

Impacts of White-tailed Deer to Forest Composition and Regeneration on Wisconsin's County Forests

A Position Paper of the Wisconsin County Forests Association

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CONCERN

White-tailed deer (*Odocoileus virginianus*) are the primary large ungulate found throughout Wisconsin. As a keystone herbivore, this species often feeds extensively on forest regeneration altering species composition and viability of some tree or shrub species. In Wisconsin, deer populations are primarily controlled by weather, predation and regulated hunting. A general decrease in the severity of winters, along with relatively low mortality rates, has resulted in deer populations in many parts of the state negatively impacting forests biologically and economically.

Contemporary research, established science, and observations of in-field forestry and wildlife professionals indicate that overabundant white-tail deer populations (population numbers that exceed the lands inherent carrying capacity) can:

- Inhibit natural regeneration of trees, shrubs, and herbaceous plants and impact reforestation/revegetation efforts when artificial regeneration is used.
- Reduce overall health of forest ecosystems by reducing diversity and disrupting ecological balance.
- Increase the spread of communicable diseases to wild and domestic ungulates.

Regulated hunting is the most effective management option for the removal of deer from the population. Efforts to manage deer to further reduce impacts to forests are often controversial and solutions are not easily achieved. A strong hunting culture exists in Wisconsin and 250,000 to 300,000 deer are harvested annually. However, in 2019, only 13.3% of the 1.8 million deer estimated to be present in Wisconsin were removed, considerably less than needed in some areas to limit forest impacts.

Adequate natural regeneration and reforestation are necessary for sustaining industries that depend on forests. The impacts of overabundant deer numbers jeopardize feedstock for the forest products industry, certification status of the county forests, as well as the aesthetics, wildlife habitat, recreational opportunities, and environmental values vital to the tourism industry.

BACKGROUND

The Wisconsin County Forest Association (WFCA) is a non-profit organization comprised of 29 member Counties who employ professional foresters to manage over 2.4 million acres of productive forest land, pursuant to the State of Wisconsin's County Forest Program and authorized under Chapter 28 of Wisconsin Statutes.

Collectively, county forests make up the largest public land base in the State and play an important role in Wisconsin's economy and quality of life. County forests are sustainably managed and third

party certified providing raw materials essential to the States \$24 Billion forest products industry. County forests provide vast recreational opportunities that are utilized by many visitors who contribute to the State's \$21 Billion tourism industry. Approximately \$2.5 Billion is contributed annually by hunting, with deer hunting the primary contributor.

Wisconsin's county forests provide approximately \$45 million in timber sale revenues each year. These dollars are critically important to local units of government to reduce tax levies while providing necessary services. County Forest Administrators are tasked with ensuring the biological and economic sustainability of county forests with forest regeneration of primary importance. Member counties invest tens of thousands of dollars in deer abatement practices (e.g. fencing, bud capping, deer damage permits and supplemental planting) to promote successful forest regeneration in areas where deer populations are negatively impacting forests (Appendix A).

Deer hunting is a popular recreational use of Wisconsin's County Forests providing a substantial portion of the public land base open to hunters. A significant challenge exists with public land managers in balancing deer population levels that stay below the carrying capacity of the land and still provide hunters with reasonable harvest opportunities.

RECOMMENDATIONS

It is necessary to give deep consideration to the social aspects of managing white-tail deer and other natural resources. At the same time, foresters have a professional obligation to recommend management practices that are known to protect forest health, regeneration, and sustainability. We encourage lawmakers and policy developers to balance social perspectives with the scientific and ecological aspects of Wisconsin's forests in relation to deer herd management.

County Forest land managers will continue documenting impacts of deer on forests using available forest regeneration metrics. This information will be publicly available to Wisconsin Department of Natural Resources (WDNR) staff and County Deer Advisory Councils (CDAC's) to guide deer population management decisions. County Forest staff will also work with WDNR to best utilize available programs (Wildlife Damage Abatement and Deer Management Assistance Programs) or develop new ways to reduce deer regeneration problems at local levels. We recommend the full use of harvest methods and season structures necessary to control deer populations.

Policies addressing management of deer populations should be based on sound science, assessment of economic costs and benefits, and understanding of local community values. WCFA will expand educational and legislative efforts to inform decision makers, CDAC's and the general public on the ecological and societal consequences of overabundant deer populations on County Forests.

REFERENCES

Websites:

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- Caring for Deer and Forests <http://deerandforests.org/>
- Deer and Elk Damage and Management https://www.aphis.usda.gov/aphis/ourfocus/wildlifedamage/programs/nwrc/SA_Animals/CT_Deer_elk
- Wisconsin Wildlife Damage Abatement and Claims Program <https://dnr.wi.gov/topic/wildlifehabitat/wdacp.html>

Reports:

- Managing White-tailed Deer in Forest Habitat from an Ecosystem Perspective: Executive Summary <https://pa.audubon.org/sites/default/files/pa-deermanagement--full--executivesummary.pdf>
- Subcontinental-scale patterns of large-ungulate herbivory and synoptic review of restoration management implications for Midwestern and Northeastern forests. Gen. Tech. Rep. NRS-182. https://www.fs.fed.us/nrs/pubs/qtr/qtr_nrs182.pdf

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APPENDIX A



Figure 1. 2017 photo of a 15' x 15' deer exclosure (forward corners of fence highlighted in red) on the Vilas County Forest illustrating the impact of deer browsing on tree regeneration. A timber harvest was conducted on the site during the winter of 2007/2008 to promote tree regeneration with the exclosure constructed in 2008.

Vilas County Forest

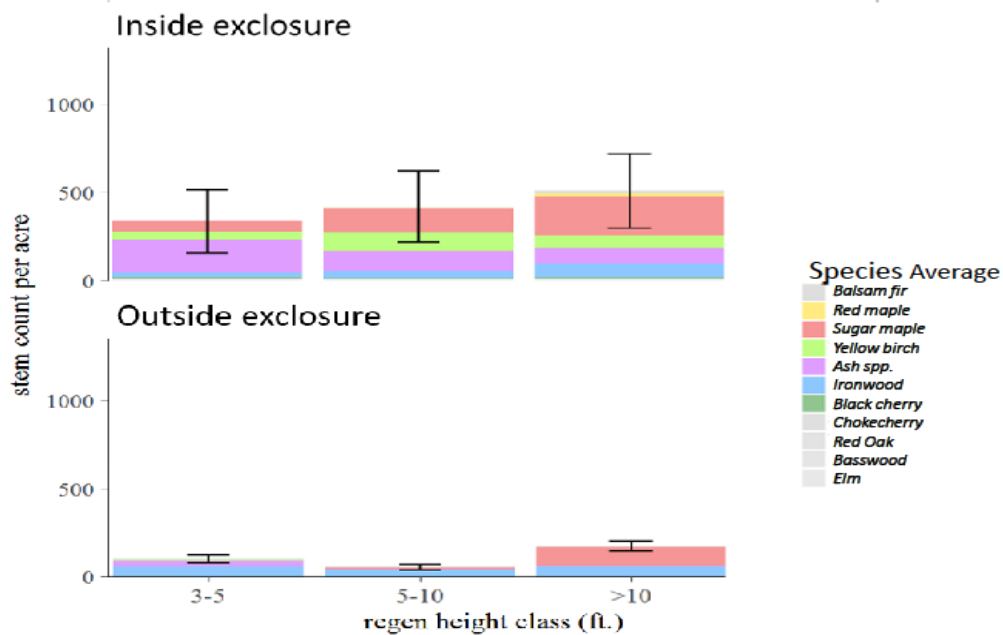


Figure 2. Data collected in 2017 at the site in Figure 1 shows both the abundance and diversity of regenerating tree species are much lower outside the deer exclosure. Ash, balsam fir, black cherry, red maple and yellow birch over 3 feet tall were only found inside the exclosure. Sugar maple under 10 feet tall, while still present outside the exclosure, were greatly reduced in number. Only ironwood remained at the same relative density inside or outside the exclosure. The regeneration of desirable tree species outside of the exclosure is insufficient to adequately stock the new stand.



Figure 3. 2007 photo of a 30-acre deer exclosure located on the Bayfield County Forest. The fenced exclosure, on the right side in this photo, was installed within a northern red oak stand following a shelterwood harvest in 2006. One season of growth is evident inside and outside of the exclosure.



Figure 4. 2009 photo of the deer exclosure from figure 3. Excluding deer browsing has created a significant disparity in the height and density of forest regeneration in the three growing seasons at this Bayfield County Site.