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Pain and fish welfare

*Commentary on **Key** on Fish Pain*

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Abstract: The evolutionary approach of Key's (2016) target article, generically comparing humans with fish of all kinds, is simplistic. The author ignores published research on structural and molecular aspects of pain in fish. The target article reads more like a selective polemic against fish welfare than an even-handed analysis.

Keywords: nociception, opioids, welfare, evolution

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In the target article, Key (2016) draws attention to some interesting research challenges that remain open: how to measure animal consciousness and pain? Prominent omissions in Key's arguments, however, preclude accepting his conclusions. The evolutionary comparisons, for example, are presented in a simplistic way, based mostly on comparing fish (all kinds of fish) with just one mammal – humans. This is a phylogenetic mistake: As other commentators have pointed out, structures can evolve very differently, through convergent or divergent evolution.

A number of studies have shown the physiological framework for nociception and pain in fish (e.g., Sneddon, 2003a; Sneddon et al., 2003; Ashley et al., 2007), yet Key fails even to mention these important findings on the neuroarchitecture of fish pain. Other bioengineering components are likewise missing, especially molecular ones. Fish respond to opioids such as morphine (Sneddon, 2003b). This means fish have receptors for opioids, which subserve the defensive phase of pain in mammals (the absence of pain after injury, allowing animals to fight or flee). Evolutionarily, it is more plausible and parsimonious to infer that such an adaptive defensive mechanism was ancient and was preserved throughout vertebrate evolution.

One also cannot agree with Key's ominous suggestion that knowing that fish feel pain would be catastrophic. Catastrophic to whom? Not to the fish. A far more thoughtful (and empathic) approach is provided by Braithwaite's (2010) book "*Do fish feel pain?*" which is likewise absent from Key's lengthy list of references. In fact, it is hard not to get the impression that the purpose of Key's target article is less an objective attempt to assess the evidence for or against fish pain than a polemic against fish welfare. The dismissal of "benefit of the doubt" considerations as mere "anthropomorphism" is a case in point.

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