



# DEER IMPACTS ON TRILLIUMS IN ANN ARBOR NATURAL AREAS SUMMARY, 2019

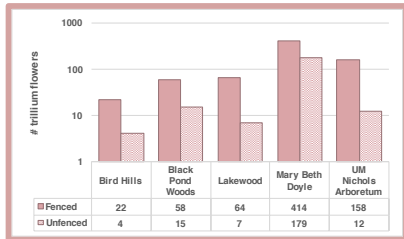


To assess how deer are affecting native plants in Ann Arbor natural areas, a trillium enclosure study has been underway since 2016 in 4 City areas (Bird Hills, Black Pond Woods, Lakewood, and Mary Beth Doyle), and, under separate contract, at Nichols Arboretum. A survey was conducted to find 6 plot pairs per site with similar initial trillium population sizes. One plot of each pair was randomly selected to be fenced and protected from deer damage. Plots have been monitored since 2016 for trillium abundance and flowering (# plants, # flowers, % flowering) as well as deer browse (# and % stems deer damaged). In all, over 2,850 trillium plants were monitored in 2019.



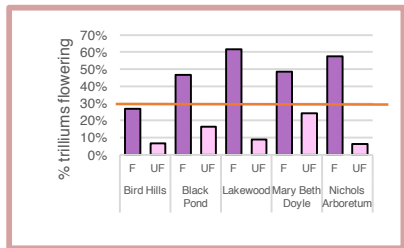
## # TRILLIUM PLANTS

- Trillium abundance was similar in fenced and unfenced plots when monitoring started in 2016, but in 2017, numbers declined or stayed the same in most unfenced plots where deer could browse and trample plants, while increasing in fenced plots protected from deer.
- In 2019, trillium abundance continued to be significantly lower in unfenced plots where deer can browse and trample.
- Differences in abundance appear to be leveling at Bird Hills and Black Pond Woods (see full report for details).



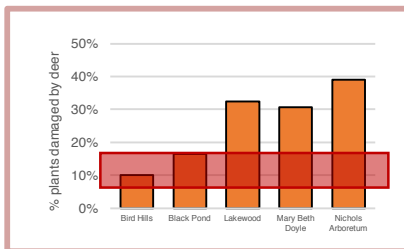
## # AND % TRILLIUMS FLOWERING

- More trilliums flowered in fenced than unfenced plots at all sites.
- Other studies suggest that deer management is needed when trillium flowering rates are less than 30%.
- Flowering rates in unfenced deer-accessible plots are below 30% at all sites. This year, flowering rates at Mary Beth Doyle fell below 30% for the first time during this study. Levels are stabilizing at Bird Hills, Black Pond Woods, and Nichols Arboretum, where deer are being managed (see full report for details).
- Flowering in fenced plots shows that trilliums are recovering with protection from deer, although recovery has been slow at Bird Hills.



## % TRILLIUMS DEER BROWSED

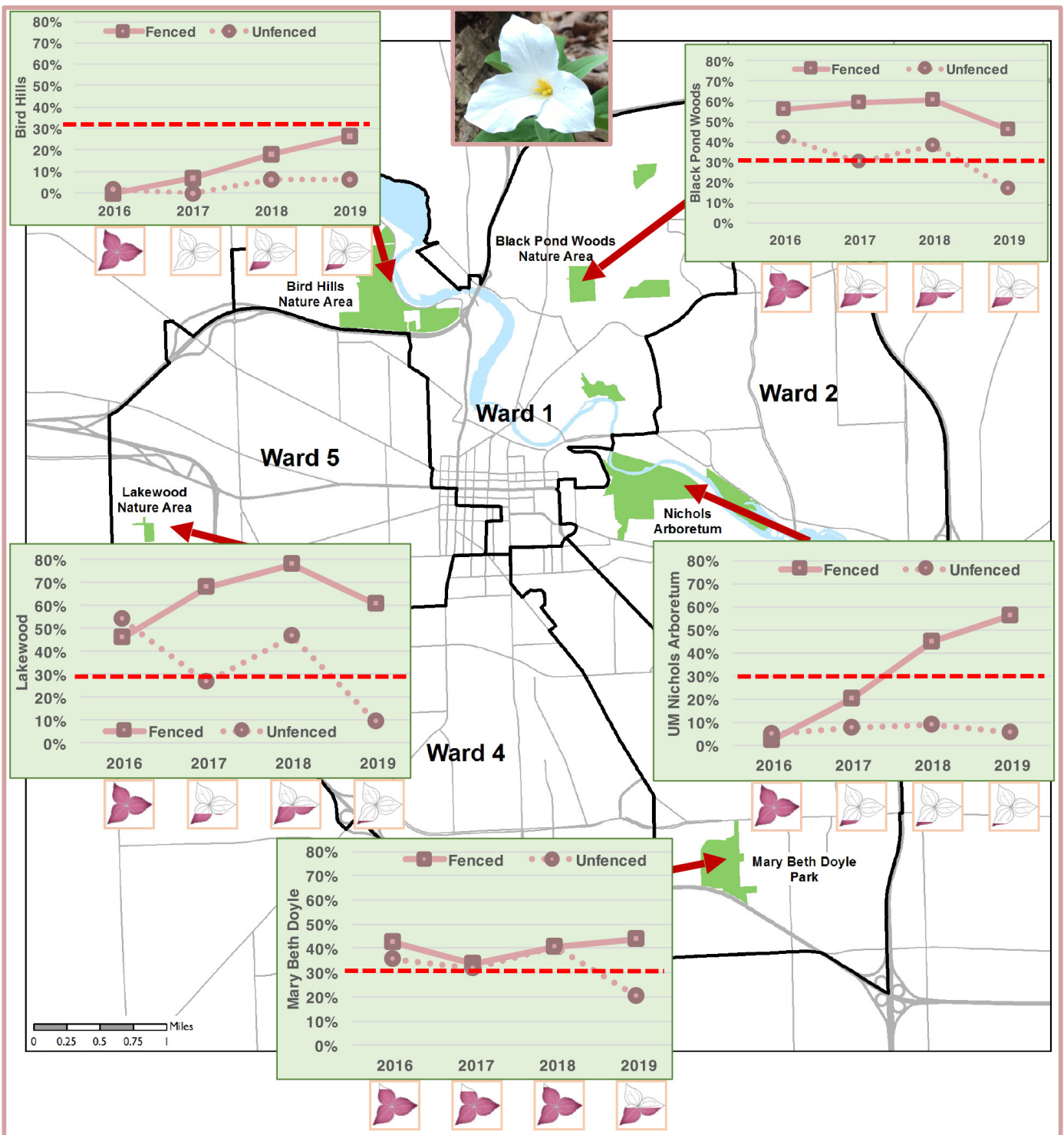
- Deer browse rates on trillium in 4 of 5 sites are above the 5–15% level that studies have shown will allow trillium populations to persist.
- Deer browse levels vary widely between plots, with some plots at Bird Hills/Newport (where deer are managed) showing no deer damage, while plots in unmanaged areas near Huron River Drive showed damage levels of 20%.
- Damage on tender herbaceous stems is hard to document; the observations reported here are a **minimum** deer browse level.



## CONCLUSIONS

Although deer management in 2016–2019 has stabilized or reduced deer populations, unfenced deer-accessible plots continue to show strong deer impacts on trillium flowering, while fenced populations show recovery. However, differences in trillium abundance between fenced and unfenced plots are stabilizing in two areas where deer are being managed. Recovery of trillium flowering appears to require sustained management during several years to lower deer populations, so that unfenced trillium populations can start a path to recovery as have the fenced trilliums.





**Trillium flowering rates (% flowering) in fenced vs. unfenced plots in Ann Arbor Natural Areas, 2016–19.** The red dashed line shows the 30% flowering rate; other studies suggest that when trillium flowering drops below this rate, deer management is needed. Flower symbols show # flowers in unfenced plots as % of fenced plots.

- Paired fenced and unfenced plots established in 2016 had similar initial numbers of *trillium plants*; small differences in initial *trillium flower* numbers between plot pairs were not statistically significant. By 2019, flowering rates were significantly lower in deer-accessible unfenced plots at all sites.
- Deer impacts increased at Mary Beth Doyle, where study plots are more than 3/8 mi from deer management (outside the effective radius); flowering rates in deer-accessible unfenced plots declined from 2018 to 2019, the first year since the study started in which unfenced plots at this site differed significantly from fenced.
- Flowering rates at Lakewood declined in unfenced plots in 2019, showing increased deer impacts.
- Flowering rates in unfenced plots in Bird Hills and Nichols Arboretum have increased somewhat since 2016, in conjunction with deer management, but recovery is slow. Flowering rates are rebounding in fenced plots.