

Survival of the fittest: Ocean acidification produces winners and losers

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(Phys.org)—As atmospheric carbon dioxide levels continue to increase, the ocean absorbs more carbon dioxide. This absorption comes at a cost, since it makes the ocean more acidic. An acid ocean will affect all marine species, but the potential severity of these effects is the subject of debate.

Most research on [ocean acidification](#) has focused on the response of pooled groups of animals. A recent study published in the journal [PLoS ONE](#) by a research team at Macquarie University has examined the responses of individual animals. They used the common purple sea urchin (*Heliocidaris erythrogramma*) to test if some individuals benefit from a more acidic ocean.

The Macquarie team, led by PhD researcher Peter Schlegel, examined the effect of CO₂-induced pH changes on sperm swimming behaviour and fertilisation success. While ocean acidification generally decreases sperm activity and [fertilization success](#), some individuals actually perform better under the more acidic conditions that will characterise near-future oceans.

"Our results suggest that some individuals will exhibit enhanced fertilisation in acidified oceans, supporting the concept of 'winners' and 'losers' of climate change at an individual level", said Schlegel.

It also suggests that adaption to the changed conditions is already underway. Selection for individuals that can reproduce under more acidic conditions may happen quickly, particularly since the selection occurs during the critical life phase of spawning and fertilization. The effects observed in sea urchins may apply to diverse marine species, all of which will undergo intense selection as the oceans acidification.

More information: The research paper can be found online www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0053118

Provided by Macquarie University

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