

Effects of ocean acidification on the rate of limb regeneration and righting time in the brittle star, *Ophiopholus aculeata*

Over the past 250 years, carbon dioxide concentrations in the atmosphere have risen and one third of the carbon dioxide has been absorbed into the ocean. Carbon dioxide is driving ocean acidification, putting marine calcifiers at risk due to a lack of carbonate ions to form calcium carbonate for shells and skeletons. For these reasons, it was hypothesized that reduced pH would have significant effects on the calcifying, regenerating brittle star *Ophiopholus aculeata*. Thirty brittle stars collected in Castine Harbor, Castine, Maine underwent single arm amputation at the second ossicle. Brittle stars were divided into two groups of fifteen; one group was subjected to an ambient seawater treatment with a pH of 7.9, the other, a variable seawater treatment with a pH of 7.6. Brittle stars remained in their prospective treatments for four weeks; each week, a measure of length regeneration and righting time were taken. It was found that reduced pH significantly decreased percent regeneration of brittle stars in the variable treatment, but had no significant effect on righting time. However, a significant increase in righting time over time was found within both pH treatments. Studies have found that marine calcifiers exhibit a wide variety of responses to ocean acidification, thus more research should be carried out to fully understand what may happen to calcifying species in the acidified ocean conditions predicted for the end of the century.