|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| RICHNESS | | | | | | | |
| Model | Parameter | Estimate | SE | Z | P value | Variance | SD |
| Species | Fixed |  |  |  |  |  |  |
|  | *Intercept* | 1.95 | 0.03 | 65.70 | <0.0001 | -- | -- |
|  | *Photo* | -0.38 | 0.04 | -9.06 | <0.0001 |  |  |
|  | *Verified* | 0.66 | 0.03 | 20.29 | <0.0001 | -- | -- |
|  | Random |  |  |  |  |  |  |
|  | *Plate:Year* | -- | -- | -- | -- | 0.03 | 0.18 |
| Functional Group | Fixed |  |  |  |  |  |  |
|  | *Intercept* | 1.33 | 0.04 | 36.74 | <0.0001 | -- | -- |
|  | *Photo* | -0.24 | 0.05 | -4.36 | <0.0001 |  |  |
|  | *Verified* | 0.54 | 0.05 | 11.78 | <0.0001 | -- | -- |
|  | Random |  |  |  |  |  |  |
|  | *Plate:Year* | -- | -- | -- | -- | <0.0001 | <0.0001 |
| DIVERSITY | | | | | | | |
| Model | Parameter | Estimate | SE | Z | P value | Variance | SD |
| Species | Fixed |  |  |  |  |  |  |
|  | *Intercept* | 1.38 | 0.03 | 42.36 | <0.0001 | -- | -- |
|  | *Photo* | -0.36 | 0.03 | -11.13 | <0.0001 | -- | -- |
|  | Random |  |  |  |  |  |  |
|  | *Plate:Year* | -- | -- | -- | -- | 0.11 | 0.32 |
| Functional Group | Fixed |  |  |  |  |  |  |
|  | *Intercept* | 0.85 | 0.02 | 34.84 | <0.0001 | -- | -- |
|  | *Photo* | -0.18 | 0.06 | -7.56 | <0.0001 | -- | -- |
|  | Random |  |  |  |  |  |  |
|  | *Plate:Year* | -- | -- | -- | -- | 0.06 | 0.25 |
|  |  |  |  |  |  |  |  |
| ABUNDANCE | | | | | | | |
| Model | Parameter | Estimate | SE | Z | P value | Variance | SD |
| Bivalvia | Fixed |  |  |  |  |  |  |
|  | *Intercept* | -1.83 | 0.33 | -5.52 | <0.0001 | -- | -- |
|  | *Photo* | 0.45 | 0.19 | 2.36 | 0.02 | -- | -- |
|  | Random |  |  |  |  |  |  |
|  | *Site:Year* | -- | -- | -- | -- | 2.15 | 1.47 |
| Branching Bryozoa | Fixed |  |  |  |  |  |  |
|  | *Intercept* | 0.52 | 0.21 | 2.53 | 0.012 | -- | -- |
|  | *Photo* | 0.05 | 0.003 | 16.72 | <0.0001 | -- | -- |
|  | Random |  |  |  |  |  |  |
|  | *Site:Year* | -- | -- | -- | -- | 1.95 | 1.40 |
| Cirripedia | Fixed |  |  |  |  |  |  |
|  | *Intercept* | -3.94 | 1.14 | -3.45 | 0.0006 | -- | -- |
|  | *Photo* | 0.02 | 0.009 | 1.73 | 0.08 | -- | -- |
|  | Random |  |  |  |  |  |  |
|  | *Site:Year* | -- | -- | -- | -- | 12.49 | 3.53 |
| Colonial Tunicata | Fixed |  |  |  |  |  |  |
|  | *Intercept* | 1.65 | 0.13 | 12.58 | <0.0001 | -- | -- |
|  | *Photo* | 0.04 | 0.002 | 19.50 | <0.0001 | -- | -- |
|  | Random |  |  |  |  |  |  |
|  | *Site:Year* | -- | -- | -- | -- | 0.82 | 0.91 |
| Encrusting Bryozoa | Fixed |  |  |  |  |  |  |
|  | *Intercept* | -0.96 | 0.40 | -2.42 | 0.02 | -- | -- |
|  | *Photo* | 0.04 | 0.01 | 2.63 | 0.009 | -- | -- |
|  | Random |  |  |  |  |  |  |
|  | *Site:Year* | -- | -- | -- | -- | 5.21 | 2.28 |
| Hydrozoa | Fixed |  |  |  |  |  |  |
|  | *Intercept* | -8.17 | 1.60 | -5.10 | <0.0001 | -- | -- |
|  | *Photo* | -0.06 | 0.03 | -2.14 | 0.032 | -- | -- |
|  | Random |  |  |  |  |  |  |
|  | *Site:Year* | -- | -- | -- | -- | 57.4 | 7.58 |
| Polychaeta | Fixed |  |  |  |  |  |  |
|  | *Intercept* | -8.45 | 1.71 | -4.95 | <0.0001 | -- | -- |
|  | *Photo* | -0.97 | 0.48 | -2.03 | 0.04 | -- | -- |
|  | Random |  |  |  |  |  |  |
|  | *Site:Year* | -- | -- | -- | -- | 61.25 | 7.83 |
| Porifera | Fixed |  |  |  |  |  |  |
|  | *Intercept* | -1.71 | 0.33 | -5.20 | <0.0001 | -- | -- |
|  | *Photo* | 0.21 | 0.06 | 3.78 | 0.0002 | -- | -- |
|  | Random |  |  |  |  |  |  |
|  | *Site:Year* | -- | -- | -- | -- | 2.61 | 1.61 |
| Soft Bryozoa | Fixed |  |  |  |  |  |  |
|  | *Intercept* | -3.30 | 0.53 | -6.20 | <0.0001 | -- | -- |
|  | *Photo* | 0.07 | 0.01 | 8.40 | <0.001 | -- | -- |
|  | Random |  |  |  |  |  |  |
|  | *Site:Year* | -- | -- | -- | -- | 8.66 | 2.94 |
| Solitary Tunicata | Fixed |  |  |  |  |  |  |
|  | *Intercept* | 2.09 | 0.12 | 17.03 | <0.0001 | -- | -- |
|  | *Photo* | 0.03 | 0.002 | 16.38 | <0.0001 | -- | -- |
|  | Random |  |  |  |  |  |  |
|  | *Site:Year* | -- | -- | -- | -- | 0.70 | 0.84 |

**Supplemental Table 3.** Generalized linear mixed model and linear mixed model details for best fit models on common ecological measures.