

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 seedlings. 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 archery hunting
- 2) Non-Lethal: Immunocontraceptives (Birth Control)
- 3) Re-Location or Altering Pattern: 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 publically 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 homes 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.

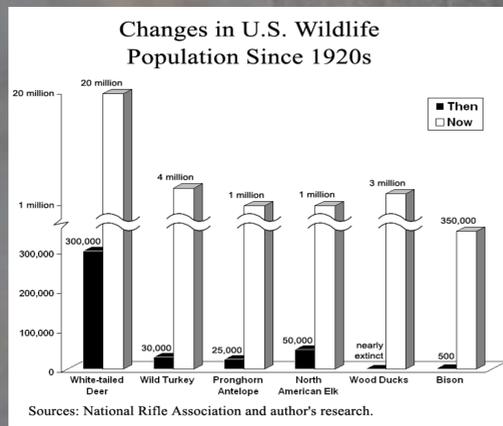


Fig. 1—Due to increased agriculture technology, increased edge habitats and deer hunting regulations deer populations have been rising significantly over the last 90+ years. Populations are at historic highs across much of the United States.

Methods

Personal interviews were conducted with officials from the Department of Natural Resources, the land managers at CSB and SJU, and biologists at Saint John's University. Interviews at CSB/SJU were conducted to provide a historical background of the land as well as provide methods previously attempted. Interviews with the MN-DNR provided information about state deer populations and viable methods that could be used.

Literature review was conducted from various sources of government agencies (EPA, Natural Resources, U.S. Fish and Wildlife Services). Also included in research was scholarly literature, biological journals, and other case studies.

References

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Methods for Controlling White-Tailed Deer Populations

Methods	Benefits	Barriers	Cost
Hunting (Forested Area)	<ul style="list-style-type: none"> Controlled Hunts are relatively inexpensive Documented cases of success Off-season hunting allows for a greater success rate Controlled # of hunters 	<ul style="list-style-type: none"> Safety Publically accepted Ethical Implications 	<ul style="list-style-type: none"> Sharpshooting – expensive Controlled hunts- inexpensive
Hunting (Urban)	<ul style="list-style-type: none"> Professional sharpshooters increase safety Documented cases of success 	<ul style="list-style-type: none"> Sharpshooting is relatively expensive Safety Generally not accepted 	<ul style="list-style-type: none"> Sharpshooting- expensive Archery hunting- free
Re-Introduction of Predators	<ul style="list-style-type: none"> Natural Proven ecosystem regeneration (Yellowstone) 	<ul style="list-style-type: none"> Safety for public 	<ul style="list-style-type: none"> Expensive – no direct fees to public (taxation)
Baiting	<ul style="list-style-type: none"> Increase success rate for hunters Inexpensive 	<ul style="list-style-type: none"> Unethical Alter patterns of deer Could increase deer on roadways 	<ul style="list-style-type: none"> Very inexpensive
Birth Control	<ul style="list-style-type: none"> Easy to implement in a controlled setting Successful if a large portion of deer are captured Few proven case studies 	<ul style="list-style-type: none"> Unnatural Could create increased mortality Relatively new to science Very expensive Need to capture (or dart) a large portion of the population to be successful 	<ul style="list-style-type: none"> Expensive. Not possible for large land areas
Fencing	<ul style="list-style-type: none"> Keeps many animals from destroying seedlings Historically successful Publically accepted Ethical Safe for public 	<ul style="list-style-type: none"> Could alter deer patterns increasing mortality Cost Maintenance Too much land decreases plausibility 	<ul style="list-style-type: none"> Variable but expensive to install and maintain if a large area
Deer Repellents	<ul style="list-style-type: none"> Inexpensive Easy to use Ethical Safe (can be used in urban settings) 	<ul style="list-style-type: none"> Works for short periods Deer become immune to smells or sights Unsuccessful in large areas 	<ul style="list-style-type: none"> Inexpensive initially but could get expensive over time

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.

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 most 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.

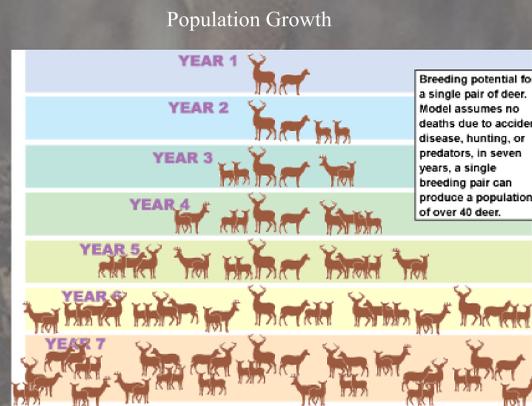


Fig 2 - Controlling deer populations is important due to rapid breeding potential. Within a relatively short amount of time, one buck and one doe can create significant population growth.

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