

Fish Welfare: Challenge for Science and Ethics—Why Fish Makes the Difference

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Fish as a Special Case: Uncertainty and Diversity

The combination between ethics and science in the field of animal welfare is not novel. Nonetheless, when we think of this combination in the area of fish welfare, novel considerations arise (cf. Huntingford et al. 2006). This was the reason to organize an expert meeting aiming to bring together a variety of academic disciplines that are involved in welfare studies to discuss fish welfare. This expert meeting about fish welfare and its moral implications, organized on November 29 and 30, 2010, by the Ethics Institute of Utrecht University, has been the occasion of this Special Issue. The meeting involved international experts from diverse academic backgrounds, including marine biology, physiology, the philosophy of mind, and ethics. For this special issue we have approached a number of the speakers at the expert meeting, but we have also invited other researchers to make a contribution. During the meeting, it appeared that the focus on fish makes a relevant difference and raises challenges both to the individual disciplines and to the interplay between ethics and science. Fish are special. Special in a biological and physiological sense, as well as from an ethical perspective.

In our view, moral decision making consists of a reflection process in which facts, intuitions, and moral principles play a role (cf. Van der Burg 2008; Van der Burg and van Willigenburg 1998). Each of these three tiers has its own input. For example, in order to reach a decision about the implementation of certain welfare measures in aquaculture, we need factual input about the consequences of different welfare measures, about levels of fish consciousness and suffering, etc. However, what particular facts one emphasizes or deems relevant, or how one interprets facts, is not objective or value-neutral. Research methodologies and the interpretation of research results are influenced by normative assumptions. In moral judgments, in turn, intuitions play a role; for example, intuitions can be a signal that something

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morally problematic is at stake, and can be a check on moral principles. If moral principles lead to very counter-intuitive results, this may be a reason to revise these principles. At the same time, intuitions can be checked by the facts.

Regarding fish welfare, in all these three tiers of facts, intuitions, and principles, we encounter uncertainty and diversity of moral opinion. This becomes clear if we encounter questions of fish welfare from both a biological and an ethical perspective. From a biological perspective, fish welfare is still a relatively under researched area. The related debates on whether fish can feel pain or have levels of consciousness are dominated by uncertainty, genuine disagreement, but also colored by a lot of new developments. As several articles in this special issue make clear, this is in no small measure due to the enormous variety of fish species that exist, of which only a few have been the subject of research so far.

From an ethical point of view, fish are interesting because they represent a borderline case. If we would conceive of moral considerability as a sliding scale, a question about which dissensus exists is where on the scale we should put fish. Are they closer to the moral position of mammals, birds, reptiles, amphibians or are they rather conceived of as a kind of semi-animal, between mammals and plants, as the authors of the final contribution suggest? As a matter of fact, dissensus even exists among animal ethicists about whether moral considerability can be conceived of as a sliding scale at all (see Bovenkerk and Meijboom 2012). As such, the case of fish presents a challenge to existing normative theories. If we would argue that fish are equally morally considerable to mammals, could we still argue that their interests are not equally significant? In a societal sense we encounter difficulties when considering fish: they are hardly visible in our society and we often have no direct relationship to them. Probably because of the lack of visual similarities to us and because we do not normally share a common environment our intuitions regarding fish are shaped differently than regarding other animals.

Three Questions of Fish Welfare

From a moral and a scientific point of view, what questions need to be answered in order to make sense of the issue of fish welfare? Three main questions underlie this special issue. Firstly, it is relevant whether fish can feel pain and suffer, or can feel pleasure and enjoyment. Questions that are presupposed in this inquiry are whether fish have a memory and are conscious. And if this is the case, secondly, what does this mean for the way we should treat these animals? Thirdly, what are the views and opinions of stakeholders and society at large about the capacities and moral status of fish and what room is there for science and morality to influence these views? The contributions in this special issue address these main questions. Therefore the issue is divided into three parts.

Part 1: What Do We Mean When We Speak of Fish Welfare?

The central question of the first part is what we mean when we speak of fish welfare. The two contributions review evidence regarding pain and cognition in

fish and connect this to moral and broader philosophical questions. First, Braithwaith, Huntingford, and Van den Bos discuss what evidence there is for emotion and cognition in fish. Their broad review of relevant studies into fish capacities focuses on teleost fishes of which some 27 thousand species exist. While systematic research on behavior that indicates emotion and cognition has only been carried out for a few fish species, the results show no fundamental difference with observations in mammals. The authors stress that though ultimately we can never know for certain what any animal feels, we can use a bottom-up approach to generate knowledge. This approach uses arguing by analogy, interpreting behavioral capacities, coupled with knowledge about brain function, and insight into the circumstances of the animal in which emotion and cognition are likely to promote fitness.

The authors give examples of experiments showing that certain fish exhibit flexible behavior and suggest that fish need a capacity for cognition and emotion to be able to do so. Next, they suggest that such capacities may very well vary between different fish species and within the same species of fish, depending on individual, sex-related, and life-history stage differences. For example, within one species different individuals exhibit differing stress coping styles, influencing the level of welfare in particular circumstances. Also, environmental influences, such as habitat complexity, and social organization determine the complexity of a fish's brain and perhaps its capacity for suffering. The authors conclude that given the wide variation between fish species there is no single answer to the question whether fish can suffer and experience pleasure and more research needs to be done if we want to be able to guarantee fish welfare. More knowledge might make it possible to select fish species that are more appropriate as food as they are less likely to be stressed or suffer in farming conditions.

Allen also starts his paper with the increasing attention for fish consciousness and cognition. In his paper he elaborates the scientific controversy with respect to fish cognition from a philosophical perspective. He raises the question of why philosophers should care about fish consciousness. He argues that fish are interesting from a philosophical perspective in two ways. On the one hand, fish entail a test of the boundaries of existing conceptions of cognition and consciousness. On the other hand, Allen sees in the current scientific controversies regarding fish clear indications that help to understand the limits of experimentation in the fields of cognitive science or animal behavior.

To show these two points he considers the work of Cabanac, who was one of the speakers at the Utrecht Expert Meeting, as a reference point for his discussion on what consciousness implies and on whether fish have consciousness. He concludes that one of the main problems of the current debates start in the "label" fish. We often speak about fish in generic terms, but also from a scientific perspective results from one fish species, such a zebra or gold fish are immediately translated to claims about consciousness of fish in general. Therefore, the author sees a task for philosophers to help test and expand the limits of the currently used scientific and philosophical conceptual schemes. This may help to avoid drawing conclusions too hastily about fish as a enormously diverse set of species.

Part 2: Why Should We Care About Fish Welfare?

The scientific and philosophical uncertainty that has been discussed in the first part has direct implications for the ethical debate on why we should care about fish welfare. However, just like Allen, Bovenkerk and Meijboom take the position that ethicists do not have to wait for all the relevant aspects of every species of fish to be scientifically investigated. The paper even argues that implementing and defining fish welfare asks for a continuous interplay between science and ethics in a way that both fields of research make their own contribution. The paper starts at the level of the current problems of implementation. The authors show how these practical problems are interrelated to a chain of questions and problems that cannot be addressed without a genuine interplay between science and ethics. First, the paper explicates and unravels this chain of questions and problems that show this interplay. Second, the article shows how empirical uncertainty and moral pluralism with respect to the moral importance of fish makes a process of continuous specific interactions between science and ethics even more important than regarding other questions of animal welfare.

In her article, Kaldewey addresses the interplay between science and ethics in the case of fish welfare from the ethical perspective. She starts from an unconventional perspective: Kantian practical reasoning theories that traditionally require quite sophisticated cognitive capacities to be included as a moral agent. Fish are not likely to meet such criteria even if one agrees on their being sentient. Nonetheless, Kaldewey argues that it can be an important starting points in the discussion on animal welfare. She shows that moral agents have reason to accept duties to animals if these animals can be considered agents in a less demanding sense. This kind of agency implies that they are motivated to pursue the objects of their desires, which includes the desire not to suffer. This does not yet turn animals into moral agents, but can be a reason for us as humans to accept moral requirements that involve treating animals in a way that does not harm them. Whether fish have such desires can be subject for further research, but Kaldewey argues that if fish have such desires, we also have duties to them.

In their review of the welfare and environmental aspects of aquaculture Bergqvist and Gunnarsson connect empirical research on the impacts of fish farming on fish and nature (the facts) with moral views (the principles) on the permissibility of fish consumption. They start their analysis from the fact that surprisingly little research has been carried out on pain and on stress in fish as a result of farming and on the environmental aspects. They indicate a number of issues of ethical concern in aquaculture. The first category includes animal welfare. In spite of the genuine uncertainty with respect to the cognitive capacities of fish that has been sketched in the first part of this issue, the authors suggest giving fish the benefit of the doubt. Their description of welfare impacts of aquaculture, divided into four stages—breeding, growth, capturing/handling, and slaughter—supports precautionary reasoning, as there appear to be many points at which fish are exposed to pain, stress, injury, and disease. While some argue that in nature fish are also exposed to many of these stressors, the authors agree with Huntingford et al. (2006) that there is a moral distinction between how we are entitled to treat fish and how nature treats

them. A practical distinction also exists, since in confinement fish cannot avoid these stressors, while in the wild they at least have a chance of escape.

A second category of issues of ethical concern is related to the environmental impacts of aquaculture, such as the decline of wild fish populations. This may happen due to using fish caught in the wild for feed, introduction of non-indigenous species, spreading of diseases, and habitat destruction. Furthermore, they stress the threats to the environment through chemical and waste discharge, and destruction of ecosystems. Based on their review they doubt whether it is possible to ethically defend a fish diet.

Part 3: Fish Welfare: Who Cares?

The central question of the third part is who cares about fish welfare. The two contributions in this part examine respectively stakeholder and lay person attitudes and opinions regarding fish capacities and welfare.

Sustainability and animal welfare are the central topics in the paper by Kalshoven and Meijboom. These topics are often mentioned, but it still remains relatively unclear what welfare and sustainability entail in the context of fishing and fish farming. To explore this, the authors focus on the views of fish buyers as a key actor in the supply chain between the fisher or fish farmer and the consumer. Based on in-depth interviews the authors analyze the moral and non-moral dilemmas with respect to welfare and sustainability that fish buyers are confronted with. They conclude that the focus on sustainability and animal welfare appear to be driven by external and market factors. With respect to welfare, the study shows that this seems more important for farmed than for wild fish. This is explained by the fact that fish buyers feel a stronger responsibility regarding kept animals than wild fish that are caught from the sea and oceans and seas. A further conclusion is that sustainability is mainly based on labels. These labels, however, are considered less effective than expected for coping with moral dilemmas. The authors explain this situation by showing that labels are a rather procedural solution that leaves the genuine dilemmas unaddressed. Therefore, the authors argue that labels are not a sufficient tool to deal with moral concerns. Further cooperation in the process of reflecting on and elaborating the sector's core values appears to be a more promising road to follow.

Kupsala, Jokinen, and Vinnari relate the results of a large survey analyzing public attitudes and views regarding the welfare of farmed fish in Finland. While aquaculture has quickly become intensive, it appears that the lay public has remained unaware of this. The survey shows that not many citizens are concerned about the welfare of farmed fish. The authors point out several causes for this lack of concern and argue that this lack confirms that fish are culturally constructed as a type of "semi-animal," a category between sentient animals and plants. Based on their analysis, the authors conclude that we cannot expect great consumer pressure to improve conditions at fish farms in Finland and they call for more research into the welfare and cognitive capacities of fish in order to raise public awareness. The particular cultural context in which this survey was carried out raises the question whether similar lack of consumer pressure can be expected in countries outside

Finland, where fishing is perhaps less tied to traditional rural views about subsistence. Nevertheless, as the authors point out, other studies show a lack of concern for fish welfare in other European countries as well.

Fish as a Continuous Challenge for all Disciplines

The rationale for this special issue has been the claim that the combination between science and ethics in the area of fish welfare leads to novel considerations. The seven papers illustrate the importance of a genuine reflection process in which moral intuitions, morally relevant facts, and moral principles are taken into consideration. This implies that science cannot wait until all uncertainties regarding fish welfare have been resolved, before moral questions will arise. At the same time, ethics need not wait to deal with the plurality of moral views on our duties regarding fish until all scientists agree. Finally, it shows that the public debate cannot be properly understood if the relevant facts and the moral considerations aren't taken seriously. The papers show that the recent advances in empirical research have resulted in morally relevant facts and that ethical analysis is of importance for the scope of the scientific research. In other words, it shows once again that understanding and guaranteeing fish welfare requires a real interplay between science and ethics and that work is still to be done by all disciplines.

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