Shifts in sponge-microbe mutualisms across an experimental irradiance gradient

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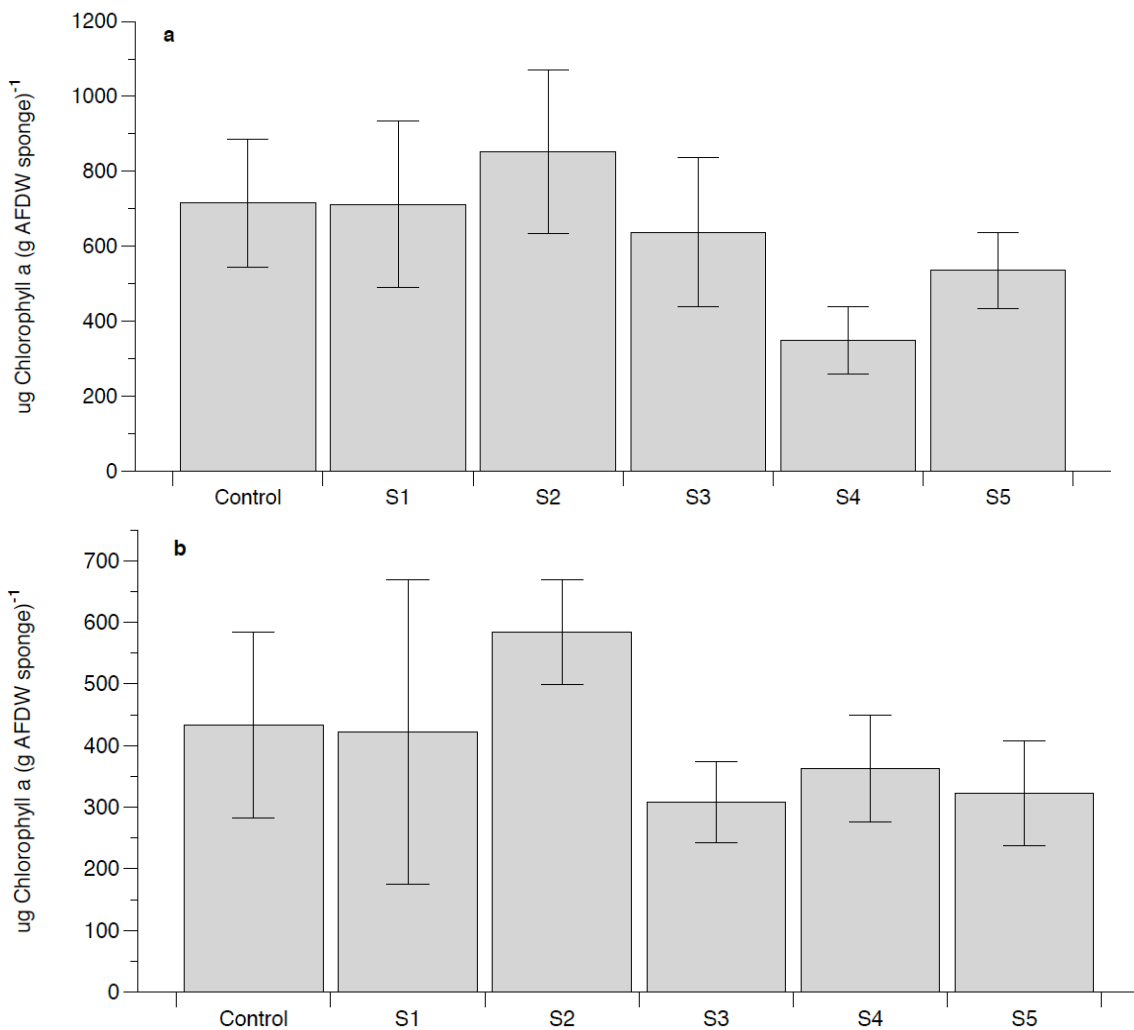
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Fig. S1. Mean (± standard error) chl *a* concentrations of *A. cauliformis* (a) and *A. fulva* (b) in samples from across a gradient of 5 irradiances (S1 [1 layer of shade cloth] to S5 [5 layers of shade cloth]) and a control. In *A. cauliformis*: N= 6 (control), N= 8 (S1), N= 9 (S2), N= 7 (S3), N= 9 (S4), and N= 8 (S5). In *A. fulva*: N= 6 (control), N= 6 (S1), N= 6 (S2), N= 6 (S3), N= 8 (S4), and N= 7 (S5)
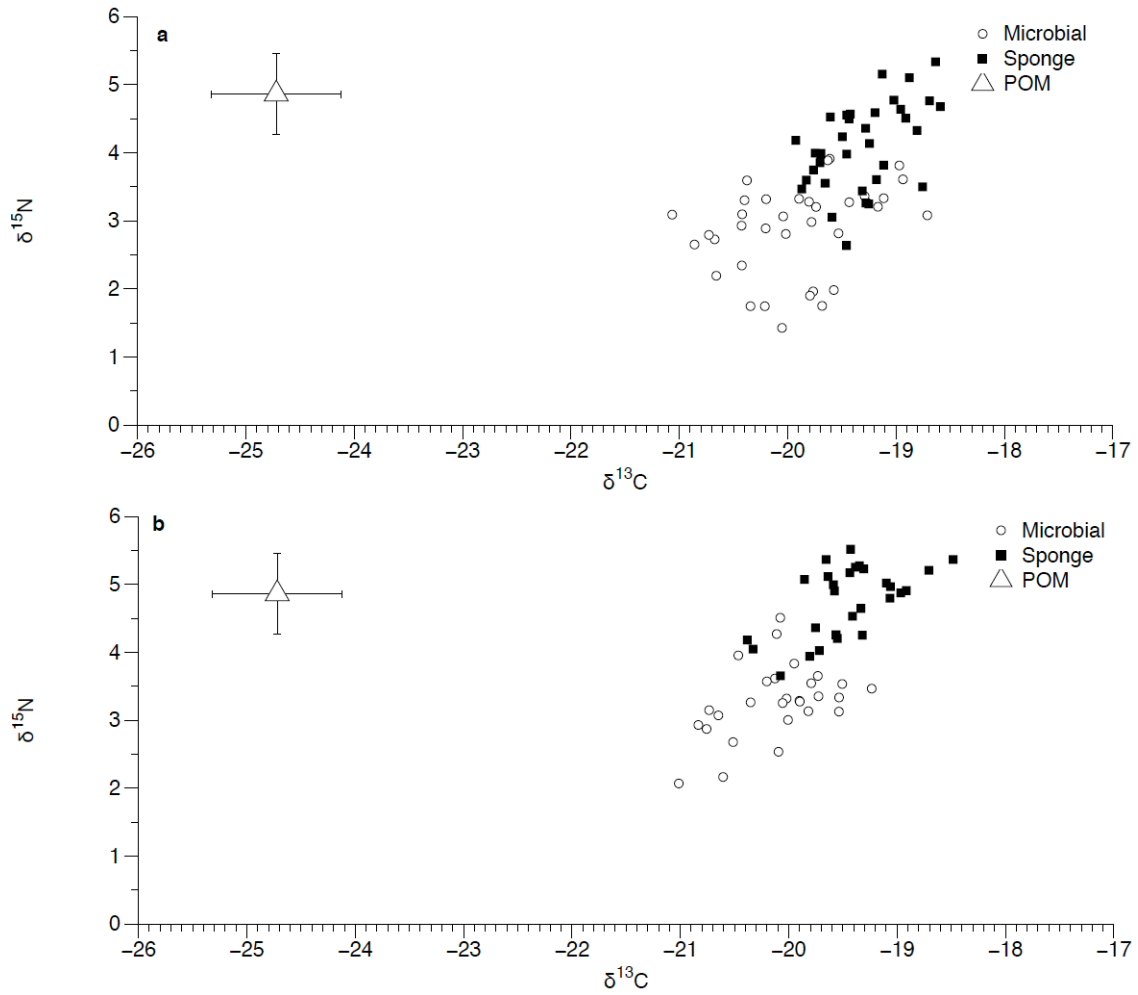
Fig. S2. Bi-plot of stable isotope (δ^{13}C and δ^{15}N) values of microbial (circle) and sponge (square) cell fractions isolated from bulk sponge tissue of experimental samples of *A. cauliformis* (a) and *A. fulva* (b) Mean δ^{13}C and δ^{15}N ($\pm$ standard error) values of particulate organic matter (POM; triangles) are shown for reference
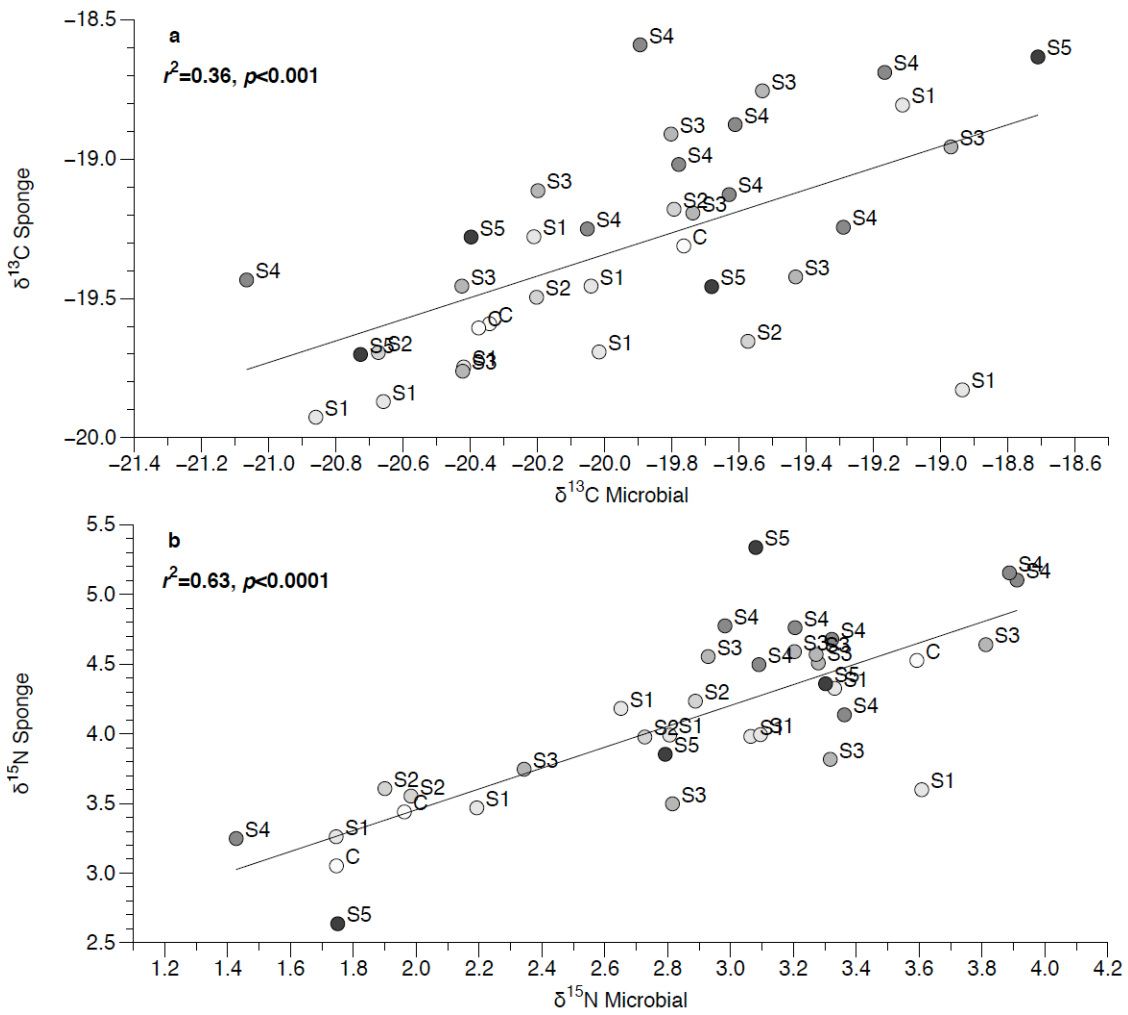
Fig. S3. Sponge $\delta^{13}C$ (a) and $\delta^{15}N$ (b) as a function of microbial $\delta^{13}C$ and $\delta^{15}N$ values in *A. cauliformis* in samples from across a gradient of 5 irradiances (S1 [1 layer of shade cloth] to S5 [5 layers of shade cloth]) and a control (C)
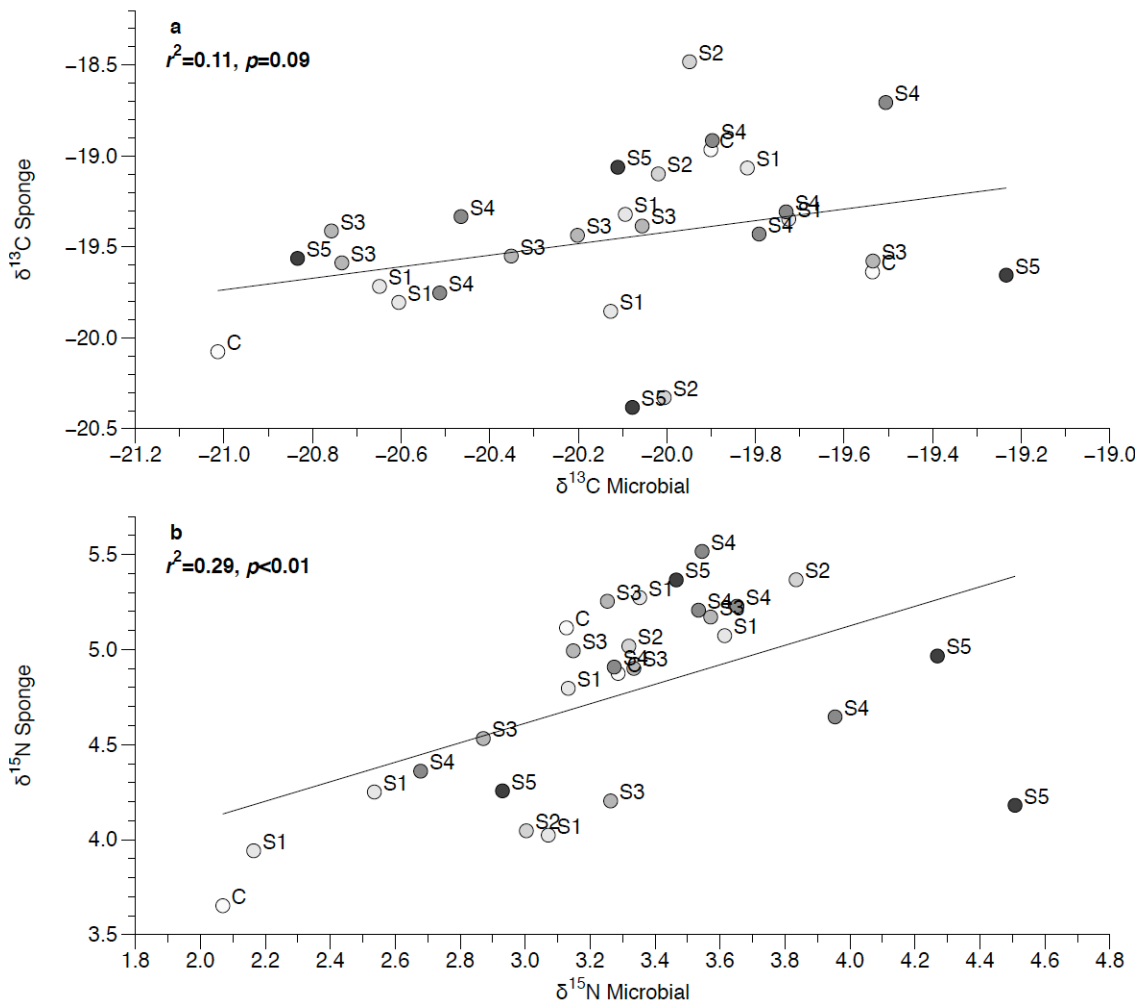
Fig. S4. Sponge $\delta^{13}C$ (a) and $\delta^{15}N$ (b) as a function of microbial $\delta^{13}C$ and $\delta^{15}N$ values in *A. fulva* in samples from across a gradient of 5 irradiances (S1 [1 layer of shade cloth] to S5 [5 layers of shade cloth]) and a control (C)
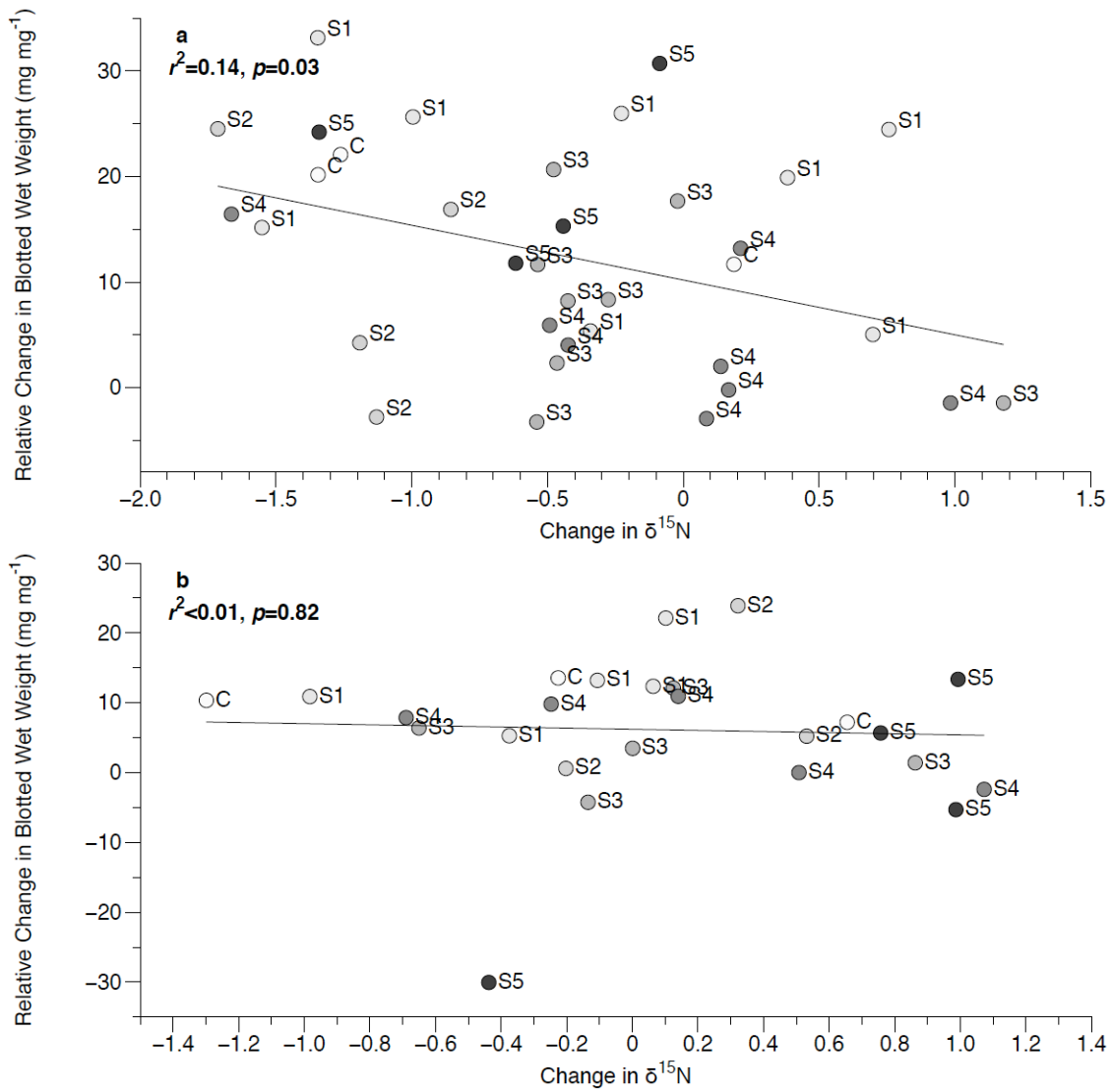
Fig. S5. Sponge growth rate (relative change in blotted wet weight) as a function of change in the δ^{15}N values (from initial) of the microbial fraction in *A. cauliformis* (a) and *A. fulva* (b) across a gradient of 5 irradiances (S1 [1 layer of shade cloth] to S5 [5 layers of shade cloth]) and under control (C) canopies
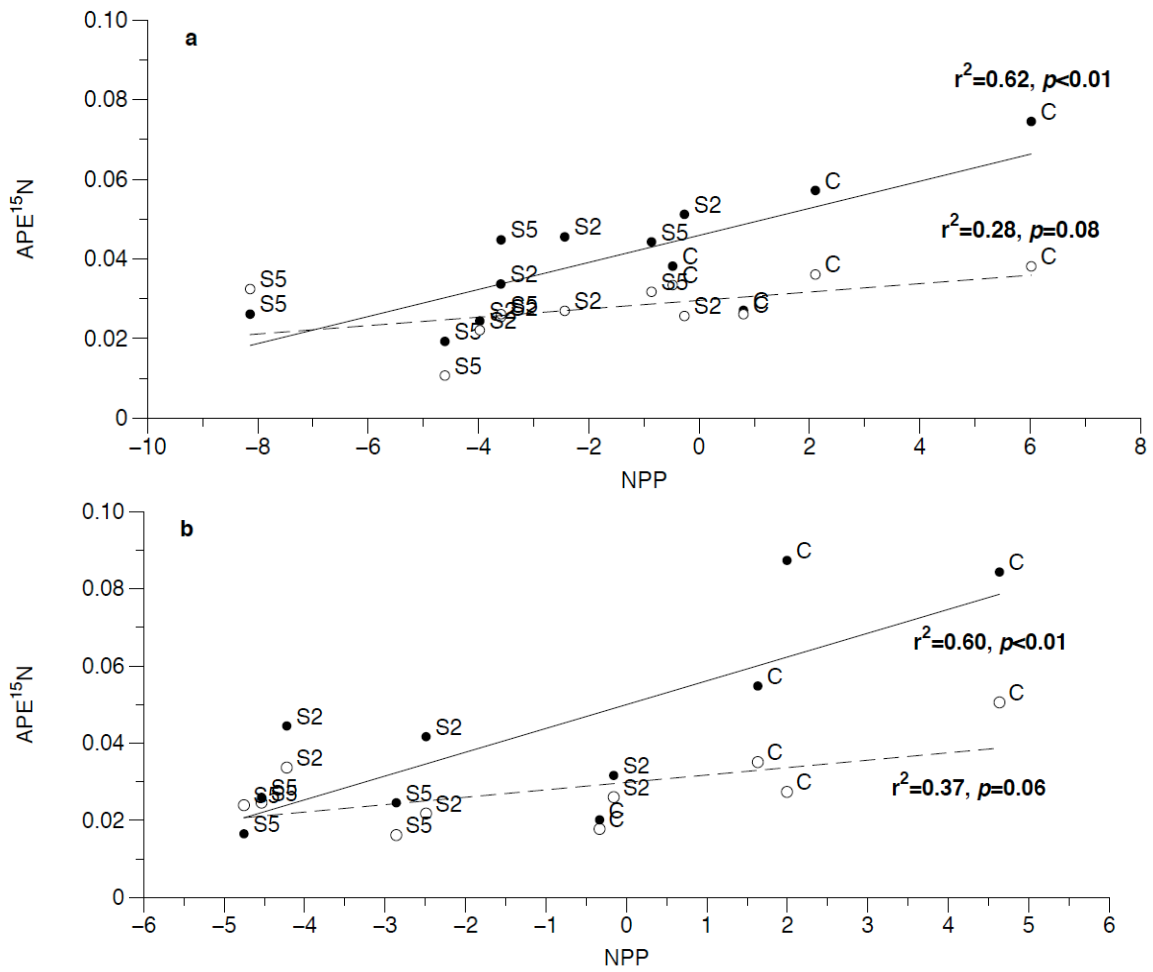
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Fig. S6. APE^{15}N of microbial (solid line) and sponge (dashed line) fractions of *A. cauliformis* (a) and *A. fulva* (b) as a function of Net Primary Productivity (NPP) from control (C), intermediate irradiance (S2), and full shade (S5) treatments
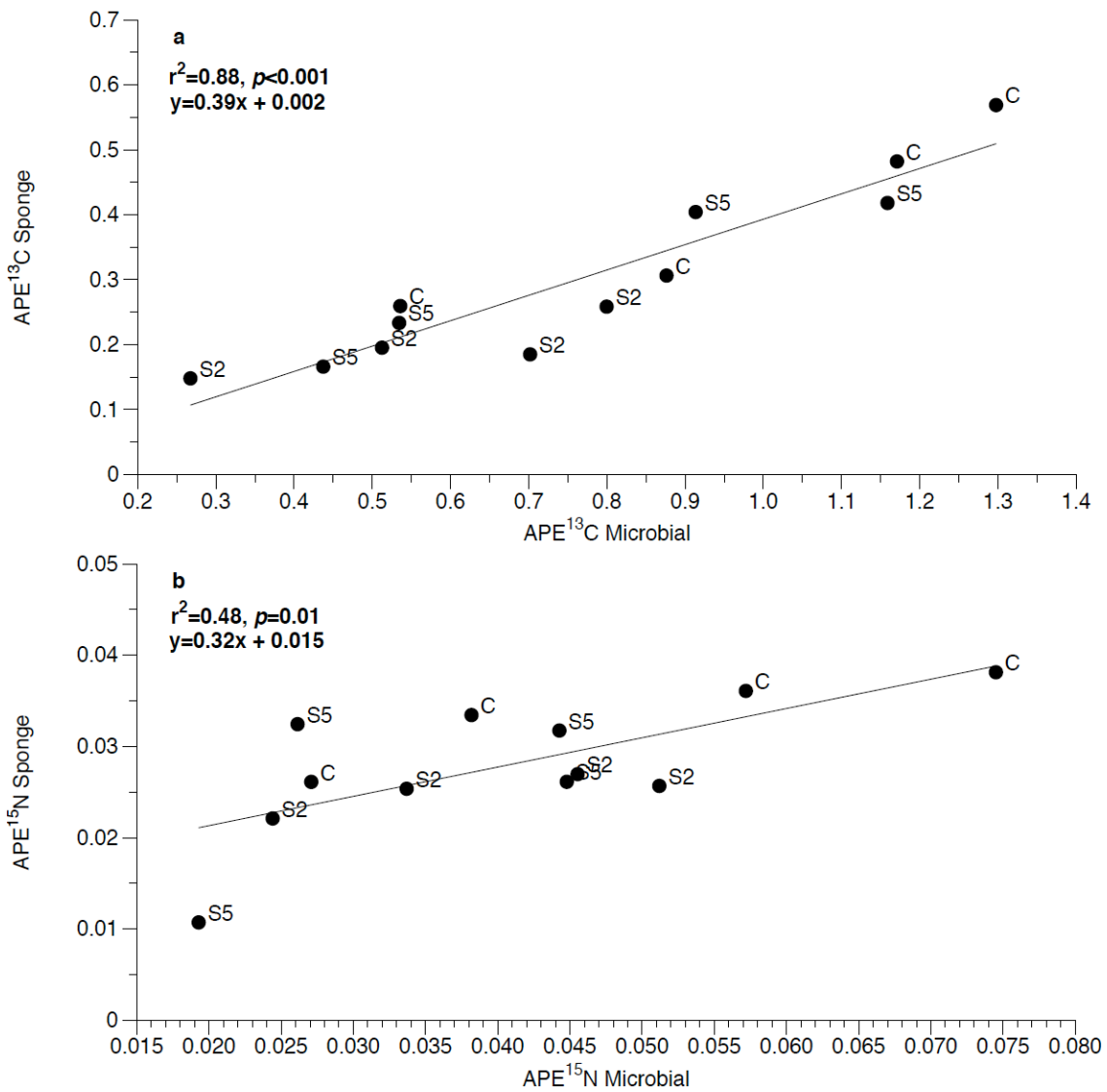
Fig. S7. APE^{13}C (a) and APE^{15}N (b) of the sponge fraction as a function of the APE^{13}C and APE^{15}N values of the corresponding microbial fraction in *A. cauliformis* from control (C), intermediate irradiance (S2), and full shade (S5) treatments

Fig. S8. APE^{13}C (a) and APE^{15}N (b) of the sponge fraction as a function of the APE^{13}C and APE^{15}N values of the corresponding microbial fraction in *A. fulva* from control (C), in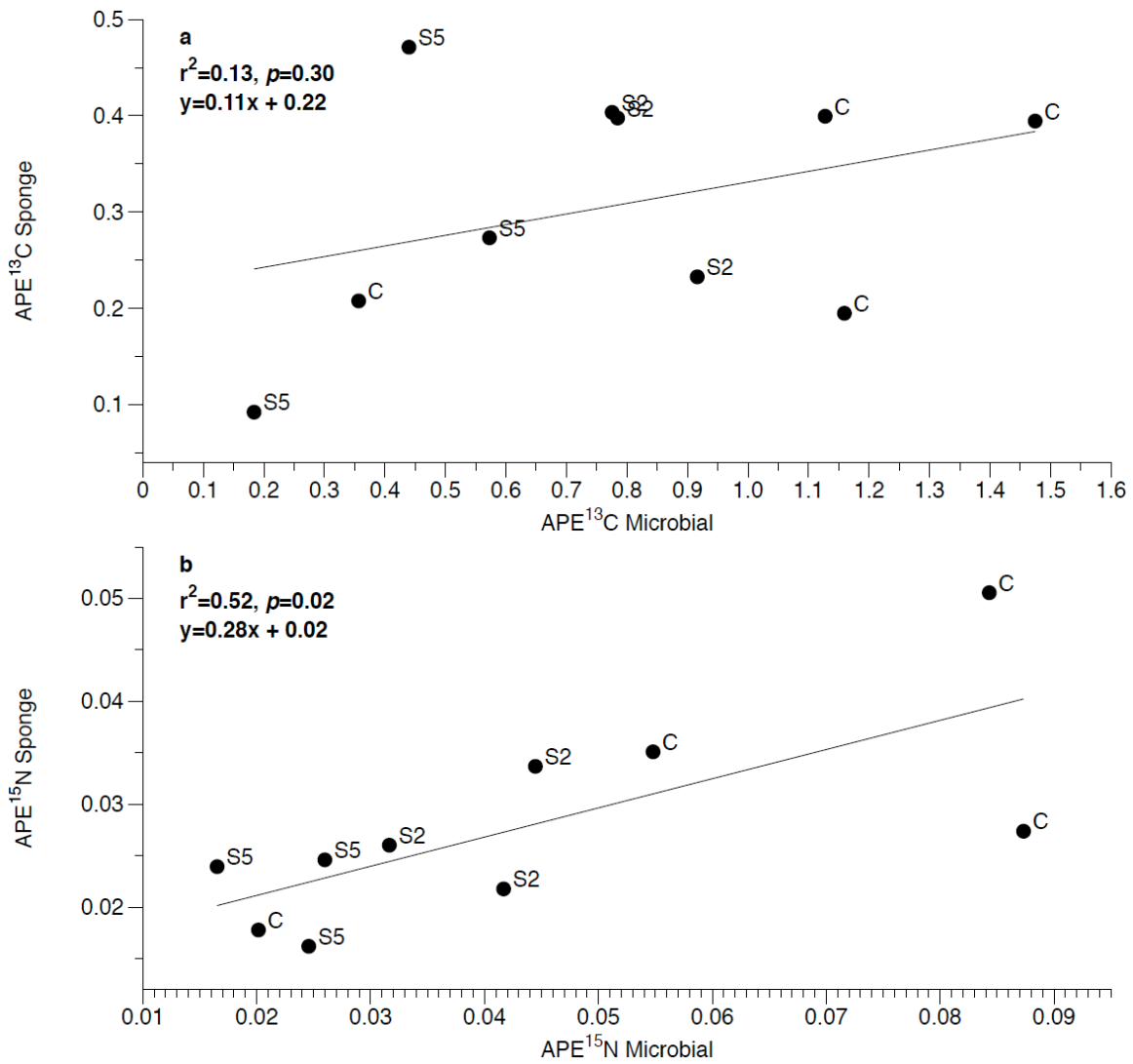termediate irradiance (S2), and full shade (S5) treatments