

## The Moral Status of Fish. The Importance and Limitations of a Fundamental Discussion for Practical Ethical Questions in Fish Farming

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**Abstract** As the world population is growing and government directives tell us to consume more fatty acids, the demand for fish is increasing. Due to declines in wild fish populations, we have come to rely more and more on aquaculture. Despite rapid expansion of aquaculture, this sector is still in a relatively early developmental stage. This means that this sector can still be steered in a favorable direction, which requires discussion about sustainability. If we want to avoid similar problems to the ones we have experienced with livestock farming, we need to generate knowledge of the biology, profitability, environmental aspects, consumer awareness, and product appreciation of particular fish species. However, the discussion about a sustainable aquaculture also raises the question how we should treat fish. This moral question is regularly addressed as a problem of applied ethics with a focus on tailoring ethical principles to practical questions. In this article we do not deny the importance of the practical accounts, but we start from the fundamental question whether and why fish matter in our moral deliberations, i.e., from the discussion on moral status. We elaborate the distinction between moral considerability and moral significance in order to show both the importance and the limitations of the discussion about moral status for practical problems in aquaculture. We illustrate these points with a case-study about the farming of a specific fish species, the African catfish.

**Keywords** Moral status · Moral significance · Moral considerability · African catfish · Aquaculture

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## Introduction

As the world population is growing, we face an increasing demand for animal protein, including fish.<sup>1</sup> Government directives to increase the intake of omega 3 fatty acids by consuming more fish also play a role in the growing demand for fish. For example, the Dutch Health Council advises the consumption of fish twice a week, of which at least once fatty fish, in order to achieve an intake of 450 mg of omega 3 fatty acids per day (Gezondheidsraad 2006).<sup>2</sup> At the same time, we are experiencing global declines of wild fish populations. This raises concerns about the sustainability of the fishing industry and causes us to rely more and more on farmed fish. Due to these developments, aquaculture has become the fastest growing animal production sector in the world. In 2007, 43% of human consumption of fish was supplied by aquaculture, and these numbers appear to be increasing (Bostock et al. 2010). While the aquaculture sector is growing rapidly, compared to land animal husbandry, it is still in an early developmental stage. At this stage the sector can still be steered in a favorable direction, regarding social and environmental sustainability, including global food security, and concerns for animal welfare. At the same time, the aquaculture sector has reached a dimension where it needs to become more professional and where regulation can still be influenced. These crossroads at which the sector finds itself, of early development and a possibility to influence regulation, yet rapid expansion, shows that we are in need of a discussion about aquaculture and, moreover, that this is the right time to have this discussion.

In order for aquaculture to become environmentally and socially sustainable, knowledge needs to be generated of the biology, profitability, environmental aspects, consumer awareness, and product appreciation (Leun et al. 2007). However, the discussion about sustainable aquaculture also raises the question of how we should treat fish. Asking this question implies that the interests of fish matter from a moral perspective. At the moment, the question of how we should treat fish tends to be understood primarily as an applied ethical question, in which ethical tools or moral guiding principles are sought in order to reach a practical solution for welfare and environmental problems (Grigorakis 2010; Bergqvist and Gunnarsson 2011; Millar and Tomkins 2007). While this is surely relevant, such solutions presuppose answers on a more fundamental level, at least if one wants to reach legitimate moral statements. This requires an analysis of moral status. With the help of, for example, the ethical matrix, but also other applied ethics accounts, a leap is made to a practice that in our eyes cannot be made yet.<sup>3</sup> This leap is too hasty for two reasons: firstly, it is necessary to make more fundamental presuppositions explicit, and secondly, regarding the capacities of fish we still encounter a

<sup>1</sup> Of course, a growing demand for fish does not imply there is also a growing need for it, as many good alternatives to animal protein can be found.

<sup>2</sup> This directive is contested, however. Some argue that the benefits of omega 3 are overstated or that there are many plant-based sources of omega 3, such as walnuts, seaweed, algae, soybean oil, and linseed oil. See Willett (2008) and Milovanovic and Radovic (2008).

<sup>3</sup> The ethical matrix is a discussion and decision-making tool for ethical questions, in which a matrix is used with the groups that are involved along one axis and moral principles (such as autonomy, justice, and beneficence) along the other axis. See Mepham (2005) and <http://www.ethicalmatrix.net>.

knowledge gap and many uncertainties. Before addressing applied questions of sustainable aquaculture or welfare friendly housing systems it is necessary to deal with a number of more fundamental questions. The first one is “why do fish matter morally?” There is a profound plurality of answers to this question. This is related to the discussion on the moral status of fish. An analysis of the notion of moral status and theories of moral status is essential in order to come to practical answers for the problems of aquaculture. However, attributing moral status to fish does not directly lead to action guiding moral principles.

This leads to the second question: how should we treat animals that matter morally? To get a grip on the discussion on moral status we use the distinction between moral considerability and moral significance. Most mainstream theories of moral status agree that at least certain animals matter morally, or in other words, are morally considerable. This is based on certain morally relevant facts about these animals. However, when we want to determine *how much* animals matter, in other words, how morally significant they are, it becomes more difficult—particularly in the case of fish. At this point the lack of morally relevant information becomes more problematic. Moreover, we will argue that this lack of information causes more of a problem for some moral theories than for others. The different normative starting points of different moral theories can lead to conflicts in practice. For example, conflicts about the questions whether we are allowed to kill fish or what housing systems are allowed.

A third step is to address the question of how we should deal with conflicting moral duties regarding animals. A theory of moral status does not yet tell us how we should weigh different duties in practice. This requires a normative theory. This is to say that when we encounter practical questions about how to treat fish in aquaculture we need to realize that we cannot find answers without adopting a specific moral framework. When we make a decision in a conflict situation we implicitly makes choices regarding moral considerability and moral significance.

In this article we want to show, based on these three questions, both the importance and the limitations of a discussion on moral status for practical problems in aquaculture. We will illustrate these points with the help of a case-study about the farming of the African catfish. In the next section we will briefly introduce this case-study and we will come back to it later in the article. After the introduction of the case-study we will clarify the concept of moral status. Then we will discuss theories in animal ethics in order to show the theory-dependency of thinking about the treatment of fish, and draw our conclusions.

### **Case-Study: The African Catfish**

The claims we want to make in this article about moral status are applicable to other animals as well, but we want to focus on fish here. These animals form a very interesting research subject for ethics, because they present a borderline case. It is difficult to establish whether fish have awareness and can suffer. We cannot read their facial expressions or hear their cries. They are anatomically similar to us in some respects but very different in others; they have a different brain structure to

mammals, for example. Fish are also interesting because there are so many different species and there is so much variation between species. Different species have different capabilities and this raises the question of whether duties to fish may vary by species. We cannot make sweeping statements about all fish in general and therefore we will, at least primarily, focus research on one particular species.

Our research is about the moral status of the African catfish (*Clarias gariepinus*) and is part of a larger research project about the welfare of this fish in aquaculture and the sustainability of this type of aquaculture. Our research group consists of physiologists, ethicists, and animal welfare specialists who study different aspects of the farming of the African catfish, such as the questions of how to decrease transportation stress and how to kill the animals as humanely as possible. We have chosen to study the African catfish as this is potentially a new favorite species in European aquaculture, due to its sturdiness, formidable growth, and efficient food-conversion ratio. As we described in the introduction regarding aquaculture in general, the catfish sector is still in a relatively early developmental stage, but is growing. Dutch *Clarias* production in 2007 was 4,200 ton and is increasing (Eijk 2008). As for a lot of new aquaculture species in countries that do not have a history in aquaculture, we see that a defined regulatory framework is lacking in the catfish sector in the Netherlands.

We can note some similarities and differences with other animal husbandry practices. In contrast to most other farmed animals, the African catfish can deal well with crowding, at least for a limited period of time. This is due to the environmental circumstances in which this species evolved: the fish have to be able to survive in very dry conditions and they manage this by lying on top of one another until the onset of the wet season. Furthermore, the African catfish is held in closed recirculation systems, which means that we do not encounter the same environmental problems as in other aquaculture systems, such as pollution, habitat destruction, and pathogen spreading. Finally, the catfish has a better food conversion ratio than other farmed fish, such as salmon. Like many other farmed fish, on the other hand, *Clarias* is piscivorous and it is fed wild fish, which contributes to overfishing. While not much is known yet about the specific features of this fish species, it is established that it is naturally aggressive (Martins et al. 2005; Nieuwegiessen 2009). It appears that this aggression is exacerbated by farming conditions. Increased aggression could be interpreted as the result of stress. Moreover, it appears that this aggression has negative consequences for welfare. Like in other animal husbandry practices, we therefore encounter welfare problems with the farming of the African catfish, for example during handling and transport. Even though the fish appear to be able to cope well with handling, common practices place so much stress on them that some do not survive transport. These observations raise the question as to how we should treat the African catfish. The standard reaction to these sorts of problems in animal husbandry is to attempt to change this practice with regards to sustainability and welfare. This also appears to be the assumption underlying our own research, which focuses on the questions of how the fish can be transported, kept, and slaughtered in a more welfare-friendly manner. However, these applied questions cannot be fully answered before we have addressed more fundamental issues of moral status and ethical theory. The first

question that needs to be answered is why fish matter morally. We will analyze this question below.

## Moral Status

Moral status is commonly conceived of in the following way: all beings that possess moral status are members of the moral community and their interests should be taken into account in our moral decisions. Understood in this sense, moral status does not seem to admit gradations. After all, one either is or is not a member of the moral community; one cannot be a little bit of a member. However, one could also understand the meaning of the concept of moral status in a different sense. One could ask “what is the moral status of this particular animal?” The answer could not only be “the moral status of this animal is that it belongs (or does not belong) to the moral community,” but it could also be “the moral status of animal x is higher than that of animal y.” In other words, framing the concept of moral status in this way presupposes that there are levels of moral status, and hence that gradation is possible. While moral status in the first use of the concept does not specify to what extent a being’s interests should be taken into account, in the second use a basis for the weighing of interests is already made. The second use not only specifies what entities belong to the moral community, but also to what extent their interests count. In order to avoid confusion, we think it is best to go along with those ethicists who make a distinction between moral considerability and moral significance and regard moral status as encompassing both (Gruen 2010; Goodpaster 1978). In Gruen’s words:

To say that a being deserves moral consideration is to say that there is a moral claim that this being has on those who can recognize such claims. A morally considerable being is a being who can be wronged in a morally relevant sense (Gruen 2010, np).

In other words, moral considerability gives a being an entry ticket to the moral community. However, Gruen (2010 np) continues,

that non-human animals can make moral claims on us does not in itself indicate how such claims are to be assessed and conflicting claims adjudicated. Being morally considerable is like showing up on a moral radar screen—how strong the signal is or where it is located on the screen are separate questions.

Staying with this metaphor, we could say that the answer to the questions whether an animal should matter morally, and why, determines its showing up on a moral radar screen (considerability). The answer to the question how we should treat the animal is dependent on how strong the signal is and where it is located on the screen (significance). Determination of an animal’s moral significance sheds light on the question of how we should treat an animal in a particular situation, but it does not fully determine this treatment. This is because, besides moral significance, more considerations may enter into our decision making process. What considerations these are will depend on one’s normative theory. An example could be that if

we have made a commitment to one animal but not another—for example because the first animal is our pet and the second is not—we have more duties towards the first animal, even though both animals might have the same moral considerability and same moral significance. In order to know how we should adjudicate in conflicts of interest we need more input than just a position on moral considerability and significance.

Even though they are related and in practice it is often difficult to separate these categories, it is important to make the distinction between considerability, significance, and the adjudication of conflict. An answer to the first does not lead to an unequivocal answer to the second or third. Even if two animal ethicists were to grant moral status to an animal on the same basis, say the fact that the animal can suffer, they could still reach different conclusions about how to treat the animal, because their argumentation is derived from different normative theories. So, for example, if two animal ethicists were to argue that African catfish are members of the moral community because they have the ability to feel pain, for one this can mean that we can genetically modify the catfish in order to grow better, as long as this does not cause welfare problems, while for the other this can mean that we cannot modify them, because this would not show the fish proper respect. In other words, it is possible for ethicists to take a characteristic, such as sentience, as basis for moral considerability without taking sentience as the most important criterion in their theory of action.

An example can show the relevance of the distinction between considerability and significance and the role that normative theory plays in theories of moral status. Like already alluded to above, a question that is discussed among animal ethicists is whether moral status admits degrees. DeGrazia (2008) argues that it does, because morally relevant characteristics come in degrees, but his account is criticized by Visak (2010). According to DeGrazia (2008, p. 192), reasons to grant two beings with a comparable interest different moral significance, could be that one has a higher degree of “cognitive, affective, and social complexity.” Visak points out that these properties are irrelevant when we are talking about comparable interests: if we are dealing with a dilemma in which an interest in not suffering is at stake, all we should do is compare amounts of suffering. As long as one can suffer one has an interest in not suffering and this interest does not change when other characteristics (such as rationality) of the entity are present or absent. These can be affected by cognitive, affective, and social complexity, but then the interests would not be comparable anymore and this still would not mean that the moral status of these beings is different. DeGrazia, however, appears to say that due to differences in cognitive, affective, and social complexity, the interests of beings with lower complexity *cannot even be compared* to the interests of beings with a higher complexity. For him, therefore, while it is sufficient that a being has interests—for which ability to suffer suffices—in order to be morally considerable, the being’s moral significance is based on other properties of the being, such as cognitive complexity. DeGrazia, then, appears to define moral status in the encompassing sense, including considerability and significance, and as gradations are possible in significance, it appears that considerability also admits gradations. Visak takes issue with the idea that moral status admits gradations, because she takes moral status more strictly to mean moral

considerability. This point of view on moral status is directly informed by her start in utilitarianism, and thus in the imperative that moral decisions should be made by weighing different interests and choosing the course of action that maximizes those interests (Visak 2011). So while all animals are equally morally considerable, how significant they (or rather, their interests) are, is dependent on the overall scheme of things and not on some property of the animal in question.

The discussion between the two authors shows, first of all, that whether one frames moral status as admitting degrees depends on whether one deems only one property sufficient to establish moral considerability and significance, or whether one takes a multi-property approach, in which one property establishes moral considerability, but other properties determine moral significance. Even if one disagrees—as some philosophers do<sup>4</sup>—that there is a different *answer* to the questions “what beings matter morally?” and “how much do their interests weigh?”, it is still important to acknowledge that these are two different *questions* and to make explicit why the answer to the two questions is the same. Secondly, this discussion shows that moral status is not a morally neutral concept, because whether one takes considerability and significance to coincide or not depends upon one’s normative theoretical framework. The upshot of this discussion is that if one wants to understand the discussion about the moral treatment of animals it does not help to simply make a deeper conceptual analysis of the concept of moral status, but that one will also have to look at normative theory. This is what we will do in the next section.

### Theories in Animal Ethics: Intrinsic Properties

Ethicists with different theoretical backgrounds justify moral considerability and significance of animals on different grounds; there is no theory-neutral basis for moral status. Within the analytical tradition, four main lines of justification can be found: an utilitarian, a deontological, a relation or care-ethical line, and a virtue-ethical line. The strategy used in most argumentation lines in animal ethics is to say that moral status depends on the possession of a certain property or group of properties. These could be either intrinsic or extrinsic properties. Intrinsic properties are properties of the animal in question. Candidates are, for example, sentience or capacity to suffer, conscious experience, the possession of desires, self-reflective agency, or autonomous activity. Extrinsic “properties”<sup>5</sup> refer to relationships between the entity and its surroundings (for example, its place in an ecosystem) or between the entity and moral agents (in particular humans). Both utilitarian and deontological theories focus on intrinsic properties.

So how do utilitarians and deontologists answer our three questions of (1) whether animals are morally considerable, (2) how morally significant they are (and whether there is a difference between these two concepts), and (3) how we should

<sup>4</sup> For example Taylor (1986) and, as we shall see, Regan (1983).

<sup>5</sup> Of course, one can wonder whether in the case of relationships it is appropriate to speak of “properties” of an individual in the first place; perhaps the extrinsic account is more about an individual’s “position” than about its properties. We would like to thank Sjaak Swart for pointing this out.

weigh their interests in cases of conflict? In the utilitarian view of Singer (1975), entities deserve moral considerability because, and in as far as, they have the ability to feel pain and pleasure. In other words, sentience is a necessary and sufficient criterion for moral considerability. This is because for Singer what matters in morality are interests; his theory starts from the basic principle that equal interests should be treated equally. A being that is not sentient, such as a rock, does not have an interest in not being kicked, while a sentient being, such as a mouse, does have an interest in not being used as a soccer ball. In the deontological view of Tom Regan, entities deserve moral status if they are subjects-of-a-life, which could be taken to mean that they can experience their life subjectively. In order to experience one's life as a subject of it, one needs certain characteristics, which include sentience, but also self-awareness. Regan, therefore, places stronger demands on entities' characteristics that confer moral considerability than Singer; for him it is not just about the capacity to feel pain and pleasure, but also about certain cognitive capacities, such as having desires, beliefs, a memory, a sense of the future, a psychosocial identity over time, and being able to act intentionally (Regan 2003, p. 18). In other words, for Singer sentience is a sufficient criterion for moral status, but for Regan it is a necessary, but not sufficient criterion. The reason why Singer and Regan focus on these specific characteristics is influenced by their broader normative framework. Regan focuses on cognitive capacities because he is a deontologist who follows Kant, and Kant focused on autonomy. Singer focuses on suffering, because he is an utilitarian and utilitarians aim to promote a non-moral value, such as happiness or the absence of suffering. Their view on what ethics aims at, therefore, prestructures their thinking about moral status. Also, in both theories the concept of interests is very basic and this is already a non-neutral starting-point.

When answering the second question, about moral significance, it is even more obvious how normative theory comes in. Utilitarians argue that we should achieve the best possible balance of happiness, well-being, or some other intrinsic value, over unhappiness or suffering, for all those affected by our moral decision. The specific version of utilitarianism that Singer supports is preference utilitarianism, meaning that we have an obligation to weigh the preferences of different entities against one another. This means, amongst other things, that all those beings that have a preference for staying alive have an interest in not being killed, and this interest should be taken seriously.<sup>6</sup> Beings with a concept of themselves as beings with a future possess self-consciousness and can form a preference to stay alive. Beings who lack this capacity, but that can still suffer, merely possess consciousness (Palmer 2003). The latter can be painlessly killed and replaced.<sup>7</sup> While for Singer, then, sentience is a sufficient criterion for moral considerability, the moral significance of an entity is influenced by more than just the capability to suffer pain and enjoy pleasure; it is influenced by cognitive complexity. Moreover, in practice the interests of self-conscious animals often carry more weight in moral decisions because their suffering is often greater, as they can fear the future or have painful

<sup>6</sup> Still, this is not an absolute prohibition on killing or harming a being, because if total utility would be served by killing a person, this could, at least in theory, be permitted in utilitarianism.

<sup>7</sup> For a thorough discussion and critique of this "replaceability argument" see Visak (2011).



memories. The significance question, then, is decided by his normative ethical theory and not by his “moral considerability theory.”

For Regan, all those beings that are subjects-of-a-life have inherent value and we should treat them with respect for this value; this means, amongst other things, that we should not use them as mere instruments or means, but also as ends in themselves; a view that is clearly based on Kant. This principle of respect for inherent value is absolute, as inherent value does not admit degrees. For Regan, therefore, the answer to the questions “what beings matter morally?” and “how much do their interests weigh?” is the same: all beings that matter morally matter equally. In other words, for Regan, significance and considerability—at least in theory—coincide. He already takes some degree of self-awareness as important for the question of which beings are morally considerable, while for Singer self-awareness only becomes relevant when discussing moral significance. For both philosophers, interests are fundamental and both use intrinsic properties to determine whether a being is morally considerable. Nevertheless, both give different answers to the moral significance question. Significance in Singer’s account is dependent on the overall good of everyone involved, whereas for Regan it is something that attaches to the individual. For Singer it is about maximizing preferences, whereas for Regan it is about not treating those with inherent value as mere instruments. This means that in certain cases they judge differently; for example, if an animal is genetically modified this in itself is not problematic for Singer, assuming that it does not interfere with the animal’s well-being and that the animal does not have a preference not to be modified. However, Regan would be opposed to genetically modifying an animal that possesses inherent value, because it would treat the animal merely as a means and not as an end in itself.

When we look at the third question, namely “how should we adjudicate in conflict situations?”, we see that normative theory frames the answer again. In fact, it even seems to frame the question. For Singer the questions of how to treat an animal and how to arbitrate in case of a conflict of interest are in effect the same, as both depend on the overall calculation of preference maximization. For Regan the questions how to treat an animal and how to deal with conflicts of interest are different. How, then, does Regan consider that we ought to make decisions in the face of conflicts of interest? He introduces the notion of “comparable harm,” which is a situation when the well-being of two or more beings stands to be equally violated. When we have to choose between the interests of two groups with comparable harm, we should choose to harm the group with the lower number of individuals (the so-called “miniride principle”). This is in line with the absolute nature of inherent value, because it is worse to override rights many times than a few times. However, when the harms involved are *not* comparable we are justified in overriding the rights of many if overriding the rights of a few would make them worse-off than any of the many would be if the former option were chosen (the so-called “worse-off principle”). This last principle is where Regan clearly departs from utilitarianism, because it in effect means that no individual may be sacrificed for the good of the whole if this would greatly disadvantage her vis-à-vis the rest. In general, according to this principle, all subjects-of-a-life are still treated with equal respect for their inherent value. However, in some cases Regan argues that we can

justify differential treatment of beings with equal inherent value on the basis of the worse-off principle. Imagine a shipwreck in which five survive, four humans and a dog. Only four fit into the lifeboat and they have to throw one overboard or else all die. In this case, according to Regan, our intuition that the dog should be thrown overboard is warranted. This is based on the idea that the harms involved are not comparable; the harm of death is worse for humans than for dogs, as the former generally have more complex interests due to their higher psychosocial capacities. To sum up, for Regan all beings with inherent value have equal inherent value and we should treat them with respect for this inherent value. Still, when it comes to the question of how to deal with conflicts of interest, Regan leaves his categorical principle and argues that there are reasons to treat different beings differently. This shows that, though related, the questions of how animals should be treated and how to deal with conflicts of interest can generate different answers, and should—at least analytically—be separated.

### Theories in Animal Ethics: Extrinsic Properties

We will now briefly go into relational and virtue ethical accounts in order to show that here as well theories about the moral treatment of animals and normative theories are interconnected. This will show, again, that there is no theory-neutral standpoint from which to regard moral status and, in other words, that normative theory prestructures our thinking about moral status. In fact, we will show that different ethical theoretical perspectives even frame the question of how we should deal with animals differently; these approaches take a different question as a starting point.

Relational ethics does not focus on intrinsic properties that confer moral status. Relational or care-ethical views in animal ethics suggest that we have obligations towards animals because we are in a specific relationship to them. This means that we have different obligations to different types of animal. We have more responsibility towards a farm- or a laboratory animal than towards an animal in the wild, for example. While we have positive duties towards the former, we only have negative duties towards the latter. We have more responsibilities towards animals in our care, because we have made prior commitments to them, by domesticating them, for example. According to relational ethics, rational argumentation, like that of Regan and Singer, overlooks the centrality of feelings of sympathy or empathy that we can have towards animals. It is through these feelings that people come to change their behavior, and not solely through rational argument (Gruen 2010).

Now what can we say about moral status in relational or care-ethical theories? The relational account seems to already assume that animals are morally considerable and focuses more on the significance question. In other words, their departure question is different than those of intrinsic accounts. We would not readily formulate an argument for moral considerability in terms of relationships; rather it seems that through our relationships with animals we come to appreciate that these animals matter, perhaps in a reflective way, but not necessarily by rationally arguing that certain properties lead to moral considerability. An argument

for moral *significance* can be formulated in terms of relationships, however. Care ethicists often use terms such as responsibility, dependence, and vulnerability in order to determine how we should treat others. For example, if a human (for example a baby) or animal (for example a laboratory animal) is particularly vulnerable this would make a stronger appeal on our responsibilities. Relational ethics can come across as counter-intuitive, because every animal is an individual and why would it matter what the relationship of the animal is to a human being? A mouse is a mouse, regardless of whether it is a laboratory animal, a pet, or “vermin.” From the internal standpoint of the animal it does not matter what sort of obligations humans have in a specific context, it just matters to it that it is treated well or that it is not killed. On the other hand, from the perspective of the person making a moral assessment it does matter (for example, it matters for one’s decision whether to help a being if one was responsible for injuring that being). So for determining one’s duty it may differ whether a mouse that is ill is one’s pet or just a mouse one encountered in the pantry. This shows that in relational ethics relationships also come in when we ask the third question of how to deal with conflicting interests.

Our point is not to argue that relational ethics is a more promising avenue for conferring moral status, but that moral considerability is not so important in this theory; relational ethics simply asks a different question. Relational ethicists are not so concerned with arguing coherently for the moral considerability of certain entities, but rather, they are more concerned with explaining what motivates humans to treat animals in a certain way. The view about what ethical theory is already differs between Singer and Regan on the one hand and relational ethics on the other; or more generally, between intrinsic and extrinsic accounts. While the first argue from a universalistic view on ethics—meaning that if there are no biological or psychological differences we cannot make a moral distinction between entities—relational ethics sees moral theory not as universal, but as fundamentally context related (Swart 2006).

Similarly, virtue ethics is not universalistic, but more contextualist. Like relational ethicists, virtue ethicists are not so interested in the moral status question. They also reject the emphasis on rational argumentation of theories like Singer and Regan’s and they simply view animals as members of our community. As Gruen (2010, np) explains, animals are members of our community that “pull on us and it is in virtue of this indescribable pull that we recognize what is wrong with cruelty. Animals are individuals with whom we share a common life and this recognition allows us to see them as they are.” If we treat animals badly, we are displaying the wrong character traits. Virtuous character traits are, for example, sensitivity and compassion and we do not cultivate these traits when we routinely harm animals. However, this view begs the question as to what treating animals badly actually means and why this would reflect badly on our character. It just assumes that animals are part of our moral community, but it does not draw a clear demarcation line. Does the same hold for plants, for example? It appears that virtue ethicists are simply asking a different question than philosophers like Singer or Regan. They are not concerned with the question of why certain entities belong to the moral community and others do not. Rather, they are more concerned with establishing the

correct attitude of moral actors towards morally considerable beings. By emphasizing virtues and morally desirable characteristics, they can only say something about moral considerability to a limited extent and even less about moral significance. In fact, one can wonder if they are even concerned with the moral status-question at all.

## Implications for Fish

When we relate the foregoing exposé about intrinsic and extrinsic property accounts to our case-study of the African catfish (and to fish in general), what can we say? First, do these fish have moral status, defined in terms of being morally considerable? As we saw, for Singer only sentience counts for moral considerability, while Regan also demands more complex cognitive capacities. The research by the physiologists in our group is relevant for the intrinsic properties approach in animal ethics, because it will provide an insight into the characteristics of these animals and might give us some insight into their interests. Initial results show that increased levels of cortisol can be measured in African catfish, for instance after transport, pointing to the presence of stress.<sup>8</sup> However, the questions whether African catfish experience pain and have more complex cognitive capacities, are more difficult to answer.

Let us have a look at pain, for example. We can distinguish between two different phases of pain. There is an unconscious phase where the nervous system automatically responds to whatever is damaging an entity: This is called nociception (DeGrazia 1996). It has been established that many fish have a nervous system and have nociceptors (Braithwaite 2010). Nociceptors send a signal to the spinal cord and this causes an immediate reflex response. Only in the second phase, when the spine sends a signal to the brain, one consciously experiences the pain (Braithwaite 2010). The question that is debated is whether the second phase occurs in fish (Braithwaite 2010; Rose 2002). The moral considerability question, therefore, demands scientific insight into nociception as well as scientific research to find out how conscious fish are.

Some raise doubts about the idea that fish can experience pain. This is because fish cannot tell us that they are in pain, we cannot hear them scream, and it is hard to read their facial expressions, and we therefore have to devise tests to find out. But the design of these tests and the interpretation of the test results can be called into question. For example, in choice-experiments animals are given a choice of two options one of which they have to work harder for. If they are prepared to do the work, it is assumed that they prefer a certain situation, for example because it is less painful. However, skeptics argue that from the behavior of animals that is classified as pain behavior we cannot automatically infer that animals subjectively experience pain. Bermond (1997), for example, cites evidence of human patients with spinal cord lesions who showed pain behavior but reported not feeling any pain. Of course, the question is what can be inferred from this evidence. It shows that in

<sup>8</sup> Personal communication with Remy Manuel and Jeroen Boerrigter.

extraordinary circumstances pain behavior and pain perception can be separated, but does it tell us something about the normal state of affairs regarding pain perception? Whether these assumptions and interpretations of ethologists are indeed questionable is a matter for philosophical reflection, particularly in the field of the philosophy of mind. The attribution of moral considerability to fish on the basis that they can suffer, therefore, is not self-evident and while scientific input is necessary for this, it alone cannot settle the matter. Certain philosophical interpretations are also necessary to make the step from nociception to awareness of pain.

Despite the doubts raised by some, the general consensus among fish researchers appears to be that fish do experience pain (Braithwaite 2010; Roques et al. 2010; van de Vis et al. 2003). Yet, among the animal ethicists who write about fish disagreement reigns. Singer (1975, pp. 171–174), for example, has argued that we should take the interests of fish into account and DeGrazia (1999, p. 29) assumes that fish are sentient and thus morally considerable, albeit less significant than humans, because they are “cognitively extremely primitive in comparison with humans.” Gary Varner, on the other hand, has argued that beings that have interests are morally considerable and in order to have interests one needs to have desires. He cites research that shows that there is some evidence for holding that reptiles and amphibians have desires, stronger evidence that birds are capable of having desires and even stronger that shows that mammals have desires, while the evidence for desires in fish is rather weak (Varner 1998, chapter 2). Similarly, Regan (1983, p. 29) does not appear to include fish into the moral community, as he defines the range of subjects-of-a-life as “normal mammals over one year old.” Regan seems to presuppose that fish do not have the qualities necessary to be a subject-of-a-life, yet he is willing to change the scope of the moral community when empirical research shows us otherwise.

However, if it is already difficult to establish whether fish feel pain, it is even harder to establish whether they possess the cognitive capacities required by Regan and Varner. Tests are being done to establish, for example, how much memory certain fish have. As fish are anatomically quite different from us, it takes a lot of imagination to devise tests to establish whether fish can act intentionally or have a sense of the future. Along the way certain interpretations have to be made, that are often not value-neutral. While we need empirical research to show us whether the animals experience pain or stress or have other cognitive capacities, we, therefore, need to bear in mind that test results still need to be interpreted. In fact, these capacities only get their meaning and value the moment they are judged from the standpoint of a specific normative theoretical framework. Moreover, if we want to establish not only moral considerability, but also significance on the basis of intrinsic properties, we need to have some way of comparing pain levels and cognitive capacities of fish, which is no small feat. One could imagine that even more value assumptions come in when we make such comparisons. While establishing moral significance for mammals is already difficult, in the case of fish we simply lack morally relevant facts. Empirical research primarily focuses on pain perception and some cognitive characteristics, such as presence of memory and preferences, but not much is known yet about higher cognitive capacities in fish. Conditioning experiments carried out in the research of the physiologists in our

group only makes a start with this difficult but important question. One major problem is that the central nervous system, including the brain, of fish is so different from that of mammals. This could mean either that fish lack higher cognitive capacities, because they do not have the brain structures that account for these capacities in humans, or that they express similar functions in different parts of the brain.<sup>9</sup>

What are the implications of our knowledge deficit about fish cognition for theories of moral status? These implications will differ for different moral theories. Utilitarians would argue that we should not harm the welfare of fish, because the pleasure humans get from the taste of fish does not weigh up to the harm that is done to fish in aquaculture. So the knowledge deficit is not a problem for a utilitarian in the sense that it does not change the utilitarian view on moral considerability and it gives us an indication for how to adjudicate in conflicts that involve harm to fish welfare. However, the knowledge deficit has consequences for preference utilitarians regarding the moral significance question. If it is unclear what the cognitive abilities of fish are, it is hard to establish whether they have preferences, in particular the preference to stay alive. Preference utilitarians can therefore not take a stance on the question whether it is problematic to painlessly kill fish if they have had an otherwise pleasant life. The physiologists in our group have only just made a start to establish catfish preferences, by teaching them to press different pendulums for different types of food. A lot more work needs to be done before the significance question can be dealt with satisfactorily. For deontologists the knowledge deficit is already problematic on the level of moral considerability, but is even more problematic when weighing interests of humans against animals, as this is based to an even greater extent on knowledge about cognitive complexity.

Another problem for both utilitarians and deontologists arises when they need to give content to the concept of welfare. On the basis of their theories of moral status we might say that we need to take the welfare of animals into account, but what does this mean exactly in the case of fish? If we do not have much information about the preferences and level of consciousness of fish, it will be hard to give content to the concept of fish welfare. Animal welfare can refer to different situations. For example, it can refer simply to the absence of suffering, but it can also refer to the presence of positive experiences or to the ability of an animal to display its natural behavior. The choices one makes regarding the concept of welfare will be determined by the normative assumptions of one's theoretical framework. In case one interprets welfare as primarily the absence of suffering more can be said on the basis of empirical research than when one has a more demanding interpretation of welfare.

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<sup>9</sup> There is evidence that shows that certain birds, in particular jays and crows, have complex cognition even though they lack a prefrontal cortex, which is the part of the brain that is linked to higher cognitive functions in humans and apes. In the brains of jays and crows these "prefrontal" functions can be found in the part that is analogous to the cortex, the mesopallium and the nidopallium. It appears that prefrontal function has been developed through convergent evolution in jays and crows. See Emery and Clayton (2004) and Fonken et al. (under review). It is possible, at least theoretically, that a similar process of convergent evolution has taken place in some fish species.

What are the implications of our research into the African catfish for extrinsic property accounts? For these accounts establishing sentience and cognition in fish is not so important, as moral considerability is “acknowledged” or “recognized” rather than argued for on the basis of empirical evidence. However, for these approaches we need scientific research as well, for example to find out how the animals react to farmers and handlers. After all, these could show to what extent the animals make an appeal on us. Also, research is needed to establish whether fish can have meaningful relationships with humans. Finally, sociological research may be relevant to find out how people in close contact to the animals perceive them and to understand what they would consider virtuous behavior towards them.

### Normative and Conceptual Choices

So far, it has become clear that there is no theory-neutral standpoint from which to discuss moral status. In fact, the moral landscape of the different approaches outlined above is so different that they even ask different questions about animals. If we look at our first question, whether animals are morally considerable, some ethicists start with the question whether animals have interests, while others emphasize our commitments towards animals as arising from our relationships or our virtues. Relational and virtue ethical approaches tend to have a richer moral terminology than rationalistic approaches; they do not only focus on what is our duty or obligation, but also on what is allowed or permitted and what is the proper attitude to display.<sup>10</sup> The answers to the questions of what an animal’s moral significance is and how we should adjudicate in cases of conflict are also dependent on one’s normative ethical framework. For some (such as Singer) these questions overlap, while for others these are two independent questions. Of course, how one argues for moral considerability of animals will influence one’s view on their moral significance, and moral significance will inform how we adjudicate conflicts, but it is conceivable that two theories use the same criterion for establishing moral considerability—say sentience—but have different views on moral significance and adjudication, because the latter is dependent on their normative ethical theories.

The upshot of this discussion is that the moral status question on its own is not that informative in a practical context. There does not even seem to be one moral status question that all theories ask. A view on moral status tells us whose interests we should take into account, and perhaps even how much those interests should weigh in theory, but it does not help us make decisions in concrete cases or justify particular decisions. In order to make practical decisions we need to look at the specific context in which we find ourselves and different considerations will play a role. For practical decisions, then, we need to rely to an even greater extent on a normative theory of action. If animal ethics wants to be able to provide tools that can be used in practice, where people are concerned with how to behave towards

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<sup>10</sup> Besides these four approaches, there are also multi-criterial approaches to moral status, such as that of Warren (2000) that argue that there is more than one criterion that is valid for attributing moral status, that there are different types of moral obligations, and that both intrinsic and extrinsic properties play a role.

animals, then more ethical work needs to be done on the moral significance and the adjudication questions. To this end the conceptual and normative assumptions of different theoretical approaches to moral significance and adjudication will need to be made more explicit.

Moreover, as has become clear in the foregoing, ethicists need to work more closely together with empirical scientists. Judgments about the moral status of fish are still tentative, because at this stage we simply lack many morally relevant facts. The lack of knowledge, particularly regarding cognitive capacities of fish, is more problematic within some theoretical perspectives and regarding some questions than others. It is less problematic for utilitarians in as far as they focus on sentience. However, when utilitarians want to make statements about fish welfare or when they want to decide whether the killing of fish is problematic they need to resort to information about cognitive capacities of fish that is to a large extent still lacking. For deontologists the knowledge gap is problematic in as far as the moral considerability question is still inconclusive and when decisions need to be made in cases of conflict. In general it could be said that the knowledge gap poses more problems for establishing moral significance than for moral considerability, and arguably even more problems when we need to resolve conflicts in practice. Extrinsic property accounts are dealing with a knowledge gap that is different in kind. While they rely to a lesser extent on empirical information about the capacities of fish they need information about the behavior of fish, about human-fish interactions, and sociological information about attitudes towards fish. This poses a problem for them, for example because saying that we have more duties towards fish in our care does not specify yet what the content of those duties are. Ultimately this also presupposes empirical knowledge about fish welfare or interests.

## Conclusion

As aquaculture is still in an early developmental stage, but at the same time we are dealing with a sector that is growing rapidly, we have reached a point where discussion about sustainability and fish welfare is both timely and indispensable. A standard response to fish welfare problems in aquaculture is to primarily approach this as an applied ethical question, in which ethical tools or moral guiding principles are sought in order to reach a practical solution for welfare problems. However, this already assumes that fish matter morally and that we know how much they matter, but as we hope to have made clear, this is not a self-evident assumption. With the help of, for example, the ethical matrix a leap is made to practice that in our eyes is too hasty. It is too hasty for two reasons: firstly, it is necessary to make more fundamental presuppositions explicit, and secondly, regarding fish our knowledge is still limited.

The applied ethical response to fish welfare problems tacitly assumes a discussion about moral status that we think should be made explicit. We have aimed to show that this discussion on moral status is only successful if three questions are explicitly distinguished: first, why would fish be morally considerable?; second, how morally significant are fish?; and third, how should we adjudicate in the case of a conflict of interest between fish and humans or other



animals? The first only establishes what entities are part of the moral community, while the second gives an answer to the question of how we should treat these entities and the third answer the question how to weigh their interests in the case of conflicts of interest. We have aimed to show that the first question only has limited applicability. Moral considerability only establishes an important starting point, but most of the work needs to be done on the significance and adjudication questions. Neither can be answered in a theory-independent way. There does not even seem to be one and the same moral status question that all theories ask. The answer to the question of what entities possess moral considerability is heavily influenced by the central conceptual choices of one's theoretical ethical framework and the answers to the significance and adjudication questions are dependent on one's normative framework. A successful discussion on moral status, then, requires that parties are aware of their ethical and normative presuppositions. The fact that theories on moral status are prestructured by theoretical ethical and normative frameworks ultimately has an influence on the moral decisions that are made in practice. For example, a question that rises in some theories, such as Regan's animal rights theory and in virtue ethics, but not in others, is whether we should farm fish in the first place. Also, some theories are more open to weighing different interests, while others are more absolutist. Especially because we encounter a knowledge gap regarding fish it is necessary to reflect on our normative presuppositions. We encounter factual uncertainties and the relevance of these uncertainties depends on one's moral principles and values. We illustrated these points with the case-study of the farming of the African catfish, which also showed the importance of cooperation with empirical scientists. The questions asked of empirical scientists, however, will differ according to the different ethical approaches.

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## References

- Bergqvist J., & Gunnarsson, S. (2011, Sep 29). Finfish aquaculture: Animal welfare, the environment, and ethical implications. *Journal of Agricultural and Environmental Ethics*. Online FIRST™.
- Bermond, B. (1997). The myth of animal suffering. In M. Dol, et al. (Eds.), *Animal consciousness and animal ethics, perspectives from the Netherlands* (pp. 125–143). Assen, NL: Van Gorkum & Comp. B.V.
- Bostock, J., McAndrew, J. B., Richards, R., Jauncey, K., Telfer, T., Lorenzen, K., et al. (2010). Aquaculture: Global status and trends. *Philosophical Transactions of the Royal Society of London. Series B, Biological sciences*, 365, 2897–2912.
- Braithwaite, V. (2010). *Do fish feel Pain?*. Oxford: Oxford University Press.
- DeGrazia, D. (1996). *Taking animals seriously. Mental life and moral status*. Cambridge: Cambridge University Press.

- DeGrazia, D. (1999). The ethics of animal research. What are the prospects for agreement? *Cambridge Quarterly of Healthcare Ethics*, 8(1), 23–34.
- DeGrazia, D. (2008). Moral status as a matter of degree. *Southern Journal of Philosophy*, XLVI(2), 181–198.
- Emery, N., & Clayton, N. (2004). The mentality of crows: Convergent evolution of intelligence in corvids and apes. *Science*, 306, 1903–1907.
- Fonken, Y., Bovenkerk, B., Meijboom, F., & Stafleu, F. The role of brain structures in determining moral status, problems of the analogy postulate. *Animal Welfare Journal* (under review).
- Gezondheidsraad. (2006). *Richtlijnen Goede Voeding*. Den Haag.
- Goodpaster, K. E. (1978). On being morally considerable. *The Journal of Philosophy*, 75(6), 308–325.
- Grigorakis, K. (2010). Ethical issues in aquaculture production. *Journal of Agricultural and Environmental Ethics*, 23(4), 345–370.
- Gruen, L. (2010). *The Moral status of animals*. In E. N. Zalta (Ed.), *The Stanford encyclopedia of philosophy* (Fall edition ed.). <http://plato.stanford.edu/archives/fall2010/entries/moral-animal/>
- Leun, P., Lee, C. S., & O' Bryen, P. (Eds.). (2007). *Species & system selection for sustainable aquaculture*. Ames: Blackwell.
- Martins, C. I. M., Aanyu, M., Schrama, J. W., & Verreth, J. A. J. (2005). Size distribution in African catfish (*Clarias gariepinus*) affects feeding behavior but not growth. *Aquaculture*, 250(1–2), 300–307.
- Mepham, B. (2005). *Bio-ethics for the biosciences: An introduction*. Oxford: Oxford University Press.
- Millar, K., & Tomkins, S. (2007). Ethical analysis of the use of GM fish: Emerging issues for aquaculture development. *Journal of Agricultural and Environmental Ethics*, 20, 437–453.
- Milovanovic, M., & Radovic, B.V. (2008). Sources, nutritional & health values of  $\Omega 3$  &  $\Omega 6$ - fatty acids. *Journal of Agricultural Sciences*, 53(3).
- Palmer, C. (2003). An overview of environmental ethics. Andrew Light & Holmes Rolston. *Environmental ethics, an antholog* (pp. 15–37). Blackwell.
- Regan, T. (1983). The case for animal rights' partially reprinted. In Armstrong, S. & Botzler, R. (Eds.) (2003). *The animal ethics reader* (pp. 17–24). Routledge: London.
- Roques, J. A. C., Abbink, W., Geurds, F., van de Vis, H., & Flik, G. (2010). Tailfin clipping, a painful procedure: Studies on Nile tilapia and common carp. *Physiology & Behavior*, 101(4), 533–540.
- Rose, J. D. (2002). The neurobehavioral nature of fishes and the question of awareness and pain. *Reviews in Fisheries Science*, 10, 1–38.
- Singer, P. (1975). *Animal liberation. A new ethics for our treatment of animals*. New York: New York Review.
- Swart, J. J. A. (2006). Ethiek uit het keurslijf. *NVBE Nieuwsbrief*, 13(3), 2–4.
- Taylor, P. (1986). *Respect for nature. A theory of environmental ethics*. Princeton, NJ: Princeton University Press.
- van de Nieuwegiessen, P. G. (2009). *Welfare of African catfish: Effects of stocking density*. Wageningen: Wageningen University.
- van de Vis, H., Kestin, S., Robb, D., Oehlenschläger, J., Lambooij, B., Münkner, W., et al. (2003). Is humane slaughter of fish possible for industry? *Aquaculture Research*, 34(3), 211–220.
- van Eijk, W. (2008). Nederland op de bres voor duurzame viskweek. *Visionair*, 8, 28–31.
- Varner, G. (1998). *In nature's interests > interests, animals rights, and environmental ethics*. Oxford: Oxford University Press.
- Visak, T. (2010). Do animals count for less? In C. M. Romeo Casabona, L. Escajedo San Epifanio, & A. E. Cirión (Eds.), *Global food security: Ethical and legal challenges* (pp. 423–428). Wageningen: Wageningen Academic Publishers.
- Visak, T. (2011). *Killing Happy Animals. Explorations in Utilitarian Ethics*. PhD thesis. Utrecht University.
- Warren, M. A. (2000). *Moral status. Obligations to persons and other living things*. Oxford: Oxford University Press.
- Willett, W. C. (2008). Review article. Overview and perspective in human nutrition. *Asia Pacific Journal of Clinical Nutrition*, 17(s1), 1–4.