

DEER IMPACTS ON OAK SEEDLINGS IN ANN ARBOR NATURAL AREAS SUMMARY, 2020



To assess how deer are affecting tree regeneration and as a standardized gauge of deer impacts across sites, experimental red oak seedlings in Ann Arbor natural areas have been planted each year since 2015 and monitored for deer browse for a full year. In 2019–2020, local-genotype red oak seedlings were planted and monitored in 14 city parks/natural areas (with 3 sites in the Bird Hills Nature Area and 2 sites at Huron Parkway Nature Area) and in University of Michigan’s Nichols Arboretum (under separate contract)—a total of 17 sites in 15 different natural areas. Key findings for 2019–2020 are summarized here. Additional details are provided in a separate report.

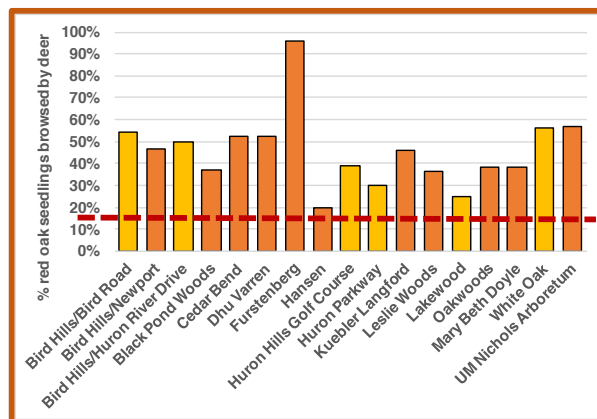
OVERVIEW



A total of 456 red oak seedlings were planted in April–June 2019. Seedlings were planted in 6 plots of 4 seedlings per planting site for each of 17 sites, with the goal of having 20 seedlings per site to assess. However, small mammals excavated some seedlings, and other plots were destroyed by fallen branches or vandalism, which left 391 experimental seedlings for assessment.

FINDINGS

- Overall, deer browsed 46% of all monitored red oak seedlings in 2019–20, the lowest level overall since monitoring began in 2015–16.
- Browse levels ranged from 20% at Hansen Nature Area to 96% at Furstenberg Nature Area, with most sites from 30–60%.
- Deer browsing decreased from 2018–19 at all sites where deer were managed except Cedar Bend, where browsing increased slightly.
- Most sites where deer have been managed have shown steady declines in deer browse levels, while sites not within the effective distance of deer management have shown ups and downs.
- Despite declines, deer browse levels remained higher at all sites than the 15% threshold beyond which oak forest regeneration is likely to fail.



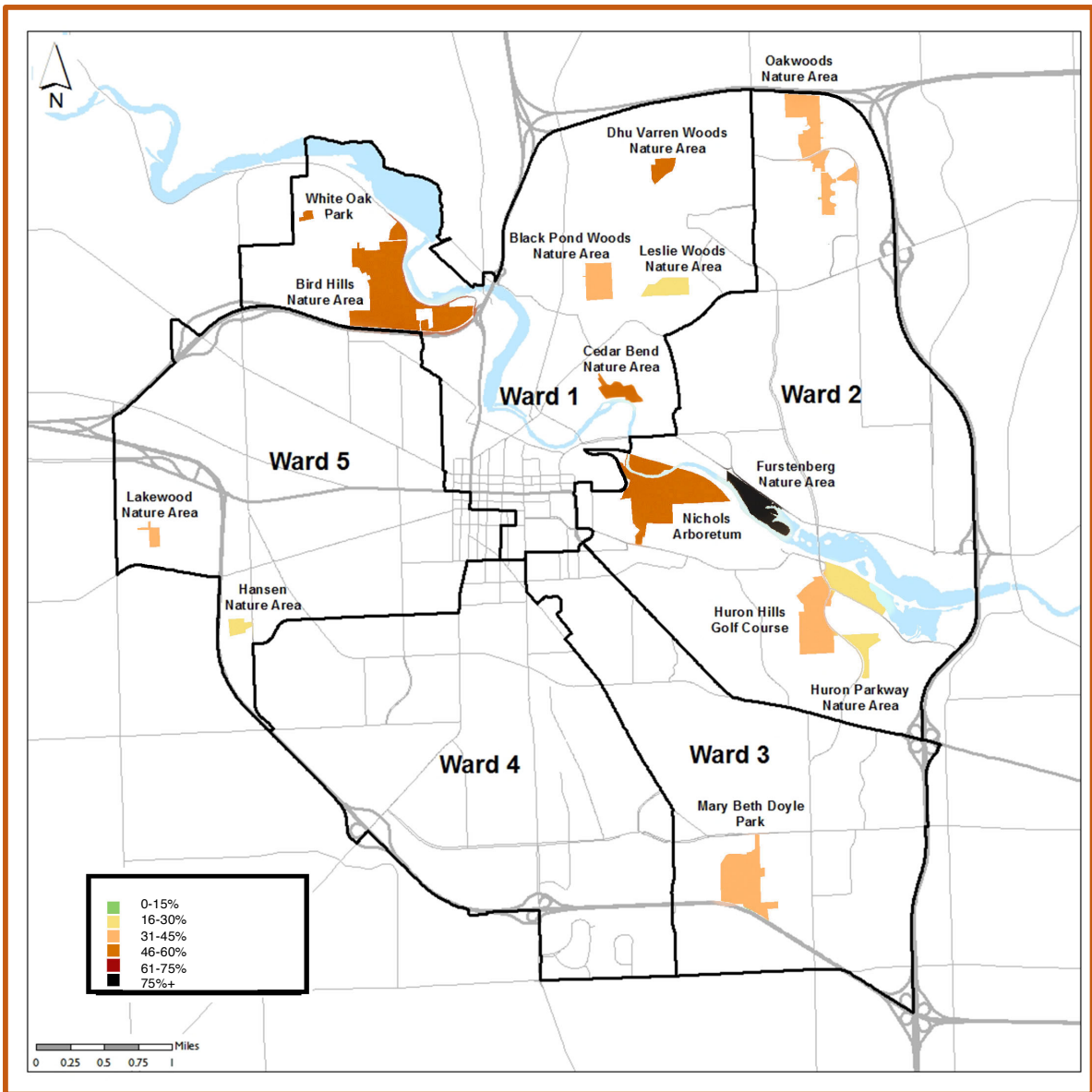
Deer browse on red oak seedlings in Ann Arbor natural areas, 2019–20. The red dashed line indicates the 15% annual browse level above which oak forest regeneration is likely to decline. Sites shown in lighter orange had low seedling numbers and may not fully represent deer browse levels.

CONSIDERATIONS

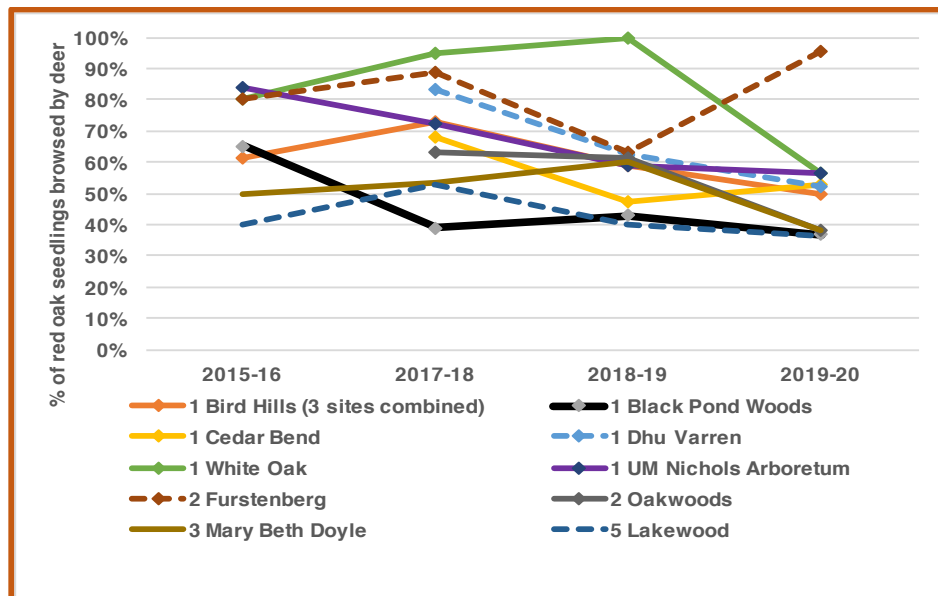
- Small mammals, including squirrels, chipmunks, and rabbits, affected more sites and more seedlings this year—from 20–67% of seedlings, compared to 5–20% of seedlings in previous years, likely due to cyclical population increases. While most seedlings resprouted after small mammal chewing, plants stayed smaller than typical deer browse height, so they were less likely to be browsed.
- Data at 6 of 17 sites with high small mammal damage (light orange in above figure) may underestimate deer impacts compared to previous years and should be interpreted as **minimum browse levels**.

CONCLUSIONS

Although greater than usual small mammal damage at 6 sites in 2019–2020 might have led to underestimates of deer damage, complicating comparisons with previous years, red oak seedling data suggest that deer management in 2016–2020 is linked to an overall decrease in browse levels in Ann Arbor natural areas. However, deer continue to damage oak seedlings at levels that can inhibit forest regeneration.



Overview of deer impacts in Ann Arbor Nature Areas, 2019–20. Shading shows % of red oak seedlings browsed by deer.



Trends in Ann Arbor deer impacts, 2016–20. Nature Areas shown with solid lines are sites where oak seedlings were planted within the effective distance (3/8 mile) of deer management; dashed lines indicate that seedlings are >3/8 mile from deer management areas.