exclude unrecorded deaths e.g. bycatch



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Around one to three million million fish are caught each year – the Americans would call this 1-3 trillion fish, the Europeans 1-3 billion

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Introduction - numbers of animals affected

Estimated numbers of wild caught & farmed fish:

Caught from the wild: 970,000,000,000 – 2,700,000,000,000  
Caught to make fish meal & oil: 450,000,000,000 – 1,000,000,000,000  
Farmed fish killed for food: ?

Estimates exclude unrecorded deaths e.g. bycatch



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Of these, from one half to one trillion fish are species that are mainly ground up to make feed for animals

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Introduction - numbers of animals affected

Estimated numbers of wild caught & farmed fish:

Caught from the wild:	970,000,000,000 – 2,700,000,000,000
Caught to make fish meal & oil:	450,000,000,000 – 1,000,000,000,000
Farmed fish killed for food:	37,000,000,000 – 120,000,000,000

Estimates exclude unrecorded deaths e.g. bycatch



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And the biggest growing sector is that between 40 and 120 billion fish are also now farmed for food.

This compares with the 70 billion mammals and birds which Compassion in World Farming estimates are farmed for food each year.

FAO figure for farmed mammals and birds killed for food in 2010: 63 billion.

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Introduction - fish sentience



"pain, fear and stress are likely to be experienced by fish in similar ways as in tetrapods [amphibians, reptiles, birds and mammals]"  
(Chandroo et al, 2004)



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This matters because there is increasing acceptance, based on scientific evidence, that fish are sentient

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Introduction - magnitude of welfare problem

Suffering is caused to fishes:

- during capture
- after landing and during processing.

Suffering is also caused to:

- fish used as live bait
- fish and other animals caught as bycatch.

Welfare issue = duration x severity x numbers  
= a major animal welfare problem



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The fish people eat suffer hugely during capture and landing.

And then they are left to die slowly or are even processed alive.

But they are not the only fish that suffer.

There are also the fish that are used as bait and the fish and other animals that are caught accidentally and are discarded as by-catch.

We are arguing that this is a huge animal welfare problem.

You can measure suffering by multiplying the amount that animals suffer by the time for which they suffer. And you must multiply that by the number of animals

that suffer.

And for fish, these are all enormous.

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Introduction - improving welfare



Suffering could be reduced by:

- reductions in fishing activity (catching fewer fish)
- measures to make fishing less inhumane.

 fishcount.org.uk  
improving animal welfare  
commercial fishing

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So, can we reduce this suffering?

Those who believe in animal rights will question whether we should be doing this at all. We should leave the fish alone.

But will this happen?

Those who campaign for animal welfare will look for ways of reducing the suffering:

- Could we catch fewer fish?
- Could we reduce the suffering of those we do catch?

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improving animal welfare  
commercial fishing

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Let us look for a moment at why this all matters.

Fishcount believes that fish are sentient beings. Let us look at some of the evidence

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Fish sentience - the goldfish who remembers

This Youtube clip is available from  
<http://fishcount.org.uk/fish-sentience/comet>



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There is a belief in Britain that goldfish have a three-second memory.

Here is proof that this is not true.

Comet the goldfish, the pet of a vegan family in the US, has been taught to play a series of tricks for a food reward.

Show film – may need translation

I am not making the case for captive fish in circuses – the point is that they are much smarter than many people believe.

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Fish sentience - *Do fish feel pain?* (2010) Victoria Braithwaite



In her book, Dr Braithwaite

- makes the science accessible to non-scientists
- describes the different evidence
- concludes that fish *"have the mental capacity to feel pain"*.



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But that is an anecdote, what does the science say?

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Fish sentience

Evidence that fish feel pain and distress includes

- presence of nociceptors (pain receptors) in fish
- activation of these nociceptors with noxious stimuli e.g. heat
- activity in the brain during nociception
- long lasting changes in behaviour following nociception
- alteration to normal fear response by nociception
- effect of analgesics (pain killers) on behavioural response to nociception
- impressive mental abilities (spatial learning, logical deduction, cooperative hunting).



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In the book *Do Fish Feel Pain*, Victoria Braithwaite summarises the scientific evidence that fish feel pain.

- They have pain nerves
- Which respond to harmful stimuli like heat or tissue damage
- Something happens in the brain as a result
- And it can change their behaviour
- It can affect their response to fear
- If fish are given pain relief, they don't respond to these stimuli in the same way
- They have impressive mental abilities – they can develop complex maps, they can use logic, they can

co-operate socially

Fish have a pain system similar to birds and mammals.

(We will consider expanding some of these into stories)

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Fish sentience - Eel and grouper



**Groupers and moray eels** are predatory fish that hunt smaller coral reef fish.

Groupers hunt in open water. In contrast, moray eels slither through crevices to corner their prey in holes.

Fish avoid grouper predation by hiding in crevices and avoid eel predation by swimming into open water.



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The most impressive example of fish intelligence is the co-operation of the grouper and the moray eel.

These are predators in the coral reefs.

Groupers chase fish in open water, but if the fish escape into the coral, the groupers can't follow.

On the other hand, the eels hunt between the crevices of the reef.

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Fish sentience - Eel and grouper



These two species of fish have developed a way of communicating with one another to hunt together.

When a grouper chases a prey fish, its quarry may seek refuge in a small hole on the reef. The grouper cannot follow it into crevices. Instead it asks an eel for help!



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When a grouper chases its prey and the prey escapes into the reef, the grouper doesn't give up. It goes in search of an eel.

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Fish sentience - Eel and grouper

The grouper searches for an eel as a hunting partner.

In this clip we see a grouper approach an eel resting in its crevice and signal, with headshaking movements, close to the eel's head.

This Youtube clip is available from <http://fishcount.org.uk/do-fish-feel-pain#y2>



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The grouper makes a headshaking gesture to communicate to the eel.

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Fish sentience - Eel and grouper

In this clip, a grouper leads an eel off to hunt.

This Youtube clip is available from <http://fishcount.org.uk/do-fish-feel-pain#y3>



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If the eel is hungry, he follows the grouper to where the fish is hiding.

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Fish sentience - Eel and grouper

In this clip a grouper shows an eel (out of view) where the prey fish was last seen by performing a headstand accompanied by head shaking.

This Youtube clip is available from <http://fishcount.org.uk/do-fish-feel-pain#y4>



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The grouper indicates where the fish is hiding by making headshaking movements

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Fish sentience - Eel and grouper

In this clip, an eel responds to the headstand with head shaking signal by exploring the area.

This Youtube clip is available from <http://fishcount.org.uk/do-fish-feel-pain#yt5>



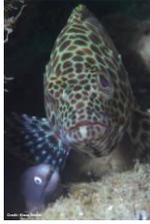
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The eel then goes and tries to catch the fish.

If the fish escapes from the eel, he ends up in the mouth of the grouper.

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Fish sentience - Eel and grouper



The moray eel and the grouper represent an example of a...

*"sophisticated, complex behaviour that requires the hunting partners to communicate and recognise each other's intentions".*

Victoria Braithwaite



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This is passed on from generation to generation. It must be learned by observation.

This sounds like the work of very sentient animals.

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Fish sentience - crustaceans



Scientists at Queens University, Belfast have found evidence that crustaceans feel pain.

Crabs and prawns were shown to react to painful situations.

Professor Elwood of Queens University argues for more humane ways of handling and killing them.



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Are other marine animals sentient. In addition to fish, there is evidence that decapod crustaceans, which includes lobsters and crabs, can feel pain was reported by the BBC this year. Professor Elwood of Queens University in Belfast who has carried out a range of research on different species of decapods, concludes we should therefore find more humane ways of handling and killing these animals. At present they are often boiled alive.

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**Fish sentience - cephalopods**



Cephalopods (including octopus and squid) are the invertebrates with the most complex brains.

They can solve maze puzzles and remember the solutions. They appear to show strong emotions signaled by changes in colour.

UK legislation on animals in scientific research includes the common octopus.



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The most intelligent invertebrates are the cephalopods, the cuttlefish, squids and octopuses.

Again, large numbers of these highly sentient animals are caught for food by people each year.

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Most animal welfare scientists believe that fish, cephalopods and quite likely decapod crustaceans are sentient animals.

In other words, they have feelings which matter to them.

So how are they treated in commercial fishing?

There are several different methods of catching fish

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**Welfare during capture**

Catching fish causes suffering  
e.g. when they are...



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Fish suffer during capture

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Welfare during capture



.....Crushed under the weight of other fish in trawl nets



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In trawling when they are buried alive under the mass of other fish, suffering from crushing and being unable to breathe

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Welfare during capture



...raised from deep water and suffer decompression effects



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When raised from deep water, parts of their bodies may explode due to changes of pressure

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Welfare during capture



...snared in gill nets



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They can be captured by their vulnerable gills in gill nets, rather like being caught in a snare as the netting cuts into them as they struggle

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Welfare during capture



...confined in constricted seine nets

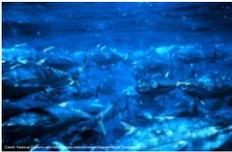


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In purse seining they are trapped by encircling nets

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Welfare during capture



...confined in constricted seine nets



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And deliberately scared into the middle of the net by speed boats or flashing lamps

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Welfare during capture



... spiked with hooks (gaffed) to bring them aboard



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Large fish may be landed by gaff hooks

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Welfare during capture



.....caught on hooks.  
They can remain on hooks or in nets for many hours or days.



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Others are caught on hooks.

This process of capture can take hours or even days

Many fish will die during capture, but the unlucky ones will survive to die onboard.

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What happens after capture?

Fish are rarely slaughtered. They are left to die during the process of capture, landing or further processing

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Welfare after capture

Most fish landed live die from suffocation in air...



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Many slowly suffocate on board

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Welfare after capture

...or from a combination of suffocation and live gutting.



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But many are gutted while still alive.

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Welfare after capture



Fish may be chilled as they suffocate. This may increase and prolong suffering.



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Sometimes fish are put in ice as they suffocate. Live chilling is aversive and can increase the time taken to become unconscious.

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Welfare after capture

Processing of fish after capture includes

- storage in air
- live gutting/filleting
- freezing alive
- chilling or cooling in ice or ice/water.



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They may also be filleted or frozen alive

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Welfare after capture

Dutch study of commercial fishing (1996) found

- majority of most species were alive and conscious when landed
- time to loss of consciousness was long.



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A Dutch study showed that most fish were still alive when landed and still took a long time to die.

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Welfare after capture

Dutch study of commercial fishing (1996) found

Time to loss of consciousness  
(for herring, cod, whiting, sole, dab and plaice)

Asphyxiation alone:

Asphyxiation with live gutting:



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They measured the time taken to die for a range of species according to whether they were just left to suffocate or whether they were gutted alive

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Welfare after capture

Dutch study of commercial fishing (1996) found

Time to loss of consciousness  
(for herring, cod, whiting, sole, dab and plaice)

Asphyxiation alone: **55-250 minutes**

Asphyxiation with live gutting:



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Suffocation took between one and four hours

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Welfare after capture

Dutch study of commercial fishing (1996) found

Time to loss of consciousness  
(for herring, cod, whiting, sole, dab and plaice)

Asphyxiation alone: 55-250 minutes  
Asphyxiation with live gutting: 25-65 minutes



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If they were gutted alive, they could still take over an hour to lose consciousness

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Welfare after capture



Flatfish, such as sole, are adapted to low-oxygen conditions and can take an especially long time to time to die after capture.



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Flat fish such as sole which live at the bottom of the sea have to be especially hardy to survive in conditions with low levels of oxygen. As a result they can take many hours to die after landing.

And they are rarely humanely slaughtered to put them out of their misery.

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Welfare after capture

In a new study of commercial fishing (2012):

Trawl-caught cod and haddock were conscious at least 2 hrs after landing and storage in air.

They developed a prototype "dry stunner" to humanely stun the fish.

Recommended fish be stunned and killed as soon as possible after landing.

Lamboury et al. [Effects of on-board storage and electrical stunning of wild cod \(Gadus morhua\) and haddock \(Melanogrammus aeglefinus\) on brain and heart activity](#)



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In another recent Dutch study on Norwegian vessels, cod were tested every half hour after landing to see if they were conscious. Although they looked dead, electroencephalogram traces showed that there were still signs of consciousness two hours later after which the last cod was processed. They could have been conscious for even longer.

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And it is not just the fish that people eat who suffer

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Welfare impact on bait fish

Pole-and-line fishing – “chumming” with bait fish



Fish are fed live to tuna.

Fishers create a feeding frenzy by throwing small bait fish, usually live, from the ship.



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Pole and line fishing is often sold as a sustainable kind of artisanal fishing which avoids bycatch.

But did you know they often throw small fish live into the shoal to create a feeding frenzy which makes the tuna bite?

These bait fish will already have suffered distress of capture and confinement for days or weeks.

If you fed a live animal to a lion in a cage you would cause an outcry

But this is reported as responsible fishing!

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Welfare impact on bait fish

Pole-and-line fishing – landing the fish

For the tuna, capture is fast...

but after landing them, the tuna are left to suffocate

This clip is available on Youtube from <http://www.youtube.com/watch?v=e6Ww2o9zqm-g>



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From the point of view of the tuna, this method of catching fish, called “pole and line” fishing is relatively more humane because the capture is fast.

Though they are still left to suffocate after landing. Such active fish die faster, but death still isn’t quick.

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Welfare impact on bait fish



Live fish are impaled on hooks as live bait



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Perhaps the worst practice of all where fish are impaled on hooks as live bait.

This is reportedly common in long line fishing for fish such as tuna.

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We have said that welfare can be measured as the combination of severity of suffering, its duration and the numbers involved.

We have seen that the severity and duration can be very high – the fish we catch can suffer a very great deal.

The numbers are also colossal.

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Huge numbers of animals are involved

An estimated **970 to 2,700 billion** fish caught each year suggests that **in the order of 1 trillion** are caught

based on FAO data for **1999-2007** and estimated average fish weights.



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Alison has estimated that the number of fish caught globally each year to be between 1 and 3 trillion (European billion - 1-3,000,000,000,000).

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Huge numbers of animals are involved



...for example  
Atlantic wolffish

Average annual capture reported by FAO : 33,000 tonnes  
Estimated mean weight : 15 pounds, or 6,800 g  
Estimated numbers : 5 million



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This is estimated by looking at the FAO data for the tonnage of each fish captured

Then looking for the average weight of each species at capture.

So, for example, if 30,000 tonnes of wolffish are caught globally each year at an average weight of nearly 7 kilogrammes, that means that around 5 million are caught each year.

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Huge numbers of animals are involved



...and  
yellowtail snapper

Average annual capture reported by FAO : 6,000 tonnes  
Estimated mean weight : 750-2000 g  
Estimated numbers : 3-9 million



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A similar calculation suggests that between 3-9 million yellowtail snappers are caught annually.

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Huge numbers of animals are involved



...and  
Chilean jack mackerel

Average annual capture reported by FAO : 2,000,000 tonnes  
Estimated mean weight : 200-1,000 g  
Estimated numbers : 2-9 billion



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And up to 9 billion (or milliard) jack mackerel

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Huge numbers of animals are involved

...and anchoveta (Peruvian anchovy)



**8.1 million tonnes**

Average annual capture reported by FAO : 9,000,000 tonnes  
Estimated mean weight : 10-30 g  
Estimated numbers : 300-900 billion



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The largest capture of all, both in weight and in numbers, is the small Peruvian anchovy. 9 million tonnes or 300-900 billion (or billiards); almost an American trillion for a species which is ground up to make fishmeal to feed to farm animals.

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catching feed fish multiplies suffering



**8.1 million tonnes**

1. It takes 2.3-4.9 kg of wild fish to produce 1 kg of farmed salmon.
2. It takes roughly 14 Kg wild-caught fish to feed one 4 kg farmed salmon.
3. It takes 14-1400 wild-caught fish to produce one salmon.
4. the inhumane killing of a 20g Peruvian anchovy produces just 6g of farmed salmon.



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Most of the fishmeal and oil produced each year is fed to farmed marine animals such as salmon.

If you look at this calculation, you can see that it can take the oil from over 1000 anchovies to feed just one salmon. Each anchovy can die horribly to produce just six grams of fish for people to eat.

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The suffering is huge, but that also means we can reduce it.

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Reducing suffering in commercial fishing



Solutions:

- reduce numbers caught
- reduce distress of capture
- humane slaughter methods.

How can suffering be reduced?



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From an animal rights point of view, you may believe we should stop fishing altogether.

That would end the suffering, but fishing will continue.

We could also improve animal welfare by finding ways of feeding humans while catching fewer fish

And by reducing suffering during capture and by humanely killing the fish after landing

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Reducing numbers of fish caught

1. reduce bycatch and illegal fishing
2. catch fewer fish and let them grow larger
3. reduce fishing for fishmeal and bait
4. marine reserves
5. develop alternatives to eating fish.



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Many of the suggestions of conservationists would also help fish welfare.

Reducing bycatch would be a benefit for all.

If you let fish grow bigger before you catch them, you don't have to catch so many for the same amount of fish. The these larger fish would breed which is good for conservation.

If industrial fishing for fishmeal and oil for animal feeds ended - it seems likely that the number of fishes caught would reduce by up to 1/3 to 1/2 since these fish tend to be the small ones.

Conservation groups have recommended large marine reserves where the sea is left alone.

But with a rising population of people and the seas already overfished, we need to find alternatives to eating so many wild-caught fish.

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Reducing suffering in commercial fishing

1. avoid using live bait fish



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commercial fishing

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We could reduce the suffering of bait fish by banning the use of live bait. Alternative baits using parts of fish that people don't eat would also save fish from being killed for bait.

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Reducing suffering in commercial fishing

2. reduce the duration of capture



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commercial fishing

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We could reduce suffering during capture if the nets or lines were not left in the water for so long

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Reducing suffering in commercial fishing

2. reduce the duration of capture  
3. reduce the stress and injury during capture



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commercial fishing

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We could also try to research into how injuries are caused with a view to reducing them.

Studies have found that modifications to fishing practice and choice of gear types (eg types of net/hook) can reduce stress and injury

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Reducing suffering in commercial fishing

4. develop methods of landing fish without injury



[fishcount.org.uk](http://fishcount.org.uk)  
Innovate more fishways  
commercial fishing

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Fish could be landed more carefully. Pumping systems which minimise stress and damage have been devised for farmed fish. These systems could potentially be adapted for use on fishing boats

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Reducing suffering in commercial fishing

5. reduce bycatch



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commercial fishing

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We could try to reduce bycatch. When levels of bycatch are high, fisheries could be closed. The fishing gear could be adapted to reduce bycatch. For example, bycatch reduction devices fitted to shrimp trawl nets can reduce the bycatch of turtles and fish

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Reducing suffering in commercial fishing

1. avoid use of live bait fish
2. reduce the duration of capture
3. reduce the stress and injury during capture
4. develop methods of landing fish that reduce stress and injury
5. reduce bycatch.

[fishcount.org.uk](http://fishcount.org.uk)  
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All of these would reduce suffering

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Humane slaughter for wild fish

Two traditional methods exist:

- percussive stunning (followed by bleeding)
- spiking the brain (*ike jime*).



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Provided the fish are killed humanely after landing.

There are two traditional ways of doing this.

A blow to the head, followed by bleeding

And spiking the brain to destroy it. This is often practised by Japanese fishermen for large tuna since reducing stress before death improves fish quality.

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Humane slaughter for wild fish

For larger fishing operations – humane slaughter technology needs to be adapted from aquaculture:

- automated percussive stunning
- electrical stunning
- food grade anaesthetics.



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There are also methods developed for fish farming which could be used on board including electrical stunning and use of food grade anaesthetics.

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Humane slaughter for wild fish

Some commercial fishermen have experimented with humane slaughter technology

This Youtube clip is available from <http://fishcount.org.uk/humane-slaughter#WSD>



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Some trials have taken place to use automated percussive stunners (developed for farmed fish) in commercial fishing.

Automatic percussive stunners stun the fish as soon as they are removed from the water

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There may be a limit to the number of fish we can kill from the sea, since the seas are already over-fished.

But to supply rising demand, there is now a massive increase in fish farming

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Fish farming - what is good welfare?

**The 5 Freedoms:**

Freedom:

- from hunger and thirst
- from pain, injury and disease
- from fear and distress
- from discomfort
- to express normal behaviour.



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Animal welfare scientists sometimes define welfare in terms of these five freedoms.

Fish suffer from all of these in fish farms, some of them severely.

I shall start by discussing the freedom to express normal behaviour. The truth is that we don't know the behavioural needs of many of the fish we farm.

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Fish farming - what is good welfare?



In the wild, salmon are solitary animals for at least part of their lives.

They swim for many miles out at sea before returning to breed in the river where they were born.



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The salmon is a solitary animal, swimming out to sea on their own for thousands of miles

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Fish farming – what is good welfare?

Farmed salmon are crowded together in sea cages and confined to swimming in circles



73

In a cage they are kept together in large numbers.

They still swim for thousands of miles – they have to keep swimming to breathe – but round and round in circles.

Is this a problem for them – the truth is, we don't know.

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Fish farming – what is good welfare?



Atlantic halibut is another solitary fish reared in crowded conditions.

Do confinement and crowding on fish farms cause suffering?

Fish welfare needs are little understood.



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The halibut is another solitary species. Should we be keeping them in crowded groups?

If it is acceptable to farm fish, is it acceptable to farm fish whose needs we don't fully understand?

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Fish farming – rearing conditions

In the EU, 80% of farmed fish production comprises the following species that are mainly farmed intensively:

- rainbow trout
- Atlantic salmon
- gilthead seabream
- European seabass.



A wild rainbow trout



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Globally, the main fish farmed are carp, tilapia and catfish.

In Europe, carnivorous fish such as trout and salmon are the main fish farmed.

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Fish farming - rearing conditions

Large numbers of fish are confined in a small area




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At least wild fish live free until they are captured.

Farmed fish also suffer lives in a cage

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Fish farming - rearing conditions

this causes a range of welfare problems:

- poor water quality (lack of oxygen, build up of ammonia)
- crowding
- disease and parasites
- social stresses.

Aggression from other fish can lead to injury, such as fin erosion, inability to feed and cannibalism.




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Crowded conditions can lead to a range of health and welfare problems.

Parasites such as lice can build up. These lice escape back into the wild to kill wild fish. The chemicals they use to control the lice also kill marine invertebrates.

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Fish farming - rearing conditions

In the US, channel catfish make up over 80% of farmed fish production tonnage.

Mortality due to infectious disease can reportedly approach 30% of the population.




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In the US the main fish farmed is catfish

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Fish farming - rearing conditions



Pangasius catfish is farmed very intensively in Vietnam, where half of production is for export.



79

In Vietnam, we have seen that the main fish is another catfish called Pangasius.

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Fish farming - rearing conditions



Small-scale pond systems are being replaced by intensive ones.

The catfish are sometimes reared at stocking densities of 44 fish per m<sup>2</sup> where death rates are reportedly 20-25%.



80

Because they can breathe air, they can be kept at very high densities. This is factory farming.

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Fish farming - methods of killing fish

Inhumane methods of fish slaughter are still widespread in the EU and elsewhere.

The EU's "AHAW" panel of scientists has concluded that:

*"many existing commercial killing methods expose fish to substantial suffering over a prolonged period of time".*



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And, though some are humanely slaughtered, the majority of farmed fish suffer the same fate as their wild cousins

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Fish farming – methods of killing fish

These include:

- Asphyxiation in air/on ice (carp, seabream, seabass, trout, turbot)
- Asphyxiation followed by percussive stun (carp)
- Carbon dioxide stunning (salmon, trout)
- Live chilling (carp, salmon, seabream, seabass, trout)
- Eels are immersed in salt and gutted while many still alive
- Gill-cutting without prior stunning (turbot).



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Dying in a range of cruel ways

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Fish farming – methods of killing fish



Many carp farmed in the EU, and elsewhere, are sold alive.

Fish killed at home may suffer:

- prolonged transport without water
- asphyxia
- temperature shock
- excessive handling
- ineffective stunning.



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In some parts of the world, fish are sold live and will suffer in the hands of the consumer

Slide 84

Fish farming – methods of killing fish

This YouTube film shows carp being sold live at a market in Minsk, Belarus.

This Youtube clip is available from <http://fishcount.org.uk/farmed-fish-slaughterbytt>



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This is common practice in Eastern Europe, Asia and in the developing world

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Fish farming – methods of killing fish

There is a growing EU/US market for Pangasius catfish farmed in Vietnam.

In commercial processing, these fish are bled to death by cutting one of the gills, without prior stunning.

The pain and distress caused is likely to last several minutes.

This Youtube clip is available from <http://fishcount.org.uk/farmed-fish-slaughter#t2>



85

Back to the Vietnamese catfish, this video, proudly put on the web by the production company, shows what the fish suffer.

I make no apologies for the awful and inappropriate music

Slide 86

Fish farming –numbers of animals affected

It is estimated\* that between 37 and 120 (midpoint 80) billion farmed fish were killed for food in 2010.

This probably already exceeds the combined number of farmed mammals and birds (63 billion in 2010).

Carps, tilapias and salmonids account for respectively 61%, 9% and 6% of total global farmed fish production tonnage, with most fish farming occurring in Asia.

\*Based on FAO data for 2010 and estimated average fish weights



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Alison has also estimated the number of farmed fish slaughtered each year using the same methods she has used to count captured fish.

The numbers have probably already overtaken the number of other farm animals such as pigs and chickens.

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Fish farming –numbers of animals affected



Large numbers of wild fish are caught to feed the growing numbers of farmed carnivorous fish, either as fishmeal or as whole/chopped fish



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And since, in Europe, we mainly farm carnivorous species, the number of wild fish caught to feed them is massive

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Fish farming –improving welfare

Improving farmed fish welfare:

- understanding the welfare needs of the species before starting to farm them
- rearing conditions that promote fish health & meet their ethological needs
- outcome based welfare assessments
- humane slaughter methods
- fish feeds based on trimmings and alternative feeds rather than purpose-caught wild fish.



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We must question the factory farming of fish.

Where they are killed, they should be humanely killed

We must note that we are farming species whose ethological needs are not understood. Humane farming, if it is ever possible, is certainly not possible without this.

We also need to find fish-feeds which don't cause suffering to billions of wild caught fish.

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Fish farming –improving welfare

Some positive/hopeful developments in welfare of farmed fish at slaughter:

- Development of humane slaughter technology for some species e.g. electrical stunning for trout
- OIE guidelines recommend humane killing methods should be used
- EU Commission due to report on possibility of introducing new requirements by end of 2014.



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Humane slaughter is now required by Norwegian law and UK farm assurance schemes.

The OIE, based in Paris and the international veterinary body equivalent to the WHO, now has set standards for humane killing of farmed fish.

New EU rules require fish to be slaughtered humanely, but don't yet say how. The scientists are due to report back next year after which rules should be set in motion.

We also need the same for fish caught from the wild.

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Summary

1. recognise it's a huge animal welfare problem
2. reduce numbers of fish caught
3. reduce industrial fishing for animal feed
4. reduce suffering during capture
5. humane slaughter for wild-caught fish
6. humane rearing & slaughter for farmed fish
7. replace fish in diet.



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In summary, fish welfare is a massive problem.

I would like to persuade the world that we should leave fish alone

But we could make their lives better

if we reduce the numbers we catch  
If we stop catching them industrially  
to make fish feed

If we hurt them less during capture  
and landing

If we develop more humane  
standards for farmed fish, both in  
rearing and slaughter

But above all, we need to eat less  
fish if we want the fish to suffer less.

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For more information, including references for the data in this presentation, please see:

- Fishcount report: [Worse things happen at sea: the welfare of wild-caught fish](http://fishcount.org.uk/publications) (2010) available from <http://fishcount.org.uk/publications>.
- Extracts from this report are now available in French from [Les Cahiers antispécistes](http://fishcount.org.uk/publications/translations) (see <http://fishcount.org.uk/publications/translations> )
- Fishcount study: [Estimating the number of fish caught in global fishing each year](http://fishcount.org.uk/publications/estimating-the-number-of-fish-caught-in-global-fishing-each-year) (2010).
- Fishcount study: [Estimating the number of fish killed in global aquaculture each year](http://fishcount.org.uk/publications/estimating-the-number-of-fish-killed-in-global-aquaculture-each-year) (2012).



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