Over-Browsing Ecosystems: Controlling White-Tailed Deer in Minnesota

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Abstract:
Deer are browsers among tree seedlings and various plants in forest ecosystems, and with their populations at historic highs, forest floors have become or will be lacking young seedings. White-tailed deer need to be managed with one of the following methods:

1) Lethal: Increased recreational hunting, off-season hunting, controlled hunts, re-introduction of predators, and arrow hunting
2) Non-Lethal: Immunocastration, birth control
3) Re-Location or Altering Patterns: Fencing or Deer Repellents

Managing white-tailed deer varies based on the make-up of the land, however a combination of hunting and fencing is most sustainable. In urban settings, a combination of archery hunting, the use of deer repellents, and/or fencing is most sustainable and publicly accepted. Saint John’s University in Collegeville, MN is home to 3,000 acres of forested protected land. Methods to control populations by Saint John’s include 1) Gun Hunting 2) Fencing 3) Deer Repellents. The College of St. Benedict in St. Joseph, MN is home to 148 forested acres and surrounded by James and a freeway. St. Benedict allows bow hunting on their property to control the deer population. The most sustainable method or combination of methods will vary based on the location where over-browsing is occurring.

Table 1 – Possible methods used reduce or remove deer from a specific area have many benefits and barriers. This table explains the positives and negatives of each method as well as provides a general overview of cost.

Methods

<table>
<thead>
<tr>
<th>Methods</th>
<th>Benefits</th>
<th>Barriers</th>
<th>Cost</th>
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</thead>
<tbody>
<tr>
<td>Controlled Hunts</td>
<td>Controlled hunts are relatively inexpensive</td>
<td>Safety</td>
<td>Sharpshooting – expensive</td>
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<tr>
<td></td>
<td>Documented cases of success</td>
<td>Publicly accepted</td>
<td>Controlled hunts- inexpensive</td>
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<td></td>
<td>Off-season hunting allows for a greater success rate</td>
<td>Ethical Implications</td>
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<td></td>
<td>Controlled of hunters</td>
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<tr>
<td>Professional sharpeyers</td>
<td>Professional sharpeyers increase safety</td>
<td>Sharpshtooting is relatively expensive</td>
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<tr>
<td></td>
<td>Documented cases of success</td>
<td>Safety</td>
<td></td>
</tr>
<tr>
<td>Natural</td>
<td>Safety for public</td>
<td>Generally not accepted</td>
<td></td>
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<tr>
<td>Proven ecosystem</td>
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<tr>
<td>regeneration (Yellowstone)</td>
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Hunting (Forrested Area)

Fencing

- Keeps many animals from destroying seedlings
- Historically successful
- Ethical
- Easy to use
- Safe for public

- Cost
- Maintenance
- Too much land decreases plausibility

Deer Repellents

- Easy to use
- Ethical
- Safe for use in urban settings

- Works for short periods
- Deer become immune to smells or sights
- Unsustainable in large areas

- Inexpensive initially but could get expensive over time

Conclusion:
Sustainable deer management methods will vary based on location, size of property, and amount of resources available.

For urban settings, archery hunting and/or deer repellents and/or fencing is most sustainable. For rural settings or large areas of land, a combination of hunting and fencing is more sustainable. However, before a method is chosen, the following questions should be asked:

- Is this method publically accepted?
- Is this method safe?
- Does this method make sense economically?

If any of these questions should answer “no,” a different method should be considered.
At Saint John’s University, a combination of controlled gun hunting and fencing has been used in previous years. Currently, Saint John’s is attempting to further reduce populations with a controlled archery hunt and the use of deer repellents.
At the College of Saint Benedict, deer populations are not creating a problem within the forest ecosystem, therefore implementing management strategies are not as vital. However, bow hunting is allowed for faculty members of the monastery.

Mr. Daniel Vogel, Saint John’s University Arboretum
Sister Margaret Wurm, Physical Plant Director, College of Saint Benedict
Mr. Tom Kroll, Forester, Saint John’s Arboretum
Mr. Fred Bengston, Wildlife Biologist, Minnesota Department of Natural Resources

Acknowledgements

Mr. John Moughn, Saint John’s University Arboretum
Mr. Susan Blanchard, College of Saint Benedict
Mr. Tim Miller, Physical Plant Director, College of Saint Benedict
Mr. Troy Knight, Environmental Studies Department, College of Saint Benedict

Fig 1 – Due to increased agriculture technology, increased edge habitats and deer hunting regulations deer populations have been rising significantly over the last 90+ years. Populations are at historic highs across much of the United States.

Fig 2 – Controlling deer populations is important due to rapid breeding potential. Within a relatively short amount of time, one buck and one doe can create significant population growth.

Fig 3 – Population growth.

Changes in U.S. Wildlife Population Since 1920s

Sources: National Rifle Association and author’s research

Methods for Controlling White-Tailed Deer Populations

Reference:
Smithsonian Institution Press, 1997

E.J. Cody and E.J. Socher, "Deer Resistant Landscaping. Location or Altering Pattern: Fencing or Deer Repellents"