**Table 1.** Mean topographic features for each site.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Site** | **Type** | **Latitude** | **Longitude** | **Elevation (m)** | **Slope (°)** | **Aspect** | **Compass** |
| Gorham Cliffs | Cliff | 44.328 | -68.185 | 100.867 | 31.867 | 151.467 | SE |
| South Cadillac | Ledge | 44.333 | -68.224 | 930.733 | 9.400 | 138.133 | SE |
| St. Sauveur | Ledge | 44.311 | -68.326 | 597.133 | 13.333 | 262.600 | W |
| Wonderland | Flat | 44.237 | -68.316 | 53.400 | 3.733 | 208.067 | S |

**Table 2.** Watson’s Two Sample Test of Homogeneity results for aspect at each site.\*

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Gorham Cliffs** | **St. Sauveur** | **South Cadillac** |
| **Wonderland** | t = 0.259 \* | t = 0.288 \*\* | t = 0.194 \* |
| **Gorham cliffs** |  | t = 0.385 \*\* | t = 0.166 *ns* |
| **St. Sauveur** |  |  | t = 0.519 \*\*\* |

\*Key: t = test statistic, *ns* =not significant, \* = P < 0.05, \*\* = P < 0.01, \*\*\* = P < 0.001, P = P-value.

**Table 3.** Analysis of variance results for the mixed effects models with soil organic nutrients: carbon (C), nitrogen (N), and C/N, and soil water retention (SWR).\*

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Soil C** | | | **Soil N** | | | **Soil C/N** | | | **SWR** | | |
|  | **df** | **F** | **P** | **df** | **F** | **P** | **df** | **F** | **P** | **df** | **F** | **P** |
| Elevation | 1 | 6.942 | **0.014** | 1 | 0.358 | 0.556 | 1 | 5.708 | **0.026** | 1 | 0.756 | 0.390 |
| Fire | 1 | 2.718 | 0.111 | 1 | 0.260 | 0.615 | 1 | 1.493 | 0.235 | 1 | 12.400 | **0.001** |
| Elevation x Fire | 1 | 0.404 | 0.530 | 1 | 1.153 | 0.295 | 1 | 2.771 | 0.110 | 1 | 12.981 | **0.001** |
| *Residuals* | *27* |  |  | *22* |  |  | *22* |  |  | *36* |  |  |

\* P-values < 0.05 are bolded. Sample size is 26 for soil organic nutrients and 40 for SWR. Key: df = degrees of freedom, F = F-value, P = P-value.

**Table 4.** Analysis of variance results for the mixed effects models with soil inorganic nutrients: aluminum (Al+), calcium (Ca2+), potassium (K+), magnesium (Mg2+), phosphorus (P), and zinc (Zn).\*

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **Soil Al+** | | **Soil Ca2+** | | **Soil K+** | | **Soil Mg2+** | | **Soil P** | | **Soil Zn** | |
|  | **df** | **χ2** | **P** | **χ2** | **P** | **χ2** | **P** | **χ2** | **P** | **χ2** | **P** | **χ2** | **P** |
| Elevation | 1 | 1.321 | 0.261 | 7.411 | **0.011** | 4.818 | **0.037** | 3.103 | *0.089* | 3.926 | *0.058* | 2.001 | 0.169 |
| Fire | 1 | 0.032 | 0.860 | 0.041 | 0.840 | 6.664 | **0.016** | 0.254 | 0.618 | 1.015 | 0.323 | 0.082 | 0.776 |
| Elevation x Fire | 1 | 7.851 | **0.009** | 0.135 | 0.716 | 0.100 | 0.755 | 0.224 | 0.640 | 0.065 | 0.801 | 2.883 | 0.101 |
| *Residuals* | *27* |  |  |  |  |  |  |  |  |  |  |  |  |

\* P-values < 0.05 are bolded and < 0.1 are italicized. Sample size is 31. Key: df = degrees of freedom, F = F-value, P = P-value.

**Table 5.** Analysis of variance results for the mixed effects models with foliar isotopes: δ13C and δ15N and foliar organic nutrients: carbon (C), nitrogen (N), and C/N.\*

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **δ13C** | | | **δ15N** | | | **Foliar C** | | | **Foliar N** | | | **Foliar C/N** | | |
|  | **df** | F | **P** | **df** | **F** | **P** | **df** | **F** | **P** | **df** | **F** | **P** | **df** | **F** | **P** |
| Elevation | 1 | 9.215 | **0.004** | 1 | 1.087 | 0.302 | 1 | 0.844 | 0.362 | 1 | 1.736 | 0.193 | 1 | 1.323 | 0.255 |
| Fire | 1 | 1.369 | 0.247 | 1 | 2.857 | *0.097* | 1 | 4.053 | **0.049** | 1 | 1.156 | 0.287 | 1 | 0.425 | 0.517 |
| Elevation x Fire | 1 | 0.227 | 0.636 | 1 | 1.831 | 0.182 | 1 | 0.001 | 0.981 | 1 | 1.020 | 0.317 | 1 | 1.707 | 0.197 |
| *Residuals* | *51* |  |  | *51* |  |  | *56* |  |  | *52* |  |  | *52* |  |  |

\* P-values < 0.05 are bolded and < 0.1 are italicized. Sample size is 55 for foliar isotopes and 56 for foliar organic nutrients. Key: df = degrees of freedom, F = F-value, P = P-value.

**Table 6.** Analysis of variance results for the mixed effects models with foliar inorganic nutrients: aluminum (Al+), calcium (Ca2+), potassium (K+), magnesium (Mg2+), phosphorus (P), and zinc (Zn).\*

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **Foliar Al+** | | **Foliar Ca2+** | | **Foliar K+** | | **Foliar Mg2+** | | **Foliar P** | | **Foliar Zn** | |
|  | **df** | **F** | **P** | **F** | **P** | **F** | **P** | **F** | **P** | **F** | **P** | **F** | **P** |
| Elevation | 1 | 0.393 | 0.534 | 15.396 | **<0.05** | 5.042 | **0.031** | 2.201 | 0.147 | 0.523 | 0.474 | 8.645 | **0.006** |
| Fire | 1 | 0.021 | 0.887 | 0.843 | 0.365 | 4.071 | *0.051* | 0.507 | 0.481 | 8.309 | **0.007** | 0.050 | 0.824 |
| Elevation x Fire | 1 | 0.187 | 0.668 | 0.088 | 0.769 | 4.863 | **0.034** | 0.377 | 0.543 | 0.407 | 0.527 | 1.458 | 0.235 |
| *Residuals* | *36* |  |  |  |  |  |  |  |  |  |  |  |  |

\* P-values < 0.05 are bolded and < 0.1 are italicized. Sample size is 40. Key: df = degrees of freedom, F = F-value, P = P-value.

**Table 7.** Analysis of variance results for the mixed effects models with slope, tree height, canopy spread, diameter at breast height (DBH), and distance between neighbors.\*

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Canopy Spread (m)** | | | **DBH (cm)** | | | | **Distance Between Neighbors (m)** | | | | **Slope (°)** | | | | **Tree Height (m)** | | | |
|  | **df** | **F** | **P** | | **df** | **F** | **P** | | **df** | **F** | **P** | | **df** | **F** | **P** | | **df** | **F** | **P** |
| Elevation | 1 | 8.174 | **0.007** | | 1 | 16.080 | **<0.05** | | 1 | 19.764 | **<0.05** | | 1 | 21.577 | **<0.05** | | 1 | 3.862 | *0.057* |
| Fire | 1 | 0.012 | 0.914 | | 1 | 1.100 | 0.301 | | 1 | 1.418 | 0.248 | | 1 | 113.805 | **<0.05** | | 1 | 0.097 | 0.757 |
| Elevation x Fire | 1 | 0.068 | 0.795 | | 1 | 3.022 | *0.091* | | 1 | 0.468 | 0.502 | | 1 | 108.085 | **<0.05** | | 1 | 6.593 | **0.015** |
| *Residuals* | *36* |  |  | | *36* |  |  | | *20* |  |  | | *56* |  |  | | *36* |  |  |

\* P-values < 0.05 are bolded and < 0.1 are italicized. Sample size is 40 for tree height, canopy spread, and DBH and 60 for slope and distance between neighbors. Key: df = degrees of freedom, F = F-value, P = P-value.