

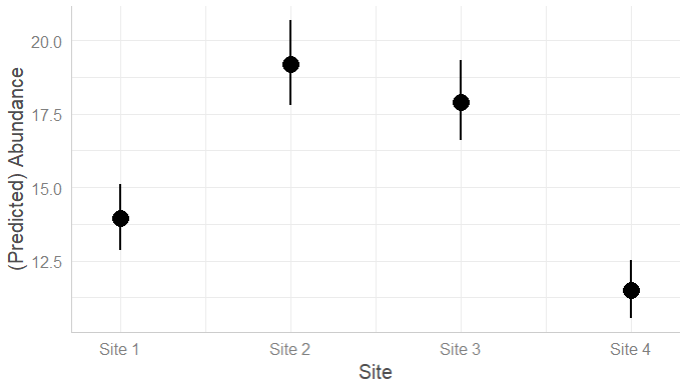
**Arthropod abundance**

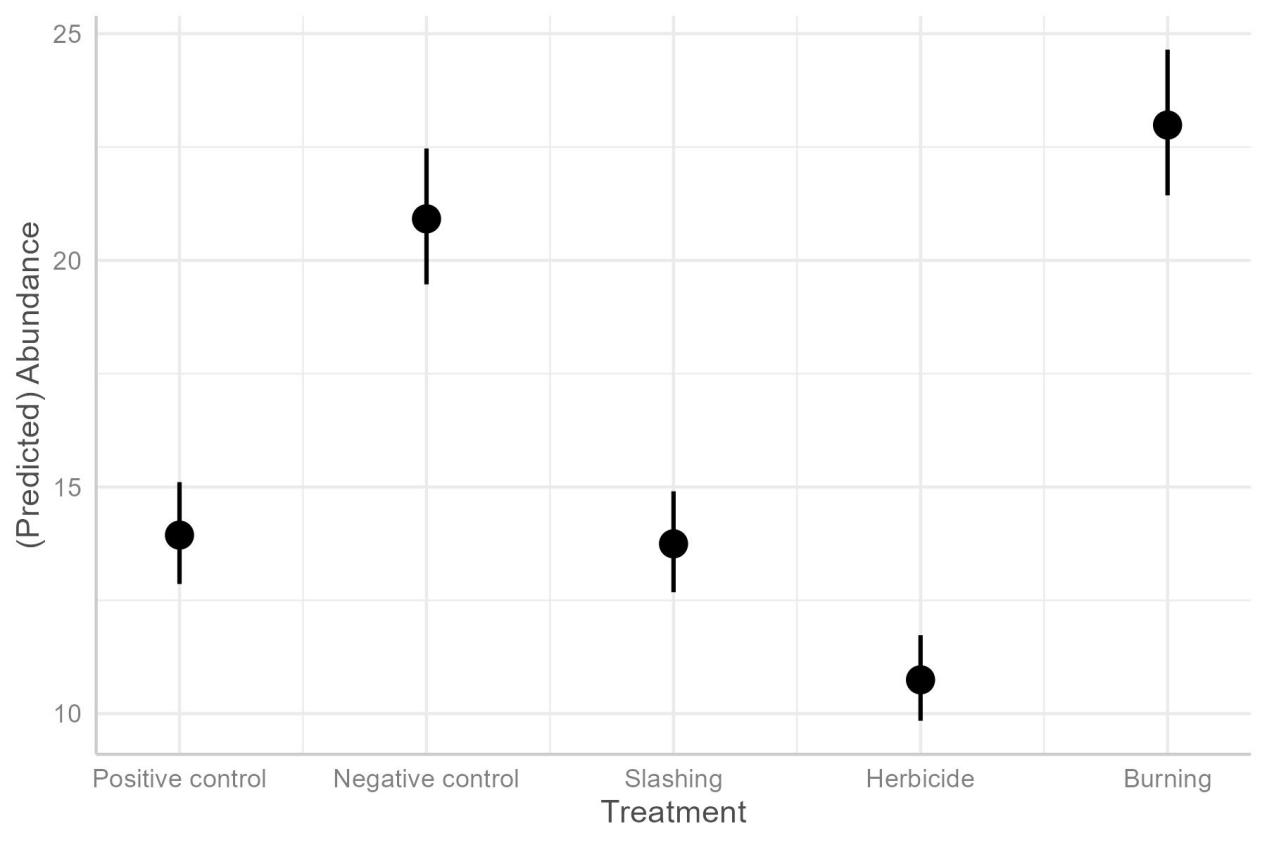
Arthropod abundance varied significantly across treatments and over time (Table X). Compared with the positive control (invaded and untreated), the negative control (uninvaded site) supported higher arthropod abundance (estimate = 0.41, z = 9.65, p < 0.001). Burning also led to significantly higher abundance relative to the positive control (estimate = 0.50, z = 12.12, p < 0.001). In contrast, herbicide application reduced arthropod abundance (estimate = –0.26, z = –5.27, p < 0.001), while slashing did not differ significantly from the positive control (estimate = –0.01, z = –0.30, p = 0.76).

Post-hoc comparisons confirmed these patterns. Abundance in burned plots and the negative control was significantly higher than in the positive control and slashed plots, but there was no significant difference between burned plots and the negative control. Similarly, the positive control did not differ significantly from slashed plots. By contrast, herbicide-treated plots supported significantly lower abundance than all other treatments.

Estimated marginal means showed that abundance was lowest in herbicide plots (emmean = 2.47, 95% CI: 2.37–2.56), intermediate in slashed (2.71, 95% CI: 2.63–2.80) and positive control sites (2.73, 95% CI: 2.64–2.81), and highest in the negative control (3.13, 95% CI: 3.07–3.20) and burned plots (3.23, 95% CI: 3.16–3.29).

Across all treatments, arthropod abundance declined slightly but significantly with increasing time after treatment (estimate = –0.013 per sampling period, z = –7.81, p < 0.001). Site-level variation was also evident, with higher abundance in Sites 2 and 3 compared with Site 1, and reduced abundance in Site 4.



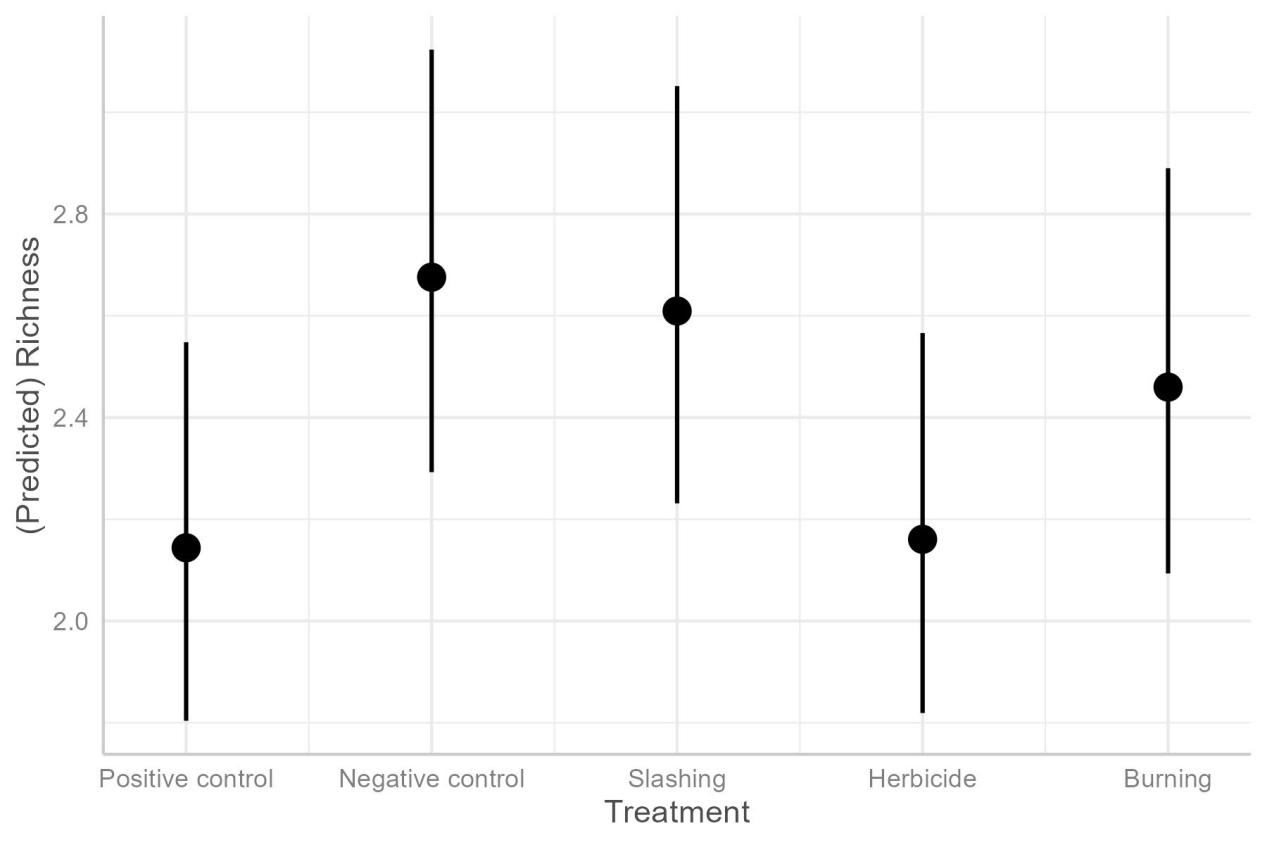


**Arthropod richness**

Species richness did not differ significantly among treatments (Table X). Compared with the positive control, the negative control (estimate = 0.22, z = 1.88, p = 0.06) and slashing (estimate = 0.20, z = 1.65, p = 0.10) showed a tendency toward higher richness, but these effects were not statistically significant. Herbicide (estimate = 0.01, z = 0.06, p = 0.95) and burning (estimate = 0.14, z = 1.14, p = 0.25) did not differ from the positive control.

Post-hoc Sidak comparisons likewise did not detect any significant differences among treatments, with all treatments grouped together. However, the estimated marginal means suggested slightly higher richness in the negative control (emmean = 0.98, 95% CI: 0.78–1.19) and slashing plots (0.96, 95% CI: 0.75–1.16) compared with the positive control (0.76, 95% CI: 0.54–0.99) and herbicide (0.77, 95% CI: 0.54–1.00).

Across treatments, species richness declined slightly but significantly with increasing time after treatment (estimate = –0.0095 per sampling period, p = 0.045). Also, unlike for abundance, site level variation was not significant (P<.05)

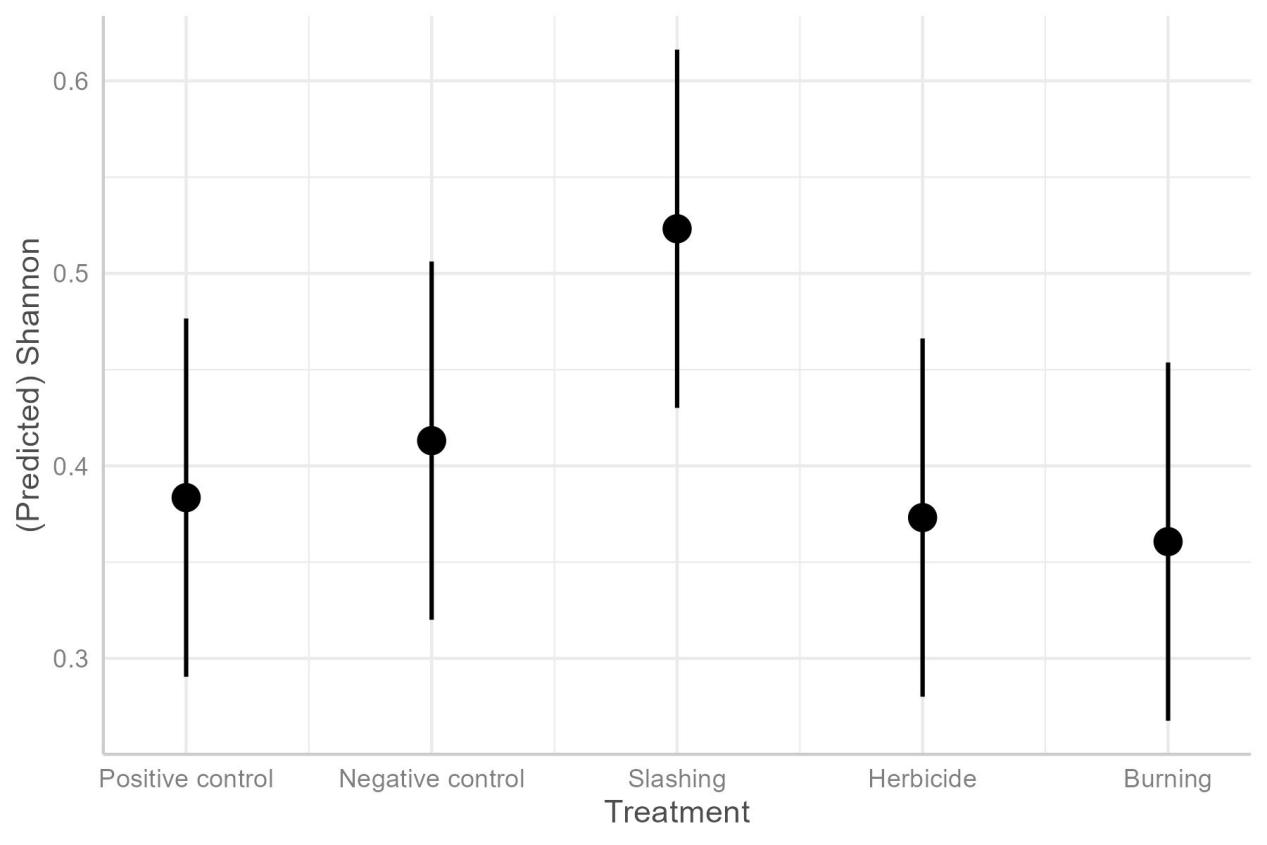


**Shannon diversity**

Shannon diversity differed only weakly among treatments (Table X). Compared with the positive control, neither the negative control (estimate = 0.03, t = 0.44, p = 0.66), herbicide (estimate = –0.01, t = –0.16, p = 0.88), nor burning (estimate = –0.02, t = –0.34, p = 0.73) showed significant differences in diversity. However, slashing supported significantly higher Shannon diversity than the positive control (estimate = 0.14, t = 2.09, p = 0.038).

Post-hoc Sidak comparisons did not detect significant pairwise differences among treatments, with all treatments grouped together. Nevertheless, the estimated marginal means revealed consistent trends in diversity values. Shannon diversity was lowest in burned plots (emmean = 0.36, 95% CI: 0.24–0.48) and herbicide-treated plots (0.37, 95% CI: 0.25–0.50), intermediate in the positive control (0.38, 95% CI: 0.26–0.51) and negative control (0.41, 95% CI: 0.29–0.54), and highest in slashed plots (0.52, 95% CI: 0.40–0.65). Thus, although conservative post-hoc testing did not detect significant differences, slashed plots consistently supported the greatest Shannon diversity, while burned and herbicide-treated plots tended to support the lowest.

Across all treatments, Shannon diversity declined slightly but significantly with increasing time after treatment (estimate = –0.0065 per sampling period, t = –2.46, p = 0.014). This suggests that temporal dynamics following treatment exerted a subtle but detectable influence on arthropod diversity.



**Simpson’s diversity index**

Analysis of Simpson’s diversity index revealed that treatment type did not significantly influence community diversity, whereas sampling period exerted a modest but significant effect. The linear model indicated no strong differences among treatments: relative to the positive control, Simpson’s index was slightly lower under the negative control (Estimate = –0.016, p = 0.659), herbicide (Estimate = –0.022, p = 0.559), and burning (Estimate = –0.038, p = 0.310) treatments, but slightly higher under slashing (Estimate = 0.062, p = 0.094). Although the effect of slashing approached significance, it remained marginal. Importantly, Simpson’s index decreased over time (β = –0.0038, p = 0.011), indicating a gradual decline in overall diversity across periods regardless of management intervention.

Post-hoc comparisons using Sidak adjustment confirmed that no treatment group differed significantly from the others, as all treatments clustered into a single statistical grouping. Mean Simpson’s index values ranged from 0.189 (burning) to 0.289 (slashing), with overlapping confidence intervals indicating homogeneity among treatments.