

Reconsidering the moral status of fish

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Abstract

In the past, ethical theories such as utilitarianism and deontology have not given much consideration to fish, and relegated fish to a low moral status. In recent years, concerns over fish welfare stemming from environmental considerations and the growth of the industry of aquaculture have resulted in a newfound interest in the lives of fish. There is now enough evidence to suggest the presence of morally relevant capacities previously thought to be absent in fish. The discrepancy between past beliefs and current scientific findings may be a result of inappropriate measuring methods during research. Tests aiming to detect or measure certain capacities in mammals are not always adequate for testing and measuring the same capacities in fish. As a result, some capacities remained undetected. Our inability to correctly detect and measure morally relevant capacities in fish resulted in fish suffering from little moral consideration. From a relational perspective, fish are not very successful in evoking empathy and sympathy, and this can be seen as a result of evolutionary differences, as fish evolved to adapt to an environment extremely different from humans. As a result, fish receive a lower moral status than other animals that are in a similar relation to humans.

Because in the past fish were granted a lower moral status as a consequence of our lack of appropriate tools to detect their capacities, it can be helpful to assess whether our current tools are the most adequate. The answer to the question of the moral status of fish relies so heavily on the framework we are working with, and we owe fish to find the framework that works to their best advantage.

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Introduction

Most people are familiar with fish, either as pets, sport, or most commonly food items.

Despite our perceived familiarity with at least some species of fish, there is very little we actually know about them. Fish are not like humans, in fact, they are not much like each other. The group we categorically refer to as “fish” encompasses roughly 60% of all known species of vertebrates (Allen 2011). Such a large group includes several taxonomic groups and more than 32,000 species, and its boundaries are not necessarily biological. For example, tuna is more closely related biologically to humans than to sharks (Allen 2011). Furthermore, the differences extend beyond biology, as our limited knowledge has shown that different species of fish have different mating and reproductive systems, that not all fish are cold-blooded, and that their sensory mechanisms can be quite diverse (Allen 2011).

Talking about fish, then, can get quite confusing.

The moral status of fish depends on which ethical framework is at work. Traditionally, ethical theories have remained largely unconcerned with fish, or tend to grant them a low moral status. However, this lower moral status for fish may not be warranted.

Capacities-based approaches such as preference utilitarian Peter Singer and deontologist Tom Regan are two leading theories in animal ethics. Capacities-based approaches focus on an intrinsic quality of an individual which makes it worthy of moral consideration. The first chapter will examine the way these theories argue for or against the granting of moral status to non-human animals. In Singer’s theory, the line is drawn between those who possess moral status and those who do not based on the capacity for suffering. As suffering is a pre-requisite for having interests, in a preference utilitarian theory it is the essential capacity (Singer, pg34 ed. Armstrong & Botszler 2003). For his part, Regan makes a distinction between moral agents and moral patients. Some moral patients are some who fulfil certain criteria are granted moral status, namely, subjects-of-a-life (Regan, pg18 ed. Armstrong & Botszler 2003).

In contrast to capacities-based approaches, Clare Palmer’s relational approach to animal ethics focuses on the special moral duties which arise from human-animal relations. Palmer argues that we have special moral duties to specific individual animals with which we have a relation, and refers to this intuition as the LFI (Palmer 2010, pg63).

Until recently, we knew very little about the capacities of fish. Because for capacities-based

approaches the capacity for suffering is crucial, whether fish feel pain is a core issue. Pain experience in humans and mammals is primarily connected to the neocortex. Fish lack a neocortex, which led to the conclusion that fish did not have the capacity for conscious pain experience. However, pain is a sequence of events rather than a single response, and in humans it involves areas other than the neocortex, such as the brain stem (Segner 2012, pg32). Careful research of this process on fish suggests that, contrary to previous assumptions, at least some species of fish have the capacity for conscious pain experience. Furthermore, the cognitive abilities of fish are much higher than the mythical 2-second memory of goldfish¹. There is now evidence that suggests fish have the capacity for access consciousness, phenomenal consciousness and even monitoring or self-consciousness (Braithwaite 2010).

What is worth noting is not only that fish have in the past been granted a lower moral status, but that this was a direct result of using inadequate measuring methods for the capacities of fish. Concepts such as consciousness and sentience can have different interpretations. How we approach the question of whether fish are conscious depends on our own interpretation of consciousness, and this will in turn affect our interpretation of scientific facts.

Similarly, the definition of pain as a process can have an impact on whether we consider fish have the capacity for suffering. Arguably, a few decades ago fish would not have received moral status based on capacity for pain experience (Segner 2012, pg77).

Relational approaches, for their part, tend to not favour fish. Because fish are so different from us, we may feel disconnected and have trouble empathising with them. Special moral duties can arise from affective and kinship relations, but fish are not very successful at forming strong bonds with humans. Furthermore, some fish have the same relation to humans as domesticated mammals but often do not receive the same moral consideration. For example, fishing can be a cruel process for fish but most people do not object with the same intensity they object to the cruel treatment of mammals such as dolphins.

What could be the reason behind the inability of fish to form the types of relations with humans that give rise to moral duties?

As our knowledge increases, our attitudes towards non-human animals and the rightful treatment of them have changed. As environmental concerns and the rise of aquaculture fuel

¹ This myth has long been disproven.

the quest for understanding the life of fish, the definitive moral status of fish is still not clearly defined.

Chapter One: Theories



(Stills from Reiner Maria Matysik's "Junge und Affe" [Boy and Monkey]
from the exhibition project *Becoming Animal/Becoming Human*²)

Many currently common human habits are highly dependent on animals. Removing all animal products from human consumption would affect areas of life one would not immediately suspect, as many items such as plastic shopping bags, fabric softener and even fireworks³ can contain ingredients of animal origin. Animals are intricately related to humans in more obvious ways as well, by being part of our workforce, our diets, and our families. From spoiled Chihuahuas to chicken burgers to logging elephants, animals are an important part of humans' lives.

It is no wonder then, that many of our human concerns are related to animals, and morality is no exception as philosophers and scientists attempt to answer complicated questions regarding the moral considerability and significance of non-human animals. How can we differentiate those individuals worthy of inclusion in moral considerations from those who are not? Does it make sense to include non-human animals in our moral considerations?

² More information on the artist and the exhibition can be found at <http://becoming-animal-becoming-human.animal-studies.org/html/matysik.html>

³ Manufacturers use animal fat as a "slipping agent" to reduce friction on plastic bags, while other plastics contain keratin protein from chicken feathers. Furthermore, some fabric softeners contain dihydrogenated tallow dimethyl ammonium chloride, which comes from the cattle, sheep and horse industry, while stearic acid is sometimes used as an antioxidant in fireworks (and although stearic acid can be sourced from plants, it is not always so). <http://www.treehugger.com/green-food/9-everyday-products-you-didnt-know-had-animal-ingredients.html>

Whether an individual has any moral status can be understood in two ways, by asking two related questions. Firstly, one can ask whether an individual is part of the moral community. If so, the interests of this individual should be taken into account (Bovenkerk & Meijboom 2011 pg2). This question is of moral considerability, as an individual either is or is not part of the moral community. But one can also ask the second question, a question of significance: what is the moral status of an individual in reference to other individuals? This question supposes levels of moral status, a ranking among the members, and thus allows for gradation (Bovenkerk & Meijboom 2011 pg2). One individual can have a higher moral status than another, so the question extends beyond a yes or no answer.

Whether one takes the meaning of moral status in the first or second sense depends on the moral framework one refers to. For example, some authors (such as DeGrazia, 2008) argue that since morally relevant characteristics can be present in varying degrees, there is gradation in moral status as well. For others (such as Visak, 2010) the mere presence of relevant characteristics is enough, regardless of the degree or amount in which they are present.

Thus, there is no basis for determining the moral status of animals, or any individual, that is theory-neutral, since the concept of moral status itself is defined by the chosen ethical framework.

The arguments to grant or deny moral status to an animal can be very varied, each with its own weaknesses and strengths. In this chapter, I will examine how various theories locate the place of animals on the moral space, and the problems and limitations with these attempts. The ethical theories I will be discussing are Peter Singer's utilitarianism and Tom Regan's deontology, which are both dominant theories in the field of animal ethics and focus on intrinsic capacities of individuals. I will also be discussing Clare Palmer's relational ethics, which provides one of the main counterpoints to capacities-based, focusing instead on the extrinsic qualities of individuals when considering moral status. By looking at the question from various different perspectives, we can gain a more meaningful insight into the question of moral status of non-human animals.

Capacities-based approaches

Authors have approached the question of ascription of moral status by looking at what

exactly makes an individual worthy of moral consideration.

Ethical frameworks such as deontology and utilitarianism approach this task by focusing on intrinsic characteristics of certain individuals which make them morally distinctive. In other words, for these theories, an individual intrinsically has or does not have moral status, intrinsically is or is not morally relevant, by way of possessing morally relevant capacities. Deontologist Tom Regan argues for animal rights in a deontological perspective by introducing the concept of subjects-of-a-life. Regan distinguishes those individuals who have certain capacities as belonging to a category deserving of special consideration (Regan, pg18 ed. Armstrong & Botszler 2003). The relevant capacities for subjects-of-a-life are the capacity to perceive and remember, to act intentionally and have a sense of the future (including their own), to be self-aware or self-conscious, and to have an emotional life, psychophysical identity over time, a kind of autonomy and experiential welfare. Those capacities allow individuals to have a subjective experience of their own lives, and their lives may fare well or badly, making them subjects-of-a-life. Regan argues that being subject-of-a-life is a significant morally relevant characteristic, because subjects-of-a-life can be on the receiving end of the right or wrong acts of moral agents, and it is in this respect that they are like moral agents (Regan, pg18 ed. Armstrong & Botszler 2003).

On a similar line of thought, Peter Singer, a preference utilitarian who has been at the forefront of the utilitarian approach for animal ethics for several decades, introduces the principle of equal consideration of interests, by which equal interests are counted equally for all individuals regardless of their capacities or other particularities, most importantly, regardless of whether these individuals belong to the same race or even the same species as us (Singer, pg33 ed. Armstrong & Botszler 2003). For Singer, the intrinsic characteristic that is vitally relevant for moral status is the capacity and capacity to suffer (and experiencing joy or enjoyment), as this is a pre-requisite for having interests (Singer, pg34 ed. Armstrong & Botszler 2003).

Both theories consider those individuals who can be negatively affected by the moral decisions of moral agents, individuals who can experience joy or suffering, whose lives can fare well or badly. Furthermore, the basis for the granting of moral status in both theories stems from the qualities which make these individuals in some respects similar to moral agents.

As Regan's and Singer's theories are based on capacities, to deny moral status to non-human

animals based on their being not-human is not justified. Furthermore, Singer argues that granting moral status based on capacities such as reason puts us in paradoxical situations with counter-intuitive results. For example, it can be argued that a chimpanzee has higher cognitive capacity than a human baby, yet it is difficult to argue that the chimpanzee should have a higher moral status. But if special consideration is awarded for the baby on the basis of his humanity rather than his reason, it is an act of speciesism, as we are differentiating on the basis of species alone. Speciesists give greater weight to the interests of members of their own species when there is a clash between their interests and those of another species (Singer, pg34 ed. Armstrong & Botszler 2003).

Regan's theory likewise does not allow for differentiations to be made based on species alone. For Regan, all subjects-of-a-life have inherent value, because the subject-of-a-life criterion identifies a relevant similarity between moral patients and moral agents that makes it intelligible to view them as inherently valuable (Regan, pg20 ed. Armstrong & Botszler 2003). Moral agents are those individuals who have various sophisticated capacities, in particular, "the ability to bring impartial moral principles to bear on the determination of what, all considered, ought to be done (Regan, pg17 ed. Armstrong & Botszler 2003)". Thus, moral agents have the capacity to make right or wrong decisions and can be held accountable for those choices. Moral patients, on the other hand, lack the pre-requisites that would allow them to make morally right or wrong choices in a way that they could be held accountable for those decisions (Regan, pg17 ed. Armstrong & Botszler 2003). Moral patients can sometimes present a paradigm as in the case of human infants, young children, the mentally enfeebled and even future generations.

Regan argues that the line between the individuals who fit in the category of moral patients (thus, subjects-of-a-life) and those who do not may be difficult to draw, and for this reason, the guidelines we use to draw it should be the same for humans as for some animals, as some humans also fall in the category of moral patient.

For Regan, thus, animals that satisfy the subject-of-a-life criterion receive moral status, regardless of whether they are human animals or not.

Aside from the argument against speciesism, both Singer and Regan argue for the granting of moral status to non-human animals by appealing to the argument from marginal cases.

Singer argues that granting moral status on the basis of possessing a certain amount of, as is commonly put forward, capacity to reason, would have undesired results. Referring back to

Jeremy Bentham, Singer argues that if moral status were granted on the basis of capacity to reason, then a dog should have higher moral status than a human new-born (Singer, pg33 ed. Armstrong & Botszler 2003). Regan similarly points out that denying moral status to moral patients (amongst which, subjects-of-a-life) would deny it to human infants, young children and the mentally disabled as well (Regan, pg15). Because some humans and animals both belong in the category of moral patients, drawing the line between moral agents and moral patients should be decided the same for non-human animals as for humans (Regan, pg18 ed. Armstrong & Botszler 2003).

But granting moral status to non-human animals can be problematic.

Regan's subject-of-a-life demarcates a categorical status shared by all moral agents and patients (Regan, pg21 ed. Armstrong & Botszler 2003), and Singer argues for equal consideration of interests. But if we are to respect the interests of animals, how can cases of conflict between interests be resolved?

Regan suggests that in cases of comparable harm, the rights of the many should override the rights of the few, because choosing to override the rights of the many would be to choose to override an equal right a greater amount of times when it was possible to choose to override such right less times (Regan, pg 22 ed. Armstrong & Botszler 2003). Often, however, the harm done against human beings is not comparable to the harm done to an animal, as evident by the example of four men and a dog on a lifeboat⁴, because the harm caused by the loss of a human life is greater than the loss of the life of a dog.

However, when the harm is not comparable, when the harm to the few would make them considerably worse-off than any of the many would be if we chose any other option when deciding to override the rights of the many versus few innocent individuals, if there are no special considerations, then the rights of the many must be overridden (Regan, pg23 ed. Armstrong & Botszler 2003).

As for Singer, although he does concede that the value of human life can be higher than the value of non-human animals for reasons unrelated to speciesism, equal consideration of interests does not allow major interests to be sacrificed for minor interests (Singer, pg37 ed. Armstrong & Botszler 2003). For this reason, he suggests a precautionary approach that would have far-reaching implications for humans, as Singer argues that it is best to reject the

⁴ In this scenario, four men and a dog crash in a boat. The lifeboat can only hold the weight of four. Because dogs have fewer opportunities for satisfaction than humans, more is lost by the loss of a human life than by the loss of a dog, so it would be right to leave the dog behind.

killing of animals for food altogether (unless when necessary for survival), because their lives are worth more than our taste (Singer, pg37 ed. Armstrong & Botszler 2003).

Another problem with capacities-based approaches lies in determining whether individuals or species possess the required capacities. Human knowledge regarding many species of animals is limited, and the facts we do have about animal biology need to be interpreted, and these interpretations can vary. This leads to the question of how we can know whether an individual or a species possesses the morally relevant intrinsic characteristics. In this respect, too, Reagan's and Singer's theories are similar.

As Singer's theory focuses on interests (or the capacity to suffer or experience joy), it requires a closer understanding of the lives of others, including those of animals. Singer argues that if a being suffers, there can be no moral justification for not taking that suffering into account, and that all suffering should be counted equally (Singer, pg34 ed. Armstrong & Botszler 2003).

However, an equal amount of suffering can translate differently across species, and comparisons of the sufferings of different species can be difficult to make. This, however, does not mean that we can never come to an agreement as to how much suffering is unacceptable. For example, Singer suggests that if we consider a certain amount of pain too much for one species, then that measurement should be the same across species (Singer, pg34 ed. Armstrong & Botszler 2003).

But how can we know how much pain another individual is feeling?

Singer argues that although we cannot directly experience the pain of another being, we can deduce from their behaviour whether they are experiencing it, and that the basis of belief that another human can feel pain and that an animal can feel it too are similar (Singer, pg40 ed. Armstrong & Botszler 2003).

Furthermore, we can infer that animals feel pain when they have an anatomically parallel or biologically comparable capacity to feel pain. In the case of animals, this is usually indicated by the presence of a nervous system (Singer, pg40 ed. Armstrong & Botszler 2003).

This approach works well for pain, but it can sometimes present us with difficulties. While we may know that an animal would prefer not to feel a certain amount of pain, we may not know whether it would prefer that amount of pain over something else, for example, loneliness or hunger. It is not easy to understand the preferences of animals. As humans, we can only take our own lives as reference point when understanding what is important and

what matters in the lives of animals and assume that there are enough similarities to make this possible. These theories require that we assume that animals have priorities, preferences and values similar to ours, which is hard to do when we know so little about certain species (Bovenkerk & Meijboom 2011).

Furthermore, these capacities-based approaches do not seem to give enough consideration to the role played by emotions and relations in moral decisions.

Relational approach

Clare Palmer argues that capacities-based approaches such as Regan's and Singer's disregard our intuition that we have more moral responsibility towards certain individual animals than toward others, even within the same species. Palmer refers to this intuition as the *laissez-faire* intuition (LFI), "the idea that, while we have obligations to assist and care for domesticated animals, we have no such obligations toward animals in the wild (Palmer 2010, pg63)." Like capacities-based approaches, Palmer's theory argues for the moral status of animals, with the basic principle that we have a moral duty not to harm animals which have moral status (Palmer 2010, pg77).

However, while capacities-based approaches translate as having the same duties to all individuals who share the same capacities or fulfil certain criteria, Palmer's argues that LFI shows that relations play an important role in making ethical decisions regarding animals. While we have a moral duty to not harm any animal, Palmer argues that our relations with animals can give rise to other moral duties.

Palmer focuses on particular morally relevant human-animal relations namely kinship-, affective or sentimental-, causal- and contractual relations. By relation, Palmer means having had an effect on another at any point in time, or the existence of an interaction that "makes a difference in states of affairs (Palmer 2010, pg48)" of another.

An affective or sentimental approach is based on moral emotions, such as empathy, sympathy and care. Palmer argues that it may be possible that just as sentiments and emotions play a role in humans' ethical relations with each other (as proposed by care ethicists), these emotions and sentiments play a role in humans' ethical relations with animals (Palmer 2010, pg52).

Similarly, a kinship approach is based on the bonds created by being a member of a community. Palmer argues that humans belong to communities that include not only other humans, but animals as well, and this closeness can give rise to bonds of sympathy, trust and affection which give rise to moral duties (Palmer 2010, pg54).

More important to the relational approach to animal ethics, however, are causal relations. Causal relations are cases in which humans are (partially or fully) responsible for causing the situations and contexts that animals find themselves in. Palmer argues that care ethics support the idea that causal relations are morally relevant, as we have greater responsibility for distress or harm to which we are causally related (Palmer 2010, pg54). Palmer illustrates this by pointing out that we feel a sense of compensatory justice to provide assistance to species that we have endangered (Palmer 2010, pg55). Furthermore, Palmer argues that humans are causally responsible for animals that have been domesticated for food, research or other utility, as these animals require human assistance to survive, and because by the actions of humans they have been removed from the natural context (Palmer 2010, pg56).

This causal relation is further developed into what Palmer refers to as the domesticated-animal contract, which provides justification for LFI (Palmer 2010, pg57).

Domesticated animals become part of human culture, gaining shelter, food and medical aid. However, this domestication changes the animals. Being separated from their natural state and being denied physical freedom, domesticated animals lack the capacity to survive in the wild (Palmer 2010, pg58).

From a contractual point of view, the domesticated-animal contract does not require “equal relative concessions from all parties (Palmer 2010, pg58)”, as the costs for humans are significantly less and the gains significantly more.

Palmer suggests that we owe more to the domesticated animals; namely, that we owe them the same as to those animals that have the same capacities, and aside from that, the added obligations from the contract. However, the idea of a “contract” as such is flawed, because animals are not equal entities freely entering the contract, and they cannot freely get out of it. Nonetheless, Palmer argues that the causal relation exposed by the idea of the domesticated-animal contract helps justify LFI.

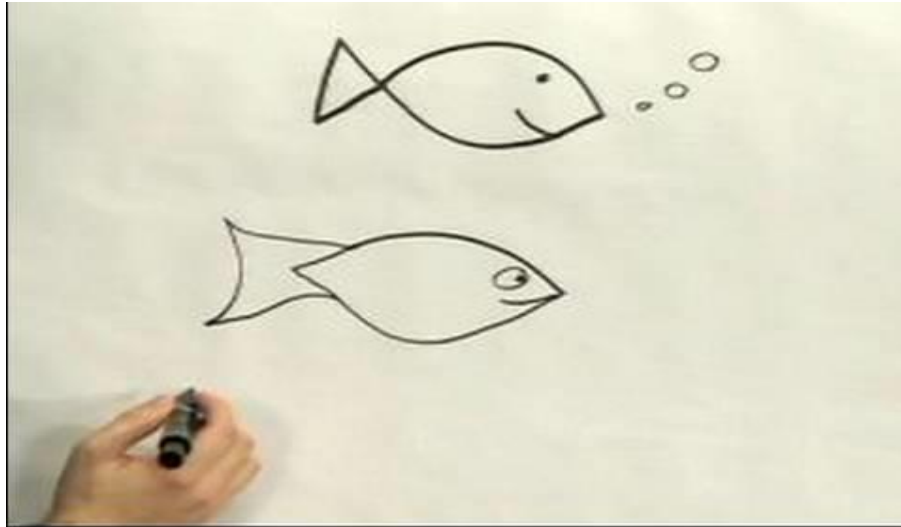
One common criticism against LFI is that it denies the principle of universalizability. The principle of universalizability argues that what is good for one under certain circumstances must be good for another under the same circumstances. Both Singer and Regan consider universalizability as a crucial principle for morality. A relational approach, however,

essentially denies the principle of universalizability arguing that, although an important principle, universalizability wrongly assumes that human predicaments are sufficiently similar (Palmer 2010, pg49).

Thus, by looking at how the relations humans have with animals can affect moral decisions, Palmer's relational account presents us with more duties towards certain individual animals, and towards certain species based on extrinsic qualities.

As stated above, whether a particular species or individual animal is granted moral status, and which duties we are owed to them, can change depending on various factors, most notable the ethical framework we work with, but also our own interpretations, assumptions and presuppositions. This will further become apparent in the next chapter, where I will attempt to locate the place of fish in the moral sphere.

Chapter Two: Fish



(Simple drawing of concept: fish ⁵)

In the previous chapter, I discussed how three ethical theories namely utilitarianism, deontology, and relational ethics deal with the moral status of animals and the most common arguments each theory puts forward, showing that decisions regarding the moral status of particular animals depend on the ethical framework one chooses to work with.

In this chapter, I will discuss the implications of each ethical framework on the moral status of fish. In doing so, I will expose the limitations of this discussion resulting from a lack of sufficient knowledge of the lives of fish, as well as the very concepts we use to define them. For example, our concept of “fish” encompasses so many species, roughly 60% of all known vertebrates. Similarly, our concepts of consciousness and pain experience are based on humans and other mammals, and thus it is difficult to apply them to fish.

Furthermore, the methods used in scientific research and their results can vary and have varied interpretations. The results of a scientific study depend on how researchers interpret the question at hand, which method they use to approach it, and how they interpret results of their tests. All of this will play a role in defining the moral status of fish as well.

⁵ Stills from Easy Drawing: How to draw cartoon fish, by Expert Village.

http://www.youtube.com/watch?feature=player_embedded&v=DSWDuQyYU6w

Capacities-based approaches

For capacities-based approaches, it is important to establish whether a certain species (or individual) possesses morally relevant capacities.

For Singer, as his theory is based on interests, the intrinsic characteristic that is at essential for moral status is the capacity and ability for suffering and enjoyment (Singer, pg34 ed. Armstrong & Botszler 2003).

This poses a problem, as it is only recently we are learning about the capacity fish have for pain experience and suffering.

One of the reasons for our lack of knowledge into the capacities of fish is that until recently, fish were not often given much consideration. And when they first emerged, concerns over fish welfare were often more firmly rooted in environmentalism and conservation of species than in the moral status of these animals (Allen, pg2 [forthcoming]).

Because of this, research into fish nociception has only included a few species and it will be a matter of time before research is carried on other species.

And it might take a considerably long time, if one takes into account that the group we commonly know as “fish” includes 60% of all known vertebrate species, making it a very large group (Allen, pg 2 [forthcoming]). This is further complicated because this group encompasses roughly 32500 species, making it the vertebrate group with the greatest variety (Froese & Pauly 2013). Fish inhabit a great variety of environments, freshwater rivers, oceans, and ponds, and each species has evolved to amazingly adapt to the specific challenges of a particular location.

With such a large and varied group, the presence of morally relevant capacities can be expected in varying degrees, so facts about one species do not necessarily hold true for another.

However, knowing whether some species of fish have the capacity for pain would suggest that if not all, at least a few other species of fish might have this capacity too.

So what do we know about fish’s capacity for pain?

Pain experience

Pain experience involves an emotional as well as a physical side, and it is not a single process

but rather a sequence of events. These events involve various parts of the nervous system and in humans it involves both unconscious and conscious components (Braithwaite 2010, pg31). There is a subjective component to pain experience as well, and this presents its own challenges as we have no direct access to the subjective experience and feelings of pain of another, much less of an animal.

This obstacle is often approached in two ways, the first of which is, as Singer suggests, that we can deduce from an animal's behaviour whether they are experiencing pain (Singer, pg40 ed. Armstrong & Botszler 2003). This is particularly challenging when it comes to fish, because fish don't normally show emotions in a way we understand. Most notably, fish "don't scream when hurt (Driessen [forthcoming])."

However, researchers have found that certain species of fish, such as trout and even glass shrimp can show behavioural responses normally associated with pain experience, such as cradling and grooming of the affected area (Braithwaite 2010, pg38).

Another way to detect the capacity for pain in non-human animals is the anatomical parallel, which involves comparing biological capacities to feel pain (Singer, pg40 ed. Armstrong & Botszler 2003).

Normally, the capacity for pain perception on animals is inferred from the presence of operational indicators (O.I.'s). O.I.'s are "parameters which connect in an identifiable and defined way with pain perception in man (Segner 2012, pg31)", for example, the elevation of plasma cortisol levels during stress. In fish, as in mammals, stress response includes the release of cortisol (Braithwaite 2010, pg11).

Notably, fish lack a neocortex, which is of central importance for conscious pain perception in man, leading many authors to conclude that fish do not experience pain (Segner 2012, pg32).

However, there are reasons to believe that pain experience in fish can take place without a neocortex. The brains of fish are not like a small simplified version of a mammal brain, but are actually very diverse, reflecting the various evolutionary challenges of each species (Segner 2012, pg35). It is also worth noting that pain experience in humans does not exclusively involve the neocortex, but other brain areas (such as brain stem) as well, and pain experience in birds, who also lack a neocortex, takes place involving a brain region called "Wulst" (Segner 2012, pg32). Thus, the lack of a neocortex does not mean that fish lack the capacity for pain experience.

Another reason to believe fish can experience pain has to do with the pain experience itself. The experience of pain can be translated in different ways. Pain is defined as an “unpleasant, sensory and emotional experience associated with actual or potential tissue damage” by the International Association for the Study of Pain (IASP)⁶. The definition includes an emotional experience, noting that there is a strong psychological aspect to pain experience, which makes it difficult to attempt to translate this experience for animals, because coming to understand the mind of an animal can be extremely challenging.

Furthermore, as stated above, an experience of pain is a sequence of various events, not a single response. Pain experience begins with nociception, or “the sensing of noxious stimuli in peripheral tissues (Segner 2012, pg9).” Then, the nociceptive signal is transmitted to the brain where it is processed into pain perception. Nociception alone is not pain, however, as it can indicate only a non-conscious reflexive response. Only the interpretation of a nociceptive signal in the brain “under the influence of emotional and cognitive factors” turns nociception into pain (Segner 2012, pg9).

As nociception is the first step in pain experience, evidence of nociceptors in fish can suggest there is at least a basic structure for pain experience in fish. Studies on teleost⁷ fish using pressure, heat and chemical irritants as noxious stimuli found evidence of the presence of various types of nociceptors, providing scientific evidence that fish possess the “sensory equipment” to detect painful stimuli (Segner 2012, pg34).

Nociception itself is very common in the animal kingdom. As nociception can play a crucial role in survival, we should expect to find evidence of even simple, nociceptive-like responses in most animals. Jellyfish, corals, sea anemones and even some insects display simple nociception (Braithwaite 2010, pg34). Since then, evidence of nociception in various species of fish has become available (Braithwaite 2010, pg49). However, nociception is a reflex, unconscious reaction, so it can be argued that fish are not conscious of this pain. The next step, then, is to find out whether the nociceptive signal reaches the brain of fish.

Regardless of species, the brain structure of vertebrates with the same basic components is found in fish (Segner 2012, pg34). While researching pain experience in fish, Victoria Braithwaite and her colleagues located and traced the nociceptive response in trout,

⁶ Quoted by Segner, pg9.

⁷ Teleost: “(infraclass Teleostei), any member of a large and extremely diverse group of ray-finned [fishes](#). The teleosts include virtually all the world’s important sport and commercial fishes, as well as a much larger number of lesser-known species. The teleosts comprise some 30,000 species (about equal to all other [vertebrate](#) groups combined), with new species being discovered each year.” <http://www.britannica.com/EBchecked/topic/585965/teleost>

concluding that the nociceptive signal does reach the brain of the fish. After noxious stimuli (heat or chemical), the signal reached the appropriate receptors, passes to the trigeminal nerve, through the brain stem, and so reaches the brain (Braithwaite 2010, pg58). Even in goldfish, the species that is arguably most often looked down upon, the nociceptive signal reaches the brain (Braithwaite 2010, pg71).

However, this is still not enough to conclude that fish experience pain, because the morally relevant experience of pain requires that it is a conscious experience.

Some authors have argued that because fish lack the neurological systems essential to pain experience in mammals, pain experience in fish is nociceptive and unconscious. However, as previously stated, we cannot make assumptions from the lack of biological structures of fish since they are very different from mammals; rather, we must look for behavioural measures as well (Allen, pg10).

When we are in pain, our breathing and heart rate accelerate and we may display certain behaviours such as cradling the injured area. As stated above, grooming and cradling has been observed in some species of fish after having received a noxious stimuli, and fish displayed other behavioural responses such as decreased appetite as well (Braithwaite 2010, pg62). Moreover, researchers found physiological evidence noting that the “gill beats” of trout increased from 50 beats per minute during rest to 90bpm after receiving a noxious stimuli (Braithwaite 2010, pg64). This shows that fish have some awareness of the noxious stimuli although it does not mean that fish are necessarily aware of the experience. This is because one can have an accelerated heart beat and stress response without being conscious of the experience.

In order for fish to perceive pain, the pain experience would have to be a cognitive process. Testing animal cognition can be challenging, but Braithwaite’s team devised a way to test whether fish’s higher cognitive processes were affected by pain experience, namely by testing whether attention, a higher cognitive process, was affected by pain in trout. Because trout are normally wary of novel objects, researchers observed the avoidance behaviour these fish displayed towards a novel object in their tank when being treated with a noxious stimuli. They found that fish who were not administered a noxious stimuli avoided the object strongly, while fish treated with bee venom or vinegar were much less fearful (Braithwaite 2010, pg68). Furthermore, fish brain has been found to contain opioid receptors, and fish that were treated with morphine after the venom or vinegar showed normal avoidance behaviour (Braithwaite 2010, pg69).

This response to pain relief and the effect of noxious stimuli on higher order cognitive process such as attention⁸ has led to the conclusion that fish do perceive pain.

However, does this mean that fish suffer from the experience? In order to suffer, fish would have to be conscious of the experience, and animal consciousness is still debated.

Consciousness

Like pain, consciousness is a complicated concept which can take many interpretations, and depending on the interpretation can have different results for fish.

One way in which authors define consciousness in animals is the distinction between sleeping and waking states.

Sleep is a difficult state to explain, and in mammals is usually associated with REM and slow cortical activity (Allen, pg7). As there is no evidence of REM in fish and they don't have cortices, many have concluded that fish don't sleep. However, we cannot conclude from lack of REM that fish don't sleep, if simply because fish's eyes are very different than humans. For example, fish can move their eyes independently, controlled bilaterally (Allen, pg7). Furthermore, there are other factors which suggest that fish do in fact sleep. For example, many species of fish are more active during one phase of the day than during the other, and some fish have shown physiological signs associated with sleep deprivation. For these reasons, authors conclude that fish do in fact sleep.

Another way in which authors define animal consciousness is what can be referred to as phenomenal consciousness, "the qualitative, subjective, experiential or phenomenological aspects of conscious experience (Allen, pg4)". It is sensing one's surroundings and its associated feelings and emotions (Braithwaite 2010, pg80).

This, I suspect, is more conscious than required for Singer's theory but not enough to qualify as self-consciousness in Regan's criteria. Nonetheless, research on fish aimed to detect phenomenal consciousness found evidence of trace conditioning on specific species of cod, halibut and trout (Allen, pg11). Trace conditioning requires that the subject retains a memory trace of the stimulus to pair it with a later stimulus. It is perfectly correlated with subjects learning the relationship between two stimuli, and this type of learning can be considered indicative of phenomenal consciousness (Allen, pg11).

In humans, the limbic system is a collection of structures which is associated with emotional

⁸ Scientists have found evidence that spatial behavior is also affected by noxious stimuli in fish (Braithwaite 2010, pg73.)

behaviour. Although fish do not have a limbic system like humans, there is a specialized area in the fish forebrain that acts like a limbic system (Braithwaite 2010, pg98). To test whether pain experience in fish had a subjective component indicative of phenomenal consciousness, researchers tested the preferences of fish. If an area of the tank is designed to give off mild electric shocks, trout will normally avoid that area. Trout normally do not like solitude, and researchers found that an individual would remain in the electro-shocking area of the tank if it allowed them to get closer to another individual (Braithwaite 2010, pg105). This shows that trout change their behaviour under specific conditions. Furthermore, researchers noted that goldfish do not prefer the companionship and would simply continue avoiding the area that gave off electric shocks, leading them to conclude that there is in fact a subjective component to the preferences of fish (Braithwaite 2010, pg 105). Phenomenal consciousness is associated with sentience, as it involves the ability to experience emotions as positive or rewarding and negative or punishing (Braithwaite 2010, pg96).

Finally, there is debate whether animals can be self-conscious. This is extremely difficult to answer because even the meaning of consciousness is often debated amongst scholars and can depend on one's own philosophical views.

However, there is evidence to suggest that at least some fish are self-conscious at least on a very basic level. Some fish, like the grouper and the eel, have been found to display cooperative hunting behaviour (Braithwaite 2010, pg107). Joint hunt requires cooperation and communication between individuals, as it is essential that each understand the other's intentions (Braithwaite 2010, pg109). Although not conclusive, this does suggest that some fish might be capable of monitoring or self-consciousness.

Impact

Until it was discovered that fish have the capacity for pain experience regardless of not having a neocortex, the assumption was made that fish were incapable of suffering. As a result, there is much catching up to do in terms of the moral consideration of fish. The problem is still that not all evidence of the capacities of fish is yet conclusive, and much research still needs to be conducted in order to truly come to understand the lives of fish.

The deficit of knowledge in regards to the presence of morally relevant capacities in fish has

a greater impact on Regan's theory than Singer's, as Regan's subject-of-a-life criterion encompasses many capacities.

Although we cannot assume what holds true for one species of fish holds true for all, the scientific evidence suggesting that fish have the capacity for conscious pain experience would grant them moral status in Singer's theory. There is enough scientific data to conclude that at least some species of fish have the capacity for conscious pain experience, and thus fulfil the pre-requisite to having interests, making them morally considerable. However, it is difficult to know how many (if any) interests fish may have aside from avoiding pain, and how much these should weigh in moral considerations of preference maximization (Bovenkerk & Meijboom, pg856). Furthermore, Singer suggests that if we consider a certain amount of pain too much for one species, then that measurement should be the same across species (Singer, pg34). Here, too, the knowledge deficit will prove problematic as it is difficult to assess the levels of pain, discomfort and emotional distress in fish, and even more difficult to translate them to make them comparable to those of humans or other mammals.

Our lack of empirical knowledge is problematic for Regan's theory as well. It is not possible at present time to say whether at least some species of fish could possess *all* relevant capacities for being subjects-of-a-life. However, there is enough evidence to believe that fish are conscious and sentient, which in Regan's theory grants them at least status of moral patients (Regan, pg17). Studies into the memory and other capacities of certain species of fish are currently taking place, but until we have more empirical evidence theories such as Regan's cannot give us a conclusive answer regarding the moral status of fish.

As we find that fish have capacities beyond what we expected, we are confronted with the question of whether our frameworks for assessing the moral status of animals are adequate. Our beliefs regarding the capacities of fish rely heavily on our concepts of these capacities, as well as interpretations of scientific findings. Furthermore, the scientific findings themselves are already dependent on the chosen research method, and if we take into consideration how different fish are from mammals, it is extremely difficult to devise a test that would find conclusive evidence of biological structures or capacities which might be present in ways we cannot anticipate. This is why our idea of the capacities of fish has changed so much as scientific data becomes available. Arguably, a few decades ago fish would not have received moral status based on capacity for pain experience (Segner 2012, pg77).

Although the problem of knowledge deficit can potentially be solved over time, and

capacities-based approaches can resort to a precautionary approach, it is worth considering whether a framework that is focused on capacities is best suited to answer moral questions regarding those whose capacities we know very little of.

We must find the correct measuring tools if we are to fairly assess the characteristics of fish. “Fish are smart if you ask the right questions (Braithwaite 2010, pgviii),” and recent research into the capacities of fish has shown that for fish, asking the right questions can make a lot of difference.

Our lack of knowledge into the capacities of fish may have less of an impact on relational ethics, but the fact that fish are so different from us can create entirely different challenges for this theory, as will become apparent below.

Limitations on knowledge regarding the capacities of fish are initially not as big a problem for relational approaches as for capacities-based approaches. Research is necessary to understand whether fish can have meaningful relationships with humans, and knowing how these animals react to human interactions can show the extent they can make an appeal on us (Bovenkerk & Meijboom, pg857).

From a relational standpoint, the moral status of fish is heavily dependent on species, as some species of fish are in more frequent and closer contact with humans than others, and we can safely assume some species are yet to be discovered.

Palmer’s LFI, the idea that we have special obligations toward domesticated animals while having no such obligations toward animals in the wild (Palmer 2010, pg63) translates as different obligations toward different species.

A kinship relation between humans and fish seems difficult to argue. Although some people keep fish (from guppies to small sharks) as “pets”, it is unlikely that the relationship between the human and the pet fish carries the same level of closeness and commitment usually associated with pets who are part of the family. This might be due to the fact that fish do not express emotion in a way that humans find familiar.

Similarly, fish do not seem to have been very successful in affective or sentimental approaches. This is evident in the covers of books on relational ethics, which often feature dogs on the cover and not fish (Driessen). An affective or sentimental approach is based on moral emotions, such as empathy, sympathy and care. Yet, humans seem particularly challenged in empathy or sympathy toward fish. An interesting example is the Pixar film *Finding Nemo*, which is often thought of as a potential tool to help us empathize with fish. *Finding Nemo* is the best-selling DVD of all time, yet, there are at least 2 fish and chip shops

operating presumably successfully worldwide under the name Frying Nemo (Driessen). This might not sound consequential, but it is interesting if one contrasts it with, for example, naming an eatery “Roasting Bambi” (Driessen).

Moreover, people seem to consider fish as a quasi-animal. This may in part have to do with the idea of fish as primitive, sparked by “living fossils” such as the coelacanth, a fish what has changed very little in the last 400 million years (Braithwaite 2010, pg137). When it comes to food, the idea of fish as quasi-animal is evident in the all too familiar case of the vegetarian who eats fish. From an affective perspective, thus, fish would not give rise to special moral obligations.

Still, humans engage with fish and their habitats in many ways, and some of these ways can be considered causal relations.

Causal relations are cases in which humans are (partially or fully) responsible for causing the situations and contexts that animals find themselves in, and these relations give rise to special moral obligations in Palmer’s relational approach. Palmer argues that because animals that have been domesticated for food, research or other utility have been removed from the natural context by the actions of humans, these animals require human assistance to survive, thus humans are causally responsible for them (Palmer 2010, pg56).

Fish have been domesticated by humans in various ways. Fish are kept in aquaria and are used for scientific research. More importantly, several species of fish are farmed for human consumption, as evident by the recent increase in demand, as well as the growth of the industry of aquaculture. This causal relation should give rise to the same moral obligations that we have toward other animals farmed for human consumption, such as pigs, cows and chicken, to fish.

Lastly, our current knowledge of the lives of fish in their natural state as well as their cognitive capacities is not sufficient to argue for a domesticated-animal contractual relation as described by Palmer. Animals in the domesticated animal contract have their capacities and abilities changed by their relation with humans. Some animals have even been bred specifically to suit human preferences (Palmer 2010, pg66). Aside from this irreversible change, the animals that enter the contract often do not freely consent, and cannot freely exit the contract. This gives rise to special moral duties towards these animals.

Fish that are farmed for human consumption do gain shelter, food, and medical aid. However, it is difficult to argue that these fish lack the capacity to survive in the wild. For example,

researchers have found that pet guppies released in the wild can create entire new populations, thriving to the point that they exist in all continents except Antarctica, threatening biodiversity in fresh water habitats (BBC, 2011). Once again, that guppies can thrive post-domestication without humans does not tell us much about carp or tilapia, but it does indicate that we do not fully understand the effects of domestication on fish.

This raises the question whether we have special moral obligations towards domesticated fish species. Although domesticated fish might be able to survive without human assistance, other aspects of domestication such as being removed from their natural habitat and being denied their freedom still negatively affect the fish. Furthermore, fish produced in aquaculture would raise the same concerns as other animals bred for human purposes. This means that if we were to consider fish as being part of the domesticated-animal contract, the benefits humans receive from keeping the fish would still give rise to the same moral obligations we would have towards other animals in a similar position.

We can thus conclude that relational approaches to granting moral status to fish are in need of more research as well, in order to understand not only the ways in which we can relate to fish but also the nature of the relationships we currently have with these animals.

As we have seen, the moral status of fish is not a clear idea that can be easily defined.

Because there are so many different species of fish, we can only make statements at extremely basic levels that are universal to all fish. Essential facts such as the capacity of fish to feel pain can come under dispute because it is difficult to understand precisely how the brain and nervous systems of fish are structured. The moral status of fish depends on the ethical framework one chooses to work with, the availability of empirical data, the subjective interpretation of this data, and humans' ability to be emotionally drawn to them. This has resulted in very little moral concern for fish until recently.

Nonetheless, in recent years there has been a growing interest in the welfare of fish. This suggests awareness, however latent, amongst humans that fish are perhaps not less worthy of moral consideration than more familiar animals. As recent data reveals the presence of capacities previously thought absent in fish, it seems that our inability to correctly detect and measure morally relevant capacities of fish in the past has led to moral misconceptions. For capacities-based approaches, this has resulted in lower moral status than fish should have received if we had taken into account the particularities of fish as having different biological structures and social behaviours than mammals. From a relational perspective, fish are not

very successful in evoking empathy and sympathy, and this can be seen as a result of evolutionary differences as well. As a result, fish receive a lower moral status than other animals in a similar domesticated animal contract.

The lower moral status of fish is not warranted, but how can we better come to understand the moral place of fish?

Looking for mammalian analogies in fish has yielded poor results in the past. Perhaps it's time to look somewhere else.

Chapter Three: Moral Status



(Releasing goldfish ⁹)

Fish, as has become obvious, are complex and strange creatures. Physically and emotionally fish are different from humans. Perhaps for this reason, fish have always remained on the margins of moral consideration.

Research is slowly showing that fish could have the same capacities considered morally relevant as mammals, even though previously this was thought not to be the case. Despite fish having demonstrated to have at least some skills, capacities and traits that should put them on par with many of humanity's favourite animals, fish do not seem to receive the same level of consideration. On the grand scale, governments have not shown to be as concerned with fish as with their mammalian counterparts, as is evident by the fact that animal welfare laws have been in existence for a few decades but only recently began including fish. On the smaller scale, people seem to regard fish as less worthy of respect as well, particularly compared to other animals that are part of the human diet. An interesting example, as mentioned above, is the case of fish and chips shops named "Frying Nemo"; particularly if contrasted with the idea of enticing customers to eat pork chops by naming one's eatery "Roasting Babe" (Driessen, [forthcoming]).

Looking at the capacities of fish or our relations with them doesn't quite explain this moral

⁹ A goldfish being released by a blogger. <http://outdoorconnections.blogspot.nl/2011/01/fish-freedom-day.html>

misconception, so how can we make sense of it?

It is possible that fish are so different from us that it has taken a long time to understand their lives, and in consequence, whether we have any obligations towards them.

And it is possible that this discrimination against fish is the result of tradition and history. Early fish farmers, more than farmers who cared for terrestrial animals, approached their profession from the perspective of a hunter or a businessman, unlike the farmer of land animals (who cares for them from birth to slaughter). Furthermore, fish farming became a large lucrative business run by multinational corporations, further cementing the view of fish as a crop to be harvested rather than an animal to be cared for (Lund, et al. pg114).

From a common evolutionary point of view as well, fish are sometimes perceived to be inferior or “lower” amongst vertebrates (Lund, et al. pg114).

This might explain why traditionally fish were not granted a high moral status in theories which focus on intrinsic qualities. If so, we should expect that as knowledge about the capacities of fish becomes more widely available their moral status will evolve accordingly.

The answer, perhaps, is relational in nature.

Results from three exploratory workshops on fish welfare involving participants with various interests in fish (e.g. aquaculture, laboratory research, aquaculture) suggest that the main reason for people’s disinterest in the welfare of fish may indeed have very little to do with their capacities and more with the way they were perceived (Driessen, [forthcoming]).

Interestingly, a large number of participants mentioned fish’s sliminess, coldness, and blatant non-cuddliness, along with their incomprehensible ways of expressing emotion (or lack thereof) and inability to communicate and relate to us as the main reasons for the lack of human interest in fish welfare (Driessen, [forthcoming]).

Fish live in the ocean, and for this reason they have faced challenges that are very different from terrestrial animals. This has led them to evolve in ways which are difficult to understand for humans.

Physically, there are very little similarities between fish and humans which could elicit empathy in humans the way mammals do and help interpret social interactions (Lund et al, pg114). Their unblinking eyes, directed to the side, make the emotionally charged experience of eye-contact virtually impossible, making fish appear basically “faceless” to us (Driessen, [forthcoming]). Fish communicate in ways that humans are not naturally responsive to, and don’t show emotion in ways we can understand (Driessen, [forthcoming]). Their environment

is so different from ours that it is almost impossible to fathom the lives of fish. Furthermore, fish are kept in large numbers in containers making it difficult to view fish as individuals (Lund et al, pg114). It is thus very difficult for people to imagine what it can be like to be a fish (Driessen, [forthcoming]).

Relational approaches, which focus on relational factors such as reciprocity, closeness or dependence in order to determine our moral obligations to animals, tend to not favour fish. Some fish have the same relation to humans as mammals, yet they do not seem to be given as much moral consideration.

In the past, inadequate attempts to measure the capacities of fish resulted in a lower moral status than it turns out they deserve. As relational approaches become more prominent, are fish fated to a lower moral status? It seems that if we are to fairly assess the moral status of fish, we must at least try to look at things from a different perspective.

Elevating fish

Fish might not be able to pull us in by being similar to us, but there might be other ways in which fish can make an emotional impact on people. As the saying goes, “everybody is a genius. But if you judge a fish by its ability to climb a tree, it will live its whole life believing that it is stupid.”¹⁰ And we already know that “fish are smart if you ask the right questions (Braithwaite 2010, pgviii)”.

As a society we emphasize the many various talents and abilities which make humans valuable and special as individuals, it would seem only natural that we would embrace differences in fish, whether species or individuals, as having value as well.

Angling, the most widely engaged-in form of interacting with wild animals, can serve as an example of how “affective and transformative” relations can arise between fish and humans. Many recreational anglers, it is argued, come to view fish as more than “alien bodies” from another world to which we have no access, as enchantingly depicted in Tim Burton’s famously moving film *Big Fish* (Driessen, [forthcoming]). Although angling circles do not normally acknowledge fish as conscious beings, this relationship suggest that there are other

¹⁰ This quote is commonly attributed to Albert Einstein. However, there is no clear evidence to attribute this quote to him. The earliest attribution of this quote to Einstein is from a chapter titled “Everybody is a Genius” in “The Rhythm of Life: Living Every Day with Passion and Purpose” by Matthew Kelly.

<http://quoteinvestigator.com/2013/04/06/fish-climb/>

ways in which fish can influence humans emotionally. If fish could influence us emotionally despite their emotionless expressions, it could result in moral duties from an affective relation between fish and humans.

Even though fish are sometimes viewed as being evolutionarily inferior (Lund et al, pg114), fish have developed in amazing ways and display impressive abilities, because their mere existence through survival makes them “the (current) endpoint of millions of years of Darwinian struggle (Driessen, [forthcoming]).” Some views of animal aesthetics emphasize functionality as an aesthetic quality, while others focus on the expressive beauty of animals (Driessen, [forthcoming]). From this angle, we might be able to feel more emotionally connected to fish. Animal aesthetics understood as looking “fit for function” looks further than human semblance, instead giving value to how different fish are from us, reminding us that “humans are not the pinnacle of evolution (Driessen, [forthcoming])”. While some species fish have evolved very little over the millennia, other species are very new. Some groups of fish in fact generate new species so quickly that scientists are beginning to look at these fish to study the process of speciation (Braithwaite 2010, pg140).

Animals can connect emotionally to humans is by gaining our admiration. Because fish are so different from us, the amazing abilities fish can display can generate awe and respect in humans (Driessen, [forthcoming]). In this way, the very fact that some fish are ugly, and that we have a difficult time imagining their life can evoke in us different affective experiences. Instead of ascribing moral status based on land-based notions of suffering, meaning and sociability, awe can inspire us to respect fish because they are mysterious or even repulsive.

As for being so different from us, a shift in perspective can show us that fish may not be that different after all. As we have seen, some fish show similar responses to pain as humans and other mammals. And, like some humans, trout will endure a little pain for the reward of companionship.

“As our knowledge has grown, our perception of animals has shifted (Braithwaite 2010, pg18).” The knowledge we have gained into the lives of fish has shown us that fish may not be as different from us as we had initially thought. We must consider the possibility that as there is still much knowledge to be gained, there may be more revelations to come. Fish have already surprised us by displaying amazing abilities and capacities to surpass our expectations. Our expectations were wrong.

Drawing the moral line can be complicated and decisions regarding which criteria matters are crucial (Braithwaite 2010, pg24). When it comes to fish, we must ensure that the criteria are suited to the peculiarities of these animals.

Furthermore, the debate of suffering and consciousness does not end with fish, as some invertebrates are already amazing scientists with their capacities. For example, researchers have found evidence of mind mapping in octopi and learning behaviour and memory in hermit crabs, raising the question of whether cephalopods and crustaceans also have the capacity to suffer (Braithwaite 2010, pg128-131). These discoveries raise questions about where and how we can draw the line when it comes to moral status. Granting moral status to fish is only one of the obstacles, as the very idea of fish welfare is new and still needs tuning and understanding. Fish welfare requires that we understand fish in more profound ways than we have until this point.

We must be open to the possibility that these and other invertebrate species may also be sentient, even though the consequences may seem daunting. And we should be willing to find the correct measuring methods to detect morally relevant capacities in fish and other animals. Because the answer to the question of the moral status of fish depends so strongly on the ethical framework we are working with, we owe it to fish to find the framework and measuring systems that are best suited to their very unique qualities.

Conclusion

In the past, there was very little concern for the moral status of fish. Ethical theories dealing with the moral status of animals usually do not devote much thought to fish. This has changed in recent years, as the demand for consumption of fish drives the continuing growth of the industry of aquaculture, putting humans into closer and more frequent contact with fish, and giving rise to questions about what we owe fish, and how much we can take from them. This question is extremely complicated and dependent on

various subjective interpretations of morally relevant concepts regarding the moral status of fish. How we approach the question of the moral status of fish depends on the ethical framework we choose to work with, as there is no theory-neutral way to come to a decision.

In the past, capacities-based approaches such as those proposed by Utilitarian Peter Singer and Deontologist Tom Regan have dominated discussions of animal ethics.

Theories based on capacities can be challenging because human knowledge of the morally relevant capacities of certain animals is limited. Furthermore, the knowledge that is available depends heavily on interpretations of scientific data, which makes it difficult to arrive to conclusive evidence for the presence or absence of the relevant capacities. For this reason, the moral status of a fish might vary depending on which theory we use to determine it. Moreover, answers to the question of the moral status of fish can vary based on the interpretation of certain concepts, amongst which pain and consciousness are of specific interest.

In the case of fish, each ethical framework is confronted with different challenges.

Capacities-based approaches have had difficulty when dealing with fish because knowledge regarding their capacities is only recently becoming available. Furthermore, as fish are very different from humans, inferring capacities from their physiology or behavior is extremely difficult. Despite this, recent evidence suggests that at least some species of fish are capable of conscious pain experience.

For their part, relational approaches are challenged by traditional relations and ideas connecting people to fish. Fish do not communicate or show emotion in ways that humans can easily relate to, making it almost impossible for humans to empathise with fish or form meaningful bonds. This may explain why, although fish may have the same relation to

humans as some non-human mammals, they often are not given equal moral consideration.

Nonetheless, fish may not as different from us as we previously thought. Researchers have discovered that fish have the capacity not only for simple nociception, but of phenomenal consciousness, pain perception and may even be self-conscious (Braithwaite 2010). Because pain is a process involving various parts of the nervous system, various tests were designed to find out whether fish had the capacity of only nociception or of conscious pain experience as well.

This has shown that although fish may not have the same biological structures as us, they may have developed their own biological structures best suited to their own environmental challenges. Likewise, in the water fish may not have a need for cuteness and cuddliness, so measuring on such a scale might be unfair. Although we may not find fish as cute as puppies, affective relations can arise from admiration or awe of their capacities and their amazing lives, and learning to appreciate fish in their own way could give rise to the type of bonds that are morally relevant to a relational approach.

The question must be asked whether it is possible that in the future we will discover that the capacities of fish, and other animals including invertebrates, have capacities that exceed our expectations. Moreover, we must consider the possibility that just as in the past inadequate methods were using for measuring the capacities of fish, our current methods are not yet ideal. Because the moral status of fish affects our treatment and handling of these animals, we owe it to fish to find the best measuring methods and frameworks catered to their particularities.

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