

Building a Europe that cares for all animals

Fish Welfare

Abstract

Fish are sentient beings and are capable of feeling fear and pain the same way as any other farm animal. Despite that there is no legislation that would effectively ensure ethical treatment of fish. As a result they are either captured with methods that are extremely painful or are farmed in crowded and highly unnatural environment. At the end they are usually gutted alive which result in slow and painful death. The only way to change this situation is to place effective and simple laws that would ensure decent living conditions and humane slaughter procedures for these animals.

Introduction

The European Union is justly proud of its high moral standards for the treatment of farm animals. However, one group of animals remains to be consumed in enormous quantities, (12,3 mln tonnes/year)¹ but whose suffering is currently ignored. Despite strong scientific evidence² showing that fish are capable of experiencing pain, stress and fear, their needs fail to be addressed in the discussion on animal welfare. We believe it is crucial to change this situation and that also fish can count on European ethical standards.

Fish are sentient beings

Research into consciousness and pain in fish has lagged behind studies of birds and mammals, but there is now good evidence that fish are conscious, sentient beings with the capacity to feel pain.^{3 4 5} They possess nociceptors⁶, respond to noxious/painful events⁷, react positively

1 The EU Fish Market the 2014 Edition, EUMOFA report for European Commission

2 Victoria Braithwaite, Do fish feel pain?, Oxford University Press, 2010

3 Chandroo, KP, Duncan IJH, Moccia RD. 2004: Can fish suffer?: perspectives on sentience, pain, fear and stress. Applied Animal Behaviour Science 86.3: 225-250.

4 Braithwaite, VA, Boulcott P. 2007: Pain perception, aversion and fear in fish. Diseases of aquatic organisms 75.2: 131-138.

5 Cottee SY. 2012: Are fish the victims of 'speciesism'? A discussion about fear, pain and animal consciousness." Fish physiology and biochemistry 38.1: 5-15

to analgesics⁸, and show avoidance learning^{9 10} which is indicative of a conscious avoidance of suffering. They also have many cognitive abilities that help them in adverse situations¹¹ and can show physiological and behavioral stress responses similar to mammals¹² when subdued to pain or handling. Many fish species have been shown to have long-term memory¹³, social learning¹⁴, conditioned suppression¹⁵, and problem solving ability¹⁶ all of which are used as indicators of sentience and cognitive capacity in other animal species. In short, the growing body of scientific evidence suggests that fish must be given the same protection as currently afforded to birds and mammals.

Issues surrounding wild fisheries

The general public is already familiar with the problem of overfishing and fish discard and while these problems are not yet solved they are recognized and policies are in place to lessen their effects.

However, a further issue that needs resolution now is the fact that almost all fishing methods inflict long-term pain and stress on fish. Wild caught fish are exposed to severe stress and pain: when caught by trawling nets they are pursued to exhaustion and subsequently crushed under the weight of other fish; they suffer painful decompression of internal organs when raised from deep water; are strangled in gill nets; and often spiked with hooks while dragged out of the water¹⁷.

6 Sneddon, LU. 2003 : The evidence for pain in fish: the use of morphine as an analgesic. *Applied Animal Behaviour Science* 83.2: 153-162.

7 Reilly SC. 2008 : "Behavioural analysis of a nociceptive event in fish: Comparisons between three species demonstrate specific responses." *Applied Animal Behaviour Science* 114.1 : 248-259.

8 Sneddon, LU. 2013: Do painful sensations and fear exist in fish. *Animal suffering: From science to law, international symposium*.

9 Yue S, Moccia RD, Duncan IJH. 2004: Investigating fear in domestic rainbow trout, *Oncorhynchus mykiss*, using an avoidance learning task. *Applied Animal Behaviour Science* 87.3: 343-354.

10 Dunlop RSM, Laming P. 2006: Avoidance learning in goldfish (*Carassius auratus*) and trout (*Oncorhynchus mykiss*) and implications for pain perception. *Applied Animal Behaviour Science* 97.2: 255-271.

11 Pyanov A. 1993: Fish learning in response to trawl fishing. *ICES Mar. Sci. Symp. Vol. 196*.

12 Sneddon LU. 2003: The evidence for pain in fish: the use of morphine as an analgesic. *Applied Animal Behaviour Science* 83.2: 153-162.

13 Aronson, LR. 1971: Further studies on orientation and jumping behavior in the gobiid fish, *Bathygobius soporator*. *Annals of the New York Academy of Sciences* 188.1: 378-392.

14 Culum B, Laland KN. 2002: Social learning of a novel avoidance task in the guppy: conformity and social release. *Animal Behaviour* 64.1: 41-47.

15 Yue S, Duncan IJH, Moccia RD. 2008: Investigating fear in rainbow trout (*Oncorhynchus mykiss*) using the conditioned suppression paradigm. *Journal of Applied Animal Welfare Science* 11.1: 14-27.

16 Mizukami E, Gunji YP, Migita M. 1999: Learning process by goldfish and its use of a local site as a map. *Biosystems* 54.1: 91-104.

17 Summary report: Worse things happen at sea: the welfare of wild-caught fish. Alison Mood, fishcount.org.uk, 201

Fish caught on long lines can stay hooked, and dragged, for hours or even days, and sometimes fish are thrown live to tuna as bait or worse impaled live on hooks as bait¹⁷.

When fish are landed aboard ship they are either left to asphyxiate, or they die during further processing such as gutting, filleting or freezing while alive and conscious. Studies show that most fish species come aboard fishing vessels alive and can take between 1- 4 hours before they lose consciousness due to suffocation. Gutted fish can stay sentient for 25 to 65 minutes¹⁸.

In addition, as many catching methods are not selective, many fish species are caught at a young age which impacts their natural reproduction cycle and significantly reduces the renewal capacity of the population¹⁹.

Some 1 trillion fish are caught each year²⁰. The severity, duration and sheer number of animals suffering makes fishing a major animal welfare issue that must be addressed. There is an urgent need to implement fish stunning or more effective methods of fish killing immediately after catching.

The welfare of fish could be improved by: avoiding the use of live fish as bait - especially when impaled on hooks; reducing the duration of capture; reducing injury and stress during capture; using tangle nets instead of gill nets; using circular hooks instead of J-shaped hooks; developing methods of landing fish that reduce stress and injury; reducing bycatch (trawl nets can be fitted with bycatch reduction devices); using nets made from biodegradable materials (reducing ghost nets), implementing onboard fish stunning and reducing fish caught wastefully (both bycatch and fish that escape nets as they usually die afterwards).

Challenges of the aquaculture sector

The World Bank predicts that by 2030 aquaculture will produce nearly two thirds of the global food fish supply²¹. As the fastest growing animal farming sector globally, modern aquaculture is a very dynamic industry. It constantly develops new methods of keeping and breeding fish, and also searches for new fish species to be reared. However, these advances are accompanied by both environmental and welfare problems. High stocking densities, food deprivation prior to slaughter (sometimes up to 10 days), vaccination procedures, water

18 Opinion of the Scientific Panel on Animal Health and Welfare on a request from the Commission related to welfare aspects of the main systems of stunning and killing the main commercial species of animals (Question N° EFSA-Q-2003-093) Adopted on the 15th of June 2004

19 Law R. 2000: Fishing, selection, and phenotypic evolution. ICES Journal of Marine Sciences 57: 3

20 Mood A, Brooke P, 2010 Estimating the number of fish caught in global fisheries each year. fishcount.org.uk

21 World Bank. 2013. Fish to 2030 : prospects for fisheries and aquaculture. Agriculture and environmental services discussion paper ; no. 3. Washington DC ; World Bank Group.
<http://documents.worldbank.org/curated/en/2013/12/18882045/fish-2030-prospects-fisheries-aquaculture>

quality changes, parasites, transport and killing without stunning²² or with painful and inefficient carbon dioxide “stunning”²³ are just some of the issues affecting the welfare of fish. In addition, fish farms do not cater for the behavioral needs of the farmed species and fish are often forced to live in highly unnatural and stressful conditions.

Aquaculture creates many environmental concerns. Carnivorous farmed fish like salmon are fed with pellets that contains large amounts of fishmeal and fish oil. Around 3-4kg of wild fish is needed to produce 1kg of farmed salmon. Large cage farms can also pollute water and spread parasites affecting local fish stocks (especially young fish)²⁴. A partial solution to this problem could be the farming of herbivorous fish such as carp or tilapia²⁵.

The EU legal basis

Under EU law fish welfare is covered by Article 13 of the Lisbon Treaty. It states:

*"In formulating and implementing the Union's agriculture, fisheries, transport, internal market, research and technological development and space policies, the Union and the Member States shall, since animals are sentient beings, pay full regard to the welfare requirements of animals, while respecting the legislative or administrative provisions and customs of the Member States relating in particular to religious rites, cultural traditions and regional heritage."*²⁶

These provisions clearly apply to the welfare of both farmed and wild caught fish. The welfare of farmed fish is also covered by the EU legislation on rearing²⁷, transport²⁸ and slaughter²⁹:

As the European Commission's Scientific Panel on Animal Health and Welfare points out, *"The concept of welfare is the same for all the animals, i.e. mammals, birds and fish, used for*

22 Ashley PJ, 2004: Fish welfare: Current issues in aquaculture. Applied Animal Behaviour Science 104: 3-4

23 Scientific Opinion of the Panel on Animal Health and Welfare. Species-specific welfare aspects of the main systems of stunning and killing of farmed fish: rainbow trout (Question No EFSA-Q--2008-438). The EFSA Journal (2009) 1013, 1-55.

24 Wu RSS, 1995: The environmental impact of marine fish culture: Towards a sustainable future. Marine Pollution Bulletin 31: 4-12

25 Kestemont P. 1995: Different systems of carp production and their impacts on the environment. Aquaculture 129: 1-4

26 Lisbon Treaty. <http://europa.eu/eu-law/decision-making/treaties/pdf>

27 EU, 1998. Council Directive 98/58 concerning the protection of animals kept for farming purposes. Article 3 provides that "Member States shall make provision to ensure that the owners or keepers take all reasonable steps to ensure the welfare of animals under their care and to ensure that those animals are not caused any unnecessary pain, suffering or injury".

28 EU, 2005. Council Regulation (EC) No 1/2005 on the protection of animals during transport. Article 3 provides that "No person shall transport animals or cause animals to be transported in a way likely to cause injury or undue suffering to them".

29 EU, 2009. Council Regulation (EC) No 1099/2009 on the protection of animals at the time of killing. Article 3(1) provides that animals "shall be spared any avoidable pain, distress or suffering during their killing and related operations".

human food and given protection under the Treaty of Amsterdam³⁰. However, fish welfare has not been studied to the same extent as mammals and birds³¹.

The Slaughter Regulation specifically states that the requirement for avoiding pain, distress or suffering during killing applies to fish. However, it does not make detailed recommendations for slaughter pending further scientific assessment.

Since equipment claimed to meet EU requirements for humane slaughter is now available for a wide range of farmed fish species³², it is clear that Member States are legally required to enforce humane slaughter. Furthermore, inhumane methods that are nevertheless widely used are documented by the Commission's Animal Health and Welfare Panel for a range of species³³. Member States should be taking urgent steps to ensure the humane killing of farmed fish, as is already commonly practiced in the UK and Norway.

The Regulation also states that : *"No later than 8 December 2014, the Commission shall submit to the European Parliament and to the Council a report on the possibility of introducing certain requirements regarding the protection of fish at the time of killing taking into account animal welfare aspects as well as the socioeconomic and environmental impacts. This report shall, if appropriate, be accompanied by legislative proposals with a view to amending this Regulation, by including specific rules regarding the protection of fish at the time of killing"*.

Although the word "shall" in legislation is normally considered as legally binding, the report has not yet been produced or even started. It is essential that the European Commission make this report a priority. It would underpin the legal requirements on member states and also ensure that the Commission also abides by its own legislation.

Introducing solutions

Although catering for fish welfare might seem complex, and will require changes in current practices and legislation, we must not forget that fish is as a species already covered by general farming legislation on European level. Furthermore there are some simple key actions that can improve the situation significantly.

The most urgent and significant change would be an implementation of mandatory fish stunning. Effective and humane fish slaughter methods already exist. Fish stunning prior to slaughter is available both for small scale aquaculture farmers and fishermen as well as for big

30 The Treaty of Amsterdam has been replaced by the Lisbon Treaty

31 EFSA, 2009, SCIENTIFIC OPINION General approach to fish welfare and to the concept of sentience in fish. Scientific Opinion of the Panel on Animal Health and Welfare. The EFSA Journal (2009) 954, 1-27.
<http://www.efsa.europa.eu/en/efsajournal/doc/954.pdf>

32 See for example <http://www.aceaquatec.com/hsu-overview>.

33 See Farmed fish slaughter on Fishcount website for a discussion of these and a list of EFSA references by species.
<http://fishcount.org.uk/farmed-fish-welfare/farmed-fish-slaughter>

scale producers and fisheries operations (as commercial large scale solutions exist and are already used on some farms).

Many aspects of fish farming techniques can easily be improved to provide better fish welfare with more emphasis on fish natural needs. Depending on the species it could be lower stocking densities, environmental enrichment or hidings for fish, improved methods of sorting of fish and fish transportation, providing more appropriate feed etc. Furthermore new species should not be introduced to farming without carefully investigating their biology with focus on welfare.

Implementation:

Implementation of mandatory fish stunning. Commission shall submit to the European Parliament and to the Council a report on the possibility of introducing certain requirements regarding the protection of fish at the time of killing taking into account animal welfare aspects as well as the socio-economic impact. While this change might force stakeholders to invest in appropriate devices at the beginning it does not significantly influence the production process. Moreover humane slaughter might be a differentiator for the consumers which in turn will increase the competitiveness of European based fisheries and aquaculture when compared to imported fish.

Creating fish welfare standards for wild caught and farmed fish. This would include a welfare assessment of catching methods and developing welfare codes for those methods as well as creating welfare criteria for fish farming.

Implementation of legislation to ensure fish welfare in wild fisheries. Many fisheries techniques can be easily modified to provide a better fish welfare. Most urgent changes covers:

- Humane methods of stunning and killing wild caught fish immediately after landing.
- Introducing time limits for the duration of capture.
- Prohibition of the use of live fish as a bait. Live fish can be replaced by artificial bait or humanely killed dead fish.
- Reduction of the number of bycatch animals by using modifications to fishing gear and practice that reduce bycatch.
- Use gear and practice that reduce ghost fishing (abandoned, lost and discarded nets that continues to fish and trap animals)
- Use of gear that reduce stress and injury. Trapping, fast hook and line fishing with artificial bait as well as some other methods but with shorter capture duration has a potential to be more humane.
- Reduction of stress and injury during landing by developing methods of landing that minimize time out of water and injuries.
- Banning gill nets in favor of tangle nets and J-shaped hooks in favor of circular hooks.

Implementation of legislation to ensure fish welfare in aquaculture. Many aspects of fish farming techniques can be easily improved to provide a better fish welfare. New measures should:

- Demand humane methods of stunning before slaughter.
- Regulate stocking densities to levels that provide better fish welfare.
- Regulate fish transport.
- Invest in research focused on main farming species actual needs as very little is known about the living conditions for those fish in terms of their natural behavior and welfare.

Research and Development:

Since fish welfare is a fairly new concept the amount of research done is still limited when compared to other farmed animals. Therefore there are still gaps in knowledge which need to be filled in order to propose the most effective ways to create fish welfare.

There is a need for research on effective and humane fish slaughter techniques and developing fishing methods that are less harmful for the fish. Also there is still not enough knowledge about the various fish species that are used for farming, yet new species are introduced to the aquaculture whilst operators have no concern as to how to meet the natural needs of the fish