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Sentience politics : a fishy perspective

Commentary on [Rowan et al.](#) on *Sentience Politics*

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Abstract: The plight of fishes has almost certainly got worse since Bentham (1789) coined the phrase “The question is not Can they reason? nor, Can they talk? but Can they suffer?” Despite the fact that fishes are increasingly recognised as sentient animals worthy of protection under animal welfare legislation in many countries around the world, fishing practices are almost universally exempt activities. The human population continues to grow, and, surprisingly, per capita intake of fish is still increasing ([FAO 2020](#)). The source of this fish is not wild stocks (catches of which have remained more or less stagnant for decades after we pillaged the oceans), but rather from a huge increase in aquaculture production. Aquaculture is currently experiencing a rapid industrialisation phase reminiscent of that seen in terrestrial food production systems over the last century. There is an urgent need for the animal welfare developments of the past 50 years that were established for terrestrial food production systems to be applied to aquaculture. Given these facts, one alarming question presents itself: Who is looking after the welfare of fishes in the context of commercial fishing and aquaculture?

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Fishes have largely been left out of the history of animal welfare and to this day there are still those (Key 2016) who view them as mindless automata (after Descartes). It seems we have gone backwards since the time of Spencer (1855), Darwin (1859) and Romanes (1884), who all viewed emotions as key adaptations and subject to natural selection. In fact, we not only know that fishes have emotions but we even know which part of the fish brain processes them (Broglio et al 2011). Sadly, there is huge gap between public perception of fish behaviour, intelligence and sentience and the scientific reality (Brown 2015). The “physiological and behavioural evidence that fish are sentient is overwhelming” (Rowan et al 2022), yet society still has a tendency to treat them as inanimate objects. Even our language is geared that way: We “harvest” fish much the same way as we would a field of wheat. Rather than referring to fish populations, they are “stocks” to be traded like other commodities. The way we quantify commercial catches and aquaculture production by weight rather than by counting individual fish. We can only guess how many individual fish are killed each year for human consumption and other purposes ([fishcount.org.uk](#)).

While feelings-based approaches using indirect measures are increasingly used to assess animal welfare in terrestrial food production systems, they are still at a fledgling stage when it comes to fishes. Yet the existing welfare-related evidence is rather telling. Perhaps one of the better approaches for asking an animal what they want is to get them to show you

through their choices. For example, if given a choice between two compartments, one enriched the other barren, fish will almost universally spend more time in the enriched compartment. Indeed, environmental enrichment is commonly used to enhance the welfare of animals held in captivity and its value is increasingly recognised in an aquaculture context (Arechavala-Lopez et al 2021). We can also put our subjects in conflict situations where they must trade-off one need over another. In our case study on fish choosing an enriched or impoverished environment, we can apply a painful stimulus (an injection of mild acetic acid) and place analgesics in the barren chamber. Under these conditions, the fish choose analgesia in the barren chamber, which clearly shows that they value freedom from pain more than they value environmental enrichment (Sneddon 2013). Similar experiments have shown that fish “value” access to school mates more than avoiding pain (Dunlop et al 2006) and are willing to forgo food in order to avoid a shock, but not when starved for 3 days (Millsop & Lamming 2008). This needs-based approach will be valuable in identifying not just the things that fish avoid (pain, extreme temperatures, predators, etc) but also the things they like (companionship, complex environments, food, and so on). With this in mind, we can certainly move beyond just removing negative experiences and start to introduce positive welfare into our husbandry equation.

The target article rightly point out that one clear frontier for animal welfare research is to examine the development of sentience through ontogeny. This does present some serious challenges from a methodological perspective. Nonetheless, it may be worth noting that a number of studies on fishes have shown that they are aware of their environment very early on in development. Rainbowfish embryos, for example, can not only detect predator cues at four days after fertilisation but they can differentiate between these cues. Oulton et al (2013) measured changes in heart rate as an indicator of stress. Zebrafish embryos, who are widely used in research as juveniles and are often exempt from animal ethics regulations, show similar responses at five days post-fertilisation (Lopez-Luna et al 2017). These data strongly suggest that sentience emerges very early on in development, likely long before fish have hatched.

Finally, whereas I acknowledge the fine work done for many years by a number of animal welfare NGOs advocating improvements in the lives of animals, that effort has tended to be heavily biased toward terrestrial animals. Aquatic animal welfare has long been neglected but I have a strong feeling that this is going to change over the coming decade as the public become increasingly aware of the overwhelming welfare disaster associated with our many uses and abuses of fishes. It is my sincere hope that we change the way we view fishes in our care, change our attitudes, and make their lives “a life worth living”.

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