

Non-lethal Methods of Addressing Deer Overabundance in the City of Oneonta

Fencing

Fencing is highly effective in preventing deer from entering yards and destroying plants but only when the proper height and strength is installed. Unfortunately, protecting a site often places new or additional pressure on surrounding areas not afforded the protection.

- The fences must be at least eight feet high to prevent deer from jumping over and constructed of strong impenetrable material like welded wire or chain link to be effective long term.
- Current city ordinance permits fencing in front yards to be a height of 4 feet and rear and side yards 7 feet. This ordinance would need to be revised to allow effective deer fencing.
- Cost: Price for chain link fencing can be between \$5–\$25 per linear foot. Installation costs are estimated at \$20 per linear foot. Regular maintenance is essential, adding to costs. Some soil types and terrains make fencing difficult.
- Fencing only some areas is not effective for city-wide mitigation. Deer will be deterred from areas that are fenced but not from unfenced areas. Fencing is impractical for dealing with problems over large areas, such as overbrowsing of natural vegetation in city parks.
- Electric fencing, while cheaper for larger areas, requires substantial maintenance, poses a hazard to people and non-target animals, and is only temporarily effective because deer can learn to get past the fence without being shocked. In addition, city ordinance does not allow fencing that incorporates barbed wire, electric current or similar devices except when necessary for public utility operations.

- Small cage-type enclosures can be placed over individual plants and netting can be draped over shrubbery. Aesthetically this may be unappealing to many residents. In addition, the cost and labor involved make them useful to only small areas of highly valued plants.

Harassment

- Devices meant to scare deer with motion, sound, light, or spraying water have been developed. The DEC reports that over time the deer get used to these devices and are no longer scared away.
- Hazing, which requires a DEC permit in New York, is active physical harassment of the deer. It usually takes the form of shooting at them with non-lethal projectiles such as rubber buckshot or beanbag rounds. Another common type of hazing is chasing by a dog that is prevented from leaving the area it is protecting, for example by an underground electronic fence. These are labor-intensive techniques that require the hazer to be on watch constantly, and they are not likely to receive widespread use.

Deer Resistant Gardening

- Chemical repellents can be applied to plants and are meant to prevent browsing, due to their noxious taste or smell. They can be effective, but they must be reapplied frequently as rain washes them off and the plants produce new growth. If deer density is high or the plants are highly desirable, they will not prevent deer from feeding on the plants.
- Spray repellents can only be applied effectively during mild weather, so their value during winter months is restricted. Repellents vary in cost from \$25 per gallon to \$45 per gallon.
- Plants vary in attractiveness to deer. Homeowners may choose less palatable species to plant in their landscaping. However, when there

is a high density of deer, they will eat plants that are typically avoided.
This does not help with homeowners who are vegetable gardeners.

The most significant difficulty with reducing deer damage to plants by any of these methods is that only individuals will benefit, not the whole community. Any action that decreases one resident's likelihood of damage will increase the pressure on everyone else's plants. The only way to reduce plant damage throughout the community is to reduce the deer population

Recommendations on deer-resistant planting are available from Cornell Cooperative Extension, along with many other sources

Deer Feeding

NYS Environmental Conservation Law 11-0505 prohibits the feeding or enticing deer to be fed within 300 feet of public road and prohibits establishing a salt lick on land inhabited by deer.

Illegal deer feeding should be reported to local Environmental Conservation Officers (ECO).

Otsego County - ECOs

Officer	Phone Number
ECO Timmy Card	(607) 267-9547
ECO Russell Fetterman	(607) 422-8342
ECO Mark Vencak	(607) 221-1544

Feeding deer in New York State carries a maximum penalty of a \$250 fine and/or 15 days in jail.

Public Education and Awareness

- Public informational meetings with DEC representatives to raise awareness of deer overabundance.
- To reduce the risk of deer-vehicle collisions, public announcements, newspaper articles, social media posts, and signage educating residents on deer behavior, the need to drive more slowly and be especially vigilant at dawn and dusk, especially during mating season, and the importance of watching for additional deer following a deer crossing the road.
- Master Gardener educational programs to promote deer resistant planting and care for landscaping plants.
- Create a Tick-safe Zone to Reduce Blacklegged Ticks in the Yard. This will not deter deer but is important information for residents who know deer have traveled in their yard. Incidents of Lyme disease have increased significantly in the City of Oneonta,
 - Remove leaf litter
 - Clear tall grasses and brush around home and edge of lawns.
 - Place a 3-ft wide barrier of wood chips or gravel between lawns and wooded areas to restrict tick migration.
 - Mow the lawn frequently
 - Stack wood neatly and in a dry area
 - Keep playground equipment, decks, and patios away from yard edges and trees.
 - Discourage unwelcome animals (deer) from entering your yard by installing fencing.
 - Remove old furniture, mattresses, or trash from the yard that may give ticks a place to hide.

Ecological Monitoring Methods

AVID (Assessing Vegetation Impacts from Deer)

The AVID protocol, developed by Cornell University Department of Natural Resources, the State University of New York College of Environmental Science and Forestry, and the DEC, is a technique for the public and professionals to monitor deer impacts. Data collected through AVID informs community deer management efforts and is used by DEC deer managers to assess trends in deer impacts across the state.

AVID can be found online at: <https://aviddeer.com/>.

Training sessions are held periodically at various locations for people who want hands-on instruction.

AVID is a method for volunteers, foresters, landowners and others to monitor deer impacts on forests. It focuses on specific wildflower and tree species that are eaten by deer in New York. The AVID website and mobile app guide users through laying out monitoring plots, plant identification, and data collection. Within the plots, individual plants of the focal species are counted, marked and measured. Measuring these same individuals each year will show whether browsing pressure from deer is changing over time and may help communities, landowners, and managers make decisions on appropriate changes in deer abundance.

Seedling count

Background – A forest with overabundant deer will have very few tree seedlings that survive their first season of growth. As deer density is reduced, more seedlings will be able to survive. Once a seedling reaches 6' tall, deer shouldn't be able to reach the top, so deer browsing should no longer prevent it from growing.

Materials needed:

- Measuring tape.
- Marking materials such as posts or stakes to set plot corners.
- Compass to help you construct rectangular plots.
- GPS unit to record locations.
- String

Plot design – At least ten rectangular 6'x18' plots should be established. Strive to have enough plots to capture whatever variability there is in local forests. Avoid extremely rocky areas, steep slopes, and areas where the foliage is so dense that virtually no sunlight reaches the forest floor in the summer.

If possible, plots should be at least 50 yards apart and at least 50 yards from any forest edge or manmade structure.

Permanently mark the corners of the plots with posts or stakes.

Record GPS coordinates of each plot to make it easier to find in future years.

Data collection – At the same time each year, count the native tree seedlings that are between 1' and 6' tall in each plot.

The shape of the plots should make it possible for one person to make a single survey pass down the length of the plot tallying seedlings without losing track of which ones have been counted.

Before starting a survey, lay out string along the two long sides of the plot so you can tell what's in and what's out. When you're done, pick up the string and take it to the next plot.

Evaluation – Natural ecosystems are too variable for there to be hard and fast rules about what densities are necessary for adequate regeneration, but as a rough lower limit guideline, an average count below five seedlings per plot (equating to approximately 2000 seedlings/acre or 5000 seedlings/hectare) would probably be cause for concern.

The species that are present should also be taken into consideration when assessing these results. If most of the seedlings are species that deer don't like to eat, like American beech (*Fagus grandifolia*) and eastern white pine (*Pinus strobus*), even though there are mature trees of other species around, that may indicate that deer browsing pressure is too high to allow the other species to grow.

35

Sentinel seedlings

Background – This method involves planting red oak (*Quercus rubra*) seedlings in upland forest areas and measuring the percentage of plants that have been browsed by deer after six months.

Red oak is a common species in eastern North America. Green ash (*Fraxinus pennsylvanica*) can be substituted in wetland areas. Planting seedlings allows the assessment of deer browsing pressure without the need to find sites that have an adequate number of suitable plants growing naturally.

Materials needed:

- 1'-3'-tall red oak seedlings. Look for a nursery that offers bulk discounts.
- Measuring tape.

- Marking materials such as flagging, tree tags and stakes to help you find the seedlings.
- Planting tool such as a garden trowel or spade.
- GPS unit to record locations.

Sample size – To obtain accurate results, it's best to have at least 10 sites with 10 seedlings at each site.

Site selection – Avoid extremely rocky areas, steep slopes, young forests without mature trees, and dense conifer stands. If possible, sites should be at least 100 yards apart and at least 50 yards from any forest edge or manmade structure. The same sites should be used on each planting occasion. If there are surviving seedlings from the previous planting, they should be removed so they don't affect how attractive the site is to deer.

Timing – Plant seedlings in early winter (November - December) while they are dormant. Data collection should take place six months later. This covers the winter-spring time period when deer tend to do the most browsing on woody plants because there is little else available.

Planting – Plant seedlings at least 3' apart in a systematic pattern. Mark individual seedlings in an unobtrusive but durable manner, such as with a tree tag attached to a stake sunk in the ground 1' north of each seedling. Marking is necessary because if a seedling has been browsed, spotting it or identifying where it was can be difficult. Markers that are more visible might attract the attention of deer, because deer are curious enough to investigate things that look different.

Record GPS coordinates for the site. Tie flagging around several trees at the edges of the site to make it easier to find in future years.

Data collection – Data interpretation can be improved if you count the number of leaf bud clusters on each seedling immediately after planting. Assuming you have a method of numbering the seedlings so you can

match up the data, when you return in six months to look for leaves you will have a better idea of whether what you see shows browsing.

Deer most commonly tear off leaves or parts of leaves. A stem torn by a deer will have a rough, jagged, frayed-looking end. In contrast, rabbit or rodent browsing usually results in a stem end with a clean-looking cut at about a 45 degree angle, because they bite it through rather than tearing.

Evaluation – Deer damage on more than 10% of the seedlings probably indicates that browsing pressure is too high to allow the forest to regenerate itself..