POSITION STATEMENT SUMMARY

Local governments should only promote effective nonlethal measures to their residents to prevent deer browsing garden damage and not implement or allow lethal measures to reduce a deer population in the absence of research studies which use scientific methodology that prove killing deer will effectively reduce residential garden damage.

As people from Michigan urban areas migrated to outlying regions during the past seven decades, forests and natural areas have been converted over time to suburban localities with high density residential subdivisions of single-family homeowners. Consequently, with natural areas declining and natural predators becoming absent, deer have increasingly established their range in a patchwork of suburban residential areas and wild habitat. These developed suburban areas have become important foraging sites to satisfy the dietary needs of suburban deer as the result of the fertilization of lawns and the planting of ornamental plants.

No research study, based on accepted scientific methodology, has concluded that killing deer, by hunting or firearm sharpshooting, in a suburban or urban community to lower the deer population to a certain level per square mile will effectively decrease deer browsing garden damage to a tolerable level for residents. When a local government requests expert technical advice from the DNR on the issue of how to reduce deer conflicts with residents, such as garden damage, the DNR's advice must have a sound scientific basis. Based on residents' complaints about deer damage to gardens, local governments should not apply for a nuisance permit from the Department of Natural Resources (DNR) or allow archery hunting to lethally reduce a local suburban or urban community's deer population because there is no sound scientific basis to support that killing deer will effectively reduce garden damage.

In addition, the DNR's should not give technical advice to local governments that nonlethal methods for reducing deer browsing damage to residential gardens are ineffective long term and too costly without a sound scientific basis and a valid cost to benefit analysis.

There are science based, effective long term nonlethal measures to prevent suburban deer browsing damage. Homeowners have low cost fencing options, including a science supported only 50" tall fencing alternative that effectively excludes deer from 8' x 16' micro-exclosures. Homeowners have numerous deer resistant aesthetic plant options for their landscaping which are able to reduce deer browsing damage of these plants to tolerable levels. And homeowners have numerous reasonable cost, effective long term deer repellent options including a newly available effective long term repellent product which is rain resistant for several months.

Local governments should implement the following administrative policies and actions for the effective reduction of deer garden damage by nonlethal methods in suburban/urban areas:

1. Local governments should not allow archery hunting in its jurisdiction, or apply for a nuisance permit, for the lethal reduction of a local deer population based on complaints about deer damage to gardens in the absence of a sound scientific basis that such reduction will effectively decrease garden damage.
2. Local governments should provide their residents with current resource materials on the implementation of effective science based nonlethal measures to prevent long term deer garden damage which allows their residents to determine if the benefit of preventing deer browsing outweighs the cost of materials and labor to implement.

POSITION STATEMENT DISCUSSION

Deer are behaving naturally in suburban residential neighborhoods when they are attracted to and are browsing on herbaceous plants[1], which are a board category of plants including many perennials and nearly all annuals and biennials. "Many of the most popular landscaping plants are highly palatable for deer because of their high nutritional value, accessibility, and the tender new growth they provide."[2] If suburban homeowners live in a community with a significant deer population, they should realize that ornamental plants preferred by deer, such as tulips and hostas, are irresistible to deer and will be damaged by deer browsing. Even if the number of deer in a subdivision is significantly reduced by lethal means, the remaining deer from the adjacent areas will still seek out those plants.

The DNR acknowledges that, "As deer have lost their inhibitions of humans and densely populated areas, they have taken advantage of an environment that provides sufficient cover, an abundance of food, and freedom from natural and human predators (recreational hunters)."[3] Suburban residents have created the very problem they eventually complain about by planting a nutritious "smorgasbord" improved habitat which tame deer take advantage by browsing the ornamental plants for food. According to Swihart et al. (1995)[4]:

> "Suburban deer routinely forage close to houses . . . [Ornamental] plants near houses are important components of the diet. . . . When humans in suburbs increase plant diversity by planting exotic species or creating additional edge, deer can respond to these changes by increasing diet breath. . . . Fertilization of lawns and landscape plants also may improve the quality and quantity of food. Thus, suburban areas may actually provide improved deer habitat, at least in terms of dietary requirements. . . . [Deer] adapt remarkably well to living in close proximity to people. In fact, developed areas appear to be important foraging sites for suburban deer."

See Note 1. for further information on deer preference for the most nutritious plants.

When enough residents in a city, township or village raise the issue that suburban or urban tame deer pose a conflict problem to their landscaping, because of "unacceptable" damage, a local government staff member typically contacts the DNR for technical advice in order to resolve the issue. According to the Wildlife Urban White-Tailed Deer Conflict Management Policy and Procedures[5], upon receipt of the complaint, the wildlife biologist will provide "options for non-lethal management, including fencing, repellents, baiting/feeding bans, etc. If the situation can be resolved through non-lethal measures or hunting seasons, no further

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[1] Herbaceous plants are vascular plants that have no persistent woody stems above ground.
[2] NC Cooperative Extension, Reducing Deer Damage in Landscapes
[3] A Review of Deer Management in Michigan, page 30.
[4] Swihart, R. K., P. M. Picone, A. J. DeNicola, and L. Cornicelli (1995) Ecology of urban and suburban white-tailed deer. Pages 35-44 in J. B. McAninch, editor. Urban deer—a manageable resource? Proceedings of the symposium of the 55th Midwest Fish and Wildlife Conference. North Central Section of the Wildlife Society, 12–14 December 1993, St. Louis, Missouri, USA.
[5] Hereinafter referred to as "Urban Deer Management Policy"

reporting or action is necessary."[6] However, if the situation "cannot be resolved" by implementing nonlethal measures or hunting seasons, then the biologist may advise the municipal or HOA representative of the option of applying for a Damage and Nuisance Animal Control Permit to lethally reduce the deer population. However, the DNR staff member should render such advice only if there is a sound scientific basis that a lethal reduction of the deer population throughout the local government's geographic area will effectively reduce deer damage to gardens.

If the community chooses to pursue that lethal option, then the local government must provide, in its permit application, a detailed description of the extent of damage caused by the deer and a review of non-lethal alternatives and the reasons why they were not viable to resolve the conflicts. When the application is submitted by the wildlife biologist to the regional supervisor for approval, the supervisor is required to give "major consideration to public health and safety considerations"[7] discussed in the application for which landscaping damage is not. The Urban Deer Management Policy correctly requires the residents to make an effort to prevent deer damage to their gardens before a Control Permit will be approved. The DNR requires, for a sharpshooting Control Permit, a review in the local government's application of the reasons why non-lethal methods is "not viable."[8] However, the lethal management of the deer natural resource must be based on more than just the residents' subjective belief that nonlethal methods cannot effectively resolve deer damage to their collective landscaping. The DNR new "clearly defined process" does not provide a clear and objective standard which gives sufficient guidance to the wildlife biologist and local governments on whether there is a sufficient factual basis for the approval of a Control Permit for garden damage. It is not clear how long and by what measure of diligence the residents of a community must implement nonlethal alternatives to satisfy a determination that the conflict situation "cannot be resolved" by those means. Based on principles of sound science, the DNR should not rely on anecdotal reports that nonlethal methods are not viable, because such reports are not an empirical basis for the DNR's permit decision. The DNR should only consider quantifiable data that nonlethal methods are not sufficiently successful to discourage deer from browsing on the residents' gardens in a community.

DNR provides no scientific basis that killing deer will effectively reduce garden damage.

In its 2009 "A Review of Deer Management in Michigan" (Review), the DNR takes the general position concerning methods to reduce conflicts between humans and deer: "Lethal tools are more effective than others but may be unacceptable in areas where social or safety concerns are an issue."[9] The agency discussed, in its Review, the effectiveness of non-lethal deer conflict management techniques to minimize landscaping damage: habitat modification, ban on deer feeding, use of unpalatable landscape plants, repellents, fencing, hazing and frightening methods and dogs as a deterrent.[10] The DNR claims, without scientific support, that that the use of repellants on garden plants to prevent deer damage "is often expensive and effects are

[6] 2016 Wildlife Urban White-Tailed Deer Conflict Management Policy and Procedures, page 2.
[7] Urban Deer Management Policy page 3.
[8] Urban Deer Management Policy, Sharp Shooting 2.a(3). p.6.
[9] Review, page 30.
[10] Review, pages 30-31

temporary."[11] The agency only referenced one report supporting nonlethal conflict management – Burroughs and Dudek (2008) "Deer-Resistant Plants for Homeowners" – which provided information about garden plants that are least preferred by deer to minimize deer damage.

"[DNR Wildlife Division trust] managers should bring science to bear in ways that are transparent, objective, and impartial." (Mason and Rudolph, 2015)[12] The DNR should only provide expert technical advice on the management of the deer population and on the subject of what are effective measures to prevent, or reduce garden damage to an acceptable level which is based on a sound scientific basis.[13] In its Review, the DNR did acknowledge that:

"Deer damage to ornamental plants often occurs in urban or suburban areas where recreational hunting is not an option. A variety of strategies can be implemented to minimize damage to ornamental plants including use of fencing and deer repellents to protect problem areas, stopping backyard feeding of deer, and the use of less palatable plants for landscaping."[14] (Emphasis added.)

And on its Nuisance Wildlife website page, with a reference to the Michigan State University Extension report "Smart gardening to deter deer", the DNR does give garden damage prevention and control tips which includes fencing, repellants and deer resistant plants. See Attachment One for MSU Extension report.

However, the DNR summarily concludes in its Review, without providing supporting scientific studies or cost to benefit analysis, that with only nonlethal management techniques, the ". . . limited effectiveness and high cost may prevent success when used exclusively to resolve human-deer conflicts. Non-lethal techniques are best used to supplement, not replace, deer population management."[15] (Emphasis added.) In its 2010 and 2016 Michigan Deer Management Plans, the DNR repeated its subjective claim, unsupported by any scientific studies or cost to benefit analysis, that the sole use of nonlethal measures is ineffective long term, expensive and labor intensive:

> "The DNR attempts to minimize deer damage to crops and ornamental plants through a variety of tools. Non-lethal methods that are frequently recommended to landowners by DNR staff include the use of fencing, repellents, habitat alterations and dogs. These methods have shown some short-term effectiveness, but can be expensive and labor-intensive. Regulated shooting of deer in conjunction with non-lethal methods has generally been the most effective strategy." [16]

And on its current website page titled "Nuisance Wildlife", the DNR states again its consistent position, without reference to any scientific support, that nonlethal deterrent methods to discourage deer, "are generally a short-term solution to solve issues, but they usually aren't

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[11] Review, page 31.

[12] Russ Mason and Brent Rudolph (2015), The Value of Science to state wildlife management, Proceedings of the National Wild Turkey Symposium 11:39-44.

[13] "We believe scientific management is in the public interest, and we use sound science to inform management decisions, evaluate the outcomes of those decisions and adapt our management accordingly." Michigan Department of Natural Resources, The GPS, Guiding Principles and Strategies, Wildlife Division Strategic Plan 2021 – 2026, at page 9.

[14] Review, page 37.

[15] Review, page 30.

[16] 2010 and 2016 Michigan Deer Management Plan, page 30 and page 25 respectively.

effective long-term."[17] See Note 2.

While the DNR recommends the use of regulated shooting during hunting seasons or the use of firearm sharpshooters, via a nuisance permit, the DNR does not reference even one research study, which used scientific methodology, that concludes the lethal reduction of a suburban/urban deer population, with or without nonlethal measures, will more effectively reduce long term damage to gardens than the local community residents' use of only nonlethal measures in those communities.

Nonlethal methods can effectively reduce long term deer garden damage to tolerable levels.

The DNR has a responsibility to timely update, based on scientific studies and cost to benefit analysis, its technical advice and information provided to the public on the effectiveness and cost of nonlethal methods to reduce long-term browsing garden damage by tame suburban deer to tolerable levels acceptable to the residents of a community. Most importantly, the agency should also provide useful and objective information concerning nonlethal garden damage prevention measures which facilitates the residents' ability to weigh the cost of using fencing, deer resistant plants and repellents to control such damage with the preservation of the beauty of their gardens and the potential savings the measures might provide.

Suburban homeowners' decision process to invest in the use of nonlethal measures to preserve the beauty of their gardens from deer browsing damage should be no different than their decision process to make a significant annual investment to maintain the health and beauty of their lawns. Proper lawn care from spring through fall involves the cost for materials and labor for watering, mowing, leaf removal, aeration, dethatching, seeding or hydroseeding, fertilizing, weed control and lawn pest control. The cost will vary depending on the size of the lawn and whether the homeowner personally performs these lawn care functions or pays a service to do so.

A. Homeowners have low cost fencing options including a 50" tall fencing alternative that effectively excludes deer from gardens in 8' x 16' micro-exclosures.

Fencing can be an effective solution to exclude deer from browsing on residential suburban landscaping plants. Whenever possible, fencing should be constructed around the landscaping before deer damage occurs to prevent the deer from establishing a feeding pattern which makes exclusion more difficult. There are numerous fence designs which are appropriate to prevent deer damage to agricultural crops, such as permanent fencing designs – wire mesh, modified woven-wire mesh, slanted wire-mesh, barbed-wire and high-tensile electric and semi-permanent or temporary fencing designs – seasonal electric, polytape and polyrope which incorporate conductive wires, and attractant/repellant-laced to attract deer to touch an electrified fence.[18] The economic feasibility of various fencing designs (whether it costs too much) should be determined by weighing the average annual loss to deer damage against the costs of installing and maintaining the fence design over its lifespan.[19] However, these fencing designs to prevent deer browsing in suburban landscaping may not be acceptable to local governments, subdivision homeowners associations (HOA) or homeowners in a suburban residential community.

The generally recommended minimum height for a fence to exclude nonstressed deer is

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[17] DNR website Nuisance Wildlife page. Go to link at:
https://www.michigan.gov/dnr/managing-resources/wildlife/nuisance-wildlife

[18] VerCauteren, K. C., M. J. Lavelle, and S. Hygnstrom. 2006b. Fences and deer-damage management: a review of designs and efficacy. Wildlife Society Bulletin 34:191–200

[19] VerCauteren et al. 2006b, at page 193.

eight feet tall because of their jumping ability.[20] The source for this recommendation usually involves a discussion of fencing structures for large land managers (Duffy et al. 1988), highway right-of-way fences (Falk et al. 1978) and fences for crops and livestock (Fitzwater 1972).[21] According to VerCauteren et al. (2010), the height to keep free-ranging wild deer from jumping a fence to prevent the spread of wildlife diseases to domestic farm animals, deer vehicle collisions and agricultural damage had not been previously quantified. The researchers conducted a study "to determine how high a fence must be to prevent jumping by white-tailed deer" over the fence. They conducted human-induced drives to motivate deer to jump the test fence into a large area which was a 2.7 acre enclosure. VerCauteren et al. (2010) concluded that the deer in their study would not jump a 7-foot 10-inch test fence.

A permanent eight-foot fence to exclude deer from gardens may be precluded by either a local governmental zoning ordinance or subdivision homeowners association (HOA) restriction. However, a city may revise its fencing ordinance to allow temporary eight-foot tall fencing. In 2023, the City of Norton Shores, which borders Lake Michigan in Muskegon County, chose to amend its fencing ordinance to allow temporary eight-foot tall deer fencing to protect its residents' gardens versus the use of lethal measures to reduce the deer population in the community. See Attachment Two. Ted Woodcock, the City's Planning and Zoning Administrator, through his research, found five communities located in Oregon, Maryland, New York and New Jersey which had adopted a deer fencing ordinance. Representatives from those communities indicated to him that the deer fencing ordinances they had enacted successfully deterred deer from destroying private property.[22] The amended ordinance allows deer fencing from April 1 until November 1 and provides the following, in part:

> "(1) Deer fencing is permitted on private property if all of the following are met:
> a. Deer fencing may only be around gardens or landscaped areas and not be used as a boundary between properties.
> b. Deer fencing may not exceed 8 feet in height (including poles) and must be constructed only of see-through nylon ("mesh") and polypropylene plastic materials that are green, brown, and black in color (wood, vinyl, metal, or similar materials are not permitted)."
> City of Norton Hills, Chapter 48, Article XII, Section 48-1325 "Deer fencing"

Rosenberry et al. (2001)[23] conducted a study on whether movable temporary eight foot "exclosures," can be effective to prevent deer browsing on agricultural crops with reasonable fencing material cost, minimal maintenance cost and low labor hours to install and remove. They constructed (approximately sized) 20' x 20' and 39' x 39' exclosures using 1.5" x10' PVC piping for corner posts, inserted in underground 2" x 2.5' PVC pipe, with 8' tall plastic fencing with 2" x 2.75" mesh. The exclosures were located in corn and soybean fields in a high deer

[20] VerCauteren et al. 2006b, at page 193.
[21] VerCauteren et al. 2006b, at page 193.
[22] See correspondence from Ted Woodcock to Planning Commissioners, dated December 27, 2022. Go to link at: https://nortonshores.org/vertical/sites/%7BC3E34314-82E6-474C-8FD2-4278A63E8331%7D/uploads/January_3_2023_Council_Packet.pdf
[23] Rosenberry, C.S., L.I. Muller and M.C. Conner. 2001. Movable, deer-proof fencing. Wildlife Society Bulletin 29(2):754-757.

density area. The plants in the exclosures had no deer browsing while the unprotected plots in their study had deer browsing on more than half of the plants. Rosenberry et al. (2001) determined that the temporary exclosure design was effective in preventing any deer browsing at a reasonable cost of fencing materials with a few labor hours to install and remove. Although the researchers did not conduct their study in a suburban residential environment, they concluded that the movable temporary low profile fencing design should also effectively prevent deer browsing on plants in suburban homeowners' landscaping. See Note 3.

Micro-exclosures fencing option to protect plants from deer

There is a viable science-based exception to the eight-foot height standard to protect plants from deer browsing damage. The University of Minnesota Extension (UME) recommends to residential gardeners to use micro-exclosures that are dimensionally 8' x 16' and use only 50 inch high woven fences to successfully exclude deer from small residential garden sections.[24] UME's recommendation is based on unpublished research conducted in 2018 by Kent Scheer, of Waden's Green Island Preserve, on the effectiveness of low-cost deer micro-exclosures that are fences of at least only four feet high to deter deer from jumping over the fence to browse on garden plants within a spatially small area. His research was conducted with 16-foot long, 50" tall cattle fencing panels[25] which created a 256 square foot (16' x 16') exclosure. One of these micro-exclosures could be built for approximately only $150 with materials which were estimated to last at least 10 years. He worked with the University of Minnesota Extension Central Regional Sustainable Development Partnership (RSDP) to test the effectiveness of these micro-exclosures to prevent deer browsing damage. See Attachment Three.[26] Prior to his study, there had been apparently no research on the effectiveness of shorter height fences enclosing a small garden area to prevent deer from browsing the plants within the exclosure. He explains that the exclosures can be built to any size or shape using various materials. Scheer explained why the shorter than the recommended eight-foot fencing is a successful psychological barrier for deer:

> "Deer are afraid of being trapped and micro-exclosures create a psychological roadblock. The operational assumption is that deer make judgments relative to safety. If an area appears too small, they will not risk entry even when the fence is fairly low because they don't want to be trapped there. If a breach occurs, it is easily resolved by making the enclosed area appear smaller. Simply string a visible wire, hung with flagging, across the center to reinforce the sense of

[24] See University of Minnesota Extension, "How to manage deer damage on trees and other plants", go to "Preventing deer damage", go to "Fencing", then to "Woven wire fences". Use the following link: https://extension.umn.edu/planting-and-growing-guides/white-tailed-deer-damage

[25] These 16-foot "Max 50 Feedlot 10-line Galvanized Cattle Fence Panels" can be purchased at Tractor Supply Company for only $30 per panel. And 8-foot fence panels are available at only a $20 cost per panel. The author of this Position Statement does not endorse a particular fencing product. Homeowners who should do their own research to confirm what is best for them.

[26] See also the University of Minnesota Extension link for "Protecting plants from deer" at https://extension.umn.edu/node/17936

enclosure. While we know deer can adapt to new situations, the preliminary results of this method are excellent." Northern Gardener March/April 2019 issue. See also Otten, J. (2018)[27].

This low cost micro-exclosure 50" high fencing system to prevent deer from browsing on residential garden plants is a viable effective solution for suburban homeowners who want a less visually obstructive fencing structure in front of their gardens.

B. Homeowners have numerous deer resistant aesthetic plant options for their landscaping which reduce deer browsing damage of these plants to tolerable levels.

In suburban and urban communities, residents will complain to their local government that the deer are eating their preferred landscaping plants which are known to be frequently browsed by deer. These residents will typically complain that the deer are not going to dictate to them which plants they should plant in their gardens. While no plant is 100% deer resistant, homeowners should make well informed selections of numerous aesthetic looking plants which are the most deer resistant and avoid plant selections which are frequently damaged by deer browsing.

If homeowners conduct online searches for deer resistant landscaping plants, they will find many lists for such plants which are based on anecdotal information or the copying of deer resistant plants from other existing lists. The Michigan State University Extension provides such a list, "Deer – Resistant" Plants for Homeowners.[28] The deer damage resistance level tables of the different plants listed are based on a Cornell Cooperative Extension Fact Sheet which was in turn based on "the combined experiences and numerical rankings of nursery operators, landscape contractors, Cornell Extension personnel, research staff, and other professional horticulturists from the northeastern states."[29] Homeowners, after conducting their own research, may choose the MSU Extension list, the lists referred to below or use a recommended list from their local government to determine which ornamental plants are the most deer resistant to place in their gardens.

Nonetheless, there are several lists which have been developed using a scientific method to determine plant resistance to deer damage. Over a two-year period, Ward (2000) conducted a research study using a deer browse damage survey with 269 Connecticut gardeners in 63 towns. The average gardener participating in the study reported growing 66 species of plants (range of 1 to 247) in their landscaping. According to their survey answers, most of the gardeners reported some deer browsing damage to their landscape plants. The gardeners reported which species had not been browsed and which species had been browsed and the severity of such browsing. This information provided an estimate of the frequency, or percentage of gardeners, who had deer browsing on a particular plant species, which resulted in determining an index of browse damage

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[27] "A review of deer fencing and repellents for home gardens" Unpublished research conducted for a project of the University of Minnesota Extension Central Regional Sustainable Development Partnership.

[28] Burroughs and Dudek (2008) "Deer – Resistant" Plants for Homeowners. MSU Extension Bulletin E-3042. Link at: https://www.canr.msu.edu/ipm/uploads/files/deer_resistant_plants.pdf

[29] Fargione, M.J., Curtis, P.D. and Richmond, M.E. (1991) Resistance of Woody Ornamental Plants to Deer Damage, Cornell Cooperative Extension Fact Sheet, Page: 800.00

susceptibility. See Note 4. The researcher provided, based his survey of Connecticut gardeners, a summary of which plants were found to be resistant to deer browse damage and which plants were found to be very susceptible to such damage.[30] See Table 2 and 3 in Attachment Four.

The staff of the Cincinnati Zoo & Botanical Garden collected over 40 deer resistant plant lists from across the Midwest. From this information, they complied a list of plants which were consistently listed as deer resistant among the collected lists. The staff then sent the complied list of deer resistant plants to "over 400 nurserymen, educators, naturalist and garden enthusiasts asking whether they found any of the plants on the list to be a problem or are in fact left alone by deer." The "Best Deer Resistant Landscape Plants" was compiled by the Zoo staff as determined from the responses which represented the "top picks of good landscape plants that are resistant or minimally damaged by deer." The SHAW Nature Reserve, a division of the Missouri Botanical Garden, published a list of "Native Plants for a Deer Resistant Garden" based on a three-year study conducted in Wildwood, Missouri. And Cornell University conducted a study of deer resistant plants and published Dr. Mark Bridgen's "List of Plants that Deer Do Not Like to Eat." See Attachment Five for these three deer resistant plants lists.

C. Homeowners have reasonable cost, effective long term deer repellent options including a newly available effective long-term rain resistant repellent product.

An Austrian manufacturer, Kwizda Agro Gmbh (KAG), has developed a deer repellant product, called Trico®, which is newly available in the United States. The product contains sheep fat as the active ingredient, which acts as a unique dual scent and taste repellent to protect trees and landscaping plants from browsing damage by deer. Palmer (2017) reported that Trico has had "an excellent performance history" over a 14-year period in Europe to successfully prevent browsing damage by several species of deer. In 2020, Trico was registered with the Environmental Protection Agency (Reg. No. 71637-2) as a deer repellent.[31] And Trico is registered as a pesticide with the Michigan Department of Agriculture & Rural Development and may be purchased in Michigan to be used as a deer repellent.[32] According to KAG's filing with the EPA, these products are rain resistant and effective to protect flowers, ornamentals, shrubs and trees long term from deer browsing damage.

Curtis and Eshenaur (2022) conducted their current controlled study in central New York state during the winter months to evaluate the effectiveness of the Trico repellent and another repellent to protect from deer browsing of yews under conditions commonly found in a suburban homeowner landscape setting. The researchers concluded that Trico deer repellent was effective long term to protect ornamental shrubs (yews) from deer browsing during the winter months. Curtis and Eshenaur (2022). They also noted that the pre-mixed repellent was simple to use

[30] Ward (2000) at page 7. A more detailed listing of all plants surveyed and their browse damage index is provided in Tables 4,5,6,7,8 and 9 in the following link to his research study: https://www.wiltonct.org/deer-committee/files/limiting-deer-browse-damage-landscape-plants

[31] See EPA Notice of Pesticide Registration, EPA Reg. Number 71637-2, issued June 12, 2020, Sublabel B: Residential Use.

[32] These products are sold at Helena retail outlets throughout Michigan at a cost of $210 for a 2.5 gallon container of Trico concentrate, or $84 per gallon. The author of this Position Statement does not endorse a particular repellent product. Homeowners should do their own research to confirm what is best for them to protect their garden plants from deer browsing damage.

which is an important factor for determining which repellent to use. The researchers stated that, ". . . a single treatment of Trico repellent in late fall or early winter could protect ornamental shrubs until spring green-up when deer reduce feeding on woody landscape plants."[33]

There are several other scientific studies which concluded that certain available commercial deer repellents are effective long term to reduce deer browsing to a tolerable level if timely reapplied to the plants by the homeowner pursuant to the manufacturer's guidelines. Ward and Williams (2010) conducted a study on the effectiveness of ten different deer repellents to protect yews with actual and recommended treatment intervals over a two-year period. The study design included using a control group of yews without any deer repellent applied. The researchers concluded that "repellents can provide protection approaching that of a physical barrier such as a fence." The two repellents in their study that provided the best protection from deer browsing were Bobbex and Hinder.[34] Trent et al. (2001) in another study concluded that Deer Away Big Game Repellent was effective to provide good protection for 8 to 12 weeks to prevent browsing damage before reapplication.

Tregoning and Kays (2010) reported on research concerning the length of the effectiveness of eight deer repellents[35], which had a range of active ingredients, to deter deer from browsing on landscape plants. The three-year study (2000 – 2002) was conducted during the winter months in sites representing "near ideal deer habitat in a suburban environment" located in Montgomery County, Maryland where deer populations exceeded 100 deer per square mile and there was heavy deer pressure on landscapes. During the three-year trials, different commercially available repellents were separately applied each year to "desirable" landscape plants (yews and azaleas) next to control plants that had no repellent applied. The amount of deer damage to the shrubs was measured weekly. The amount of deer browsing was significantly reduced by the application of the repellents compared to the loss of vegetation of the control shrubs that had no repellent treatment. The researchers concluded the following concerning the length of repellent effectiveness: "Even at sites with the highest deer pressure, repellents held damage in check for six to eight weeks, in many cases. At sites with less deer pressure, 10 to 12 weeks of effectiveness was common. On sites with high deer pressure, repellents will most likely be effective but may require more frequent re-application (as often as every 6 to 8 weeks)." They also concluded that, based on the data developed during the study, there was strong evidence that the repellants used will keep deer damage to gardens to a tolerable level for most people.
There are several useful informational resources on the application and cost of deer repellents to prevent residential garden damage. The Minnesota DNR published the "Nuisance Wildlife Repellent Handbook" which provides excellent deer repellent information about the active ingredients, mode of action, cost analysis (which needs updating) and coverage of deer

[33] Curtis and Eshenaur (2022) at page 26.
[34] Ward, J. and S. Williams (2010), Effectiveness of deer repellents in Connecticut. Human-Wildlife Interactions 4(1):56-66. Go to link at: https://digitalcommons.usu.edu/cgi/viewcontent.cgi?article=1197&context=hwi
[35] The repellents tested in the study were Repellex, Plantskydd, Deerbusters Deer 1, Liquid Fence, Deerbusters Plant Growth Stimulant, Bobbex, Deer Away BGR and Tree Guard.

repellents.[36] The Handbook recommends the reapplication of the repellent after periods of rainfall, but also the addition of an anti-transpirant, such as Vapor Guard® or Weathershield® to reduce the need to reapply after every rainfall. The Handbook also recommends, as do other informative resources, that the repellent should be changed periodically to prevent the deer from becoming accustomed over time to only one type of repellent.

The Alabama Cooperative Extension System published, in 2010, "An Overview and Cost Analysis of Deer Repellents for Homeowners and Landowners" which provides deer repellent information including active ingredients, mode of action, reapplication frequency, recommended plants for use on, cost per gallon (which needs to be updated), area covered per gallon of concentrate and cost per 100 square foot area per year.[37] Current repellent pricing cost appears to be relatively stable versus 2010. See Note 5 for comparison of repellent pricing in 2010 versus current pricing in 2023. The authors of this report emphasized the importance of the timing of reapplication of the repellent chosen to successfully deter deer from a garden area: "For a repellent to be effective to its full potential, understanding and following reapplication timing is a key aspect to successfully deterring deer from a desired area. Repellents must be applied and reapplied according to manufacturer guidelines to achieve their full effect."[38]

The DNR should provide up-to-date information to residential homeowners so they can determine for themselves what their approximate labor and cost of applying repellents at the recommended frequency on their landscaping plants. The residents can then determine whether the resulting benefit of potential savings from a reduced level of deer browsing outweighs the cost and labor experienced to effectively minimize deer browsing damage to their landscaping.

Conclusion

In the absence of rigorous scientific studies provided by the DNR, local governments should not rely on the DNR's opinion that only the primary use of lethal measures to reduce a deer population will effectively decrease long-term deer browsing damage to their residents' gardens. In addition, local governments should not rely on the DNR's opinion that nonlethal measures such as the use of fencing, deer resistant plants and deer repellents are too costly and not effective long-term solutions to reduce deer browsing garden damage. The DNR has not supported its opinion about the costliness or ineffectiveness of nonlethal measures with any reference to any relevant cost to benefit analysis or scientific studies which conclude nonlethal measures are too costly and not effective long-term to prevent deer from damaging residential landscaping plants.

If the DNR is unable to provide a scientific basis and a cost to benefit analysis to support its

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[36] Minnesota DNR Wildlife Damage Management Program "Nuisance Wildlife Repellent Handbook". Go to link at:
https://files.dnr.state.mn.us/assistance/backyard/livingwith_wildlife/repellent_handbook.pdf

[37] L. Ashley Baker, D. Joseph Eakes, Glenn B. Fain, Stephen S. Ditchkoff and Christine Coker (2010) "An Overview and Cost Analysis of Deer Repellents for Homeowners and Landowners" ANR-1370 Alabama Cooperative Extension System (Alabama A&M University and Auburn University). Go to link at:
http://wp.auburn.edu/deerlab/wp-content/uploads/2014/05/64Ext2010-Cost-of-Deer-Repellents.pdf

[38] Ibid, Baker et al 2010 at page 4.

negative opinion concerning nonlethal measures, local governments should source subject matter experts who are able to give objective science-based opinions on assisting residents to prevent deer browsing damage to their suburban gardens. Local governments should proactively search for and provide their residents informational resources about effective reasonable cost nonlethal solutions, such as the micro-exclosure fencing option, to prevent deer browsing damage to gardens. Residents will then be able to make their own fact-based decisions as to which nonlethal measures are best suitable for them to protect their gardens from deer browsing damage.

This Position Statement is authored by:

Gary Granader, President
Advocates for Michigan Wildlife
Michigan Non-Profit
Updated: 8/18/24

NOTES

Note 1.
Conover et al. (2018) discussed the factors that determine which plants deer find most palatable:

> "Deer seek out the most nutritious plant species and plant parts (Nudds 1980, Vangilder et al. 1982). Flowers and sprouting plants are easily digestable and contain high levels of digestible energy; for these reasons, deer forage heavily on them in the spring to regain energy lost during winter (Vangilder et al. 1982, Campbell et al. 2002)."

> "Environmental factors, such as soil nutrients, water stress, and shade also play a role in plant palatability. Deer select fertilized over unfertilized plants because fertilized plants provide protein, carbohydrates, minerals, and salts to hungry deer (Conover and Kania 1988, Wade and Mengak 2010). Plants that grow under restricted light conditions are more palatable than plants that have sufficient sunlight (Paciullo et al. 2014, Pang et al. 2017). This is particularly true for plants with carbon-based chemical defenses (such as phenolic compounds) as the amount of carbon in shaded plants may be low enough to affect the plants' carbon-based defenses (Bryant et al. 1983, Bryant 1987). Concentrations of protein and plant digestibility are generally greater in shaded plants (Pang et al. 2017). Water stress retards plant maturity, meaning lower content of fiber and greater content of protein in water stressed plants (Grant et al. 2014). Thus, water stress increases nutritional quality and palatability while reducing plant biomass."

Note 2.
Michigan DNR "Nuisance Wildlife" website page:

> "White-tailed deer are found in every county in Michigan and can easily adapt to their surroundings. Deer can be found in just about every habitat type, including both urban and suburban areas.
>
> In urban and suburban areas, white-tailed deer will take advantage of gardens and landscaping for food. They may even try to feed from bird feeders. By removing potential food sources and protecting gardens with fencing, deer may move to other areas for food. **Never intentionally feed or try to tame a white-tailed deer**.
>
> **Prevention and control tips**
>
> - Do not intentionally feed deer.
> - Remove or modify bird feeders to prevent deer from accessing the food.
> - Construct fences or put wiring around gardens or individual plants to protect from damage.
> - Use scare tactics to frighten deer away.
> - Try repellents or modify landscaping. Use plants that are less likely to be eaten by deer.
>   - MSU Extension: Smart gardening to deter deer
>   - MSU Extension: Deer-resistant plants for homeowners
> - Leave fawns in the wild; it is not unusual to find a fawn on its own.

"Hunting is one option communities may use to help reduce deer populations in their area. If hunting is not currently an option in your area, try some non-lethal deterrent methods to discourage deer. Deterrent methods are generally a short-term solution to solve issues, but they usually aren't effective long-term. Examples of deterrents include fencing to keep deer out of a specific area, using noise and visual scare tactics, applying taste deterrents to ornamental plants, removing feed and making bird feeders inaccessible to deer."

"Deer may be aggressive towards pets, particularly dogs, that they view as a predator/threat. If a deer is acting aggressive or attacking a pet, use scare tactics to frighten the deer away and bring the pet indoors until the deer has left the area. Accompany your pet outdoors and keep it on a leash."

"The local DNR office can be contacted if there is an aggressive white-tailed deer causing a public safety risk, a sick deer, agricultural or horticultural damage, or for additional prevention and control options."

Resources

- Deer SMART Brochure
- Deer SMART Brochure (Accessible)

Note 3.

Rosenberry et al. (2001), at pages 755-756, further explained the following:

"Our exclosure design was effective in preventing deer browsing in an area up to 12 m x 12 m and permitted access to plots for common farming practices. Farming activities during our study were conducted early in the growing season when plant height was <0.5 m. Had farming activities required moving exclosures later in the growing season, additional personnel might have been needed to lift fencing material over taller crops to prevent damage."

"Although not specifically evaluated, our movable, temporary fence should effectively prevent deer browsing in suburban areas. For homeowners experiencing deer damage, a temporary, inconspicuous, deer-proof fence provides an option not currently available. This type of fence would have advantages over permanent woven-wire or temporary electric fences and would "blend into" vegetated areas. Potential improvements for suburban use could include permanent underground posts to reduce annual setup labor and less conspicuous corner posts."

"Our design has advantages of greater flexibility than woven-wire fencing and fewer maintenance needs compared to electric fences. Flexibility of fencing material permitted ease of movement and storage. Unlike woven-wire fencing, the material necessary for one exclosure was easily carried by one person. In addition, fencing

material could be folded or rolled for storage. Maintenance needs were minimal. Whereas maintenance costs can constitute half of the total cost of establishing and maintaining an electric fence (M. C. Conner, unpublished data), our design required no regular maintenance."

Note 4.

Ward (2000) explains how a homeowner may use the "index of browse damage susceptibility" created as a result of his study:

> "An index of browse damage susceptibility was calculated for each species using both the frequency and severity of browsing using:
>
> **Index of browse damage susceptibility = 100* frequency * severity.**
>
> High index values indicate species susceptible to browse damage. Species that are resistant to browse damage have low index values. If you are starting a new garden, or are uncertain about browse damage in your neighborhood, use the following general guide. Plants with index values over 200 will probably suffer severe-to-extreme browse damage if deer are browsing plants on other properties in the neighborhood. Plants with index values between 100-200 will likely suffer heavy-to-severe browse damage; index values between 50-100 indicate plants may occasionally be damaged; and plants with index values < 50 are unlikely to be damaged by deer browsing. A simplified summary of this study is provided to help you choose plants for your garden. Browse resistant species (low index values) are in Table 2. Species that are susceptible to browse damage (high index values) are in Table 3."
>
> "More comprehensive guides with 256 landscape species can be found in Tables 4 – 9. Plants are grouped into general growth types. Table 4 lists annuals and perennials grown as annuals in Connecticut. Table 5 lists groundcovers and Table 6 lists bulbs and corms. Herbaceous perennials are listed in Table 7. Table 8 lists vines and Table 9 lists shrubs and small trees. In each table, plants that are most susceptible to browse damage are found at the beginning of the list, and plants that are resistant to browse damage are found at the end of the list."
>
> "To use the comprehensive guides it is important to determine the degree of browse damage to landscape plants in your neighborhood. The first step is to note which plants in your garden are lightly or occasionally browsed, i.e., occasional nibbling here and there. Where possible, scout for browse damage in your neighborhood, especially on plants that you are considering adding to your landscape. Discovering which species have light browse damage will allow you to determine the browse pressure in your neighborhood."
>
> "The next step is to find those plants that are lightly or occasionally browsed in your neighborhood on one of the lists (Tables 4-9). Note the index values for each species. Lastly, choose plants with a similar or lower index value for your garden".
>
> "I will use the gardens of May Flores (a hypothetical gardener) as an example. The numbers in parentheses are the index value for each species. She observed that deer destroyed her tulips (368) and hosta (314), and caused moderate damage to her crocus (142), hollyhocks (158), and foundation junipers (149). Damage to her viburnums (98), gayfeathers (100), and larkspurs (87) was light (acceptable). This indicates that she should select plants with index values less than 100 (e.g., nasturtiums, pachysandra,

fritillary, primrose, etc.). These plants should experience little or light damage in her garden. There are no guarantees against browse damage (deer are unpredictable), but choosing resistant plants will increase the odds that deer will not cause extensive damage to the shrubs and flowers in your landscape." Ward (2000) pages 5-8.

Note 5.
This chart gives a comparison of current 2023 pricing for various common deer repellents versus the 2010 cost as reported by the Alabama Cooperative Extension System in its "An Overview and Cost Analysis of Deer Repellents for Homeowners and Landowners":

Repellent Name	2023 Cost	2010 Cost	Per Unit of Product
Bobbex	$92.98	$97.98	per gallon concentrated spray
Deer Off Squirrel, Rabbit & Deer	$120.00	$146.04	per gallon concentrate
Deer Stopper	$88.68	$124.95	per gallon concentrate
Hinder	$59.99	$37.99	per gallon concentrate
Liquid Fence	$119.99	$124.99	per gallon concentrate
Miller Hot Sauce	$298.00	$289.00	per gallon concentrate

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ATTACHMENT ONE

Michigan State University Extension report “Smart gardening to deter deer.”

Smart gardening to deter deer

Rebecca Finneran, and Sarah Rautio, Michigan State University Extension - December 20, 2016

Stop deer damage in your garden or landscape with smart gardening techniques.

It can be heart-wrenching to look out at your prized garden and find that your plants have been completely nibbled away. Gardeners have been plagued by deer damage for generations, but why are we seeing more damage than ever to our home landscapes?

As natural habitat is lost to new roads, homes and buildings, deer begin to spend more time in areas populated by humans, such as your backyard. Deer are just as happy foraging in your yard as they would in a natural area. In fact—they may actually ***prefer*** what you have planted over their natural diet.

By understanding deer behavior, learning how to divert attention away from your plants and making the garden difficult to access, you will take the first steps towards thwarting deer damage in your landscape and garden.

Plants deer love
Deer damage primarily happens during the night, but deer will feed anytime they are hungry on a wide variety of plants. No plant is absolutely deer-proof and preferences for certain plants may not be the same from one area to another. However, there are some plants that are like candy to deer and you may want to avoid.

Evergreen shrubs such as our native cedars (landscape *Arborvitae*) and yews are some of their wintertime favorites. They will also browse on rhododendron, winter creeper, holly and false cypress. They also like small deciduous trees, such as Japanese maples, and many ornamental shrubs including roses. Herbaceous plants that hold their leaves through winter such as *Heuchera* will also be a target for hungry deer.

In spring and summer, deer will seek out lush herbaceous plants like tulips and newly emerging *Hosta* or daylilies. They may eat recently planted annuals or just yank individual plants out of the ground while taste-testing.

In late summer, male deer use the trunks of woody plants that are 2 inches wide or less to rub off their antler velvet. These "buck rubs" can create lasting scars and structural weakness. Deer also love all parts of fruit trees, which makes it important to protect those trees year-round, particularly when they are young.

Make smart plant choices

The best defense against deer is to plant things they are known to dislike. Deer tend to be put off by fuzzy, coarse or "fern-like" foliage, and leaves or stems with strong odors or spines. Some plants less attractive to deer are lamb's ears, hellebores, ornamental grasses, ferns, catmint, Russian sage, lavender and snakeroot. While deer love tulips, they tend to avoid other bulbs such as daffodil, allium, grape hyacinth and autumn crocus.

As for trees and shrubs, deer often avoid pines, spruces, larches, cypress and boxwood. In spring and summer, *Forsythia*, *Weigelia*, *Spirea* and Ninebark attract fewer deer. For late-season color, try *Callicarpa* (Beautyberry) or *Potentilla.*

The Michigan State University Extension publication "Deer-Resistant" Plants for Homeowners" has a more comprehensive list for your reference. Again, no plant is 100 percent deer-proof.

Use repellants to show deer what is off limits

Using a variety of commercial or homemade repellants can also be an effective tool to thwart deer browsing. Repellants use three techniques to deter deer—bad taste or scent and fear.

Bad taste and scent repellants often contain ingredients such as capsicum pepper, putrid egg solids and garlic. Fear repellants, on the other hand, contain scents that warn deer of predators, like coyote urine and animal remains.

Motion-sensing noise-makers and water scare tactics are another option. Coupling these devices with some of the repellants can send a clear message your garden is off limits.

All repellants work to some degree, but deer can acclimate to one, so rotate them using several different types. Be consistent about reapplying to keep the repellant fresh. After consistently encountering your repellants, deer will change their traffic patterns to avoid your yard and you may be able to then reduce repellant use.

Unfortunately, repellants may not totally deter deer. Repellants lose their taste and scent from rainfall or irrigation. They also cannot protect new leaves and shoots that emerge after your application. In winter, deer are more desperate for food and may tolerate repellants. Your only option may be to cover or block deer from plants, shrubs and trees.

Barriers that work

One sure-fire way to stop deer browsing is to fence your whole yard, which can be costly and otherwise undesirable. Physical barriers such as wraps, netting and small fencing are much more practical. Even though deer can leap over a 6-foot fence, they are sometimes reluctant to enter a smaller area like a fenced bed of *Rhododendrons* or yews.

Consider attaching netting to stakes with staples, twine or zip-ties to protect larger plants. Old tomato cages, wire-hanging baskets and milk crates can be anchored in place with tent stakes to cover small plants. Be sure the holes are small enough that they cannot squeeze their noses in between.

You can also protect young trees from buck rubs by wrapping trunks with plastic or paper tree wraps. Be sure to occasionally replace wraps to avoid moisture build up or insect infestation. Young trees can also be protected with wire fence cages that are supported with stakes.

During the growing season, deer are frustrated if they have to stick their nose or hooves through something they cannot see. Try running fishing line through a perennial garden, creating a "web" of confusion (using the perennials themselves or simple garden stakes). They also are unlikely to step on uneven surfaces such as crimped, undulating chicken wire fence laying on the ground in front of a bed.

Take action now to avoid unwanted deer activity in your garden. Just remember these three smart gardening tips:

1. Choose SMART plants that deer do not like.
2. Apply SMART repellents to deter deer.
3. Create SMART barriers to block deer.

Download tip sheet version of this article: Smart gardening to deter deer
For more information on a wide variety of smart gardening topics, visit the Gardening in Michigan website or call the MSU Extension Lawn and Garden Hotline at 1-888-678-3464.

This material is based upon work supported by the USDA and the National Institute of Food and Agriculture award number(s) 2014-70006-22498.

This article was published by **Michigan State University Extension**. For more information, visit https://extension.msu.edu. To have a digest of information delivered straight to your email inbox, visit https://extension.msu.edu/newsletters. To contact an expert in your area, visit https://extension.msu.edu/experts, or call 888-MSUE4MI (888-678-3464).

Note: Photos have not been included in this attachment.

ATTACHMENT TWO

City of Norton Shores ordinance and correspondence for eight-foot temporary garden fences

city of Norton Shores

4814 Henry Street Norton Shores, Michigan 49441 www.nortonshores.org

AGENDA 9a
DATE 1·3·23

December 27, 2022

Council Meeting of January3, 2023
SUBJECT: Adopt Zoning Ordinance Amendment – Deer Fencing

The Honorable Mayor
and
Members of the City Council

Ladies and Gentlemen:

Enclosed is a zoning ordinance amendment for proposed Section 48-1325, which has the proposed title of "Deer fencing". Due to resident complaints about the influx of deer on private properties, City staff has sought out solutions to control the deer issues in Norton Shores. One solution is permitting deer fencing to be installed to stop the deer from destroying gardens, flowers, etc.

The draft ordinance proposes having deer fences that would not exceed eight (8) feet in height (current fence ordinance states the maximum may only be six (6) feet), it would be limited to green, brown, and black coloring and only be made out of nylon ("mesh") or polypropylene plastic. Other criterion would include not placing the fence on top of another fence or walls, that the fencing could only be in a side or rear yard and that it could not be used on property lines as a boundary fence. All fencing on property lines would continue to be permitted and enforced as they currently are.

The Planning Commission reviewed this request at their December 13, 2022 meeting and unanimously recommended approval of the proposed zoning ordinance amendment. The attached zoning ordinance amendment was introduced at the December 20, 2022 City Council meeting and may be adopted at the January 3, 2023 meeting. A prepared resolution is attached for the Council's use.

Respectfully submitted,

Mark C. Meyers
City Administrator

TSW/sr
Attachment

CITY OF NORTON SHORES
4814 Henry Street
NORTON SHORES, MICHIGAN 49441

Ordinance No.

AN ORDINANCE TO AMEND ARTICLE XII OF CHAPTER 48 OF THE CODE OF ORDINANCES PERTAINING TO DEER FENCING

THE CITY OF NORTON SHORES ORDAINS:

Section 1. That Section 48-1325 captioned "Deer fencing" of Article XII captioned "Fences" of Chapter 48 captioned "Zoning" of the Code of Ordinances for the City of Norton Shores is hereby added so as to read as follows:

(1) Deer fencing is permitted on private property if all the following are met:

a. Deer fencing may only be around gardens or landscaped areas and is not to be used as a boundary between properties.

b. Deer fencing may not exceed 8 feet in height (including poles) and must be constructed only of see-through nylon ("mesh") and polypropylene plastic materials that are green, brown, and black in color (wood, vinyl, metal, or similar materials are not permitted).

c. Deer fencing shall be placed directly on the ground and it shall be supported on its own.

d. Deer fencing shall not be placed in the road right-of-way.

e. Deer fencing must remain open air; no fencing or roof structure is permitted.

f. Deer fencing shall only be allowed from April 1 until November 1 in a calendar year.

Section 2. Severability: Should any part of this ordinance be held invalid by a court of competent jurisdiction; the remaining parts shall be severable and shall continue in full force and effect.

Section 3. Repeal of Conflicting Ordinances: All ordinances or parts of ordinances in conflict with the provisions of this ordinance to the extent of such conflict are hereby repealed.

Section 4. Effective Date: This ordinance will become effective ten (10) days after adoption.

_____
Shelly Stibitz, City Clerk

Introduced: December 20, 2022
Adopted:
Published:
Effective:

city of Norton Shores

Internal Memo

December 27, 2022

TO: Planning Commissioners

FROM: Ted Woodcock, Planning and Zoning Administrator

SUBJECT: Deer fence draft ordinance

Following please find comments regarding a draft ordinance regarding deer fencing:

Due to resident complaints about the influx of deer on private properties, City staff has sought out solutions to control the deer issues in Norton Shores. One solution is permitting deer fencing to be installed to stop the deer from destroying gardens, flowers, etc. I researched what other communities have done to combat their deer issues. I found that at least five other communities have adopted a deer fencing ordinance. Those communities were in Oregon, Maryland, New York, and New Jersey. (No communities in Michigan were found to have deer fencing ordinances based on a cursory Google search). I did reach out to these communities and from the answers I received, the deer fencing ordinances they had put in place were successful in deterring the deer from destroying private property.

The attached draft ordinance City staff prepared takes common elements from what these communities have adopted. City staff feels that this ordinance could be an effective solution in controlling or eliminating problems that property owners face due to the deer. Most significantly, it would be a private property solution that could be decided by the property owner. Conversely, a deer cull could only be done on public property, which in turn could force the deer away from the public property and onto the adjacent private properties. Culls are also relatively expensive and require state permitting.

The draft ordinance proposes having deer fences that would not exceed 8 feet in height (current fence ordinance states the maximum could only be 6 feet), it would be limited to green, brown, and black coloring, and only be made out of nylon ("mesh") or polypropylene plastic. Other criterion would include not placing the fence on top of another fence or walls and that fencing would only be allowed around landscaped and garden areas, as well as from April 1 to November 1. All fencing on property lines would continue to be permitted and enforced as they currently are.

This amendment was brought in front of the Planning Commission at the November 7, 2022 meeting where it was discussed. Planning Commissioners requested an amendment ordinance, which is attached. The amended ordinance removed the no permit required language, as well as re-worded subsection (a). The revised zoning ordinance amendment was brought back to the Planning Commission at their December 13, 2022 meeting with it receiving unanimous recommendation to City Council. A public hearing was held at that meeting as well, with no public comment being received. This request was introduced by the City Council at their December 20, 2022 meeting.

ATTACHMENT THREE

Micro-exclosures to Protect Plants from Deer

University of Minnesota Extension
Protecting plants from deer

Home > **Regional Partnerships** > **Central** > Protecting plants from deer

Landowners, gardeners and foresters need practical solutions for protecting plants from deer. Control measures range from physical barriers to hunting to sensory and psychological deterrents. The University of Minnesota Extension Regional Sustainable Development Partnerships (RSDP) have supported research on practical tips for keeping deer away from plants.

Deer micro-exclosures

Description
A micro-exclosure is a small, fenced compound for deer control based on the concept that deer avoid entering small spaces. Micro-exclosures provide a psychological deterrent to deer, appearing too risky for fast entry and exit.

With support from the Central RSDP, Wadena farmer and private forest owner Kent Scheer **conducted trials on six micro-exclosures**. Scheer built exclosures using cattle panels. Information presented on micro-exclosures here is based on Scheer's trials.

Uses
Micro-exclosures can be used to protect plants in home vegetable gardening and reforestation projects. They work well for defining nursery beds, fencing berry plantings, protecting rare wild flowers, securing high-value plants such as ginseng, and supporting increased woodland diversity. Micro-exclosures can also be used in landscaping, providing simple, clean framing for a prized collection of hostas or lilies.

Trials
Over the course of two growing seasons (100 days), Scheer experienced only one breach in his pilot micro-exclosures. This was solved by reducing the size of the micro-exclosure. Once the area was made smaller, no further breaches occurred.

Construction

Micro-exclosures can be built using cattle panels commonly available at farming supply stores. The panels come in 16-foot lengths which can be carried by two people. They are rigid and self-supporting, but can be bowed to fit into the bed of a standard pick-up truck for transporting. Exclosures can be made of four cattle panels connected at the corners with cable clamps to form a 16-foot square. Other shapes and configurations can also be formed with fewer or more panels.

The top wire across the exclosures measures 50 inches from the ground. Three of the four corners are secured by cable clamps, and the remaining corner is left unconnected to serve as a gate. A total of nine ⅜-inch cable clamps are needed, with three in each of three corners.

Scheer recommends using four six-foot steel T posts with one wired to the center of each panel for increased rigidity.

Scheer's 2018 trials indicated that an entire micro-exclosure could be built for approximately $150, with materials estimated at lasting at least 10 years. In his experience, micro-exclosures are easy to move around.

Effectiveness

Micro-exclosures have shown a high success rate, but they should be monitored. Deer demonstrate regional differences in behavior, so it is important to observe whether the exclosure is effectively serving as a psychological deterrent. If a breach occurs, the exclosure can be made to appear smaller by installing a fifth cattle panel in the center or by stretching a wire hung with flagging across the midsection.

The Minnesota Department of Natural Resources offers a design and assistance for **business-scale deer exclosures**.

Sources

Mohr, C., and LaMond, A. (2018). **Protecting our gardens from deer**. RSDP Happenings. University of Minnesota Extension Regional Sustainable Development Partnerships.

Otten, J. (2018). A review of deer fencing and repellents for home gardens. Unpublished research conducted for a project of the University of Minnesota Extension Central Regional Sustainable Development Partnership.

Scheer, K. (2018). Summary evaluation of the three deer control systems. Unpublished research conducted for a project of the University of Minnesota Extension Central Regional Sustainable Development Partnership.

ATTACHMENT FOUR

Ward, Jeffrey S. (2000), Limiting Deer Browse Damage to Landscape Plants
Lists of Plant Browse Damage Index
Tables 2 and 3

Table 2. Plants that were found to be resistant to deer browse damage by a survey of Connecticut gardeners. These plants are appropriate for areas where moderate browse damage may be expected. Plants are listed by common name with genus in parentheses.

Annuals and perennials grown as annuals		
Spiderflower (*Cleome*)	Marigold (*Tagetes*)	Forget-me-not (*Myosotis*)
Vinca (*Catharanthus*)	Alyssum (*Lobularia*)	Dusty miller (*Senecio*)
Groundcovers		
Myrtle (*Vinca*)	Dead nettle (*Lamium*)	Pachysandra (*Pachysandra*)
Bugleweed (*Ajuga*)	Sweet woodruff (*Galium*)	Wild ginger (*Asarum*)
Bulbs and corms		
Hen & chicks (*Sempervivum*)	Star of Bethlehem (*Ornithogalum*)	Snowdrop (*Galanthus*)
Ornamental chives (*Allium*)	Daffodil (*Narcissus*)	
Herbaceous perennials		
Lily of the valley (*Convallaria*)	Lamb's ears (*Stachys*)	Lavender (*Lavandula*)
Yarrow (*Achillea*)	Foxglove (*Digitalis*)	Mint (*Mentha*)
Russian sage (*Perovskia*)	Oregano (*Origanum*)	Silvermound (*Artemisia*)
Lady's mantle (*Alchemilla*)	Thyme (*Thymus*)	Poppy (*Papaver*)
Catmint (*Nepeta*)	Goldenrod (*Solidago*)	Rubarb (*Rheum*)
Monkshood (*Aconitum*)	Mayapple (*Podophyllum*)	
Vines		
Bittersweet (*Celastrus*)	Wisteria (*Wisteria*)	Virginia creeper (*Parthenocissus*)
Shrubs and trees		
Leucothoe (*Leucothoe*)	Flowering quince (*Chaenomeles*)	Weigela (*Weigela*)
Butterfly bush (*Buddleia*)	Deutzia (*Deutzia*)	Spruce (*Picea*)
Cotoneaster (*Cotoneaster*)	Boxwood (*Buxus*)	Spirea (*Spiraea*)
Honeysuckle (*Lonicera*)	Heather (*Calluna*)	Barberry (*Berberis*)
Goldenbells (*Forsythia*)	Andromeda (*Pieris*)	

Table 3. Plants that were found to be very susceptible to deer browse damage by a survey of Connecticut gardeners. These plants are not likely to survive in areas where deer browse damage is expected. Plants are listed by common name with genus in parentheses.

Annuals and perennials grown as annuals		
Impatiens (*Impatiens*)	Sunflower (*Helianthus*)	English daisy (*Bellis*)
Dahlia (*Dahlia*)	Fibrous begonia (*Begonia*)	
Bulbs and corms		
Tulip (*Tulipa*)	Daylily (*Hemerocallis*)	Lilies (*Lilium*)
Spring-flowering crocus (*Crocus*)		
Herbaceous perennials		
Hosta (*Hosta*)	Garden phlox (*P. paniculata*)	Hollyhock (*Alcea*)
Daisy (*Chrysanthenum*)	Black-eyed Susan (*Rudbeckia*)	Jerusalem artichoke (*Helianthus*)
Candytuft (*Iberis*)	Shasta daisy (*Leucanthemum*)	Coneflower (*Echinacea*)
Cardinal flower (*Lobelia*)	Hibiscus (*Hibiscus*)	Rose mallow (*Malva*)
Shrubs and trees		
Yew (*Taxus*)	Euonymus (*Euonymus*)	Arborvitae (*Thuja*)
Deciduous azalea (*Rhododendron*)	Rhododendron (*Rhododendron*)	Evergreen azalea (*Rhododendron*)
Rose (*Rosa*)	Hydrangea (*Hydrangea*)	American holly (*Ilex*)
Evergreen holly (*Ilex*)	Yucca (*Yucca*)	Eastern red cedar (*Juniperus*)
Juniper (*Juniperus*)	Mountain laurel (*Kalmia*)	Hemlock (*Tsuga*)

ATTACHMENT FIVE

"Best Deer Resistant Landscape Plants" by the Cincinnati Zoo & Botanical Garden

"Native Plants for a Deer Resistant Garden" by the SHAW Nature Reserve

Dr. Mark Bridgen's "List of Plants that Deer Do Not Like to Eat." by Cornell University

Best Deer Resistant Landscape Plants

www.cincinnatizoo.com

What landscape plants won't deer eat?!

This is the question that we have attempted to answer. First we collected deer resistant plant lists from across the Midwest - over 40 lists were collected. From this information we pulled the plants that were consistently listed as deer resistant. Our compiled list was sent out to over 400 nurserymen, educators, naturalist and garden enthusiasts asking whether they found any of the plants on the list to be a problem or are in fact left alone by deer. From the return responses we "compiled" this list, which represents the top picks of good landscape plants that are resistant *or minimally damaged* by deer.

***Note:** **Using plants from this list does not guarantee no deer damage to plants. Deer populations and deer taste preferences are variable and if you have large herds you are more likely to experience deer damage.**

Plants listed in **bold** are the plants most frequently agreed deer resistant.

ANNUALS
Ageratum
Allyssum
Cleome
Dusty Miller
Lantana
Nicotiana
Plectranthus argenteus
Blue Salvia
Snapdragon
Vinca (annual vine)
Zinnia anguatifolia

BULBS
Allium
Chionodoxa
Colchicum
Daffodil
Galanthus (Snowdrops)
Grape Hyacinth
Hyacinthoides (Squill)
Leucojum
Pushkinia

GROUNDCOVERS
Ajuga
Convallaria
(Lily of the Valley)
Galium
Lamiastrum
Lamium
Vinca minor
Pachysandra

VINES
Bignonia (Crossvine)
Campsis
Clematis paniculata
Lonicera sempervirens
Wisteria

FERNS
Japanese Painted Fern
Wood Fern
Ostrich Fern
Sensitive Fern
Cinnamon Fern
Royal Fern
Christmas Fern

ORNAMENTAL GRASSES
Miscanthus cultivars
Pennisetum cultivars
Arundo
Sporobolis
Panicum cultivars
Calamagrostis
Carex
Saccharum (Erianthus)
Bamboo

SHRUBS
Abelia
Aesculus parviflora
Berberis (Barberry)
Buddleia
Callicarpa
Calycanthus
Caryopteris
Cotinus
Forsythia
Hypericum
Lespedeza 'Gibraltar'
Lindera
Myrica
Rhus aromaticia 'Gro-Low'
Spirea
Symphoricarpus
Vitex
Yucca

EVERGREEN SHRUBS
Boxwood
Ilex glabra-Inkberry Holly
Mugo Pine
Cephalotaxus
Juniper (low growing-groundcover types)

EVERGREEN TREES
Magnolia grandifloria 'Bracken's Brown Beauty'
Picea abies
Picea pungens
Psuedotsuga menziesii

SHADE PERENNIALS
Aquilegia
Brunnera
Chelone
Dicentra
Epimedium
Galium odoratum
Helleborus
Huechera villosa
Lamium
Lamiastrum
Pilmonaria
Tiarella

PLANTS DEER LOVE MOST !

Roses	Tulips
Hostas	American Arborvitae
Impatiens	Daylily
Taxus	Sedum
Blue Holly	Phlox paniculata
China Holly	Oakleaf Hydrangea
Euonymus	White Pine
Rhododendron	Scabiosa

SUN PERENNIALS
Achillea
Aesclepias tuberosa
Alchemilla
Amsonia hubrichtii
Aquilegia canadensis
Artemesia
Aster lateriforus 'Lady in Black'
Aster oblongifolius 'Raydon's Favorite'
Asteromoea mongolica
Baptisia australis
Calamintha
Chrysanthemum 'Becky'
Coreopsis lanceolata
Crocosmia
Dianthus 'Baths Pink','Firewitch', 'Mountain Mist'
Euphorbia myrsinites
Euphorbia robbiae
Geranium 'Biokova'
Geranium sanguineum
Iris
Lavendula
Liatris
Monarda
Oenothera
Paeonia
Perovskia
Rudbeckia (eat young foliage)
Salvia
Solidago
Stachys 'Helene Von Stein', 'Silver Carpet'
Thymus serphyllum
Veronica

If you have additions or corrections please contact us at deersurvey@cincinnatizoo.org.

SHAW NATURE RESERVE
a division of the MISSOURI BOTANICAL GARDEN

Native Plants for a Deer Resistant Garden

This information was gathered from a three year study conducted in Wildwood, Missouri where there is a heavy over-population of deer.

No Browse

Achillea millefolium (Yarrow)

Adiantum pedatum (Maidenhair fern)

Agastache nepetoldes (Giant hyssop)

Allium stellatum (Fall glade onion)

Amsonia ciliata (Feathery blue star)

Amsonia illustris (Shining blue star)

Andropogon gerardii (Big bluestem)

Asclepias incarnata (Swamp milkweed)

Asclepias viridis (Spider milkweed)

Asclepias tuberosa (Butterfly flower)

Callicarpa americana (Beautyberry)

Carex annectens (Yellow-fruited sedge)

Carex muskingumensis (Palm sedge)

Carex stricta (Tussock sedge)

Coreopsis tinctoria (Plains coreopsis)

Delphinium exaltatum (Tall larkspur)

Elymus canadensis (Canada wild rye)

Eryngium yuccifolium (Rattlesnake master)

Erysimum capitatum (Western wallflower)

Glandularia canadensis (Rose verbena)

Helenium autumnale (Autumn sneezeweed)

Hibiscus lasiocarpos (Woolly rose mallow)

Iris virginica (Blue flag iris)

Juncus effusus (Soft rush)

Lobelia cardinalis (Cardinal flower)

Mimulus ringens (Monkeyflower)

Monarda bradburiana (Bradbury beebalm)

Onoclea sensibilis (Sensitive fern)

Palafoxia callosa (Palafoxia)

Panicum virgatum (Switchgrass)

Penstemon digitalis (Smooth beard-tongue)

Physostegia virginiana (Obedient plant)

Polemonium reptans (Jacob's ladder)

Pycnanthemum pilosum (Hairy mtn mint)

Pycnanthemum tenuifolium (Slender mtn mint)

Pycnanthemum virginianum (Mountain mint)

Salvia azurea (Blue salvia)

No Browse (cont.)

Schizachyrium scoprium (Little bluestem)

Scutellaria incana (Hoary skullcap)

Scutellaria ovata (Heart-leaved skullcap)

Sedum ternatum (Wild stonecrop)

Senecio obovatus (Round-leaved ragwort)

Senna marilandica (Wild senna)

Solidago drummondii (Cliff goldenrod)

Sporobolus heterolepis (Prairie dropseed)

Verbesina helianthoides (Yellow wingstem)

Vernonia arkansana (Arkansas ironweed)

Veronicastrum virginicum (Culver's root)

Very Light Browse (Tasted)

Aruncus dioicus (Goatsbeard)

Baptisia australis (Blue wild indigo)

Eupatorium purpureum (Joe pye weed)

Grindelia lanceolata (Gum plant)

Liatris pycnostachya (Prairie blazing star)

Lobelia siphilitica (Blue lobelia)

Monarda fistulosa (Wild bergamot)

Silena regia (Royal catchfly)

Solidago riddellii (Riddell's goldenrod)

Stylophorum diphyllum (Celandine poppy)

Zizia aurea (Golden Alexander)

Light Browse

Aquilegia canadensis (Wild columbine)

Aster oblongifolius (Aromatic aster)

Aster oolentangiensis (Sky blue aster)

Aster patens (Purple daisy)

Blephilia ciliata (Ohio horsemint)

Chelone obliqua (Rosy turtlehead)

Coreopsis lanceolata (Lance-leaved coreopsis)

Echinacea simulata (Glade coneflower)

Helianthus maximilianii (Maximilian sunflower)

Heliopsis helianthoides (False sunflower)

Heuchera richardsonii (Prairie alumroot)

Phlox paniculata (Garden phlox)

Polystichum acrostichoides (Christmas fern)

Ruellia humilis (Hairy wild petunia)

Rudbeckia fulgida (Orange coneflower)

Rudbeckia subtomentosa (Sweet coneflower)

Solidago caesia (Blue-stemed goldenrod)

Solidago nemoralis (Missouri goldenrod)

Medium Browse

Amorpha canescens (Leadplant)

Aster linariifolius (Stiff-leaved aster)

Aster novae-angliae (New England aster)

Aster turbinellus (Prairie aster)

Bignonia capreolata (Cross vine)

Boltonia asteroides (False aster)

Celastrus scandens (Bittersweet)

Dalea purpurea (Purple prairie clover)

Echinacea purpurea (Purple coneflower)

Helianthus occidentalis (Western sunflower)

Ilex verticillata (Winterberry holly)

Iris cristata (Dwarf crested iris)

Rudbeckia missouriensis (MO black-eyed Susan)

Solidago rigida (Stiff goldenrod)

Spigelia marilandica (Indian pink)

Tradescantia subaspera (Zigzag spiderwort)

Heavy Browse

Aronia melanocarpa (Black Chokeberry)

Campsis radicans (Trumpet creeper)

Coreopsis tripteris (Tall coreopsis)

Echinacea pallida (Pale purple coneflower)

Helianthus mollis (Ashy sunflower)

Hydrangea arborescens (Wild hydrangea)

Lespedeza capitata (Round-head bushclover)

Prunus americana (Ameran plum)

Ratibida pinnata (Grayhead coneflower)

Rosa species (Rose)

Silphium terebinthinaceum (Prairie dock)

Viburnum species (Viburnum)

Complete Browse

Callirhroe bushii (Bush's poppy mallow)

Ceanothus americanus (New Jersey tea)

Cephalanthus occidentalis (Buttonbush)

Echinacea paradoxa (Yellow coneflower)

Oenothera macrocarpa (MO eve. primrose)

Silphium integrefolium (Rosinweed)

Silphium laciniatum (Compass plant)

Tradescantia ohiensis (Ohio spiderwort)

Cornell University

Dr. Bridgen's List of

November 2015

Plants that Deer Do Not Like to Eat

		Genus	specific epithet	Common Name
Annual		Antirrhinum	majus	Snapdragon
Annual	*	*Asparagus*	*springerii*	Asparagus fern
Annual		*Begonia*	*sempervirens*	Wax Begonia
Annual	*	*Cleome*	*hasslerana*	Spider Flower
Annual	*	*Colocasia*	*esculenta*	Taro; Elephant Ear
Annual	*	*Datura, Brugmansia*	*spp.*	Angel's Trumpet
Annual		*Lobularia*	*maritima*	Sweet Alyssum
Annual	*	*Nicotiana*	*sylvestris*	Tobacco
Annual grass	*	*Pennisetum*	*setaceum 'Rubrum'*	Purple Fountain Grass
Annual		*Senecio*	*cineraria*	Dusty Miller
		Genus	**specific epithet**	**Common Name**
Woody Perennial	*	*Berberis*	*thunbergii*	Japanese Barberry
Woody Perennial	*	*Buddleia*	*davidii*	Butterfly Bush
Woody Perennial	*	*Buxus*	*microphylla*	Boxwood
Woody Perennial		*Cotoneaster*	*spp.*	Contoneaster
Woody Perennial	*	Cryptomeria	japonica	Japanese Cedar
Woody Perennial	*	*Juniperus*	*communis*	Common Juniper, 'Gold Cone'
Woody Perennial	*	*Juniperus*	*horizontalis*	Creeping Juniper
Woody Perennial	*	*Juniperus*	*procumbens*	Japanese Juniper
Woody Perennial	*	*Juniperus*	*scopulorum*	Skyrocket Juniper
Woody Perennial		*Leucothoe*	*fontanesiana*	Drooping Leucothoe
Woody Perennial	*	*x Mahoberberis*		cultivar: Dart's Treasure
Woody Perennial	*	*Mahonia*	*bealei*	Leatherleaf Grapeholly
Woody Perennial	*	*Myrica*	*pennsylvanica*	Northern Bayberry
Woody Perennial	*	*Osmanthus*	*heterophyllus variegatus*	Variegated False Holly
Woody Perennial	*	*Paeonia*	*suffruticosa*	Tree Peony
Woody Perennial	*	*Picea*	*abies*	Norway Spruce
Woody Perennial	*	*Picea*	*glauca*	White Spruce
Woody Perennial	*	*Picea*	*pungens glauca*	Colorado Blue Spruce
Woody Perennial	*	*Pieris*	*japonica*	Japanese Andromeda
Woody Perennial	*	*Platanus*	*occidentalis*	American Sycamore
Woody Perennial	*	*Potentilla*	*fruticosa*	Cinquefoil
Woody Perennial	*	*Skimmia*	*japonica*	Skimmia
Woody Perennial	*	Vitex	agnus-castus	Hemp Tree
		Genus	**specific epithet**	**Common Name**
Grass	*	*Hakonechloa*	*macra* 'Aureola'	Golden Variegated Hakonechloa
Grass	*	*Miscanthus*	*sinensis*	Chinese Silver Grass
Grass	*	*Panicum*	*virgatum*	Switch Grass
Grass	*	*Pennisetum*	*alopecuroides*	Perennial Fountain Grass
Grass	*	*Phalaris*	*arundinacea picta*	Ribbon Grass
Note:		*Probably ALL ornamental*	*grasses are not eaten by*	deer
		Genus	**specific epithet**	**Common Name**
Herbaceous Perennial		*Aconitum*	*napellus*	Monkshood
Herbaceous Perennial		*Aegopodium*	*podagraria 'Variegatum'*	Bishop's Goutweed
Herbaceous Perennial	*	*Agastache*	*foeniculum*	Anise-Hyssop
Herbaceous Perennial		*Allium*	*schoenoprasum*	Chives
Herbaceous Perennial	*	*Allium*	*tuberosum*	Garlic Chives
Herbaceous Perennial	*	*Amsonia*	*tabernaemontana*	Blue Stars
Herbaceous Perennial	*	*Artemesia*	*ludoviciana*	White Sage

* = *"95% Plant"*
Will not be touched by deer 95% of the time

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Cornell University Dr. Bridgen's List of **Plants that Deer Do Not Like to Eat** November 2015

		Genus	specific epithet	Common Name
Herbaceous Perennial	*	*Artemesia*	*schmidtiana*	Wormwood
Herbaceous Perennial	*	*Asclepias*	*tuberosa*	Butterfly Weed
Herbaceous Perennial	*	*Asclepias*	*syriaca*	Milkweed
Herbaceous Perennial		*Athyrium*	*nipponicum pictum*	Japanese Painted Fern
Herbaceous Perennial	*	*Calamintha*	*grandiflora*	Calamint
Herbaceous Perennial	*	*Carex*	spp.	Japanese Sedges
Herbaceous Perennial		*Cerastium*	*tomentosum*	Snow-in-Summer
Herbaceous Perennial		*Dicentra*	*eximia*	Fringed Bleeding Heart
Herbaceous Perennial		*Dicentra*	*spectabilis*	Bleeding Heart
Herbaceous Perennial	*	*Digitalis*	*purpurea*	Foxglove
Herbaceous Perennial	*	*Dryopteris*	*marginalis*	Wood Fern
Herbaceous Perennial		*Epimedium*	spp.	Barrenwort
Herbaceous Perennial	*	*Euphorbia*	spp.	Spurge
Herbaceous Perennial	*	*Fritillaria*	*imperialis*	Fritillaria
Herbaceous Perennial		*Galanthus*	*nivalis*	Snowdrops
Herbaceous Perennial	*	*Helleborus*	*foetidus*	Stinking Hellebore
Herbaceous Perennial	*	*Helleborus*	*orientalis*	Lenten Rose
Herbaceous Perennial		*Lamiastrum*	*galeobdolon* 'Variegatum'	Yellow Archangel
Herbaceous Perennial	*	*Lamium*	*maculatum*	Spotted Dead Nettle
Herbaceous Perennial	*	*Lavendula*	*angustifolia*	Lavender
Herbaceous Perennial		*Lespedeza*	*bicolor*	Bush Clover
Herbaceous Perennial	*	*Leucojum*	*vernum*	Spring Snowflake
Herbaceous Perennial	*	*Ligularia*	*dentata*	Ragwort
Herbaceous Perennial		*Lysimachia*	*nummularia*	Creeping Jenny; Moneywort
Herbaceous Perennial	*	*Marrubium*	*vulgare*	Horehound
Herbaceous Perennial	*	*Mazus*	*reptans*	Creeping Mazus
Herbaceous Perennial	*	*Melissa*	*officinalis aurea*	Lemon Balm
Herbaceous Perennial	*	*Mentha*	spp.	Mint
Herbaceous Perennial	*	*Narcissus*	*spp. and hybrids*	Daffodil
Herbaceous Perennial	*	*Nepeta*	*mussinii*	Catnip
Herbaceous Perennial	*	*Nepeta*	*x faassenii*	Catmint
Herbaceous Perennial	*	*Opuntia*	*humifusa*	Prickly Pear Cactus
Herbaceous Perennial	*	*Origanum*	*vulgare (marjorana)*	Oregano (Marjoram)
Herbaceous Perennial	*	*Pachysandra*	*procumbens*	Allegheny Spurge
Herbaceous Perennial	*	*Pachysandra*	*terminalis*	Pachysandra
Herbaceous Perennial	*	*Paeonia*	*hybrids*	Chinese Peony
Herbaceous Perennial	*	*Perovskia*	*atriplicifolia*	Russian Sage
Herbaceous Perennial		*Petasites*	*japonicus*	Japanese Butterbur
Herbaceous Perennial	*	*Podophyllum*	*peltatum*	Mayapple
Herbaceous Perennial		*Rheum*	*rhabarbarum*	Rhubarb
Herbaceous Perennial	*	*Ruta*	*graviolens*	Rue
Herbaceous Perennial	*	*Salvia*	*officinalis*	Sage (culinary)
Herbaceous Perennial	*	*Santolina*	*chamaecyparissus*	Lavender Cotton
Herbaceous Perennial	*	*Santolina*	*virens*	Green Lavender Cotton
Herbaceous Perennial	*	*Cytisus*	*scoparius*	Scotch Broom
Herbaceous Perennial	*	*Stachys*	*byzantina*	Lamb's Ear
Herbaceous Perennial	*	*Tanacetum*	*parthenium*	Feverfew
Herbaceous Perennial	*	*Teucrium*	*chamaedrys*	Germander
Herbaceous Perennial	*	*Thymus*	spp.	Thyme
Herbaceous Perennial	*	*Typha*	latifolia	Cattail
Herbaceous Perennial	*	*Verbascum*	*olympicum*	Mullein
Herbaceous Perennial	*	*Vinca*	*minor*	Periwinkle