JUNE **NEWSLETTER** 2021



OUR MISSION STATEMENT

Encourage, foster, support, and promote horticulture for all Master Gardener Volunteers and residents of Barron County and to promote the UW-Extension from which we are founded.

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BARRON COUNTY MASTER GARDENER VOLUNTEERS

This article from gardeners.com* reminds us that MOST BUGS ARE GOOD BUGS. (Gardeners.com uses only research based information for their articles.)

Most Garden Visitors – More Than 95% – Are Either Beneficial or Benign

An adult lacewing, left, and the larval form.

When you're deciding how to manage pests in your garden and landscape, keep this in mind: First, do no harm. The vast majority of garden visitors are either helpful or harmless. Get on a first-name basis with as many of them as possible.

Ladybugs, the darlings of the garden, are easy. What other insect do you see emblazoned on t-shirts, garden clogs and kids' pajamas? Sure, ladybugs are beneficial, eating the aphids that might otherwise overwhelm our plants, but if being beneficial is all it takes to become a garden icon, why don't we see parasitic wasps and spiders embroidered on kids' clothes, too?

Let's face it: Ladybugs are popular because they're cute. And we all know not to harm them when we see them on plants. But what most folks don't realize is it's their larvae that do most of the aphid-eating. Do you know what they look like?

Ladybug larva, are not

especially cute, but they are major aphid eaters. Don't squish these good guys.

How many ladybugs have had their lives cut short because gardeners thought the homely larvae were pests? The point: Learn to identify the insects and other creatures that inhabit your garden including all their life stages. (The other point: Beauty is only skin deep.)



Lacewing larvae won't win any beauty contests either, but they rival ladybug larvae in the aphideating department.

If you like butterflies (and who doesn't?) then you should know that their larvae are caterpillars. That means that any pesticides you apply to kill the caterpillar pests (like those cabbageworms eating your broccoli) will also kill butterfly larvae. Learn to identify pest caterpillars, including their eggs, and remember that you can manage many pest caterpillars by hand picking or using row covers to prevent adults from laying eggs in the first place. Use pesticides as a last resort — even organic ones.

If you love monarch butterflies, leave their larvae, right, to munch on milkweed.

If you want black swallowtail butterflies in your garden, share some of your dill, parsley and fennel with their larvae.

Upwards of 95 percent of creatures in our gardens are either beneficial or benign. They go about their business, which

may include eating other insects, breaking down organic matter and pollinating flowers.

The pest eaters: In addition to ladybugs, other beneficial insects that help control pest insects include dragonflies; parasitic (non-stinging) wasps; tachinid and syrphid flies; and the colorfully named damsel, assassin and big-eyed bugs.

melons blueb

The decomposers: These are the Rodney Dangerfields of the garden. They don't get no

Most Bugs are Good Bugs Continued . . .

respect. Centipedes, sowbugs and ground beetles break down organic matter, helping release the nutrients to garden plants, and keep us from becoming buried under mountains of fallen leaves.



The pollinators: Bees,

moths, butterflies, wasps and beetles all play a role in pollination. And a garden without pollination is a garden without pumpkins, squash, cucumbers,



Toads and spiders help keep insect pests under control.

melons, blueberries, apples and nuts, to name a few pollinator-dependent crops.

If you want pumpkins, make your garden



hospitable to pollinators, such as these bumblebees.

If you go out of your way to nurture and protect these harmless garden visitors, they'll return the favor by keeping pests

in check, pollinating your plants, and entertaining you with their activity.

More "Good Guys"

Be sure to welcome these pest-eaters to your garden:

- **Toads:** You'll have fewer slugs if toads are in residence.
- **Spiders:** Spiders control aphids, caterpillars and other insect pests.
- Bats: Most species consume huge numbers of insects every day, and others are important pollinators.
- Birds: Most backyard birds eat a combination of seeds, berries and insects. But in late spring and early summer, birds are busy filling the mouths of their hatchlings, and baby birds like nothing better than freshly caught bugs. Attempt to eradicate insects from your landscape means you'll see fewer birds.

Aphids

Karen Delahaut, UW-Madison Fresh Market Vegetable Program

Aphids are soft-bodied, sucking insects that are sometimes called plant lice. They feed on plant sap and subsequently excrete a sugary substance (called honeydew) that can attract ants as well as support the growth of a saprophytic fungus called sooty mold. There are several species of aphids (all of which belong to the insect

aphids have shortened their life cycle and increased their reproductive capability. Throughout the summer, wingless females predominate, but winged forms may arise when populations become too large for the available food source. In late summer, in response to the shortened day length, wingless females and males are

family Aphididae) that are capable of attacking any type of vegetation. Host plants for some aphids can be identified by a particular aphid's common name. The aphids that pose the most serious problem to Wisconsin vegetable production include the green peach, melon, potato and soybean aphids.

Appearance: All aphids

are soft-bodied and pear-shaped with a pair of cornicles (tailpipe-like structures) projecting from the rear end of their abdomen. Adult aphids may or may not be winged. Some of the more common species, along with their descriptions are listed in the table below.

Symptoms and Effects: Reduced plant vigor, stunting, and deformation of plant parts are common symptoms of aphid infestations. In some cases, the presence of honeydew or sooty mold is the primary indication of an aphid outbreak. In addition, aphids are excellent vectors of several virus diseases such as a group of mosaic viruses that infect a wide host range. In some cases, the appearance of virus symptoms indicates that aphids are present.

Life Cycle: Generalizing the life cycle of all aphids is difficult because of the diversity of their life habits ranging from single to multiple hosts. One of the unique characteristics of aphids that sets them apart from all other insects is their ability to bear live young. Aphids overwinter as eggs on a perennial host. In spring, the eggs hatch and the aphids migrate onto their summer host when available. These female aphids can reproduce without mating and hold eggs in their bodies to give birth to live young. By eliminating mating and egg-laying,



produced for the purpose of mating and laying of fertilized eggs that will survive adverse winter conditions. **Scouting Suggestions:** Look for "hot spots" of aphid activity scattered throughout the field. Because of the spotty nature of infestations, a number of plants in several areas should be examined for aphids.

Examine the terminals of 15 consecutive plants (or other sample unit) and rate the plants as infested or uninfested. Given the huge reproductive potential of aphids, an infestation level of 5 to 10% would indicate a potentially damaging infestation. Repeat checks at weekly intervals to determine the need to treat. Control

<u>Cultural:</u> Predators such as ladybird beetle adults and larvae, green lacewing larvae, syrphid fly larvae, and several parasitic wasps all help reduce aphid numbers when insecticides are not used. Heavy rains help dislodge aphids from the plant and, during periods of high humidity, fungal diseases may greatly reduce populations. The remarkable reproductive capacity of the aphid normally overcomes the effects of natural controls in spring when cool temperatures hinder the development of natural enemies. These natural controls are most effective in the warmer weather of summer and fall.

<u>Chemical:</u> Treat with an insecticide when threshold levels have been reached. Refer to UWEX publication A3422 "Commercial Vegetable Production in Wisconsin" for a list of recommended products

Aphids—Continued . . .

Keep in mind however, that green peach and melon aphids have shown resistance to several insecticides. In particular, resistance to organophosphate insecticides had been reported.

Common Name	Scientific Name	Description	Host Plant(s)
Bean Aphid	Aphis fabae	Dark green to sooty black	Artichoke, asparagus, bean, carrot, corn, let- tuce, parsnip, rhubarb, spinach, squash. Over- winters on Euonymous and Viburnum spp.
Cabbage Aphid	Brevicoryne brassicae	Gray-green with a powdery, waxy covering	Broccoli, Brussels, sprouts, cabbage, col- lards, kale, kohlrabi, and radish. Overwinters as eggs on host plants.
Corn leaf aphid	Rhopalosiphum maidis	Bluish-green	Corn. Does not overwin- ter in Wisconsin; mi- grates from the south.
Green peach aphid	Myzus persicae	Yellowish-green with three dark lines on their back.	Beet, celery, Cole crops, cucurbits. Lettuce, pep- per, potato, spinach, to- mato. Overwinters on cherry and peach
Melon aphid	Aphis gossypii	Pale yellow to brown or nearly black with black cornicles	Asparagus, bean, beet, celery, cucurbits, okra, spinach. Overwinters on many plants.
Pea aphid	Acyrthosiphon pisum	Pale green with black legs	Peas. Overwinters on alfalfa
Potato aphid	Macrosiphum euphorbiae	Pink or green	Asparagus, bean, corn, cucurbits, eggplant, let- tuce, pepper, potato, sweet potato, tomato. Overwinters on rose.
Soybean aphid	Aphis glycines	Light yellow	Cucurbits, beans. Overwinters on buckthorn

UW–Madison Arboretum

"Jumping Worm" – Amynthas spp.

Amynthas species, invasive earthworms from temperate regions of Asia, were found in limited areas near the Visitor Center in fall 2013. Com- monly called "jumping worms" or "crazy worms," Amynthas have since been found elsewhere in Wisconsin, primarily in urban areas.

Jumping worms have been in the eastern U.S. for decades. They alter soil structure and chemistry dramatically, leaving a distinctive grainy soil full of worm castings (feces), and they can damage forest understory habitat. They are significant-

ly more aggressive than European earthworm species. Their presence may facilitate spread of invasive plant species.

The worm can reproduce without mating during its active season. Populations grow rapidly, reach- ing peak abundance in late summer/early fall, and out-compete other species.

The Arboretum is facilitating much-needed research as well as public outreach and educa- tion. Staff are following DNR best management practices to limit spread of the worm.

Restricted Species

It is illegal to transport, transfer, or introduce *Amynthas* worms in Wisconsin without a permit. **Do not** buy or use jumping worms for composting, gardening, or bait. Jumping worms are restricted under Wisconsin DNR invasive species rule NR40.



Mature jumping worm, showing characteristic smooth light clitellum (band near the head or the worm).

Did You Know?

- All earthworms found today in Wisconsin's glaciated regions are non-native.
- Earthworms are especially harmful to forest ecosystems.
- People spread earthworms—by using them for bait and compost, or by unknowingly transporting worms or cocoons on shoes, wheels, mulch, or transplanted plants.
- Earthworms (e.g., bait) should not be discarded in or near natural areas—they should be put in the trash.
- Earthworms have been valued in yards and gardens, but in large numbers they harm beneficial soil life and plant growth. Jumping worms cause even greater damage in natural and cultivated environments.

Jumping Worms Continued . . .



Cocoons of Amynthas species can vary in size depending on species. (Photo: Marie Johnson)

What Can You Do?

Check your property for earthworms. A mustard pour is an easy way to sample for worms: www.nrri.umn.edu/worms/ research/ methods_worms.html

Learn to recognize the soil signature.

Be careful when sharing and moving plants—know where they came from and check for jumping worms. If you think you have them, don't transplant mulch, soil, or plants. Cocoons are hard to see—err on the side of caution.

Contain their spread—don't buy or use jumping worms for composting or bait.

If you suspect jumping worms, alert the DNR: Bernadette.Williams@wisconsin.gov

Suggested Reading

"Jumping Worms: The Creepy, Damaging Invasive You Don't Know," Matt Miller, Cool Green Science: blog.nature.org/science/2016/10/31/jumpingworm- the-creepy-damaging-invasive-you-don't-know/. Wisconsin DNR invasive species rule NR40: dnr.wi.gov/topic/Invasives/classification.html. Great Lakes Worm Watch: www.nrri.umn.edu/worms/

Questions?

Amynthas at the Arboretum: Brad Herrick, Ecologist, Bradley.herrick@wisc.edu. Outside the Arboretum: Bernadette Williams, Wisconsin DNR, Bernadette.Williams@wisconsin.gov



Soil infested by jumping worms (left side of Photo) is notably different than uninfested soil (right).

Identifying Adult Amynthas

You can help document the presence of jumping worms—and contain their spread. Here's what to look for:

Distinctive grainy soil full of worm castings

Very active (hence the "jumper" nickname), moves like a snake

Smooth, light-colored clitellum (the glan- dular band near the earthworm's head; in other species it is raised and pink, or a color similar to the worm.)

Can drop its tail if handled roughly

Jumping worms:

Can extend range by 12 m / year

Reproduce asexually (parthogenically)— and more rapidly than European species

Mature in about 60 days

Can grow up to 8 in. long, dep. on species

Cocoons are approx. 2 mm in diameter and similar in color to dirt

Cabbage Looper-Karen Delahaut, UW-Madison Fresh Market Vegetable Program

The cabbage looper (Trichoplusia ni) is a lepidopteran insect and an important pest of cole crops in Wisconsin. All cole crops, including cabbage, broccoli, Brussels sprouts, cauliflower, and rutabaga, are susceptible to attack by this insect. In addition, cabbage loopers will also attack beets, celery, lettuce, peas, potatoes, spinach and tomato.

Appearance: The cabbage looper is named for the way in which the caterpillar stage of the insect arches

its body while moving. When fully grown, the caterpillar has a greenish body that is 11/2 inches long and tapers near the head. There is a thin white line along each side of the caterpillar and two white lines along its back. The cabbage looper adult is greyishbrown, night-flying moth with a wingspan of 11/2 inches. The mottled brown forewings are marked near the middle with a small, silver-white figure "8: or letter "Y".

Symptoms and Effects: Cabbage looper larvae feed on cole crop leaves between the large veins and midribs. Feeding occurs primarily on the upper leaf surface near the midrib producing large, irregular holes. Severe feeding damage will stunt cabbage and cauliflower heads. Larval damage to the developing buds on young cabbages can cause heads to abort. Cabbage loopers can also bore into the heads of early cabbage and can result in heads that are unmarketable. Cabbage looper damage to root crops is generally of little economic importance. The copious quantity of greenish-brown frass (i.e., fecal material) produced by larvae can also be a problem as it contaminates heads and foliage.

<u>Life Cycle:</u> Adult cabbage loopers overwinter in the south and migrate into Wisconsin from mid-July through September. The female moths lay white eggs singly on the lower leaf surfaces in July. Four to five

weeks after hatching, the larvae pupate. Moths emerge 10 to 14 days later, mate, and lay eggs which give rise to a second generation. This generation causes the most damage to cole crops in Wisconsin.

<u>Scouting Suggestions:</u> Scout fields weekly throughout the season for damage. Check plants carefully, even if no feeding damage is apparent, to look for eggs that will hatch into small caterpillars several days to a week later. Examine the lower leaves of plants for the larvae

of each pest. Although feeding damage and fecal material are signs of activity, it's better to rely on larvae counts to determine the level of infestation. Caterpillars cause varying amounts of damage depending on the maturity of the plant, so the need for treatment changes as the crop grows. Keep a record of the life stage and

the percentage of plants infested. This information will be useful for monitoring whether the population is increasing or decreasing.

Treatment thresholds are well established and are based on the percent infestation by any lepidopteran species and varies based on the stage of crop development. Cabbage, broccoli, and cauliflower in the seed bed are particularly susceptible to damage and therefore when 10% of the plants are infested with cabbage loopers, diamondback moths or imported cabbageworms, control is warranted. For cabbage between transplant and cupping, the economic threshold (ET) is raised to 30%. Once the plants have begun to cup, until early heading, if greater than 20% of plants are infested, treatment is warranted. From early heading until harvest, the threshold drops back to 10% to protect the market quality of the produce. For broccoli and cauliflower between transplant and first flower or curd, the threshold is increased to 50%. However once



Cabbage Looper—Continued ...

Karen Delahaut, UW-Madison Fresh Market Vegetable Program

flowers or curds begin to develop, the economic threshold drops back to 10% to maintain a high level of quality.

Control

<u>Cultural:</u> Effective integrated pest management (IPM) programs for cabbage looper should be designed to prevent damage, encourage natural control, and avoid resistance. The use of transplants that are free of larval contamination is a key step in avoiding damage. Floating row covers can provide a physical barrier to cabbage loopers in small cole crop plantings. Natural controls are frequently quite effective in preventing buildups of cabbage looper populations.

<u>Chemical:</u> Bacillus thuringiensis var Kurstaki or Aisawai applied to early instar larvae can be very effective in controlling cabbage loopers. Chemical insecticides can also be effective in controlling caterpillar pests of cole crops. Refer to University of Wisconsin-Extension publication A3422 "Commercial Vegetable Production in Wisconsin" for specific insecticide recommendations. Target early instar larvae and insure good plant coverage to improve efficacy when using insecticides. Use pest- specific insecticides when cabbage loopers are prevalent so that natural enemies are conserved. Resistance is a key concern with all lepidopteran pests on cole crops.

Garlic Mustard—Lisa Johnson, Commercial Horticulture Agent, Milwaukee/Waukesha County

What is garlic mustard? Garlic mustard (Alliaria petiolata) is a European woodland plant introduced to North America by early settlers for its culinary and alleged medicinal qualities. In North America, European insects and diseases that control the plant's population are not present. Garlic mustard starts growing earlier in the season than our native plants, and outcompetes them. It also produces large quantities of seed. For these reasons, garlic mustard spreads rapidly in wooded areas, forming tall, dense stands that smother native wildflowers, and native tree and shrub seedlings. It can overrun a forest floor in a few years, destroying a previously healthy ecosystem by eliminating many plant species. In addition, animals, birds and insects that depended on a diversity of plant species for food and shelter can then no longer live in the infested area.

<u>What does garlic mustard look like?</u> Garlic mustard is a biennial plant with a two-year life cycle. The first year, it forms a rosette of round, scalloped-margined leaves that stay semi-evergreen through winter. The second year, it sends up a flower stem with triangular toothed leaves that bears tiny white flowers with four petals. The plant dies after producing long narrow seedpods. At ma-

turity, garlic mustard plants may be 3 to 4 ft. tall and bear up to 500 seeds per plant.

How can I control garlic mustard? Repeat any control method for several years since garlic mustard seeds can survive in the soil for up to 7 years. Hand-pull small infestations, but do not compost the plants because most compost piles do not get hot enough to kill the seeds. Dispose of pulled plants by burying deeply in an area that will not be disturbed, or landfilling. Call the Bureau of Endangered Resources at 608-266-7012 if you need permission to landfill garlic mustard. To burn collected plants, burn them while still moist, because dried garlic mustard seedpods can burst open and spread the seed. If you use an herbicide, spray early in spring or late in fall, because our native plants are dormant at these times, but garlic mustard is still green and vulnerable to sprays. A 1-2% solution of a glyphosate-containing herbicide is very effective. Glyphosate is a nonselective herbicide, so avoid spraying nontarget plants. Read and follow all label directions on the herbicide product. Encourage your community to scout for garlic mustard in your area and remove it, if found.

Gypsy Moth—R. Chris Williamson, UW Turf and Ornamental Specialist

The gypsy moth is native to Europe, Asia and North Africa. It was inadvertently introduced into North America in 1869 in a misguided attempt to breed a harand are frequently attached to houses, lawn furniture, mail boxes, rocks and trees. Often, egg masses are well hidden. Approximately one month after eggs are laid,

dy silkworm. Since that time, the gypsy moth has escalated into the most important insect pest of forest and shade trees in the eastern U.S. The gypsy moth caterpillar is the destructive life stage that defoliates entire trees and forests. Repeated defoliation often weakens trees resulting in greater susceptibility to disease and other insect pests. Gypsy



the tiny larvae are fully formed within the eggs and are ready to hatch. However, at this point, the larvae go into an overwinphase, shutting tering down metabolic activities and becoming insensitive to temperature. The larvae pass through the winter within the eggs. In the early spring, as temperatures increase, the larvae inside the eggs slowly be-

moth caterpillars can also be nuisance problems because they typically aggregate on the sides of buildings and homes, and produce large quantities of frass (i.e., fecal pellets) that fall from trees onto lawns and patios. Some people may experience an allergic reaction when they contact the many hairs covering the body of caterpillars.

Plants Attacked and Damage: Gypsy moth caterpillars have been reported to feed on over 600 species of trees and shrubs. Preferred hosts include aspen, birch, crabapple, hawthorn, linden, mountain ash, oak, sweet gum, and willow. Some deciduous trees (e.g., dogwood, green ash, honey locust, silver and red maple, tulip tree, and white ash) are resistant. Typically, most evergreen trees are also resistant. However, blue spruce and white pine are susceptible. Feeding damage frequently results in severe and/or complete defoliation; decreasing the energy reserves of the tree. On rare occasions, trees that are defoliated by gypsy moth are killed. More typically, trees recover and produce new leaves in July.

Life Cycle: The gypsy moth has four distinct developmental stages: egg, larva (caterpillar), pupa, and adult. Each life stage looks and behaves very differently. Adult females lay eggs in masses of up to 1000 or more in August. Egg masses can be attached to most any object

come more active, and in mid-May, as leaves expand, the eggs hatch.

Newly hatched caterpillars climb into tree canopies and begin feeding. If the first tree is not suitable, they will produce a silken thread that becomes caught in the wind and disperses them to a new host. This process is known as ballooning. Once larvae have completed ballooning, they begin feeding, and continue feeding for approximately five to six weeks. About once per week the larvae grow too large for their exoskeleton and molt. These molts separate the larval period into five or six stages called instars. Early larval instars (one through three) feed during the day. Once larvae reach the fourth instar, they begin feeding at night and hide beneath rough bark or in leaf litter during the day. Approximately 90% of the leaves consumed by larvae are eaten in the last two instars. After they have completed feeding, caterpillars enter the pupal life stage from which the adult moths emerge sometime in July. The adults are not damaging because they do not feed and only live long enough to mate and produce eggs.

For more information on gypsy moth: See UW-Extension bulletin A3597.

Gypsy Moth—WI Gypsy Moth Program

Gypsy Moth Aerial Spraying Update

<u>What:</u> Aerial spraying of BTK to treat for gypsy moth. <u>When:</u> Thursday, June 3, 2021 weather permitting.

Spraying can start as early as sunrise and continue until the day's plan is complete and as weather conditions allow. Aerial spraying requires calm winds, high humidity, and no precipitation. The yellow planes are loud and will fly low, just above the tree canopy. Pets or livestock may be frightened by the noise of the low-flying planes, so keep them indoors or monitor them.

<u>Where:</u> Select sites in Barron and Washburn counties. You can view a progress chart and maps of treatment sites at http:// gypsymoth.wi.gov.

<u>Why:</u> Treating for gypsy moth is necessary to control the spread of this destructive and invasive pest that feeds on the leaves of oaks,

maples, crabapple, birch, and many other species of trees and shrubs.

Plan details: The first BTK treatments will begin in the counties listed above covering five sites. Most sites will receive a second application of BTK about 7–10 days after the first application.

Product: Planes will apply Foray 48B, which is approved for use in certified organic production or food processing by the Organic Materials Review Institute. The insecticide contains Bacillus thuringiensis var. kurstaki or BTK. It is a naturally occurring soil bacterium that is poisonous to gypsy moth caterpillars when consumed. BTK breaks down in sunlight within a few days. Spraying does not affect organic certification. The insecticide is not toxic to people, bees, animals,

birds, or plants. People who have allergies may wish to stay indoors or leave the area until treatments are done.

More information:

To learn more about the Gypsy Moth Program, visit https://gmaerialspray.wi.gov or visit the gypsy moth portal at https://gypsymoth.wi.gov/.

To find out daily treatment plan updates, you can do any of the following:

• Call the toll-free hotline at (800) 642-MOTH (6684),

press 1 for a recorded message of the treatment plan for that day.

• Connect with us on Twitter (http://twitter.com/widatcp) or Facebook (http://www.facebook.com/widatcp).

• Subscribe to receive gypsy moth email updates at https:// service.govdelivery.com/accounts/ WIDATCP/subscriber/new.

program staff through any of the following:

- Call the toll-free hotline at (800) 642-MOTH (6684), press 2 to speak with someone at DATCP or stay on the line to leave a message. Please include your name, phone number, and county of residence in your message.
- Email gypsymoth@wisconsin.gov.

More information about Wisconsin's Gypsy Moth Program: https://gmaerialspray.wi.gov

Wisconsin Department of Agriculture, Trade and Consumer Protection

Division of Agricultural Resource Management | Bureau of Plant Industry https://datcp.wi.gov.



Plants not favored by deer

Laura G. Jull

n a matter of moments, a hungr deer can destroy a prized garden specimen, taking with it the time spent selecting, planting, and caring for the plant. This happens all too often in Wisconsin and is the result of an increasing deer population trying to survive in a shrinking natural habitat. As food becomes scarce-particularly in winter and early spring-deer seek out alternative food sources such as ornamental plants grown near woodlands. Feeding damage can kill young plants and permanently ruin the shape of mature plants.

How can you avoid deer browsing? If deer are hungry enough, they will eat almost anything. However, there are a number of woody and herbaceous plants that deer usually don't find appealing. Many of these plants are listed below, though this list is not definitive as deer preferences vary by region. Deer in your area may be attracted to some of the plants listed below and they may avoid some plants that aren't included here. The best long-term strategy may be to note which plants they seem to favor or avoid in your yard or neighborhood and plant accordingly. Remember, though, that in severe conditions all plants are vulnerable to deer browsing.

Deciduous trees

Alnus glutinosa (European black alder) Amelanchier x grandiflora (apple serviceberry) Betula nigra (river birch) Betula papyrifera (paper birch) Carpinus caroliniana (American hornbeam) *Catalpa speciosa* (northern catalpa) Cornus kousa (kousa dogwood) Cotinus obovatus (American smoketree) Crataegus spp. (hawthorn) Elaeagnus angustifolia (Russian olive) Fagus spp. (beech) Fraxinus americana (white ash) Fraxinus pennsylvanica (green ash) Ginkgo biloba (ginkgo) Gleditsia triacanthos var. inermis (thornless honeylocust)

Gymnocladus dioica (Kentucky coffeetree) Larix spp. (larch) *Liriodendron tulipifera* (tuliptree) Magnolia spp. (magnolia) Metasequoia glyptostroboides (dawn redwood) Nyssa sylvatica (black gum, tupelo, sour gum) Ostrya virginiana (American hophornbeam) Platanus occidentalis (American sycamore) Robinia pseudoacacia (black locust) Salix matsudana 'Tortuosa' (corkscrew willow) Sassafras albidum (sassafras) Sophora japonica (Japanese pagodatree) Stewartia pseudocamellia (Japanese stewartia) Syringa reticulata (Japanese tree lilac) Taxodium distichum (bald cypress)



Antler damage

Plantings are also vulnerable to damage caused in the fall by bucks rubbing their antlers along tree trunks and branches. This behavior strips off bark, creating large wounds on the plant where disease organisms can enter. Unfortunately, bucks seem to show no preference for plant species. To protect plants against this type of damage, fencing or repellents will be needed. See Extension publication *Controlling Deer Damage in Wisconsin* (G3083) for details.

A3727

Evergreens

Abies concolor (concolor fir, white fir) Juniperus chinensis (Chinese juniper) Juniperus communis (common juniper) Picea abies (Norway spruce) Picea glauca (white spruce) Picea pungens f. glauca

(Colorado blue spruce) Pinus mugo (mugo pine) Pinus nigra (Austrian pine) Pinus resinosa (red pine, Norway pine) Thuja plicata (western red-cedar)

Vines

Akebia quinata (fiveleaf akebia) Campsis radicans (trumpetcreeper) Celastrus scandens (American bittersweet) Lonicera sempervirens (trumpet honeysuckle) Parthenocissus quinquefolia (Virginia creeper) Parthenocissus tricuspidata (Boston ivy) Polygonum aubertii (silver lace vine) Wisteria macrostachys (Kentucky wisteria)



Shrubs

Abeliophyllum distichum (white forsythia) Berberis koreana (Korean barberry) Berberis thunbergii (Japanese barberry) Buddleja davidii (butterfly bush) Buxus microphylla var. koreana (Korean boxwood) Carvopteris x clandonensis (bluemist spirea) Clethra alnifolia (summersweet clethra) Calycanthus floridus (Carolina allspice) Chionanthus virginicus (fringetree) Cotinus coggygria (smokebush) Daphne x burkwoodii 'Carol Mackie' (Carol Mackie daphne) Dirca palustris (leatherwood) Forsythia spp. (forsythia) Hibiscus syriacus (Rose-of-Sharon) Ilex glabra (inkberry) Ilex verticillata (winterberry) Kerria japonica (Japanese kerria) Kolkwitzia amabilis (beautybush) Lindera benzoin (spicebush) Mahonia aquifolium (Oregon grapeholly) Myrica pensylvanica (northern bayberry) Pieris japonica (Japanese pieris) Potentilla fruticosa (potentilla) Rosa rugosa (rugosa rose) Shepherdia argentea (silver buffaloberry) Spiraea japonica (Japanese spirea) Symphoricarpos albus (common snowberry) Symphoricarpos orbiculatus

(Indiancurrant coralberry) Syringa vulgaris (common lilac) Vitex agnus-castus (chastetree)

Groundcovers

Aegopodium podagraria (goutweed, bishop's weed) Alchemilla mollis (lady's mantle) Ajuga reptans (ajuga, bugleweed) Arabis caucasica (rock cress) Asarum canadense (Canadian wildginger) Aubrieta deltoidea (false rock cress) Cerastium tomentosum (snow-in-the-summer) Convallaria majalis (lily-of-the-valley) Epimedium spp. (bishop's cap, barrenwort) Galium odoratum (sweet woodruff) Iberis sempervirens (evergreen candytuft) Juniperus spp. (juniper) Lamium maculatum (spotted dead nettle) *Liriope spicata* (creeping lily turf) Pachysandra terminalis (Japanese pachysandra) Potentilla tridentata (wineleaf cinquefoil) Vinca minor (periwinkle, myrtle) Waldsteinia fragarioides (barren strawberry) Waldsteinia ternata (Siberian barren strawberry)

Bulbs

Allium spp. (allium) Chionodoxa luciliae (glory-of-the-snow) Colchicum speciosum (autumn crocus, colchicum) Eranthis hyemalis (winter aconite) Fritillaria imperialis (crown imperial) Galanthus nivalis (common snowdrop) Leucojum vernum (spring snowflake) Muscari spp. (grape hyacinth) Narcissus spp. (daffodil) Puschkinia scilloides (striped squill) Scilla siberica (Siberian squill)

Herbaceous perennials

Achillea spp. (yarrow) Aconitum spp. (monkshood) Amsonia tabernaemontana (willow amsonia) Anaphalis triplinervis (pearly everlasting) Anchusa azurea (Italian bugloss) Anemone spp. (anemone) Anthemis tinctoria (hardy golden marguerite) Aquilegia spp. (columbine) Armeria maritima (sea thrift) Artemisia spp. (wormwood, artemisia) Asclepias tuberosa (butterfly weed) Astilbe spp. (astilbe) Baptisia spp. (false indigo) Bergenia cordifolia (bergenia) Boltonia asteroides (boltonia) Brunnera macrophylla (Siberian bugloss) Caltha palustris (marsh marigold) Centaurea spp. (cornflower, knapweed) Ceratostigma plumbaginoides (plumbago) Chelone lyonii (turtlehead) Cimicifuga racemosa (black snakeroot) Coreopsis spp. (coreopsis) Crocosmia x crocosmiiflora (crocosmia) Cynoglossum nervosum (hairy hound's tongue) Delphinium spp. (delphinium) Dianthus spp. (pinks) Dicentra spp. (bleeding heart) Dictamnus albus (gas plant) Digitalis spp. (foxglove, biennial) Dryopteris spp. (wood fern) Echinacea purpurea (purple coneflower) Echinops ritro (globe thistle) Erigeron x hybridus (fleabane daisy) Eupatorium purpureum (Joe-pye weed) Euphorbia spp. (spurge) Filipendula vulgaris (meadowsweet)

Gaillardia x grandiflora (blanketflower) Gentiana septemfida (crested gentian) Geum spp. (avens) *Gypsophila paniculata* (baby's breath) Helenium autumnale (sneezeweed) Helleborus spp. (hellebore) Heuchera spp. (coral bells) Hibiscus spp. (hibiscus, mallow) Hyacinthoides hispanica (Spanish bluebells) Hypericum spp. (St. Johnswort) Iris spp. (iris) Kniphofia spp. (red-hot poker) Lavandula angustifolia (lavender) Leucanthemum x superbum (shasta daisy) Liatris spicata (gayfeather) Ligularia spp. (ligularia) Linaria spp. (toad flax) Linum perenne (perennial flax) *Lupinus* spp. (lupine) Lychnis coronaria (rose campion) Lysimachia nummularia (creeping Jenny) Macleaya cordata (plume poppy) Matteuccia struthiopteris (ostrich fern) Mertensia virginica (Virginia bluebells) Monarda spp. (beebalm) Myosotis sylvatica (forget-me-not) Oenothera spp. (evening primrose) Papaver orientale (Oriental poppy) Penstemon spp. (beardtongue, penstemon) Perovskia atriplicifolia (Russian sage) Physostegia virginiana (obedient plant) Podophyllum peltatum (mayapple) Polemonium caeruleum (Jacob's ladder) Polygonatum spp. (Solomon's seal) Primula spp. (primrose) Pteridium aquilinum (bracken fern) Pulmonaria spp. (lungwort) Pulsatilla vulgaris (pasque flower) Rudbeckia fulgida (orange coneflower) Salvia x superba (perennial salvia) Saponaria ocymoides (rock soapwort) Scabiosa spp. (pincushion flower)

Sedum kamtschaticum (yellow stone crop)

Sempervivum tectorum (hen-and-chickens) Solidago spp. (goldenrod) Stachys byzantina (lamb's ear) Stokesia laevis (Stoke's aster) Tanacetum coccineum (painted daisy) Tiarella cordifolia (foamflower) Tradescantia virginiana (spiderwort) Valeriana officinalis (valerian) Veronica spp. (speedwell) Woodwardia areolata (chain fern)

Annuals

Ageratum houstonianum (ageratum) Amaranthus tricolor (Joseph's coat amaranth) Antirrhinum majus (snapdragon) Begonia semperflorens-cultorum hybrids (wax begonia) Brugmansia spp. (datura, angel's trumpet) Calendula officinalis (pot marigold) Capsicum annuum (ornamental pepper) Catharanthus roseus (periwinkle) Cleome hassleriana (spider flower) Cosmos bipinnatus (cosmos) *Cunoglossum amabile* (Chinese forget-me-not, biennial) Dahlia spp. (dahlia) Euphorbia marginata (snow-on-the-mountain) Gaillardia pulchella (blanket flower) Gomphrena globosa (globe amaranth) Helichrysum bracteatum (strawflower) Heliotropium arborescens (heliotrope) Hypoestes phyllostachya (polka-dot plant) Ipomoea alba (moonflower) Ipomoea purpurea (morning glory) Lantana spp. (lantana) Lobelia erinus (edging lobelia) Lobularia maritima (sweet alyssum) Matthiola incana (stock) Mirabilis jalapa (four o'clock)

Mimulus spp. (mimulus, monkey flower) Nierembergia hippomanica var. violacea (cupflower) Ricinus communis (castor bean) Salvia farinacea (blue salvia) Salvia viridis (painted salvia) Sanvitalia procumbens (creeping sanvitalia) Senecio cineraria (dusty miller) Tagetes patula (French marigold) Tagetes tenuifolia (signet marigold) Tithonia rotundifolia (tithonia) Tropaeolum majus (nasturtium) Verbena x hybrida (garden verbena) Zinnia angustifolia (narrowleaf zinnia) Zinnia elegans (zinnia)

Herbs

Allium spp. (chives) Anethum graveolens (dill) Angelica archangelica (angelica) Borago officinalis (borage) Foeniculum vulgare (fennel) Hyssopus officinalis (hyssop) Levisticum officinale (lovage) Marrubium vulgare (horehound) Matricaria recutita (chamomile) Melissa officinalis (lemon balm) Mentha x piperita (peppermint) Mentha spicata (spearmint) Nepeta x faassenii (catmint) Ocimum basilicum (sweet basil) Origanum vulgare (oregano) Perilla frutescens (perilla) Petroselinum crispum (parsley) Rosmarinus officinalis (rosemary) Ruta graveolens (common rue) Salvia officinalis (common sage) Sanguisorba spp. (burnet) Santolina chamaecyparissus (lavender cotton) Satureja montana (winter savory) Symphytum spp. (comfrey) Tanacetum parthenium (feverfew) Tanacetum vulgare (tansy) Teucrium chamaedrys (wall germander) Thymus spp. (thyme) Verbascum spp. (mullein)

Grasses

Calamagrostis x acutiflora 'Karl Foerster' (feather reed grass) Carex spp. (sedge) Chasmanthium latifolium (northern sea oats) Erianthus ravennae (tall ravenna grass) Festuca cinerea (blue fescue) Luzula nivea (snowy wood rush) Miscanthus sinensis (miscanthus, silver grass) Pennisetum alopecuroides (fountain grass) Sisyrinchium striatum (blue-eyed grass) Stipa pennata (feather grass)



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