Hollingsworth T. N., A. L.. Breen, R. E. Hewitt, and M. C. Mack. Does fire accelerate shrub expansion in Arctic Alaska tundra? Examining the complex effect of fire history on vegetation and ecosystem dynamics on the Seward Peninsula. Submitted to *Arctic, Antarctic, and Alpine Research*

**Supplemental Table 3:** Chi square estimates and significance of linear-mixed effects models explaining fire effects on a) soil properties and b) vegetation properties. R2m= marginal R2 excluding random factors; R2c=conditional R2 including effect of random factor. Fire effect is significantly related to variables in bold. P-values adjusted for multiple comparisons by controlling for the false discovery rates with the Benjamini-Hochberg procedure (Benjamini and Hochberg, 1995).

a.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Variable | *χ2* | Df | p | R2m | R2c | Data  transformation |
|  | **Organic layer depth** | 14.35 | 1 | <0.01 | 0.48 | 0.95 |  |
|  | **Thaw depth** | 21.07 | 1 | <0.01 | 0.62 | 0.96 |  |
| Profile-weighted | C:N | 0.01 | 1 | 0.92 | 0 | 0.92 |  |
|  | **C pool** | 5.22 | 1 | 0.04 | 0.19 | 0.91 | log10 |
|  | N pool | 3.47 | 1 | 0.06 | 0.16 | 0.91 | log10 |
|  | **Fine pool** | 5.44 | 1 | 0.02 | 0.19 | 0.91 | log10 |
|  | CWD pool | 0.47 | 1 | 0.49 | 0.03 | 0.90 |  |
| Surface | **C:N** | 4.12 | 1 | 0.04 | 0.09 | 1.00 |  |
|  |  |  |  |  |  |  |  |

b.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Variable | *χ2* | Df | p | R2m | R2c | Data transformation |
| Total richness | 1 | 1 | 0.37 | 0.08 | 0.93 |  |
| Shrub basal area | 1.55 | 1 | 0.29 | 0.08 | 0.91 | log10 |
| Shrub density | 1.02 | 1 | 0.37 | 0.08 | 0.94 | sqrt |
| Plot biomass | 4.69 | 1 | 0.06 | 0.3 | 0.96 | sqrt |
| **Grass % cover** | 8.1 | 1 | 0.03 | 0.38 | 0.95 | log10 |
| Deciduous shrub % cover | 1.77 | 1 | 0.29 | 0.11 | 0.92 | sqrt |
| Foliar C:N *E. vaginatum* | 3.28 | 1 | 0.13 | 0.28 | 0.94 | log10 |
| Foliar C:N *B. nana* | 1.62 | 1 | 0.29 | 0.16 | 0.94 |  |
| **Foliar C:N *Salix* sp.** | 9.27 | 1 | 0.03 | 0.29 | 1 | log10 |
| **Foliar %N *E. vaginatum*** | 8.01 | 1 | 0.03 | 0.21 | 0.9 |  |
| **Foliar %N *B. nana*** | 13.68 | 1 | 0.03 | 0.3 | 0.91 |  |
| Foliar %N *Salix* sp. | 0.56 | 1 | 0.48 | 0.02 | 0.89 |  |
| **Foliar %C *E. vaginatum*** | 13.78 | 1 | 0.03 | 0.31 | 0.92 |  |
| Foliar %C *B. nana* | 0.01 | 1 | 0.93 | 0 | 0.87 |  |
| **Foliar %C *Salix* sp.** | 9.7 | 1 | 0.03 | 0.29 | 0.91 |  |