**Table S1.** Full generalized linear model results examining relationships between damage type richness and possible drivers.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Independent Variable** | **Dependent Variable** | **Regression coefficient** | **Standard error** | **T-value** | ***p*-value** | **Adjusted**  ***p*-value** |
| DT richness (DTs) | Mean annual temperature (**°**C) (MAT) | 0.5684 | 0.1426 | 3.985 | 0.000211 \*\*\* | 0.003060\*\* |
| DTs | Mean annual precipitation cm/year (MAP) | -0.0011 | 0.0024 | -0.469 | 0.642 | 0.769169 |
| DTs | Date of publication | 0.1674 | 0.1598 | 1.048 | 0.299 | 0.433550 |
| DTs | Geologic age (Ma) | -0.0098 | 0.0526 | -0.186 | 0.853 | 0.853000 |
| DTs | Shannon’s diversity index | 2.6070 | 1.1420 | 2.283 | 0.026 \* | 0.104400 |
| DTs | Pielou’s J | 5.3450 | 3.8630 | 1.383 | 0.172 | 0.277111 |
| DTs | Plant diversity at 300 specimens | 0.0922 | 0.0560 | 1.646 | 0.105 | 0.217500 |
| Specialized DTs | MAT | 0.3718 | 0.0987 | 3.768 | 0.000421 \*\*\* | 0.004070\*\* |
| Specialized DTs | MAP | -0.0014 | 0.0016 | -0.878 | 0.386 | 0.504520 |
| Specialized DTs | Date of publication | 0.0934 | 0.1077 | 0.868 | 0.389 | 0.504520 |
| Specialized DTs | Geologic age (Ma) | 0.0092 | 0.0354 | 0.260 | 0.796 | 0.824429 |
| Specialized DTs | Shannon’s diversity index | 1.4799 | 0.7874 | 1.880 | 0.065109 | 0.188816 |
| Specialized DTs | Pielou’s J | 3.8850 | 2.6220 | 1.481 | 0.143817 | 0.260668 |
| Specialized DTs | Plant diversity at 300 specimens | 0.0466 | 0.0380 | 1.226 | 0.225 | 0.343421 |
| Galling DTs | MAT | 0.1704 | 0.0565 | 3.014 | 0.00397 \*\* | 0.028780\* |
| Galling DTs | MAP | 0.0004 | 0.0009 | 0.403 | 0.6896 | 0.769169 |
| Galling DTs | Date of publication | 0.1349 | 0.0504 | 2.679 | 0.00952 \*\* | 0.055216 |
| Galling DTs | Geologic age (Ma) | -0.0296 | 0.0170 | -1.742 | 0.0866 | 0.217500 |
| Galling DTs | Shannon’s diversity index | 0.8899 | 0.3849 | 2.312 | 0.0243 \* | 0.104400 |
| Galling DTs | Pielou’s J | 2.1714 | 1.2938 | 1.678 | 0.0986 | 0.217500 |
| Galling DTs | Plant diversity at 300 specimens | 0.0314 | 0.0185 | 1.699 | 0.094558 | 0.217500 |
| Mining DTs | MAT | 0.0928 | 0.0413 | 2.249 | 0.0288 \* | 0.104400 |
| Mining DTs | MAP | -0.0005 | 0.0006 | -0.852 | 0.40014 | 0.504520 |
| Mining DTs | Date of publication | 0.0135 | 0.0400 | 0.337 | 0.737 | 0.791593 |
| Mining DTs | Geologic age (Ma) | -0.0057 | 0.0131 | -0.434 | 0.665853 | 0.769169 |
| Mining DTs | Shannon’s diversity index | 0.6158 | 0.2918 | 2.111 | 0.039 \* | 0.125667 |
| Mining DTs | Pielou’s J | 1.3916 | 0.9803 | 1.420 | 0.1610 | 0.274647 |
| Mining DTs | Plant diversity at 300 specimens | 0.0218 | 0.0139 | 1.569 | 0.12197 | 0.235810 |
| Publication Date | Geologic Age | -1.535 | 0.336 | -4.569 | 2.34e-05 \*\*\* | 0.000679\*\*\* |

**Table S2.** Full generalized linear model results examining relationships between damage frequency (expressed as the percent of leaves at a site that have a given type of damage) and possible drivers.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Independent Variable** | **Dependent Variable** | **Regression coefficient** | **Standard error** | **T-value** | ***p*-value** | **Adjusted**  ***p*-value** |
| DT % | Mean annual temperature (**°**C) (MAT) | 0.8896 | 0.3247 | 2.740 | 0.00823 \*\* | 0.115220 |
| DT % | Mean annual precipitation cm/year (MAP) | 0.002577 | 0.005147 | 0.501 | 0.61946 | 0.893455 |
| DT % | Date of publication | 0.3085 | 0.3071 | 1.005 | 0.319 | 0.812000 |
| DT % | Geologic age (Ma) | 0.12040 | 0.09955 | 1.209 | 0.231 | 0.646800 |
| DT % | Shannon’s diversity index | -0.4721 | 2.2995 | -0.205 | 0.838 | 0.906660 |
| DT % | Pielou’s J | 4.360 | 7.558 | 0.577 | 0.566 | 0.893455 |
| DT % | Plant diversity at 300 specimens | -0.04508 | 0.10938 | -0.412 | 0.682 | 0.893455 |
| Specialized DT % | MAT | 0.37177 | 0.09866 | 3.768 | 0.000421 \*\*\* | 0.011788\*\* |
| Specialized DT % | MAP | -0.000442 | 0.001836 | -0.241 | 0.81123 | 0.906660 |
| Specialized DT % | Date of publication | 0.05941 | 0.13060 | 0.455 | 0.651 | 0.893455 |
| Specialized DT % | Geologic age (Ma) | 0.05369 | 0.04195 | 1.280 | 0.20560 | 0.646800 |
| Specialized DT % | Shannon’s diversity index | 0.1746 | 0.9852 | 0.177 | 0.859933 | 0.906660 |
| Specialized DT % | Pielou’s J | 0.8664 | 3.2450 | 0.267 | 0.790402 | 0.906660 |
| Specialized DT % | Plant diversity at 300 specimens | -0.01786 | 0.04638 | -0.385 | 0.702 | 0.893455 |
| Galling DT % | MAT | 0.11802 | 0.08695 | 1.357 | 0.180 | 0.646800 |
| Galling DT % | MAP | -0.0005486 | 0.000994 | -0.552 | 0.584 | 0.893455 |
| Galling DT % | Date of publication | 0.19655 | 0.07857 | 2.502 | 0.0149 \* | 0.139067 |
| Galling DT % | Geologic age (Ma) | -0.04707 | 0.02626 | -1.792 | 0.0779 | 0.436240 |
| Galling DT % | Shannon’s diversity index | 0.07095 | 0.63816 | 0.111 | 0.9118 | 0.911800 |
| Galling DT % | Pielou’s J | 1.335 | 2.096 | 0.637 | 0.5267 | 0.893455 |
| Galling DT % | Plant diversity at 300 specimens | -0.004743 | 0.029848 | -0.159 | 0.87428 | 0.906660 |
| Mining DT % | MAT | 0.06143 | 0.02915 | 2.107 | 0.0396 \* | 0.277200 |
| Mining DT % | MAP | -0.0001850 | 0.000333 | -0.555 | 0.5819 | 0.893455 |
| Mining DT % | Date of publication | -0.009808 | 0.023744 | -0.413 | 0.681 | 0.893455 |
| Mining DT % | Geologic age (Ma) | 0.005180 | 0.007758 | 0.668 | 0.5068 | 0.893455 |
| Mining DT % | Shannon’s diversity index | 0.2757 | 0.1820 | 1.515 | 0.135 | 0.630000 |
| Mining DT % | Pielou’s J | 0.4614 | 0.6084 | 0.758 | 0.4512 | 0.893455 |
| Mining DT % | Plant diversity at 300 specimens | 0.010717 | 0.008577 | 1.25 | 0.21631 | 0.646800 |

**Table S3.** Full mixed effects model results.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Independent Variable** | **Dependent Variable** | **Mixed Effects Regressor** | **Coefficients** | **Regression coefficient** | **Standard error** | **T-value** | ***p*-value** |
| 1 | DT Richness | MAT | Depositional Environment | Intercept | 8.7677 | 4.1267 | 2.125 | 0.038687 \* |
| MAT | 0.5305 | 0.1386 | 3.827 | 0.000368 \*\*\* |
| Fluvial | 2.0423 | 3.5681 | 0.572 | 0.569683 |
| Lacustrine | 5.6399 | 3.6507 | 1.545 | 0.128804 |
| Mixed | 1.8696 | 4.2367 | 0.441 | 0.660958 |
| 2 | Specialized DT Richness | MAT | Depositional Environment | Intercept | 1.1362 | 2.8876 | 0.393 | 0.695679 |
| MAT | 0.3507 | 0.0970 | 3.615 | 0.000707 \*\*\* |
| Fluvial | 2.2036 | 2.4968 | 0.883 | 0.381762 |
| Lacustrine | 3.9996 | 2.5545 | 1.566 | 0.123852 |
| Mixed | 0.5945 | 2.9646 | 0.201 | 0.841899 |
| 3 | Galling DT Richness | MAT | Depositional Environment | Intercept | 0.9761 | 1.6603 | 0.588 | 0.55932 |
| MAT | 0.1546 | 0.0558 | 2.771 | 0.00787 \*\* |
| Fluvial | -1.1410 | 1.4356 | -0.795 | 0.43057 |
| Lacustrine | 0.2135 | 1.4688 | 0.145 | 0.88501 |
| Mixed | -0.6432 | 1.7046 | -0.377 | 0.70756 |
| 4 | Mining DT Richness | MAT | Depositional Environment | Intercept | 0.1535 | 1.1969 | 0.128 | 0.898 |
| MAT | 0.0812 | 0.0402 | 2.019 | 0.049 \* |
| Fluvial | 0.2979 | 1.0349 | 0.288 | 0.775 |
| Lacustrine | 1.1779 | 1.0589 | 1.112 | 0.271 |
| Mixed | -0.5122 | 1.2288 | -0.417 | 0.679 |
| 5 | DT Richness | MAT | Latitude | Intercept | 10.2668 | 2.4990 | 4.108 | 0.000151 \*\*\* |
| MAT | 0.4493 | 0.1984 | 2.265 | 0.027965 \* |
| Mid-North Latitudes | 3.0310 | 2.3699 | 1.279 | 0.206925 |
| Low Latitudes | 1.9250 | 5.3634 | 0.359 | 0.721208 |
| Mid-South Latitudes | 6.9388 | 3.4243 | 2.026 | 0.048194 \* |
| 6 | Specialized DT Richness | MAT | Latitude | Intercept | 2.3162 | 1.7432 | 1.329 | 0.19010 |
| MAT | 0.3985 | 0.1384 | 2.880 | 0.00588 \*\* |
| Mid-North Latitudes | 0.7363 | 1.6531 | 0.445 | 0.65800 |
| Low Latitudes | -2.7599 | 3.7413 | -0.738 | 0.46422 |
| Mid-South Latitudes | 2.8826 | 2.3887 | 1.207 | 0.23331 |
| 7 | Galling DT Richness | MAT | Latitude | Intercept | 0.1321 | 1.0292 | 0.128 | 0.8984 |
| MAT | 0.1998 | 0.0817 | 2.446 | 0.0181 \* |
| Mid-North Latitudes | -0.4939 | 0.9760 | -0.506 | 0.6151 |
| Low Latitudes | -0.8328 | 2.2089 | -0.377 | 0.7078 |
| Mid-South Latitudes | -1.1850 | 1.4103 | -0.840 | 0.4049 |
| 8 | Mining DT Richness | MAT | Latitude | Intercept | 0.1517 | 0.7030 | 0.216 | 0.83011 |
| MAT | 0.1742 | 0.0558 | 3.121 | 0.00302 \*\* |
| Mid-North Latitudes | -1.0798 | 0.6667 | -1.620 | 0.11174 |
| Low Latitudes | -3.3527 | 1.5089 | -2.222 | 0.03093 \* |
| Mid-South Latitudes | 0.0849 | 0.9634 | 0.088 | 0.93011 |
| 9 | DT Richness | Shannon | Depositional Environment | Intercept | 19.6030 | 4.7900 | 4.093 | 0.000138 \*\*\* |
| Shannon | 1.5860 | 1.2700 | 1.249 | 0.216895 |
| Fluvial | -3.0430 | 3.7060 | -0.821 | 0.415126 |
| Lacustrine | 1.1390 | 3.7110 | 0.307 | 0.760063 |
| Mixed | -4.7230 | 5.0030 | -0.944 | 0.349215 |
| 10 | Specialized DT Richness | Shannon | Depositional Environment | Intercept | 8.7706 | 3.3109 | 2.649 | 0.0105 \* |
| Shannon | 0.9257 | 0.8778 | 1.055 | 0.2961 |
| Fluvial | -1.4452 | 2.5619 | -0.564 | 0.5749 |
| Lacustrine | 0.8603 | 2.5654 | 0.335 | 0.7386 |
| Mixed | -3.9695 | 3.4583 | -1.148 | 0.2559 |
| 11 | Galling DT Richness | Shannon | Depositional Environment | Intercept | 3.1502 | 1.6106 | 1.956 | 0.0555 |
| Shannon | 0.4975 | 0.4270 | 1.165 | 0.2489 |
| Fluvial | -1.6886 | 1.2463 | -1.355 | 0.1809 |
| Lacustrine | -0.2343 | 1.2479 | -0.188 | 0.8518 |
| Mixed | -1.6581 | 1.6823 | -0.986 | 0.3286 |
| 12 | Mining DT Richness | Shannon | Depositional Environment | Intercept | 0.4608 | 1.2069 | 0.382 | 0.704 |
| Shannon | 0.4456 | 0.3200 | 1.392 | 0.169 |
| Fluvial | 0.4266 | 0.9339 | 0.457 | 0.650 |
| Lacustrine | 1.4053 | 0.9352 | 1.503 | 0.139 |
| Mixed | -0.6100 | 1.2606 | -0.484 | 0.630 |
| 13 | DT Richness | Shannon | Latitude | Intercept | 12.3830 | 3.2370 | 3.825 | 0.000331 \*\*\* |
| Shannon | 1.5090 | 1.0330 | 1.460 | 0.149814 |
| Mid-North Latitudes | 4.8030 | 2.6510 | 1.812 | 0.075381 |
| Low Latitudes | 6.9960 | 4.5290 | 1.545 | 0.128030 |
| Mid-South Latitudes | 14.4830 | 3.3300 | 4.350 | 5.83e-05 \*\*\* |
| 14 | Specialized DT Richness | Shannon | Latitude | Intercept | 4.7696 | 2.2951 | 2.078 | 0.042290 \* |
| Shannon | 0.8237 | 0.7327 | 1.124 | 0.265718 |
| Mid-North Latitudes | 2.8554 | 1.8795 | 1.519 | 0.134340 |
| Low Latitudes | 2.9244 | 3.2105 | 0.911 | 0.366255 |
| Mid-South Latitudes | 9.0960 | 2.3605 | 3.853 | 0.000302 \*\*\* |
| 15 | Galling DT Richness | Shannon | Latitude | Intercept | 0.7737 | 1.2417 | 0.623 | 0.5357 |
| Shannon | 0.6928 | 0.3964 | 1.748 | 0.0860 |
| Mid-North Latitudes | 0.6427 | 1.0168 | 0.632 | 0.5299 |
| Low Latitudes | 1.6212 | 1.7369 | 0.933 | 0.3546 |
| Mid-South Latitudes | 2.2284 | 1.2771 | 1.745 | 0.0865 |
| 16 | Mining DT Richness | Shannon | Latitude | Intercept | 0.9215 | 0.9285 | 0.992 | 0.3252 |
| Shannon | 0.5032 | 0.2964 | 1.698 | 0.0951 |
| Mid-North Latitudes | -0.1683 | 0.7604 | -0.221 | 0.8257 |
| Low Latitudes | -0.8681 | 1.2988 | -0.668 | 0.5067 |
| Mid-South Latitudes | 1.3496 | 0.9550 | 1.413 | 0.1631 |