

# Nitrogen enrichment in macroalgae following mass coral mortality

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# **Supplementary Figures**



**Supplementary Figure 1.** Mo'orea, French Polynesia. The sites for collection and transplantation of *Sargassum mangarevense* specimens (n=10) are labelled with the blue circles, and the four sites with benthic cover from the Service National d'Observation CORAIL are labelled in abbreviated capital letters (TIA = Tiahura; E2B = Entre Deux Baies; PIH = Pihaena; AR = Aroa) with green triangles. CRIOBE research station, where the specimens were depleted of internal nutrients for 7 days, is indicated with a white circle and black dot.



**Supplementary Figure 2.** Average Temperature patterns from *in situ* temperature loggers at Tiahura reef on the north shore of Moorea in 2019. (A) In 2019 (blue line) temperatures exceed the maximum monthly mean of 29 °C during the Austral summer, and it was much warmer than the average long-term seasonal pattern (blue line with 95% confidence intervals as dashed blue lines). (B) Cumulative heat stress, measured as a 12-week running sum for all temperatures exceeding the maximum monthly mean, peaked in April 2019.



**Supplementary Figure 3**. Box plots of the median a) total and branching coral cover in both pre-bleaching and post-bleaching years (2014 and 2017, respectively) on regime-shifted reefs (n=6), b) the average  $\delta^{15}N$  signatures in *Sargassum* sp. tissues in both years, and c) the average percent N (%N) in both years. The pale blue boxes represent the pre-bleaching year and pale pink boxes represent the post-bleaching year, which both show the third quartile (Q3) and first quartile (Q1) range of the data and data outliers.



**Figure 4.** Box and whisker plots of the median %N in *Sargassum mangarevense* tissue across three treatments from a short-term transplant experiment, showing the third quartile (Q3) and first quartile (Q1) range of the data, the whiskers (95% quartile) and data outliers. Connecting letters indicate significance between treatments. Nutrient signatures were measured in subset samples of the same specimens that were collected from a low-nutrient reef (initial), placed in laboratory aquaria to deplete internal nutrient stores for ~7 days (pre-transplant), before they were deployed on the bleached reef for 3 weeks (post-transplant) (n=10).