

# Impact of Ocean Acidification on Relative Fitness and Interspecies Interactions of Picophytoplankton

Knight, Margaret (School: Pelham Memorial High School)

Ocean Acidification (OA) is caused by increase of CO<sub>2</sub> in the atmosphere due to industrialization. Oceanic pH prior to the industrial revolution was 8.2. By 2100, pH will be 7.8 if acidification continues as predicted. OA is expected to globally impact health and physiology of marine organisms. This study investigated how elevated CO<sub>2</sub> affects relative fitness of two dominant species of marine picophytoplankton: *Prochlorococcus* and *Synechococcus*. These species were cultured individually at ambient or elevated CO<sub>2</sub> conditions and then were mixed into co-culture to compete at these conditions. It was determined using difference in growth rates between the 2 conditions that the fitness of the species is not impacted by CO<sub>2</sub> alone. Culturing conditions affect fitness of both species. When *Prochlorococcus* is co-cultured with *Synechococcus*, the harmful effect of CO<sub>2</sub> is mitigated. This shows that the conservation of biodiversity and climate change prevention are important at the microbial level.