

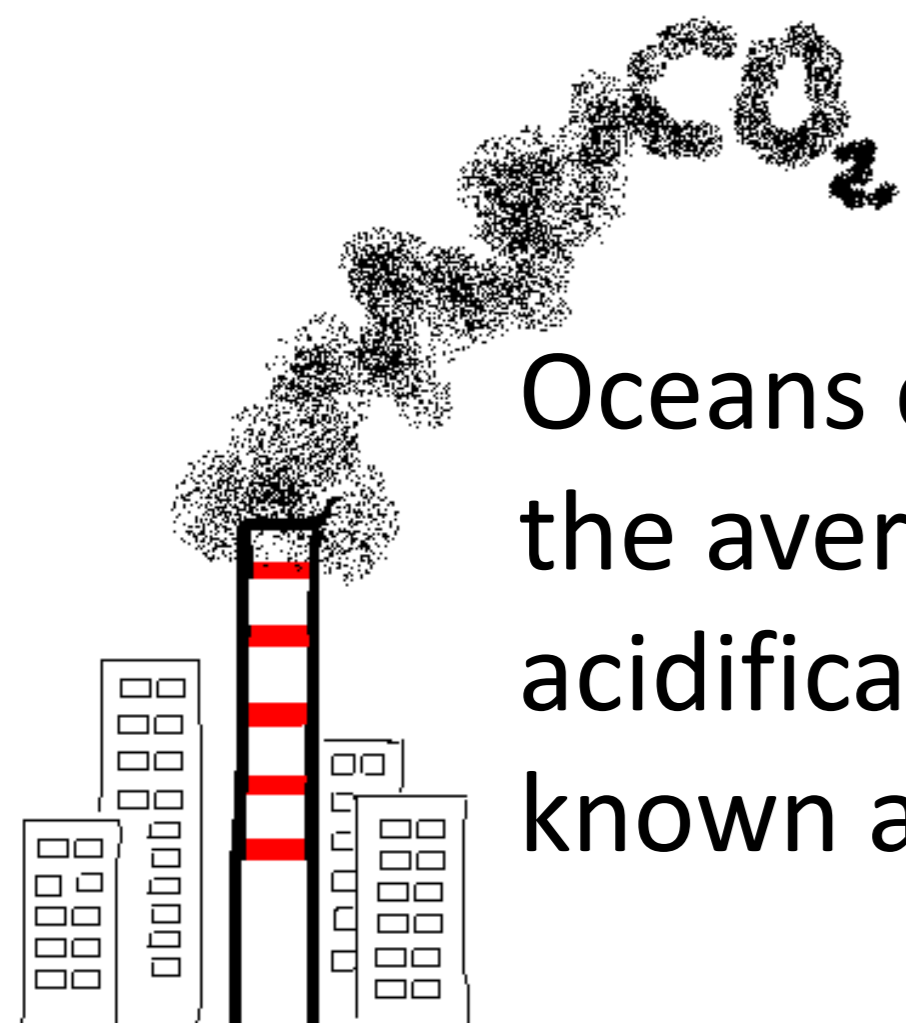
Effects of ocean acidification on rocky shore communities at Vulcano Island

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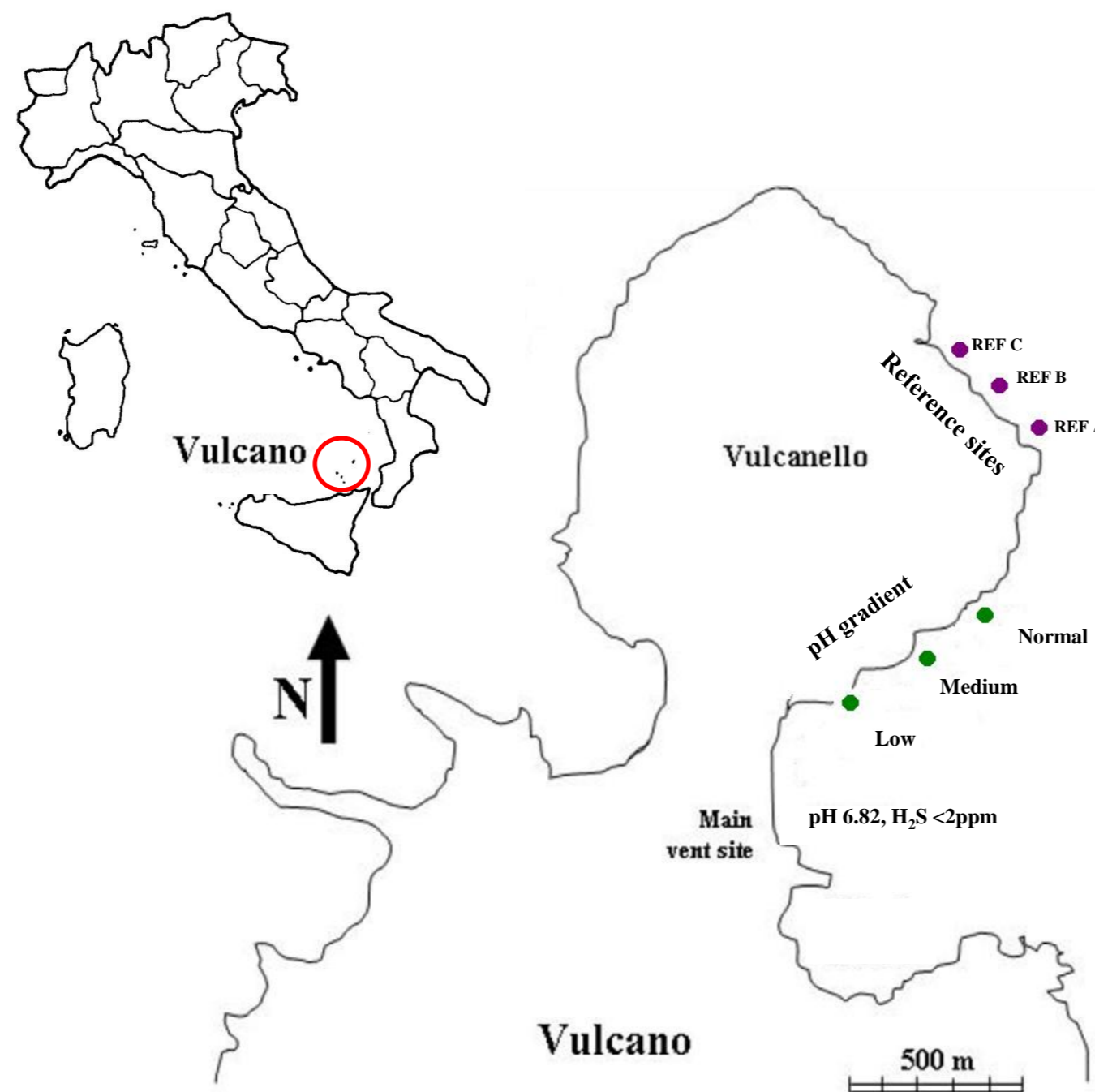
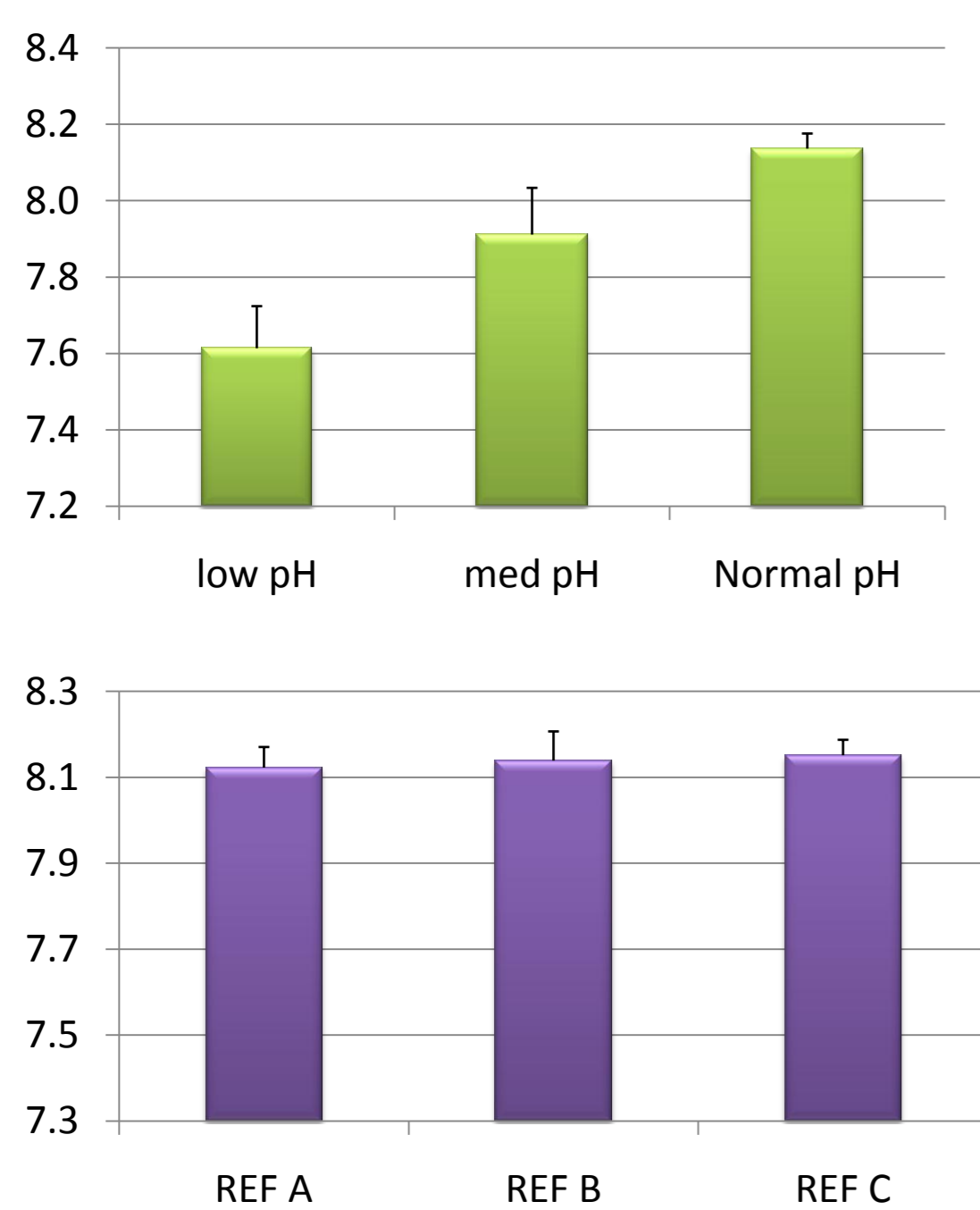
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Oceans currently absorb over 25 million tons of carbon dioxide every day which has caused the average pH of surface waters to decrease. Evaluation of the effects of this rapid acidification on the biodiversity of marine life is an urgent research priority as very little is known about the effects of ocean acidification on marine communities and ecosystems.



CO₂ vents on Vulcano Island (NE Sicily)



Fig. 1 CO₂ study area and graphs of pH (mean ± s.e., n=48) along a gradient near volcanic vents (green) and at reference sites (purple), Oct 2009.

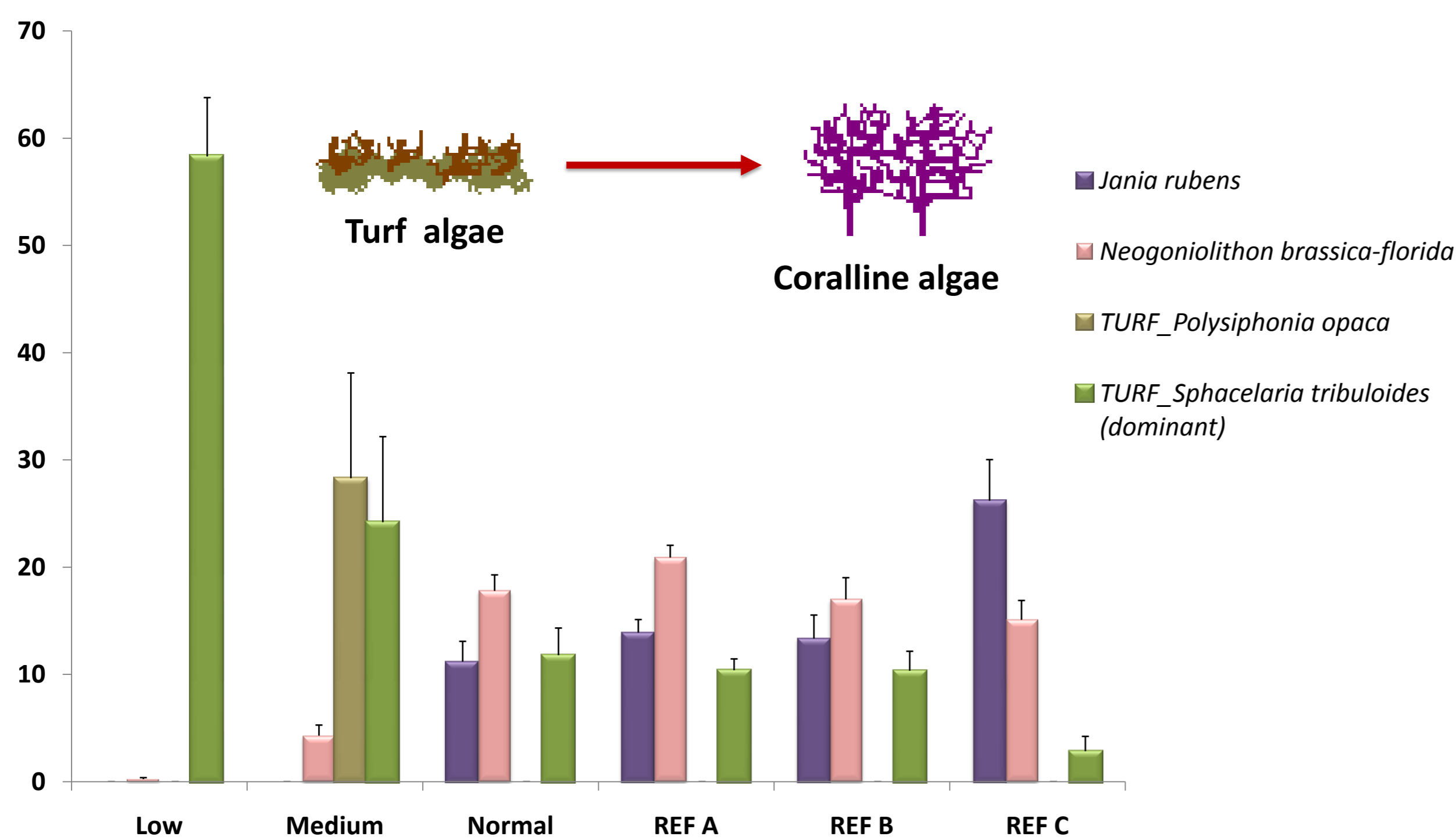


Fig. 2 Average % cover of species (± s.e., n=10) in 20x 20 cm rocky shore quadrats along a gradient in pH showing the main drivers of differences in community composition calculated using SIMPER analysis.

We assessed the spatial patterns of intertidal benthic assemblages exposed to three different pH levels and at three reference sites.

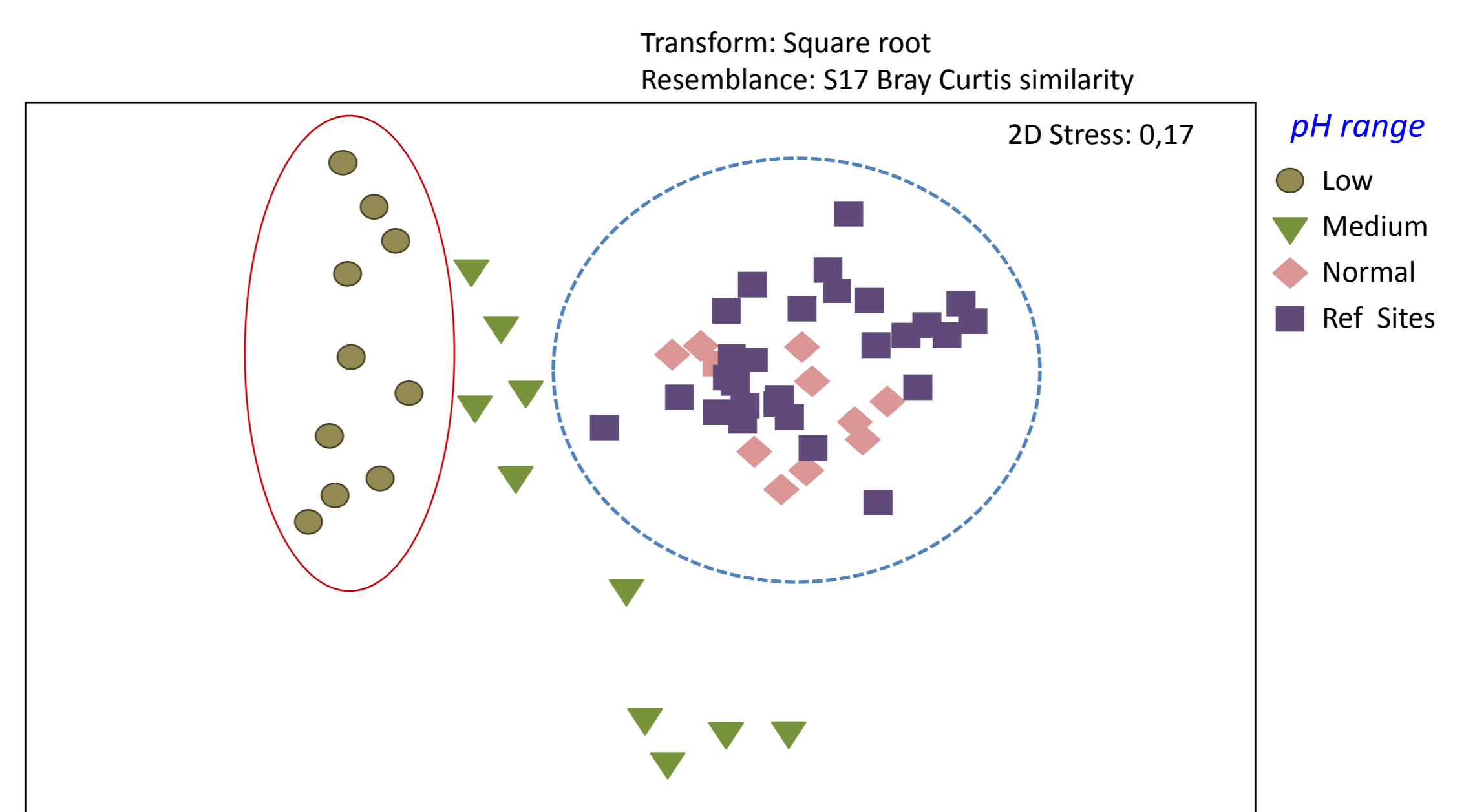


Fig.3 Multivariate analyses showed significant shifts in benthic community composition and biodiversity patterns as mean pH decreased from 8.14 to 7.91 and 7.61.

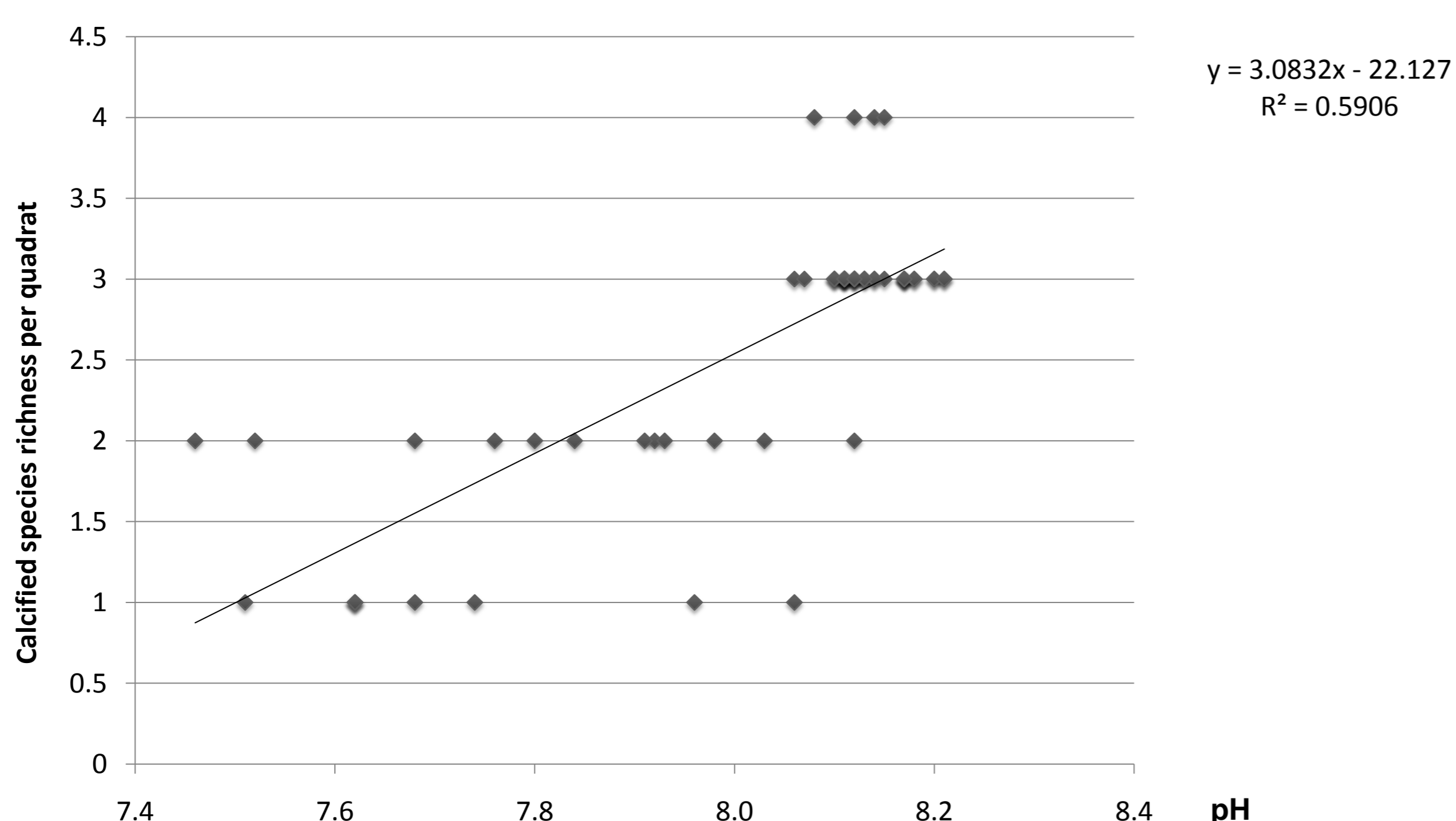


Fig. 4 There were significantly fewer calcified species in rocky shore communities at mean pH < 7.9

CO₂ These observations show that coastal ecosystems are disrupted by ocean acidification and underline the necessity of reducing anthropogenic carbon dioxide emissions.