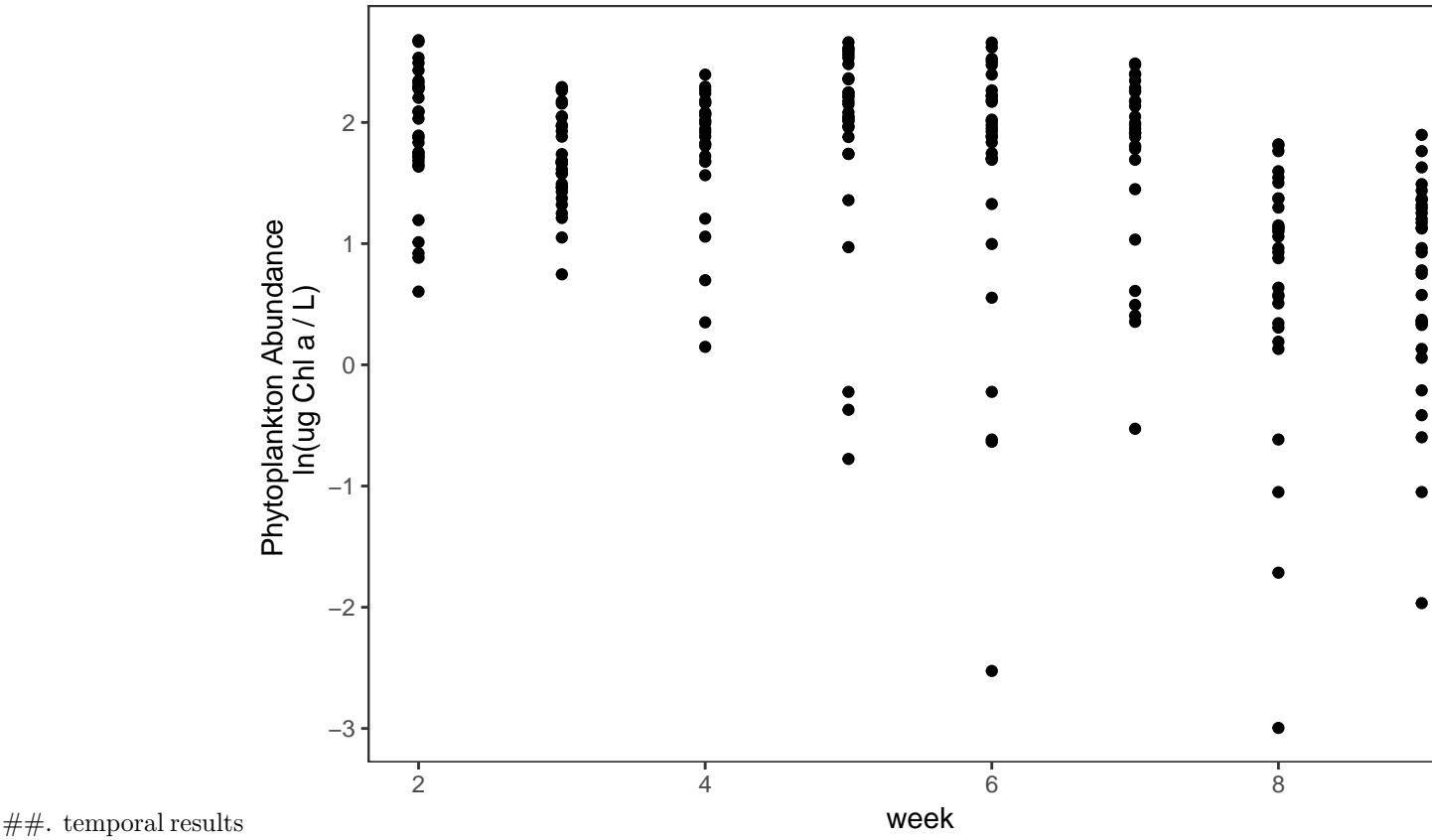
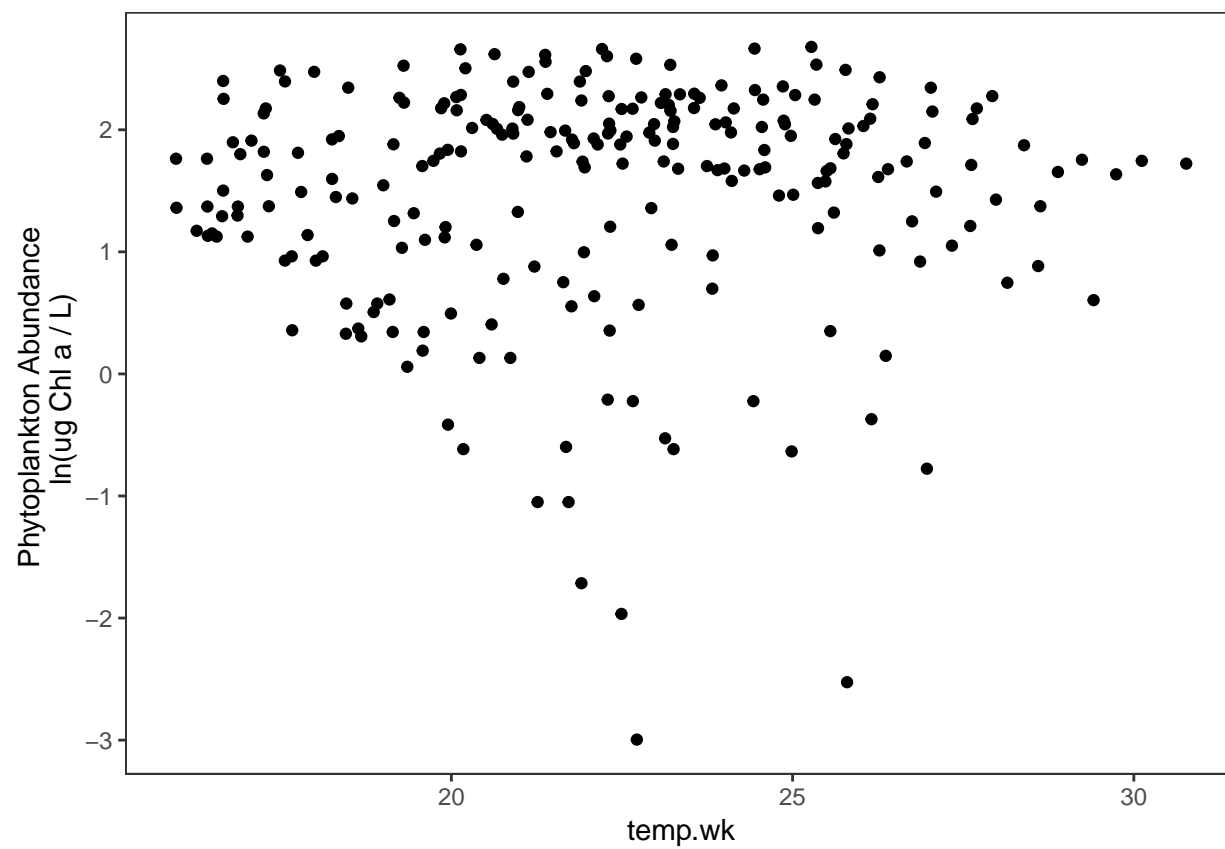


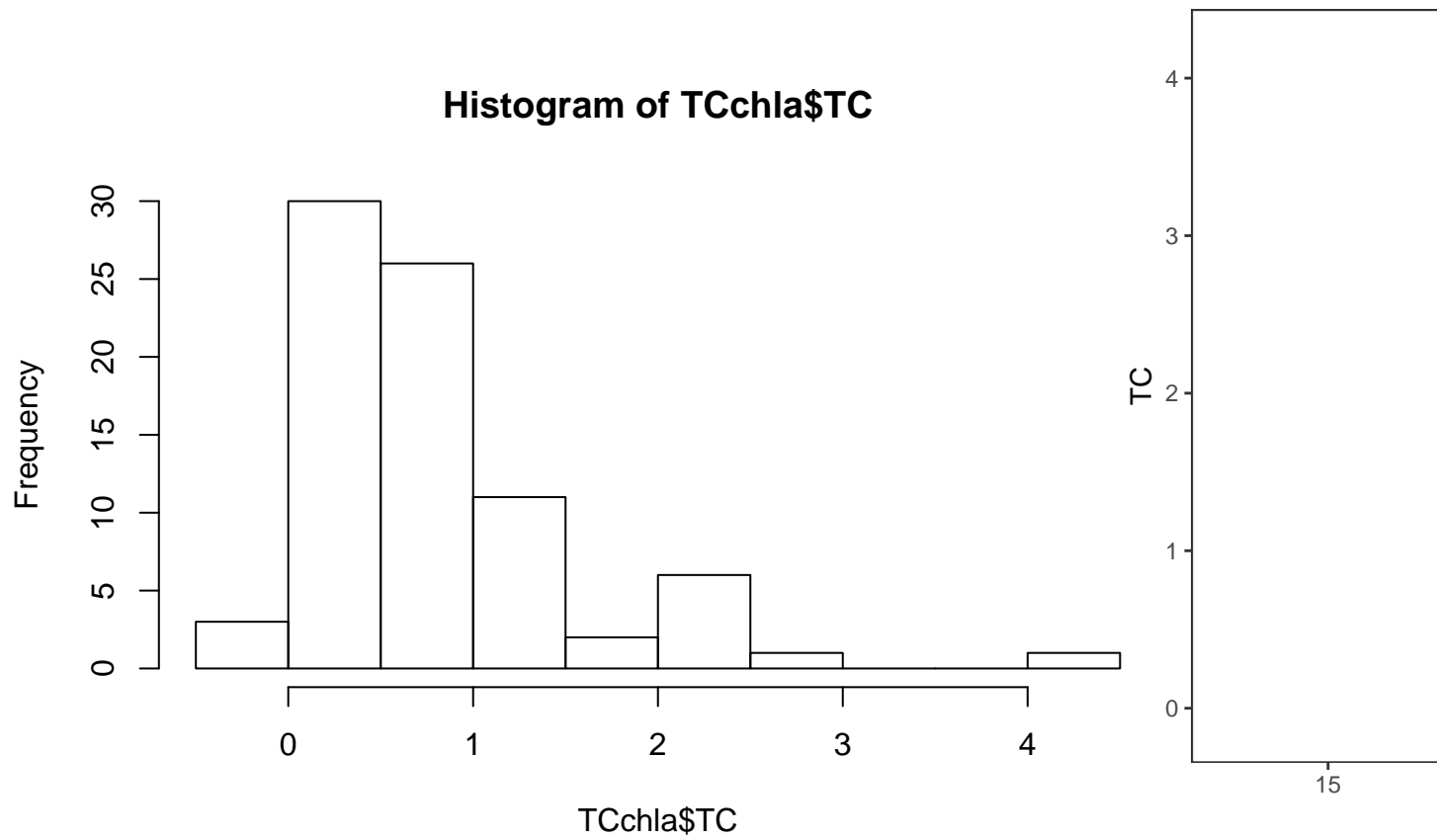
Temperature dependence of biomass and ecosystem function depend on species interactions. Supplementary File 2: Phytoplankton and oxygen flux results in main text.



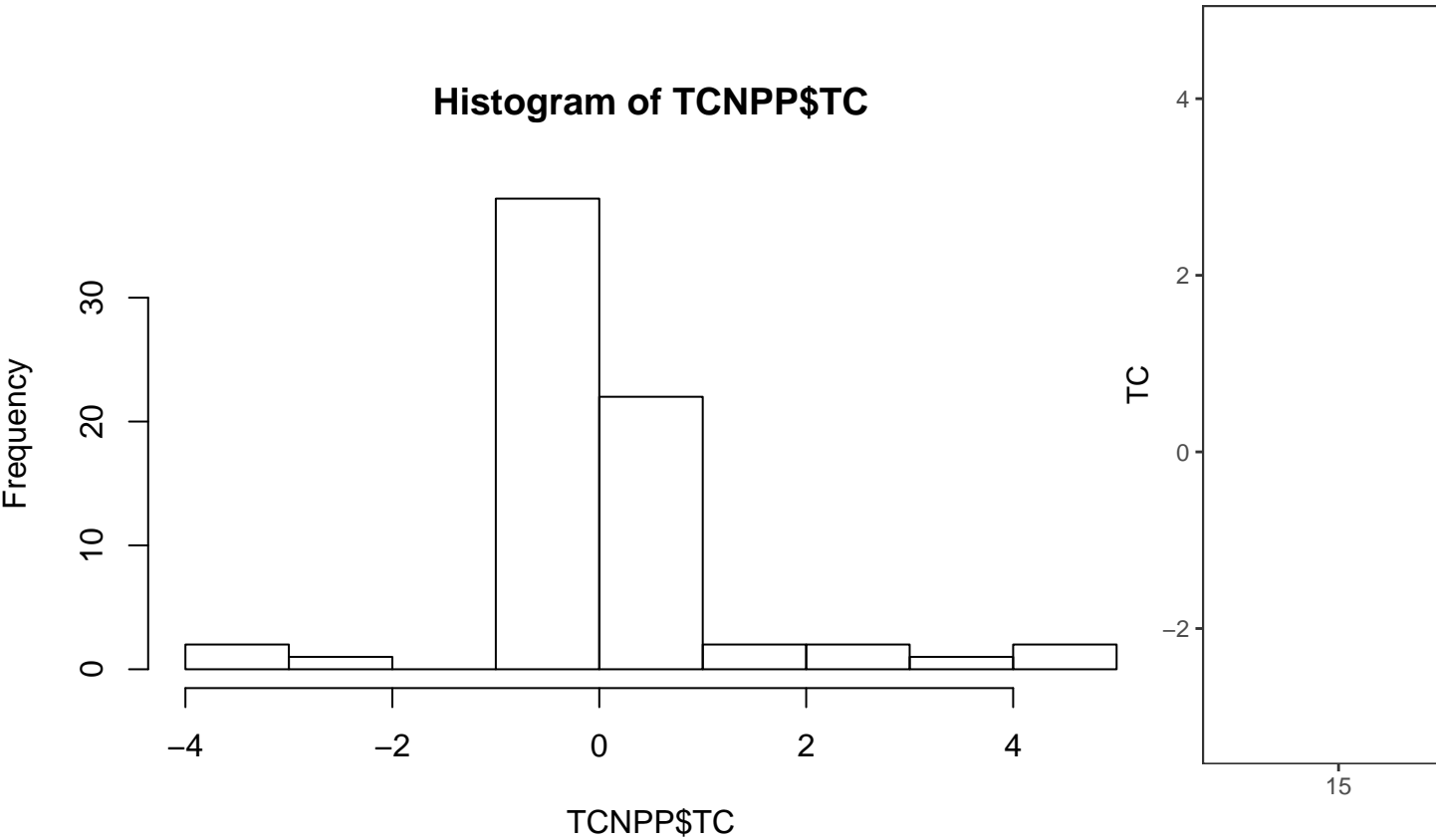


## 1. Trophic Cascade Results (Figure 2 Main text)

Calculate strength of grazing and strength of the trophic cascade on chla



Calculate strength of grazing and strength of the trophic cascade on NPP2



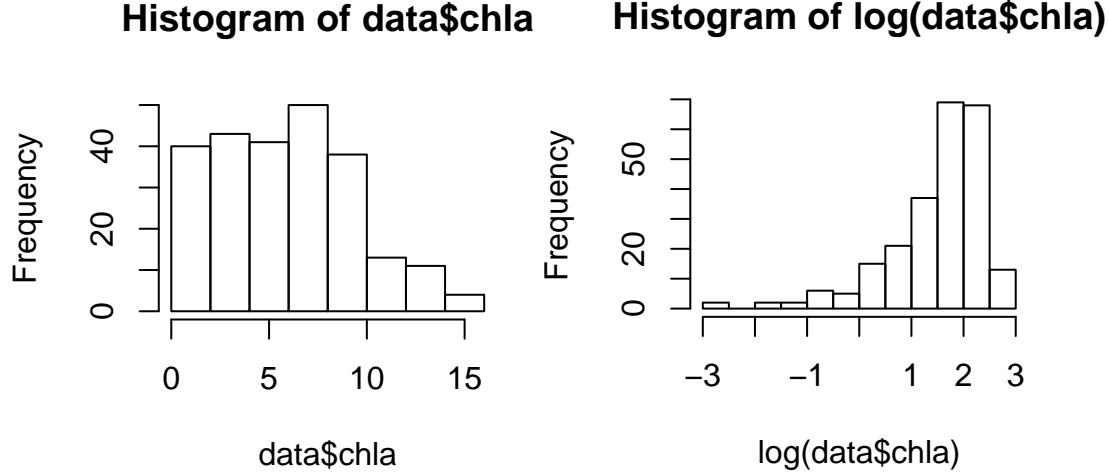
estimate of TC pooled across treatments; cut this now

Figure S2. 2: Trophic Treatment Effects on Chlorophyll a, Net Oxygen Ecosystem Production (NEP), and Net Ecosystem Respiration (ER)

```
## TableGrob (1 x 3) "arrange": 3 grobs
##   z      cells   name      grob
## 1 1 (1-1,1-1) arrange gtable[layout]
## 2 2 (1-1,2-2) arrange gtable[layout]
## 3 3 (1-1,3-3) arrange gtable[layout]
```

2.1 Phytoplankton abundance (for Figure 3, Table 2 main text)

Figure S2. 1: Chlorophyll a concentration



## 2.1.1 Phytoplankton abundance candidate models

Table S2. 1: Model selection results for Phytoplankton (Chl a) for linear mixed effects model

|        | Int  | TL | Tw    | Tt   | Tw*Tt | Tw*TL | Tt*TL | df | logLik  | AICc   | d      | w            |
|--------|------|----|-------|------|-------|-------|-------|----|---------|--------|--------|--------------|
| modPB8 | 2.05 | +  | -0.66 | 1.30 | NA    | +     | +     | 11 | -162.86 | 348.87 | 0.00   | 9.528923e-01 |
| modPB7 | 2.05 | +  | -0.96 | 1.30 | NA    | NA    | +     | 9  | -168.05 | 354.89 | 6.02   | 4.698179e-02 |
| modPBF | 2.14 | +  | -0.52 | 2.16 | 1.34  | +     | NA    | 10 | -172.89 | 366.74 | 17.86  | 1.259313e-04 |
| modPB4 | 1.50 | NA | -0.96 | 1.70 | 0.96  | NA    | NA    | 6  | -207.95 | 428.26 | 79.38  | 5.511062e-18 |
| modPB6 | 1.91 | +  | -0.66 | NA   | NA    | +     | NA    | 8  | -206.58 | 429.79 | 80.92  | 2.557666e-18 |
| modPB3 | 1.50 | NA | -0.96 | 1.71 | NA    | NA    | NA    | 5  | -211.74 | 433.74 | 84.86  | 3.556642e-19 |
| modPB5 | 1.91 | +  | -0.96 | NA   | NA    | NA    | NA    | 6  | -211.45 | 435.27 | 86.40  | 1.653514e-19 |
| modPB2 | 1.50 | NA | -0.96 | NA   | NA    | NA    | NA    | 4  | -218.40 | 444.98 | 96.11  | 1.286913e-21 |
| modPB1 | 1.90 | +  | NA    | NA   | NA    | NA    | NA    | 5  | -257.21 | 524.68 | 175.81 | 6.345675e-39 |
| modPB0 | 1.49 | NA | NA    | NA   | NA    | NA    | NA    | 3  | -264.15 | 534.41 | 185.54 | 4.902314e-41 |

Table S2. 2: Parameter estimates from model PB8 (Table S2.1) for Phytoplankton (Chl a) for linear mixed effects model

|     | Ea   | lower | upper |
|-----|------|-------|-------|
| P   | 1.30 | 0.85  | 1.76  |
| PZ  | 3.15 | 2.76  | 3.54  |
| PZN | 1.65 | 1.19  | 2.10  |

## 2.2 Net ecosystem oxygen production

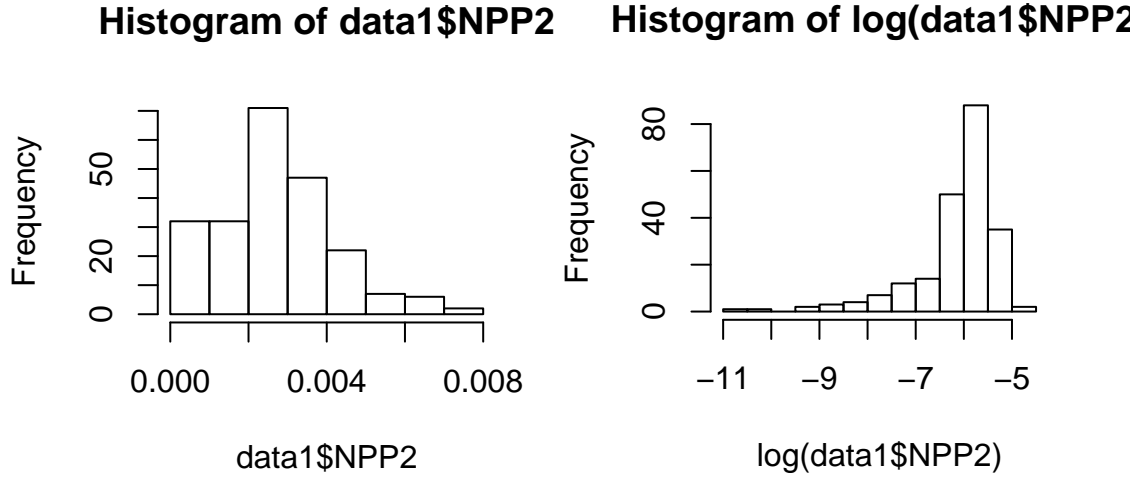


Table S2. 3: Model selection results for Net Ecosystem Oxygen Production, with 1|Tank as a random effect. Model terms are: intercept (Int), trophic treatment (TL), Temperature - weekly average (Tw), temperature - expt average (Tt), interaction terms and statistical estimates

|         | Int   | TL | Tw   | Tt    | Tw*Tt | Tw*TL | Tt*TL | df | logLik  | AICc   | d     | w            |
|---------|-------|----|------|-------|-------|-------|-------|----|---------|--------|-------|--------------|
| modNPP8 | -6.42 | +  | 0.29 | -1.41 | NA    | +     | +     | 11 | -266.46 | 556.20 | 0.00  | 3.880444e-01 |
| modNPPF | -6.42 | +  | 0.37 | -1.42 | 0.84  | +     | +     | 12 | -265.54 | 556.59 | 0.39  | 3.199070e-01 |
| modNPP7 | -6.41 | +  | 0.03 | -1.39 | NA    | NA    | +     | 9  | -269.68 | 558.21 | 2.01  | 1.421772e-01 |
| modNPP3 | -6.15 | NA | 0.02 | -0.96 | NA    | NA    | NA    | 5  | -274.37 | 559.02 | 2.81  | 9.506575e-02 |
| modNPP4 | -6.15 | NA | 0.02 | -0.96 | 0.61  | NA    | NA    | 6  | -273.87 | 560.13 | 3.92  | 5.458021e-02 |
| modNPP0 | -6.15 | NA | NA   | NA    | NA    | NA    | NA    | 3  | -283.15 | 572.41 | 16.20 | 1.177095e-04 |
| modNPP2 | -6.15 | NA | 0.03 | NA    | NA    | NA    | NA    | 4  | -283.13 | 574.44 | 18.24 | 4.256459e-05 |
| modNPP1 | -6.26 | +  | NA   | NA    | NA    | NA    | NA    | 5  | -282.25 | 574.78 | 18.58 | 3.589977e-05 |
| modNPP6 | -6.26 | +  | 0.27 | NA    | NA    | +     | NA    | 8  | -279.83 | 576.34 | 20.14 | 1.642404e-05 |
| modNPP5 | -6.26 | +  | 0.03 | NA    | NA    | NA    | NA    | 6  | -282.23 | 576.85 | 20.65 | 1.275902e-05 |

### NPP Coefficients

Table S2. 4: Parameter estimates from model NPP8 (Table S2.3) for Net Ecosystem Oxygen Productivity (NEP) for linear mixed effects model(For MS Figure 3)

|     | Ea    | lower | upper |
|-----|-------|-------|-------|
| P   | -1.41 | -2.25 | -0.58 |
| PZ  | -1.21 | -2.36 | -0.07 |
| PZN | -0.99 | -2.10 | 0.12  |

## 2.2 Net ecosystem oxygen consumption (ER)

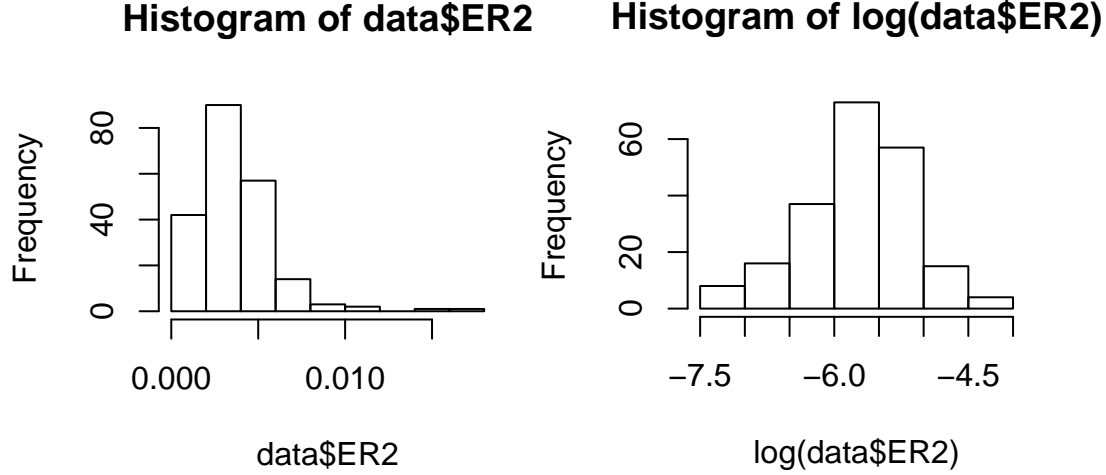


Table S2. 5: Model selection results for Net Ecosystem Respiration, with 1|Tank as a random effect. Model terms are: intercept (Int), trophic treatment (TL), Temperature - weekly average (Tw), temperature - expt average (Tt), interaction terms and statistical estimates

|        | Int   | TL | Tw   | Tt    | Tw*Tt | Tw*TL | Tt*TL | df | logLik  | AICc   | d     | w            |
|--------|-------|----|------|-------|-------|-------|-------|----|---------|--------|-------|--------------|
| modER7 | -6.03 | +  | 0.26 | -1.32 | NA    | NA    | +     | 9  | -158.72 | 336.33 | 0.00  | 8.117512e-01 |
| modER8 | -6.03 | +  | 0.19 | -1.32 | NA    | +     | +     | 11 | -158.19 | 339.72 | 3.39  | 1.492212e-01 |
| modERF | -5.98 | +  | 0.25 | -0.81 | 0.57  | +     | NA    | 10 | -160.65 | 342.41 | 6.08  | 3.885201e-02 |
| modER3 | -5.74 | NA | 0.26 | -0.68 | NA    | NA    | NA    | 5  | -172.34 | 354.98 | 18.64 | 7.257027e-05 |
| modER4 | -5.74 | NA | 0.26 | -0.64 | 0.60  | NA    | NA    | 6  | -171.28 | 354.98 | 18.65 | 7.255858e-05 |
| modER5 | -5.89 | +  | 0.26 | NA    | NA    | NA    | NA    | 6  | -172.51 | 357.43 | 21.09 | 2.134098e-05 |
| modER6 | -5.89 | +  | 0.19 | NA    | NA    | +     | NA    | 8  | -172.00 | 360.71 | 24.38 | 4.134606e-06 |
| modER1 | -5.90 | +  | NA   | NA    | NA    | NA    | NA    | 5  | -175.56 | 361.42 | 25.09 | 2.892592e-06 |
| modER2 | -5.74 | NA | 0.26 | NA    | NA    | NA    | NA    | 4  | -177.02 | 362.24 | 25.90 | 1.927201e-06 |
| modER0 | -5.76 | NA | NA   | NA    | NA    | NA    | NA    | 3  | -180.12 | 366.35 | 30.02 | 2.461395e-07 |

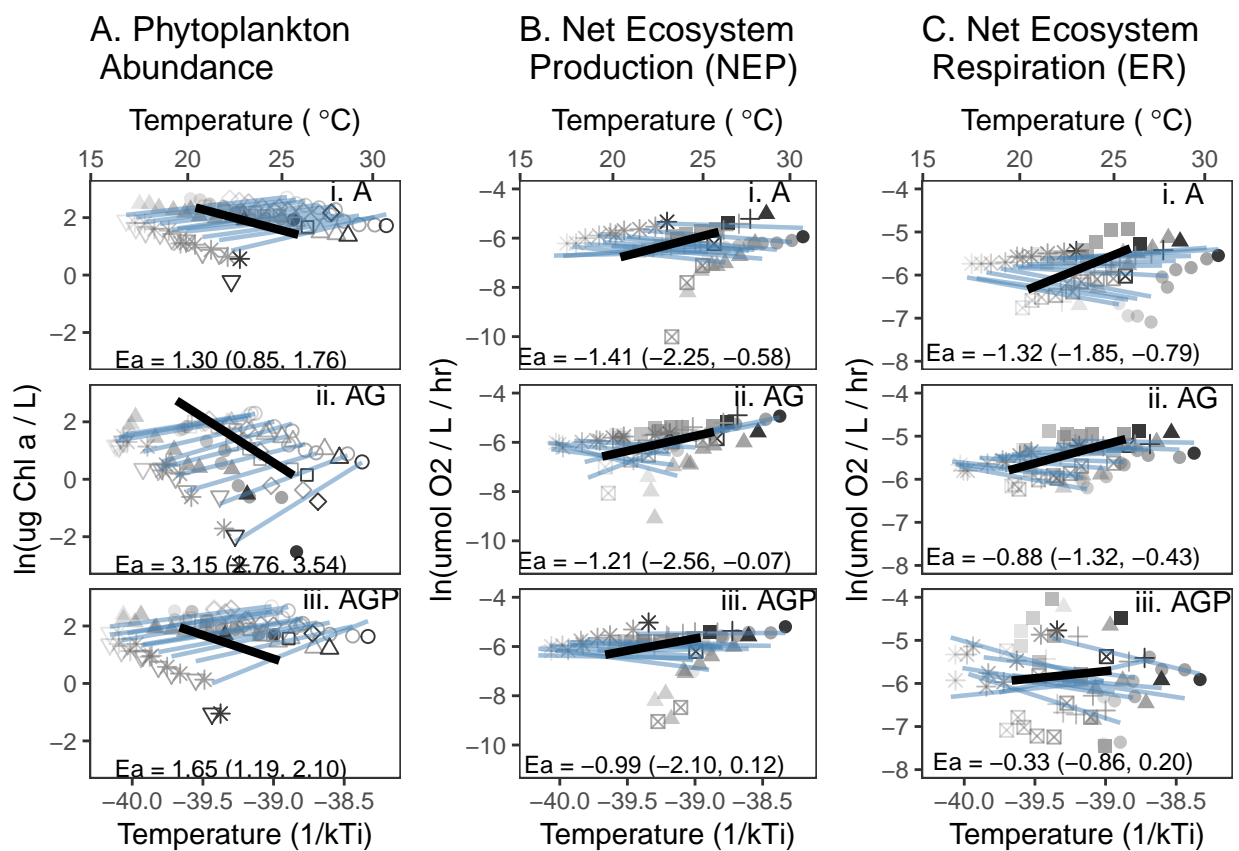
## ER coefficients

Table S2. 6: Confidence intervals for model ER7 (Table S2.5) (For MS Figure 3)

|     | Ea         | lower      | upper      |
|-----|------------|------------|------------|
| P   | -1.3163396 | -1.8455347 | -0.7871445 |
| PZ  | -0.8777488 | -1.3246951 | -0.4308026 |
| PZN | -0.3295142 | -0.8562013 | 0.1971728  |

## Figure 3 (Full)

Figure S2. 3: Manuscript figure 3: Effects of temperature on oxygen flux and phytoplankton standing stock



## pdf  
## 2