Fish sentience, consciousness, and AI
Commentary on **Sneddon et al.** on *Sentience Denial*

Ila France Porcher
Independent Ethologist

Abstract: The systematic criticism of articles providing evidence that fish and invertebrates can feel pain is discussed. Beliefs are known to be stronger than evidence in the human mind, and could generate this outcry, while from another perspective, the criticisms appear as a territorial move by fishermen against a perceived threat to their domain. The scientific inconsistency in which consciousness is granted to machines but not to fish and invertebrates, purely due to political bias, is pointed out. No basis exists for denying sentience to any life form as long as science is ignorant of the nature and source of consciousness.

Ila France Porcher is an ethologist and the only researcher to have studied the behaviour of the individuals of a community of reef sharks through underwater observation long term, finding both cognition and suffering. She wrote *The True Nature of Sharks.* **ilafranceporcher.wixsite.com/author**

Sneddon et al.'s (2018) target article is important because it directly addresses the refusal of fishing interests to accept the evidence that fish — and other marine animals assumed to be "low" — feel pain and suffer. Given the descriptions of the systematic criticisms of each study published to scientifically establish fish sensitivity to pain, it appears that no matter what evidence is presented, it will be argued against, even to the extent of twisting experimental results, as Rose (2014) has repeatedly done when discussing Sneddon's evidence.

Kahan and his team (2013), researchers at Yale, found that beliefs are stronger than scientific findings in the human mind. Where a strong belief is held, the believer will use available evidence to support it, rather than changing his belief to accord with the evidence. This is just as true of scientists. Fishermen's persistent anthropocentric arguments against fishes' suffering, in spite of all evidence to the contrary, appear to be examples of this phenomenon. The cherry picking of the evidence and rhetorical nature of their arguments are typical signs. Unfortunately, as Sneddon et al. have stated, by "muddying the waters," these critics are delaying measures that should be taken for fish welfare.

The idea that fish do not feel pain comes from the mass of information, called doxa, that is believed and perpetuated by the populace, but that is not underpinned by empirical evidence. For centuries, society has reflected the teaching that animals are here exclusively for its use and has treated them as objects without concern for their lives. So fishermen, who have been yanking fish around by their hooks since they were children, feel that they are right and that anyone who

disagrees is wrong. If they cannot find fault with the evidence, they will target the experiment or the researcher, or resort to personal attacks and the use of denigrating terms such as "anti-fishing activist."

In the past, fishermen and the multi-billion-dollar fisheries industry, with all of their dogmas and jargon, have exercised full control not only of fish, but of how they are perceived in the minds of the public. So their efforts to debunk the evidence of sentience in their target animals have the feel of a territorial move against a perceived threat to their dominion. Therefore, this type of criticism is unlikely to stop.

It has never been scientifically established that fish cannot feel pain, and there is no reason to assume that they do not. Indeed, the evolution of a host of oceanic stingers has depended precisely upon their sensitivity to pain, and cognitive evidence shows that their subjective experiences cannot be as rudimentary as Rose and his co-authors maintain (Bshary et al. 2002). They assume that subjective states, including pain, are dependent on the complex human brain. But not only has this not been proven, there is no empirical evidence that such is the case.

As long as no branch of science understands the nature and source of consciousness, no basis exists for denying it to any life form. Consciousness researcher and mathematical physicist, Penrose (1989, 2004a, b), postulates that conscious awareness involves quantum mechanical phenomena and that all life forms might well be conscious in their way. Further, like many other things in reality, consciousness does not involve computations — it has the quality of being non-computational — so no computer will ever be conscious, no matter how big, fast, or complex it might be. Could an animal be using computations to deal with a non-computational reality? Natural selection would have eliminated each one the first time it made a mistake.

The popularity of Artificial Intelligence (AI) has served to amplify the idea that animals are machines. Some arguments against fish sentience actually use the word "robot" to refer to them (Chella 2016). Fishermen will even say that though fish act like they feel pain, they don't *really*. But by definition, a machine cannot act "as if" it can think and feel — this argument requires that the alleged machine imitate consciousness on cue.

Yet, while sentience is being denied to fish, some thinkers have been willing to accept the idea that a thermostat is conscious (Dennett 1971), and the conjecture that machines will soon outdo human thinking has been held to be true since the 1960s, although no evidence has been found to support it. This curious case of cognitive dissonance in science originates from a second major consciousness theory which holds that after a certain level of complexity is reached, consciousness emerges naturally, as in the human brain. This theory supports AI as well as the arguments against fish sentience that depend on brain comparisons, but it has been criticized for predicting consciousness where it could not arise. Scientific ignorance about consciousness underlies AI (Dehaene et al. 2017), just as it underlies the bias against fish and invertebrates.

For every time it has been examined, evidence of sentience has been found in animals from insects to sharks to elephants. Even the paramecium, a single-celled animal, presents a set of preferences indicating learning and memory (Armus et al. 2006). Recent studies have demonstrated that plants show the ability to learn and remember (Gagliano 2014); and amoebas have demonstrated abilities that have been considered until now to depend on brain circuitry

(Reid et al. 2012). Awareness in these life forms indicates that the capacity for consciousness does not depend on the human brain. Indeed, such findings suggest that it might have other roots.

The evidence indicates that we live on a planet alive with conscious life forms, in spite of what we have been taught. I commend Sneddon et al. for speaking up against industry and fishing doxa in the effort to establish the truth and continue the work of building a moral society.

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The Other Minds Problem: Animal Sentience and Cognition

Overview. Since Descartes, philosophers know there is no way to know for sure what — or whether — others feel (not even if they tell you). Science, however, is not about certainty but about probability and evidence. The 7.5 billion individual members of the human species can tell us what they are feeling. But there are 9 million other species on the planet (20 quintillion individuals), from microbes to mammals, with which humans share biological and cognitive ancestry, but not one other species can speak: Which of them can feel — and what do they feel? Their human spokespersons — the comparative psychologists, ethologists, evolutionists, and cognitive neurobiologists who are the world's leading experts in "mind-reading" other species -- will provide a sweeping panorama of what it feels like to be an elephant, ape, whale, cow, pig, dog, chicken, mouse, fish, lizard, lobster, snail: This growing body of facts about nonhuman sentience has profound implications not only for our understanding of human cognition, but for our treatment of other sentient species.

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Adam Shriver: Do Human Lesion Studies Tell Us the Cortex is Required for Pain Experiences?

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