Analysis of the Woody and Herbaceous Deer Browse Data from Griffy Lake Nature Preserve 2018-2022

Analysis

For the woody plant data, spicebush was excluded due to non-preference by deer. Additionally, all heights above 1m were not included because they were above deer browse height. While some browse was evident on taller individuals and spicebush, it was a small percentage of the total foliage and unlikely to significantly affect the overall vigor. The mean height and mean root collar diameter (rcd) of woody species were analyzed by samples year (2018,2019,2020,2021,2022,2023) using a repeated measures one-way ANOVA ($\alpha = 0.05$) test. For herbaceous data (Solomon's seal and Jack-in-the-pulpit), mean height was also analyzed by sample year using a repeated measure one-way ANOVA ($\alpha = 0.05$) test. If significant differences were found within the data, Holm-Sidak multiple comparison tests ($\alpha = 0.05$) were used to compare individual years. All data was evaluated for and met assumptions of normality.

Results

The woody data showed mixed results in 2023 with little clear trend. The mean height decreased slightly as it did in 2022, likely again due to mortality in some of the older sapling classes. Successive years of early summer drought may be contributing to increased mortality. After declining last year, the average root collar diameter increased slightly in 2023, but remains below what was recorded in 2021. Browse on favored woody species such as roundleaf greenbrier and mapleleaf viburnum remains high with the percentage of shoots browsed fluctuating between 30 and 50 percent since 2020 after initially being near 60 percent when this data was first taken in 2019.

The 2023 herbaceous data has lost the clear upward trajectory evident from 2019 through 2022. Both the Jack-in-the-pulpit and the Solomon's seal showed slight declines in height in 2023. Browse was evident on large specimens of both species even though Jack-in-the-pulpit is not particularly favored by deer. The decline in the Jack-in-the-pulpit height was not significant relative to 2022 and has largely plateaued since 2021 after increasing from 2019-2021. The decline in the height of the solomon's seal was more evident, but still not significantly different from 2022. However, it was a rather abrupt change in trajectory from the steady and statistically significant increases from 2019 through 2022.

The four floodplain transects continue to show very heavy browse. Large stands of non-native privet in the floodplain of Griffy Creek upstream from the reservoir seem to have created the ideal winter habitat for deer. Significant browse is evident on the twigs of the privet. Deer culls seem to be maintaining a reduced but still excessive population.

Figure 1: Root collor diameter showing a non-significant increase since from 2022

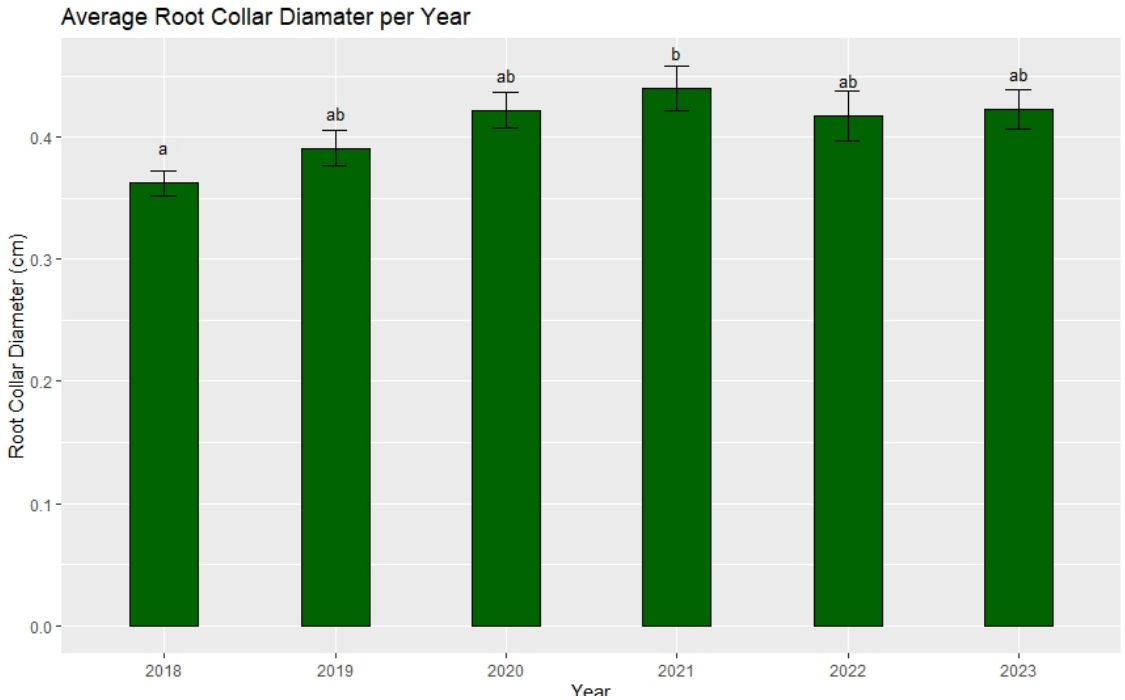

Figure 2: Sapling height showing a non-significant decline from 2022

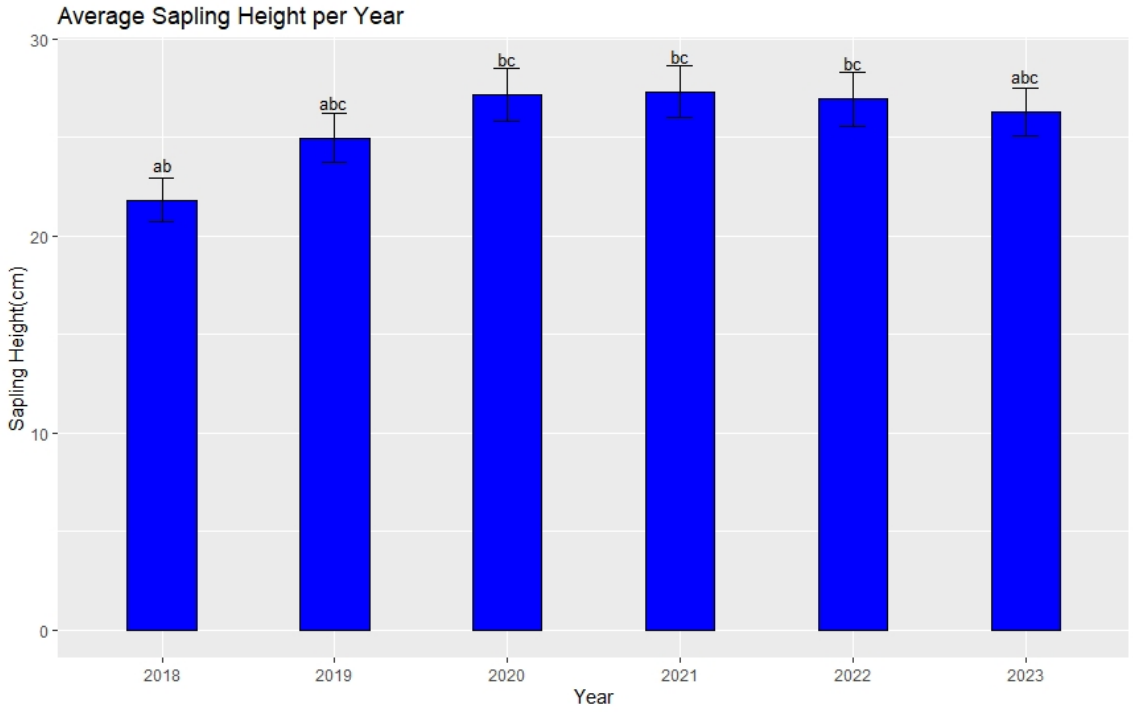

Figure 3: Solomon's seal height showing a non-significant decline from 2022

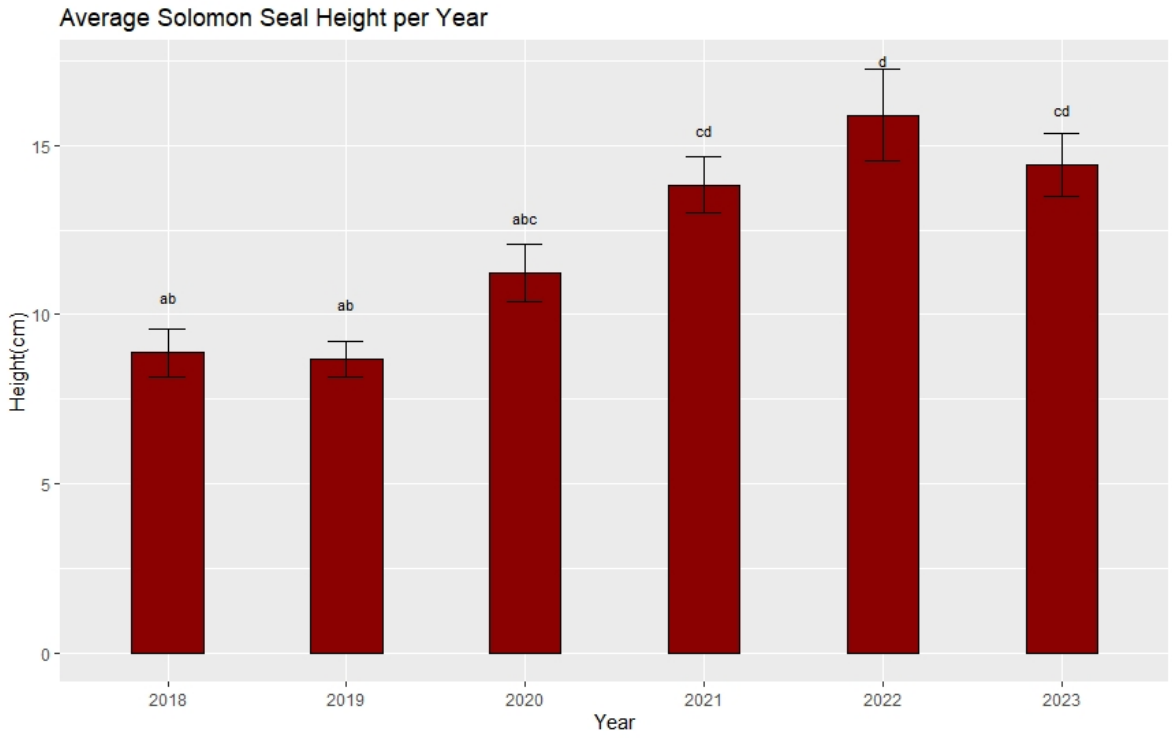

Figure 4: Jack-in-the-pulpit height showing a non-significant decline from 2022