

Crabs suffer, remember pain, study finds

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Courtesy Queen's University Belfast
and World Science staff

Crabs not only suffer pain but remember it, a study has found. The research calls into question a popular view that when small animals recoil from unpleasantness, it's just reflex without actual feeling.

The study, by Bob Elwood and Mirjam Appel at Queen's University Belfast, is to appear in an upcoming issue of the research journal *Animal Behaviour*. "A potentially very large problem is being ignored," said Elwood, noting that the millions of crustaceans caught daily for food receive few or no safeguards against pain.



A hermit crab (courtesy Queen's University Belfast)

Hermit crabs have no shell of their own so they inhabit other, empty shells that they find. They prefer some types of shells over others, and will switch shells if they see a better option.

Elwood and colleagues subjected crabs within their shells to electric shocks that were usually too weak to prompt immediate evacuation. Rather, Elwood said, shocked crabs simply were more likely than others to switch shells when they were later offered a new one.

The outcome suggests crabs were considering pain in their decisionmaking, not just responding in a knee-jerk fashion, said Elwood, whose previous research also found prawns endure pain.

"There has been a long debate about whether crustaceans including crabs, prawns and lobsters feel pain," he said. "We know from previous research that they can detect harmful stimuli and withdraw from the source of the stimuli but that could be a simple reflex without the inner 'feeling' of unpleasantness that we associate with pain.

"This research demonstrates that it is not a simple reflex but that crabs trade off their need for a quality shell with the need to avoid the harmful stimulus. Such trade-offs are seen in vertebrates," he went on. "Humans, for example, may hold on a hot plate that contains food whereas they may drop an empty plate."
