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Evidence for pain in decapod crustaceans

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Abstract

Vast numbers of decapods are used in human food and currently subject to extreme treatments and there is concern that they might experience pain. If pain is indicated then a positive change in the care afforded to this group has the potential to produce a major advance in animal welfare. However, it is difficult to determine pain in animals. The vast majority of animal phyla have a nociceptive ability that enables them to detect potential or actual tissue damage and move away by a reflex response. In these cases there is no need to assume an unpleasant feeling that we call pain. However, various criteria have been proposed that might indicate pain rather than simple nociception. Here, with respect to decapod crustaceans, four such criteria are discussed: avoidance learning, physiological responses, protective motor reactions and motivational trade-offs. The evidence from various experiments indicates that all four criteria are fulfilled and the data are thus consistent with the idea of pain. The responses cannot be explained by nociception alone but, it is still difficult to state categorically that pain is experienced by decapods. However, the evidence is as strong for this group as it is for fish but the idea that fish experience pain has broader acceptance than does the idea of decapod pain. A taxonomic bias is evident in the evaluation of experimental data.

Keywords: *animal welfare, avoidance learning, decapod, motivational trade-off, nociception, protective motor reaction*