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Supplement of

Quantifying the δ^{15}N trophic offset in a cold-water scleractinian coral (CWC): implications for the CWC diet and coral δ^{15}N as a marine N cycle proxy

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Table S1. Sample types, collection dates, and collection location.

Date	Station Name	Lat (˚N)	Lon (˚W)	Tissue	Skeleton	Nitrate	SPOM	Net Tow
Sept. 2020	PC	48.588	-122.937			X		
Sept. 2020	FHL Dock	48.545	-123.012					X
Sept. 2020	Point Caution	48.563	-123.014	X	X			
April 2021	Shady Cove	48.547	-123.007	X		X	X	
Nov. 2020	Bell Island	48.596	-122.981	X	X	X		
Aug 2021	Station 1	48.553	-123.006			X	X	X
Aug 2021	Station 2	48.546	-123.007			X	X	X
Aug 2021	Station 3	48.562	-123.014			X	X	X
Aug 2021	Station 4	48.549	-123.005			X	X	X

Table S2. Summary of experimental treatments. In the first three columns, we provide the provenance of experimental groups and the IDs used to describe the different Artemia. For each experimental group, we also show the average $\delta^{15}N$ of the artemia, hatched over multiple incubations, along with the corresponding 1 σ S.D. The final column in the table shows how many coral samples were assigned to each experimental group.

Experimental group	*Artemia* ID	Location	Average $\delta^{15}N$ (‰)	± σ (‰)	Number of coral samples
Green	GSL	Great Salt Lake	17.0	0.3	18
Yellow	1816	Lake Ulzhay, Russia	13.8	0.4	12
Orange	1805	Vinh Chau, Vietnam	9.9	0.3	12
Pink	1808	Tibet	6.3	0.2	12

Table S3. Relative carbon and nitrogen content of the experimental *Artemia* strains and corresponding $\delta^{13}C$ and $\delta^{15}N$ (standard error = ± 0.3 ‰)

***Artemia* Strain**		**% C**	**$\delta^{13}C$ (‰)**	**% N**	**$\delta^{15}N$ (‰)**	**Molar C/N ratio**
GSL	Cysts	51.7	-19.1	9.1	16.6	6.7
	Nauplii	49.1	-18.9	9.6	16.9	6.0
1816	Cysts	49.5	-20.1	9.5	13.4	6.5
	Nauplii	44.0	-19.1	7.6	14.1	5.1
1805	Cysts	51.9	-20.0	9.4	9.9	6.5
	Nauplii	42.9	-19.2	10.3	9.9	4.8
1808	Cysts	57.5	-21.3	11.1	6.1	6.1
	Nauplii	50.6	-21.8	9.7	6.4	6.1

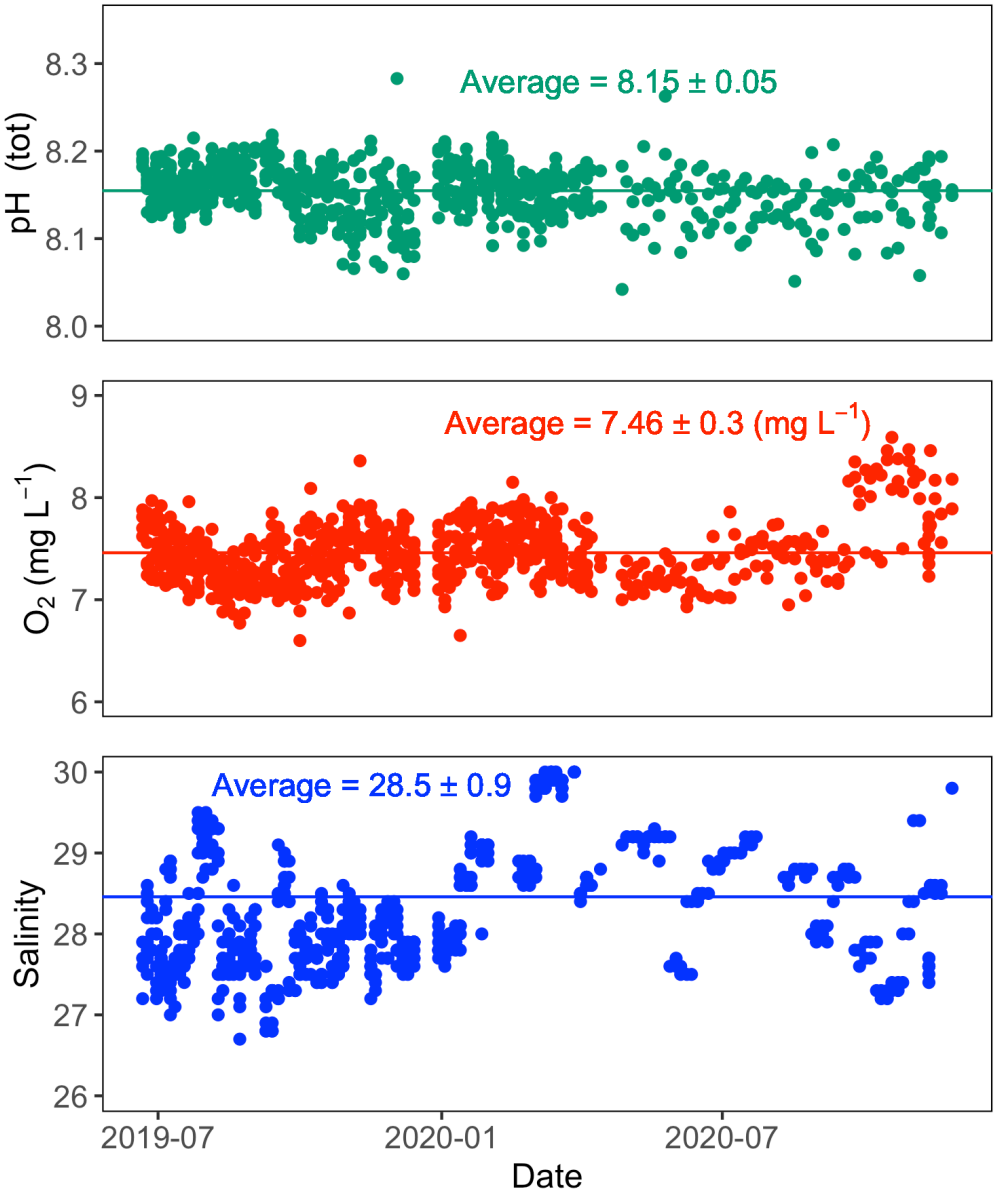

Figure S1. Measurements (a) of pH, (b) dissolved oxygen, and (c) salinity at bi-weekly water changes for the span of the feeding experiment. Measurements were taken from both spent and fresh incubation water. Error on respective means is the standard deviation.

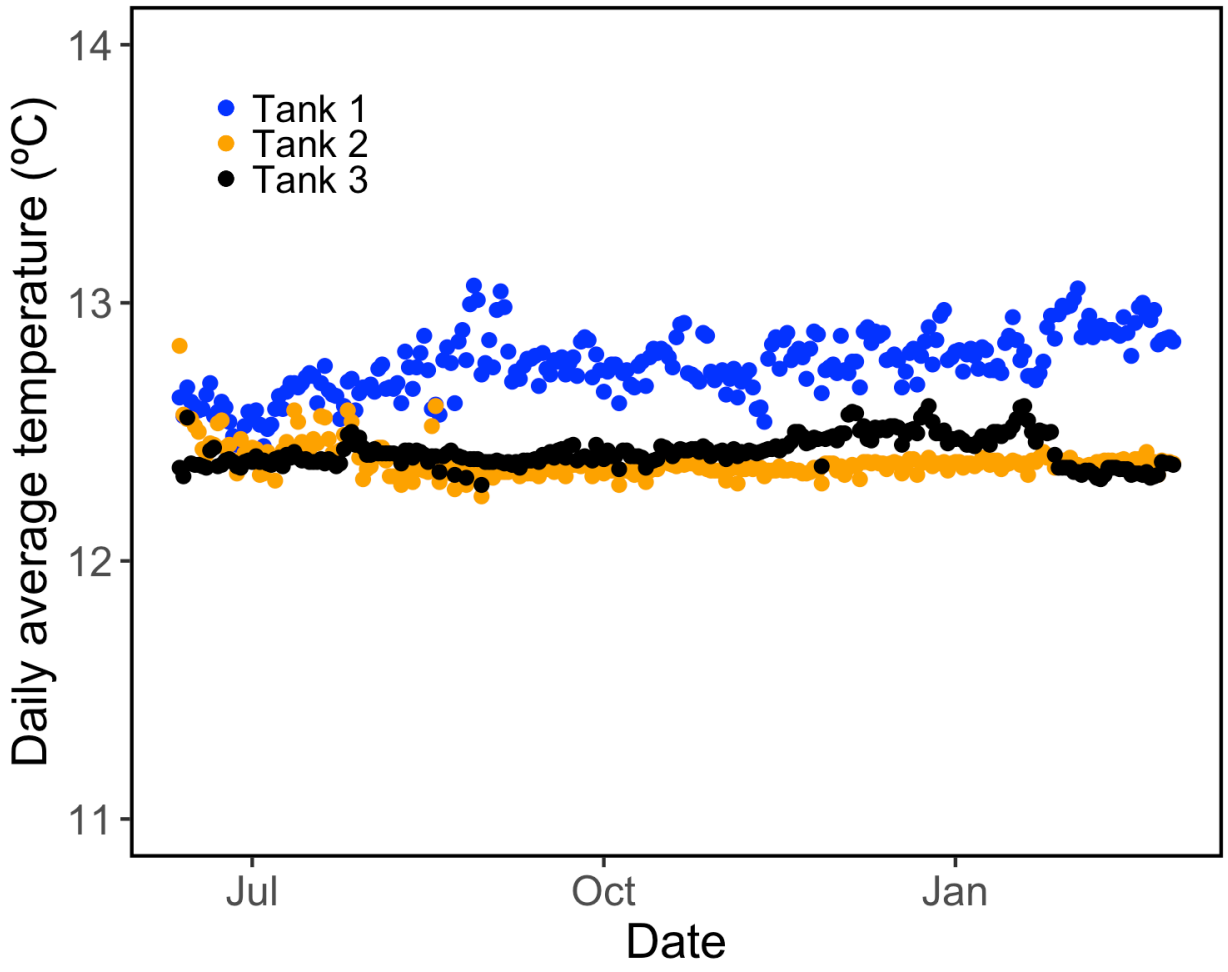

Figure S2. Temperature in the three recirculating water tanks over the course of the coral culture experiment. The average temperature among tanks was12.5 ± 0.2ºC.

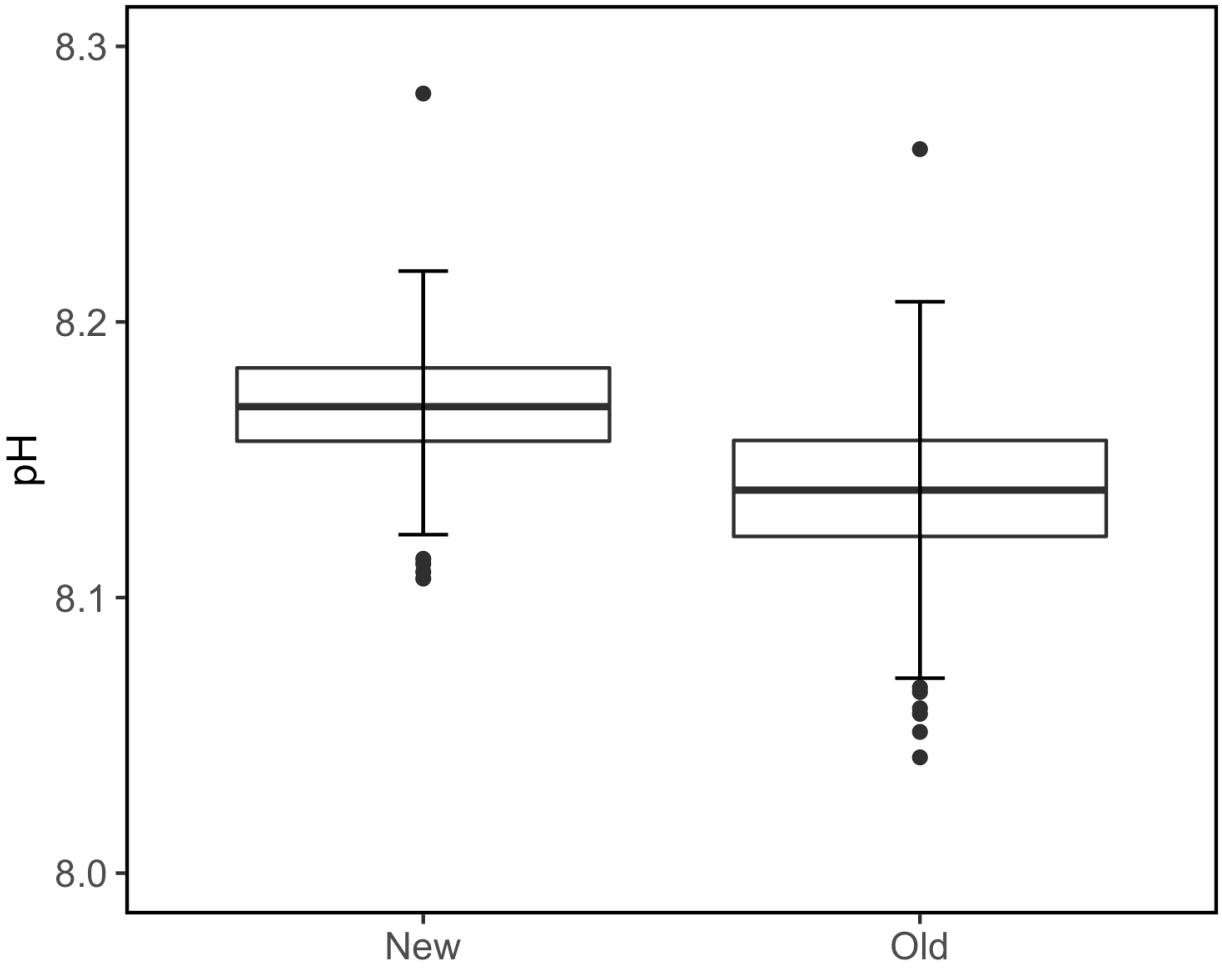

Figure S3. The pH of seawater prior to and following the coral incubation periods. The seawater was changed twice a week when the corals were fed in order to maintain relatively constant conditions. After 3 to 4 days, the pH of the incubation bottle decreased by ~0.03 pH units (p-value < 0.01) due to coral respiration. The boxplots represent mean, first and third quartiles, and maxima and minima, dots are outliers.

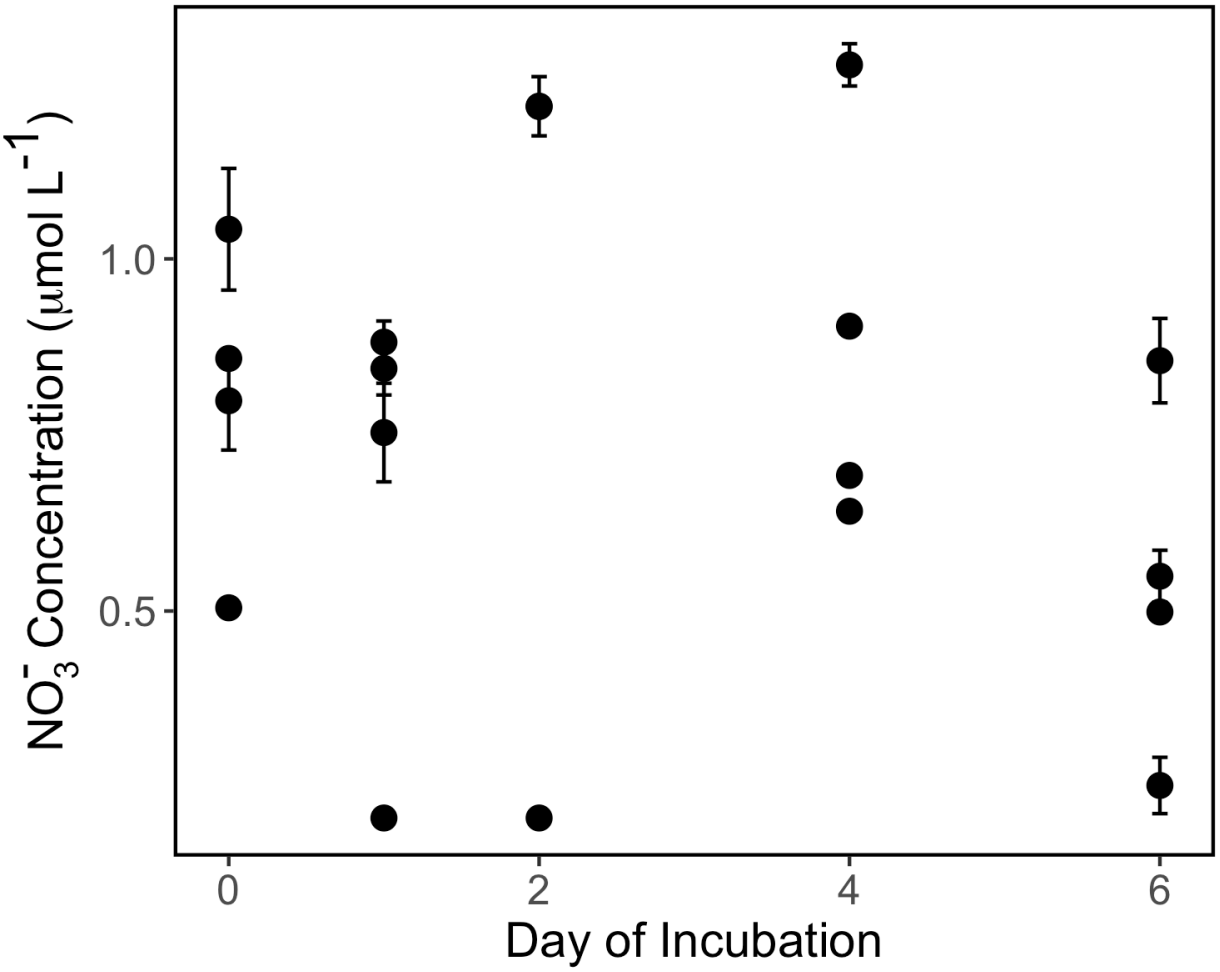

Figure S4. The concentration of nitrate in the coral incubations over a six-day course.

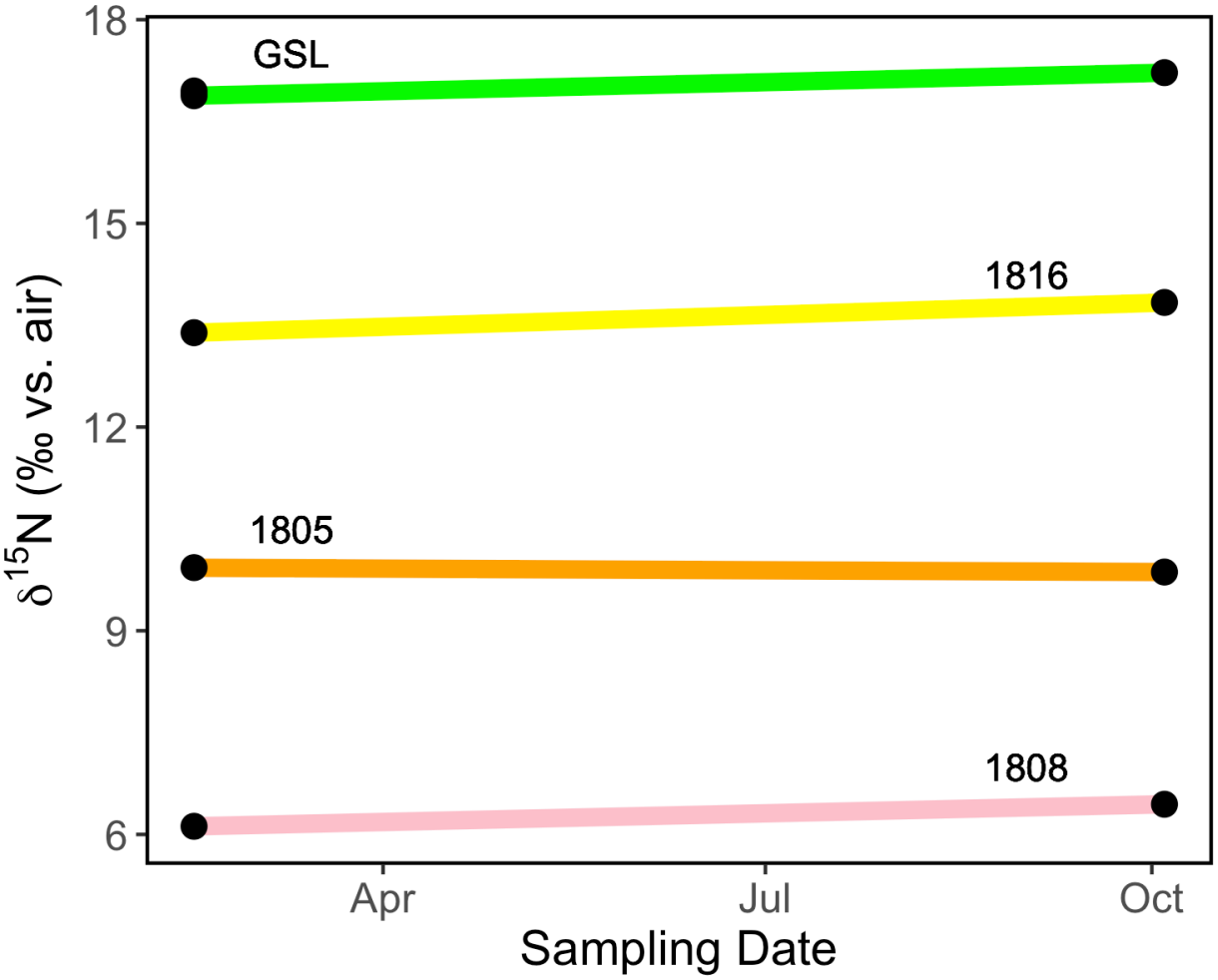

Figure S5. Effect of long-term freezer storage on the $\delta^{15}N$ of *Artemia* nauplii, showing the lack of variability in the diet being fed to corals. Freezing and time have no significant effect (p-value = 0.93) on the $\delta^{15}N$ of the *Artemia* over time for any strain.

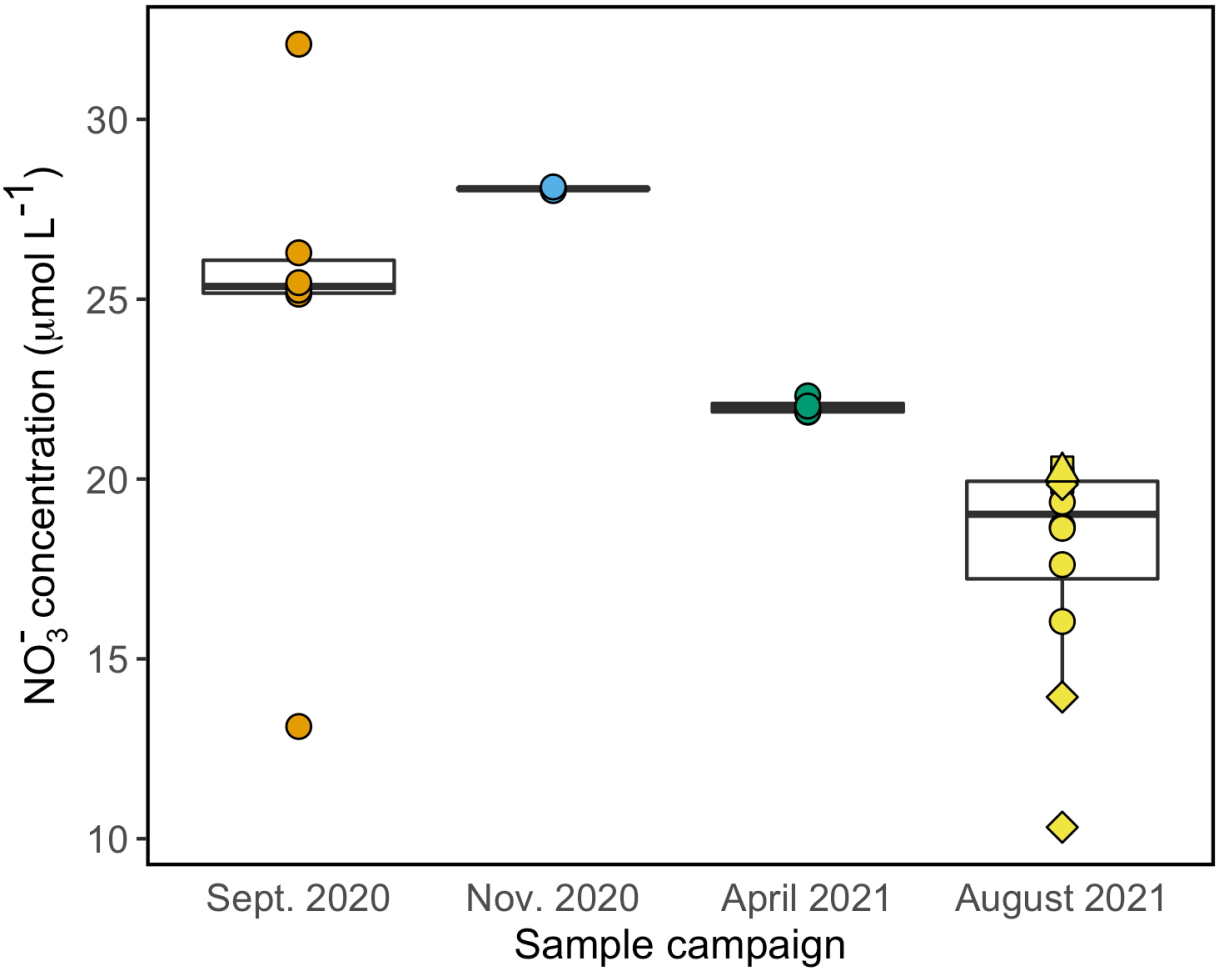

Figure S6. Boxplot of the concentration of nitrate (NO_3^-) measured in samples collected during respective sampling campaigns.

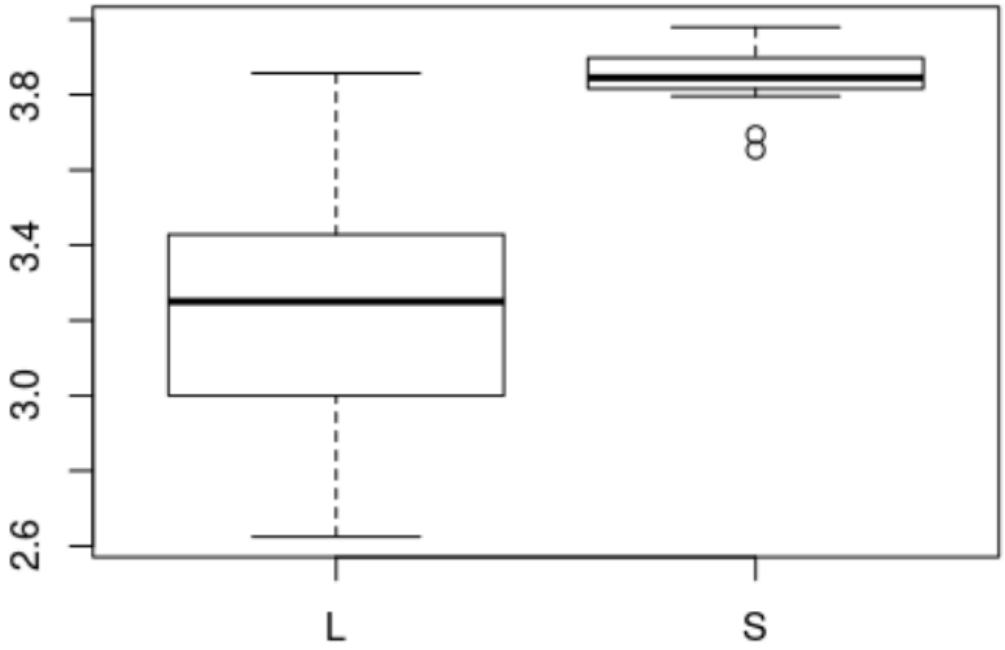

Figure S7. Boxplot outlining the differences in coral health based on the average feeding rate of coral between starved (L-batch) and unstarved (S-batch). The starved (L) batch has evidently lower average feeding (eat) rates that the corals that are not starved. The feeding rate indices are qualitative measures of health.

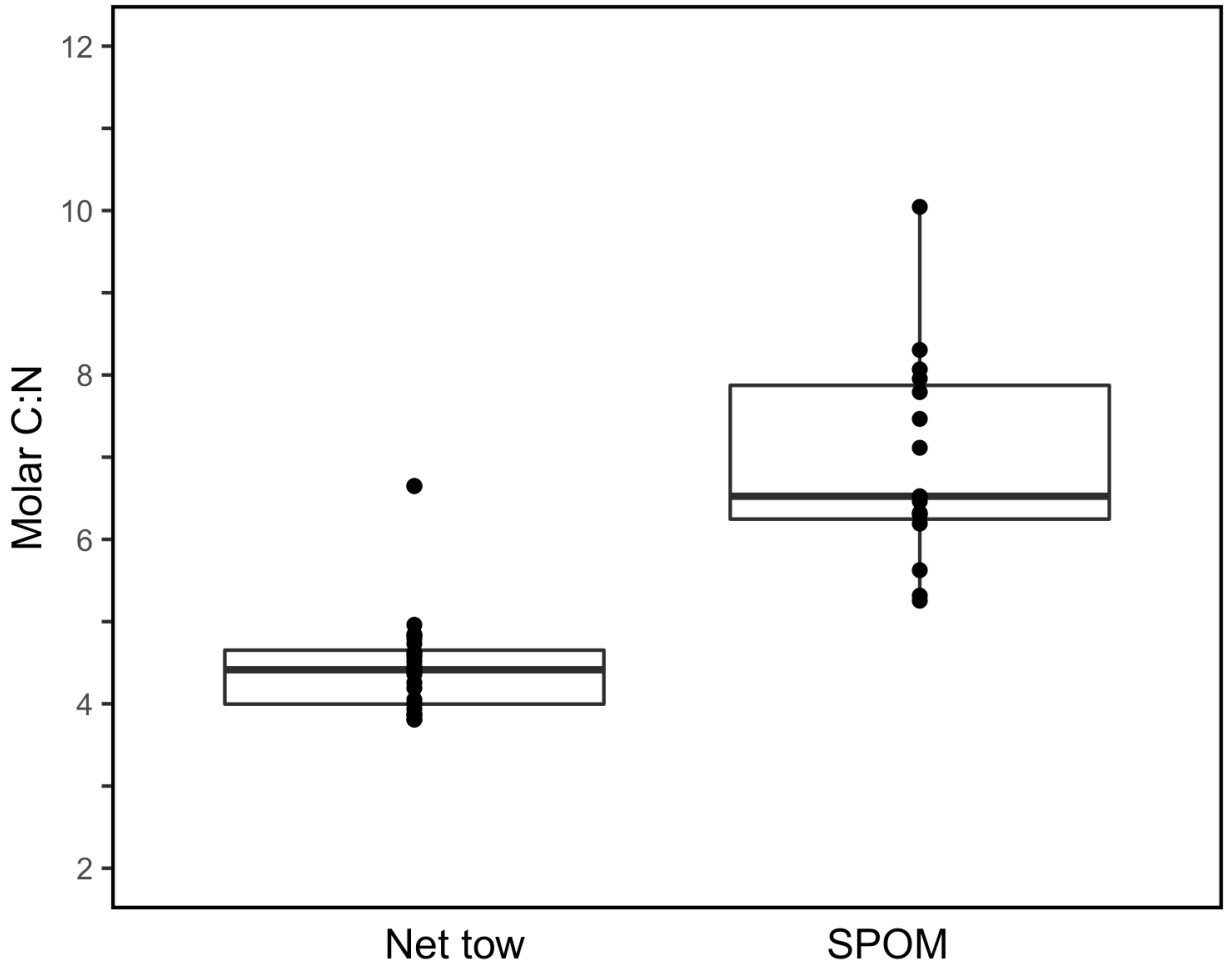

Figure S8. Boxplots of molar C:N ratio of net tow material (mesh size ≥ 80µm) and SPOM from the August 2021sampling campaign.

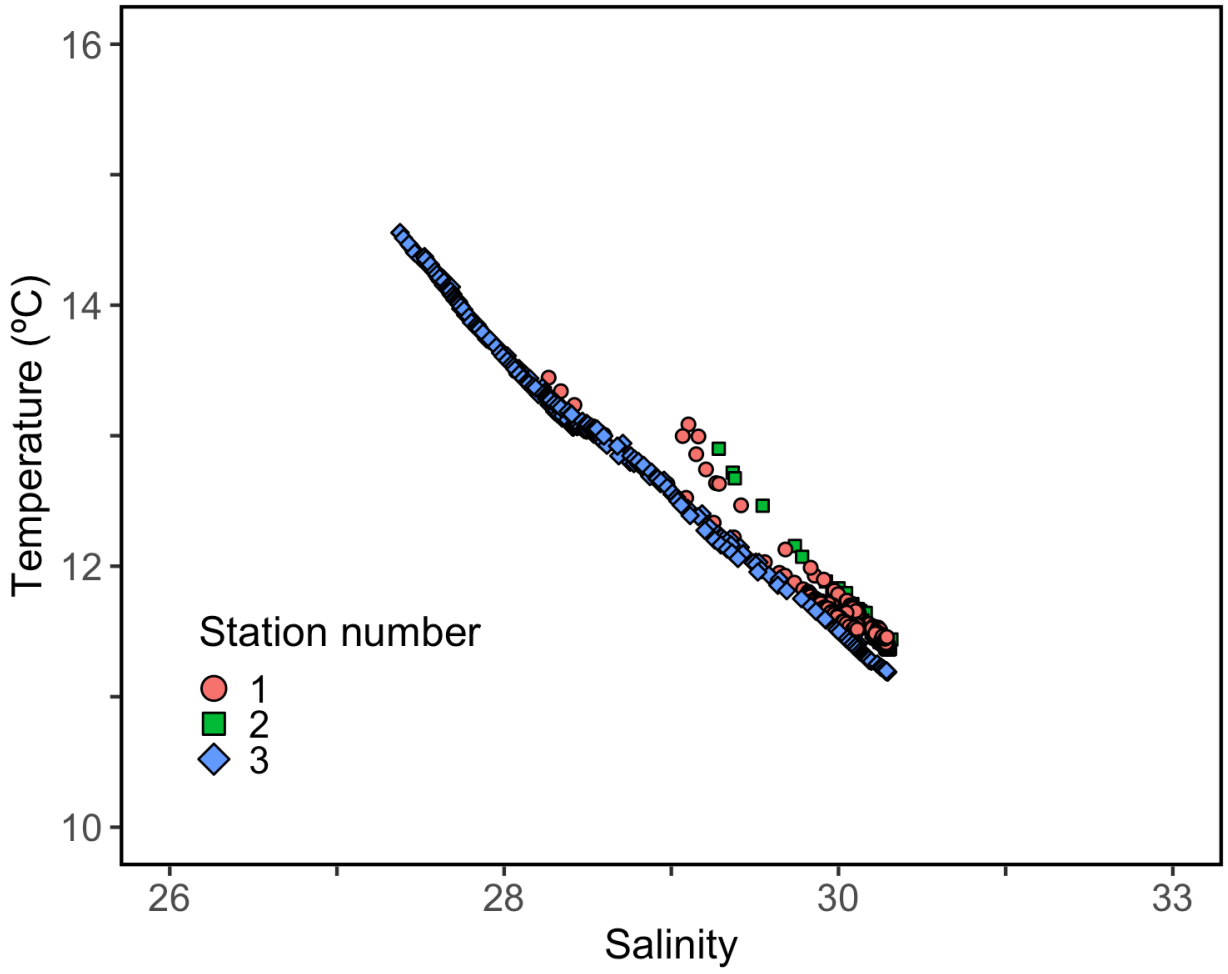

Figure S9. Temperature versus salinity plot for CTD casts conducted near Friday Harbor in August 2021.

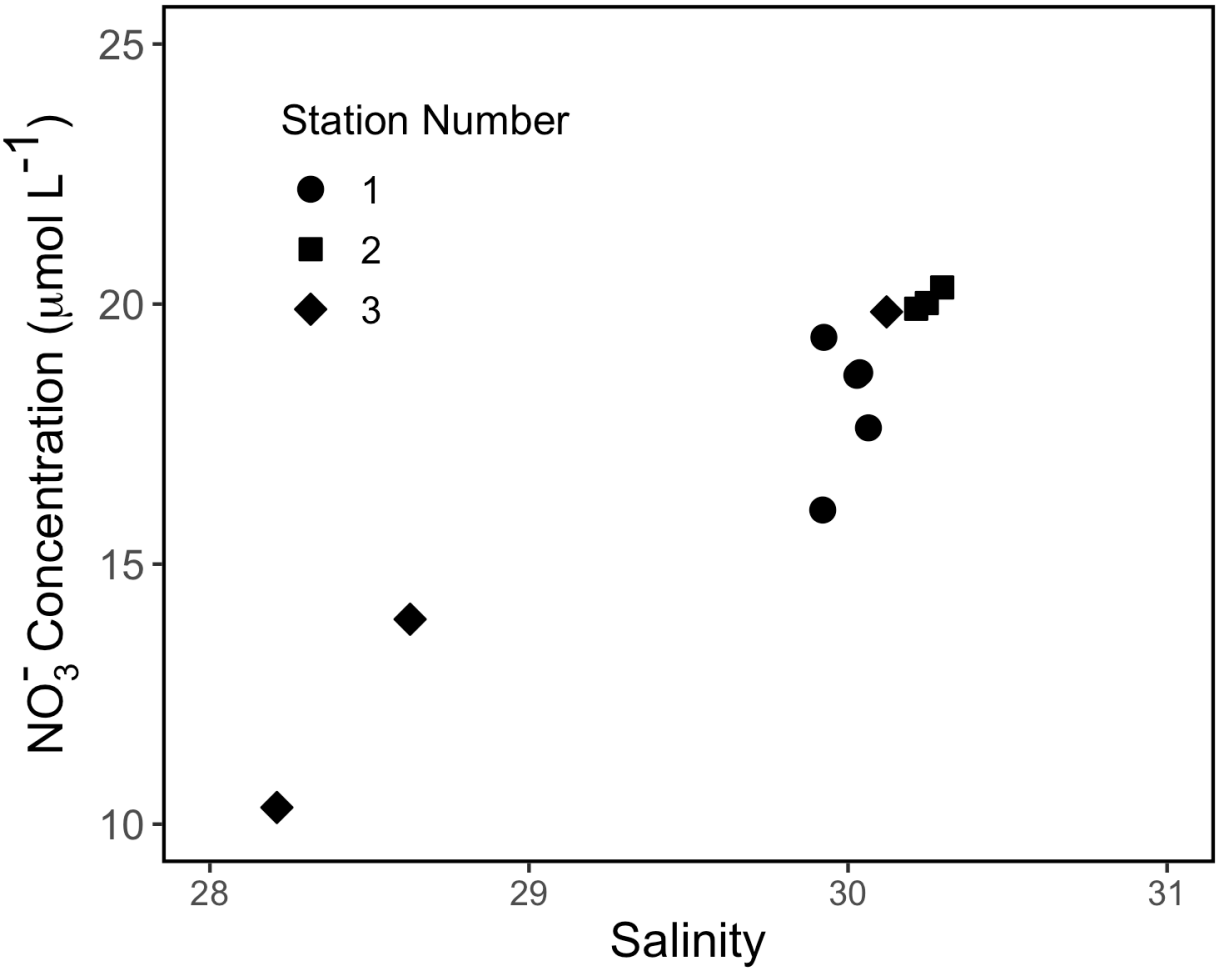

Figure S10. Salinity and corresponding concentration of nitrate during the August 2021 sampling campaign. There is a correlation between salinity and nitrate concentration (R=0.9, linear regression test in R studio).