

*Supplement of*

**The influence of irradiance and interspecific differences on  $\delta^{11}\text{B}$ ,  $\delta^{13}\text{C}$ ,  $\delta^{18}\text{O}$ , and elemental ratios in four coralline algae complexes**

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## **Supplemental Figures**

**Figure S1:** Data and significant models (black line) for the geochemical parameters measured and used in this study.

**Figure S2:** Data and significant models (black line) for the physiological parameters from Krieger et al. (2023) and used in this study.

**Figure S3:** Principal component analyses for (a) the relevant geochemical and physiological parameters used in this study and (b) elemental ratios and physiological parameters.

**Figure S4:** Statistical analysis, Mantel tests, for (a) the geniculate complexes and (b) the non-geniculate complexes.

**Figure S5:** Cross-plots of  $\delta^{13}\text{C}_{\text{mineral}}$  and  $\delta^{11}\text{B}$  for other photo-physiological parameters, (a) and (b) Gross photosynthesis, (c) and (d) for ETRmax, (e) and (f) for Chl a.

**Figure S6:** Cross-plots of B/Ca with (a)  $\delta^{11}\text{B}$  and (b) Chl a.

## **Supplemental Tables**

**Table S1:** Geochemical and physiological data.

**Table S2:** Comparison of linear and quadratic models based on AIC for the geochemical parameters measured in this study.

**Table S3:** Comparison of linear and quadratic models based on AIC for the physiological parameters published in Krieger et al., (2023).

**Table S4:** ANOVA testing geochemical and physiological data against changing irradiance.

**Table S5:** T-test for parameters presenting significant ANOVA with changing irradiance (from Table S4).

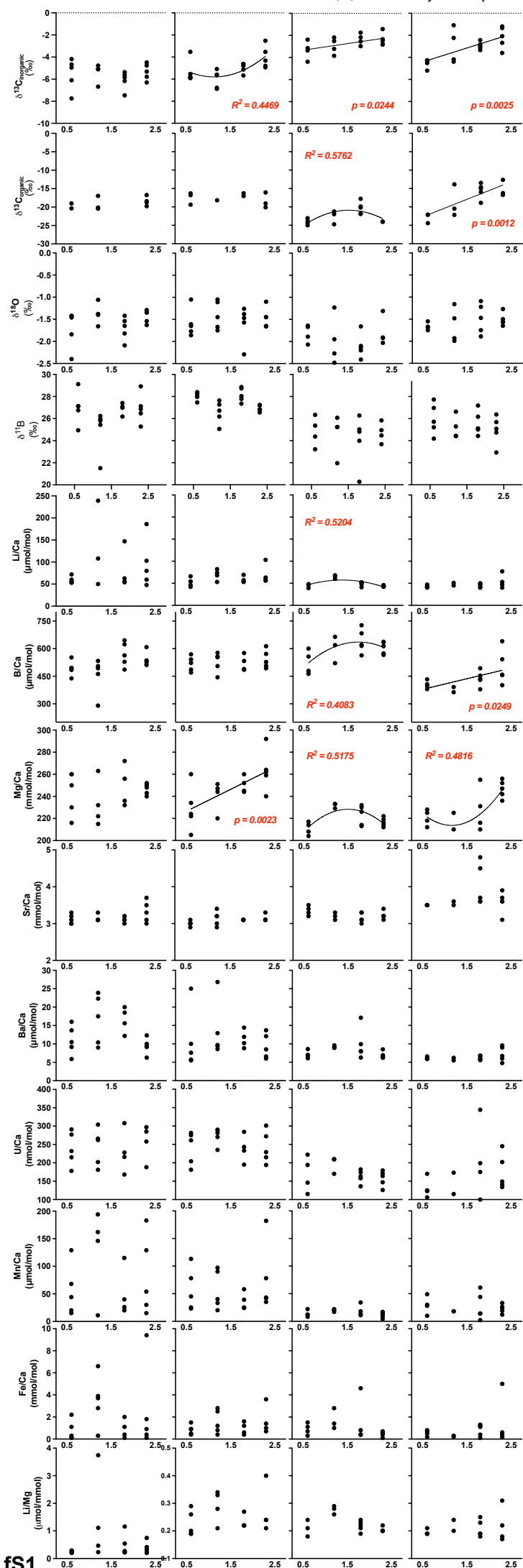
**Table S6:** ANOVA testing geochemical and physiological data between complexes.

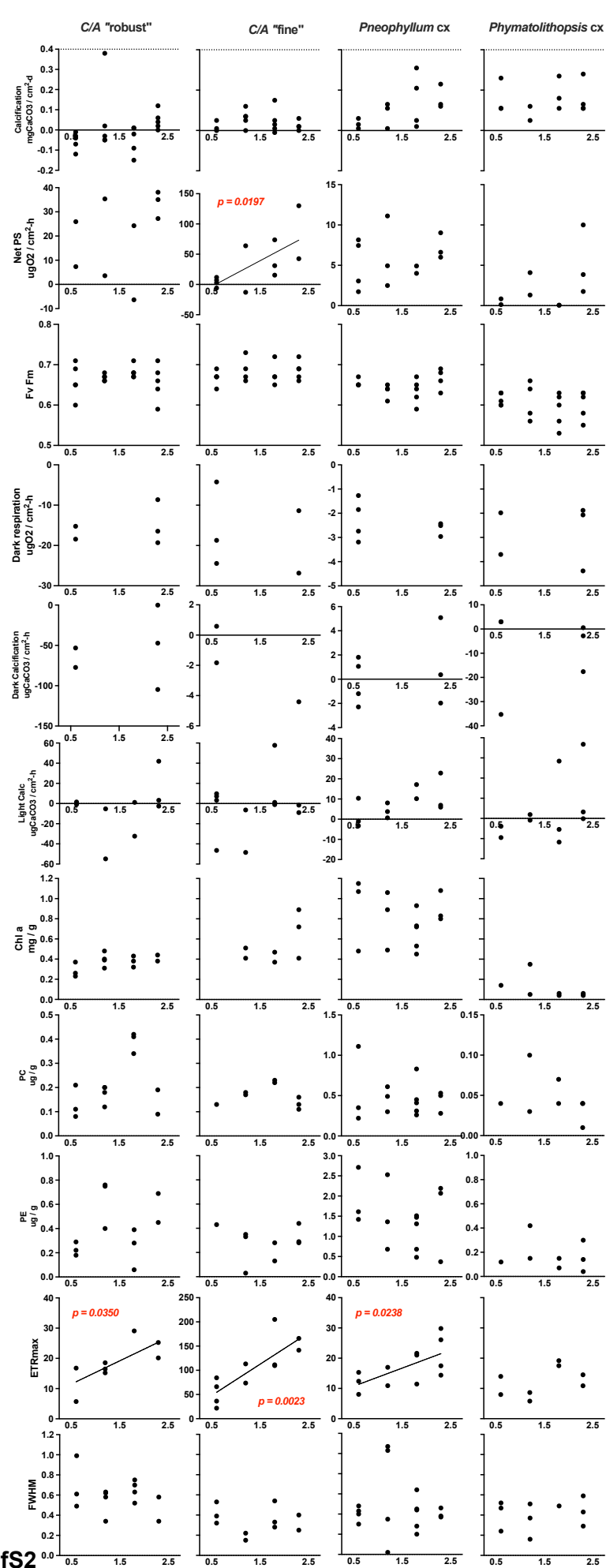
**Table S7:** T-test for parameters presenting significant ANOVA when testing for differences between complexes.

**Table S8:**  $\delta^{11}\text{B}$  of NIST 8301, JCp-1 and seawater measured in this study.

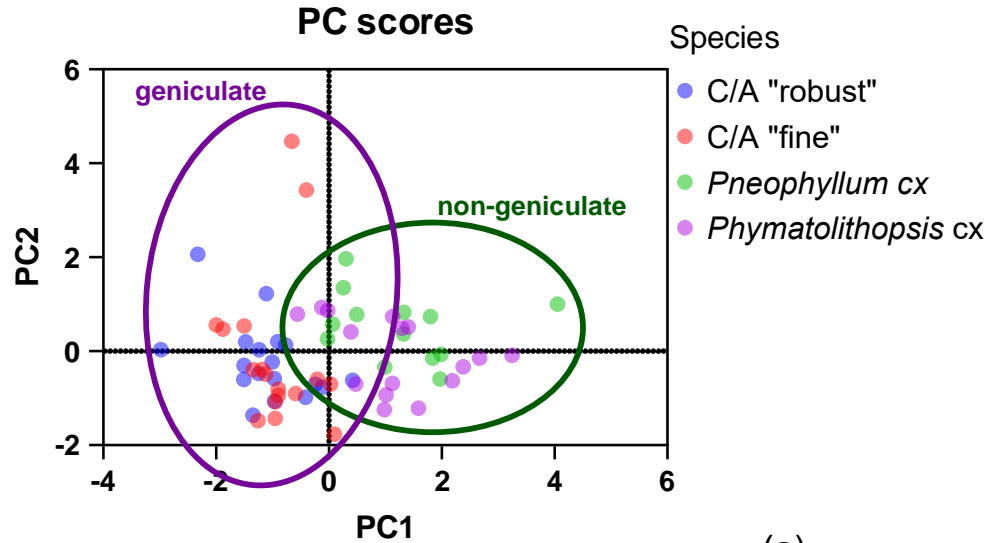
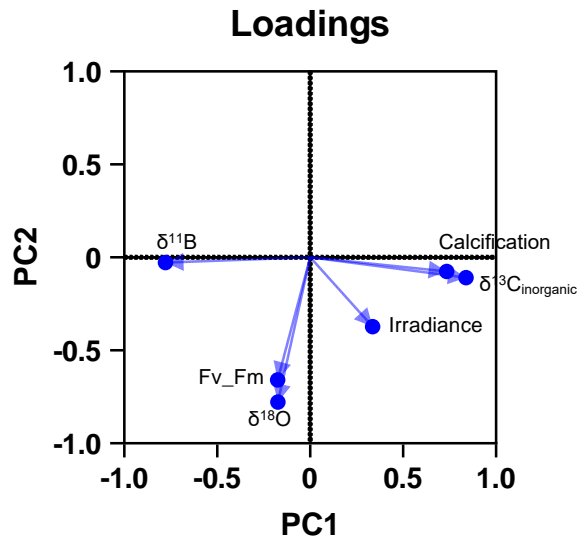
C/A "robust"

C/A "fine"

*Pneophyllum* cx*Phymatolithopsis* cx

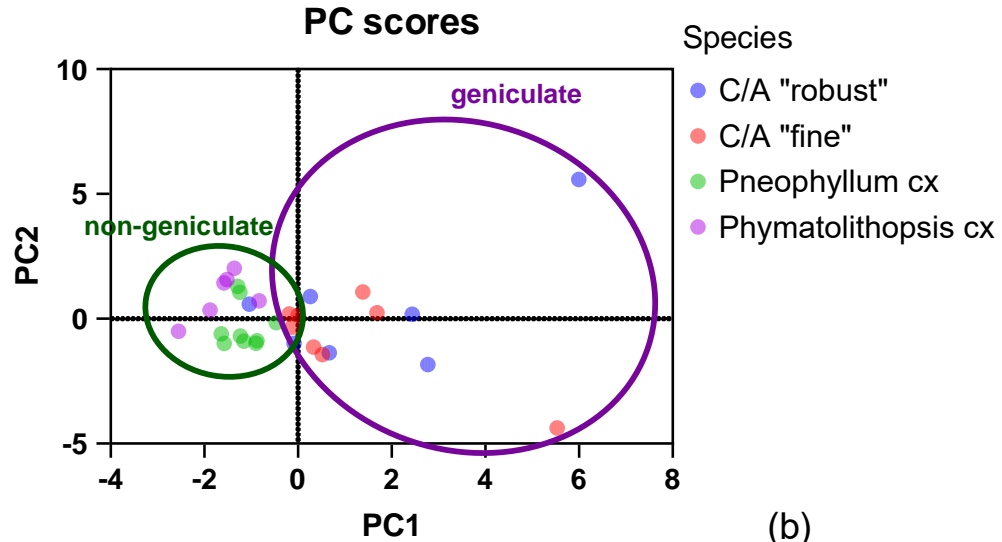
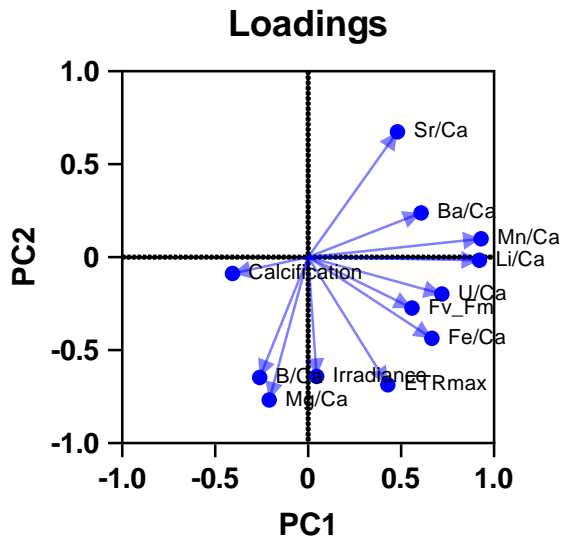


# Physiological Data PCA



(a)

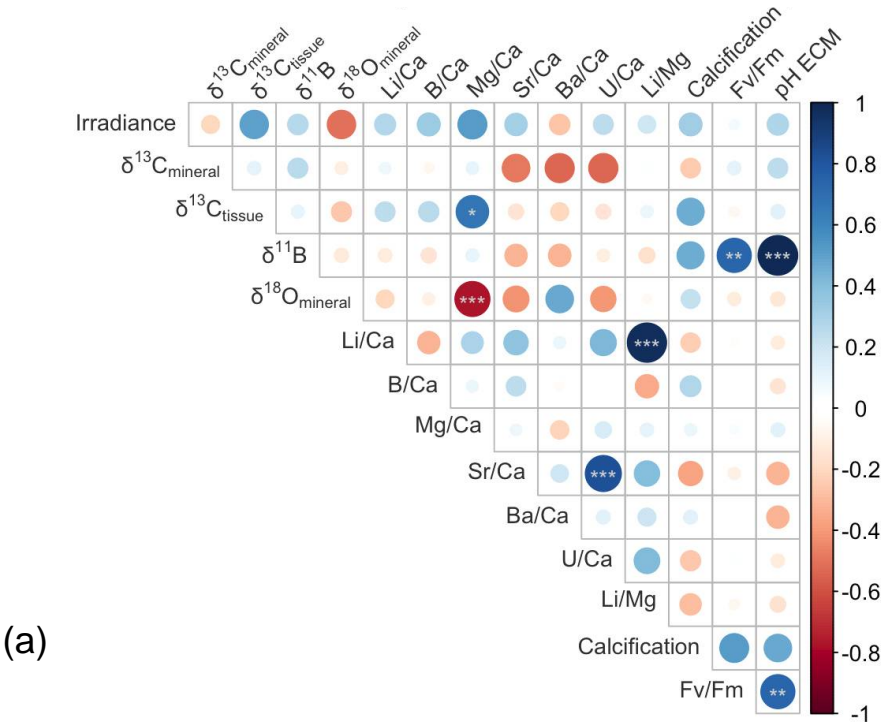
# Trace Element Data PCA



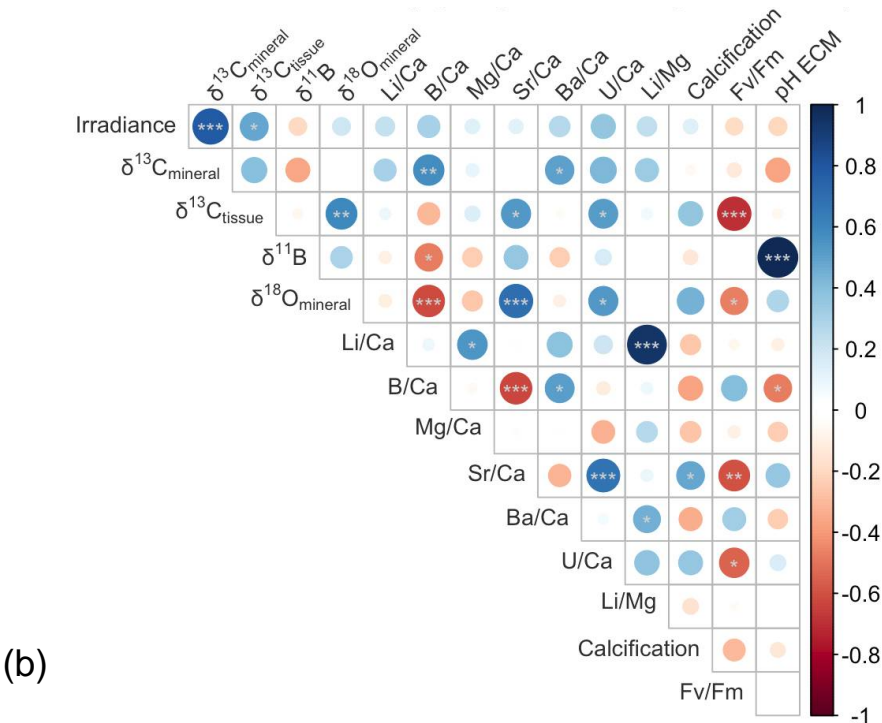
(b)

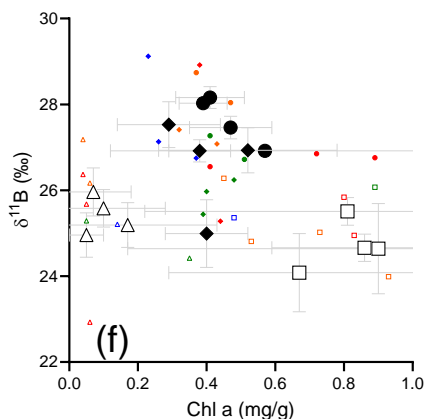
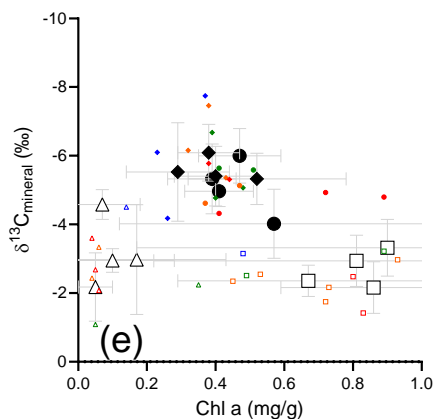
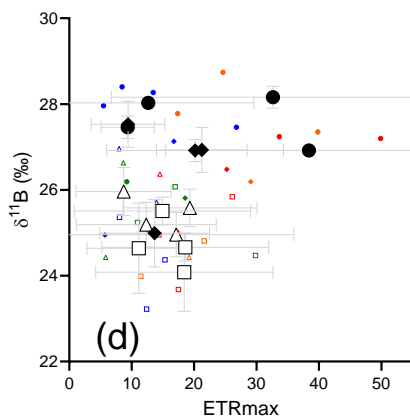
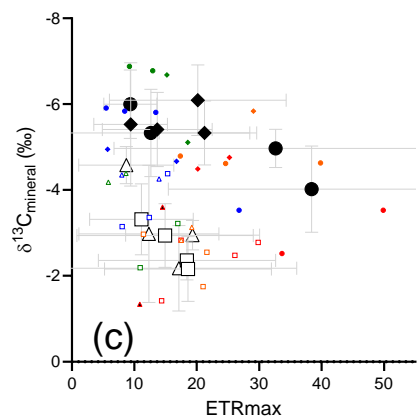
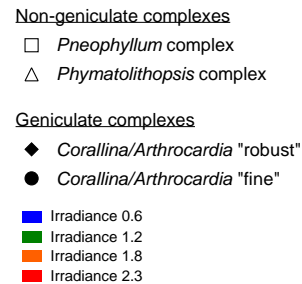
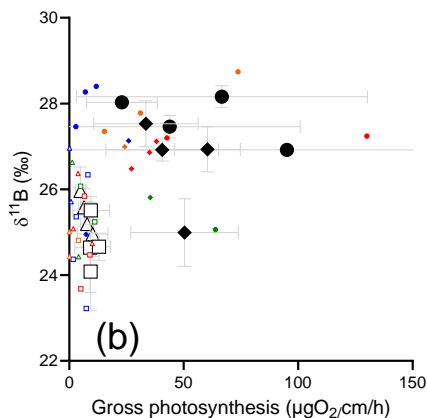
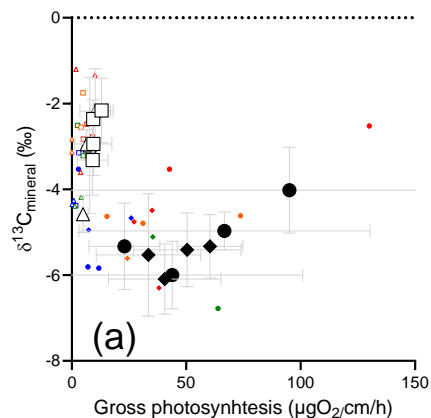
# Mantel tests

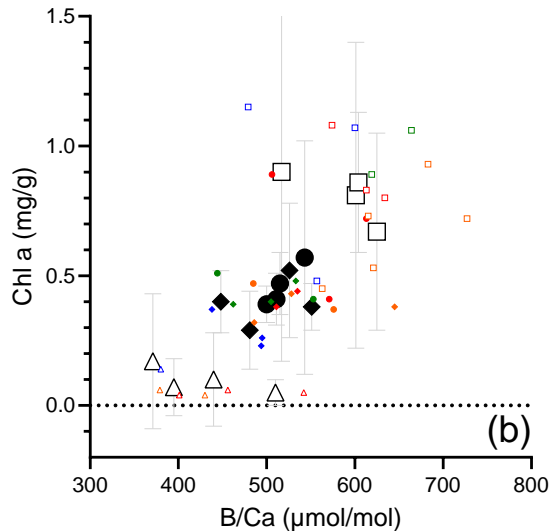
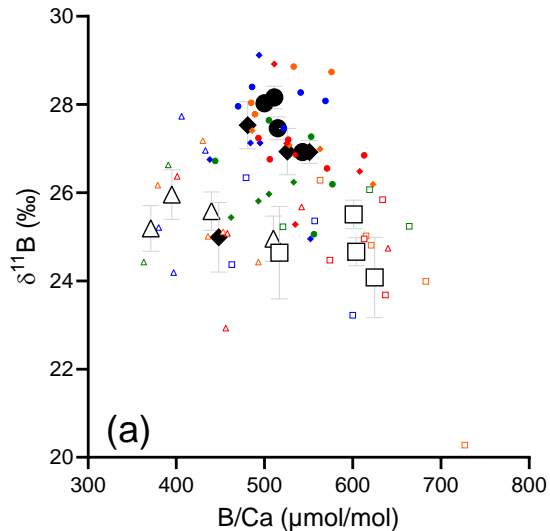
## Geniculate complexes



## Non-geniculate complexes







Non-geniculate complexes

□ *Pneophyllum* complex

△ *Phymatolithopsis* complex

Geniculate complexes

◆ *Corallina/Arthrocardia* "robust"

● *Corallina/Arthrocardia* "fine"

■ Irradiance 0.6

■ Irradiance 1.2

■ Irradiance 1.8

■ Irradiance 2.3