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2020 has jumped the shark!

(Janna Beckerman, jbeckerm@purdue.edu)

A mild winter, followed by a brief warm-up, caused many plants to flower or leaf out before one last freeze. Unfortunately, that succulent new growth is much more susceptible to frost and freeze damage. Freeze injury in many plants will occur when the temperature falls below 32° F (0° C) and the water within the plant's cells freezes. The ice crystals that develop in the cells puncture the cells, killing them when the tissue warms up, and the cell's contents leak out. Symptoms of this type of damage include dark green and water-soaked leaves that later turn black as the tissues dies. The speed of this process has a great deal to do with how quickly the plant warms up. With our last two freezes, many people did not see significant damage until the second freeze event when even more susceptible tissue had emerged.

Some plants are better adapted to our challenging Midwest climate. Freeze damage is species and even tissue dependent—some plants will suffer significant damage to their appearance, whereas others are unaffected, or will only lose flowers or fruit. Some of the common landscape plants that are more susceptible to freeze damage include hydrangea, hardy kiwi, porcelain-berry, sumacs, walnuts, Japanese maple, and hosta. Lilacs, viburnums and magnolias will have flowers that turn brown and quickly drop. Other plants will have foliage that appears relatively unscathed, but will lose the developing fruit crop because the flowers were all killed. Homeowners should expect a lighter than usual crop of apples, pears, apricots, peaches, cherries, and plums, and if they have a crop, that the fruit may be russeted, cat-faced, or otherwise damaged from the freeze/frost events. Cane fruit, particularly blackberries, that fruit on old wood, are not expected to have a crop, unless they are primocane varieties that fruit on new wood. Raspberries would be

expected to produce a late season crop.



Fig 1 – Tiger-eye sumac freeze damage. Photo by Janna Beckerman.



Fig 2 – Frost damage on only leaf of a hosta. Photo by Janna Beckerman.

Grapes were also hit hard, but the possibility of producing a later, albeit lighter crop, remains. With grapes, each bud site possesses a secondary bud that will develop if the primary bud is killed. Although this will keep the plant alive, vines from secondary buds produce fewer fruit clusters resulting in a smaller crop. Thus, the grapes may look bad right now, but the possibility of a crop remains.



Fig 3 – Frost-killed apricot. Note unaffected leaves. Photo by Janna Beckerman.



Fig 4 – Freeze damaged grape. Note killed and unaffected leaves and fruit. Photo by Janna Beckerman.

If your plant was damaged earlier this month, don't worry too much: The prognosis for well-established plants is good, and they will eventually refoliate in the next few weeks. When temperatures warm up, an application of a well-balanced fertilizer will help, but isn't essential. Most trees, shrubs and perennials can obtain adequate nutrition from their surrounding landscape. Extra care should be taken to minimize the risk of other defoliation events, like those caused by disease or insect for the remainder of the season, but no other special treatment of the plant is needed.

For more information on the effect of cold weather on plants, see: <http://www.extension.purdue.edu/extmedia/HO/HO-203.html>

Oystershell scale may be killing tree and shrub branches in urban tree

plantings

(Cliff Sadof, csadof@purdue.edu)

Trees and shrubs can lose their leaves for many reasons. The maple tree in the cover photo is planted in a parking lot, and mulched incorrectly. The parking lot location gives the tree much less access to rainwater than a tree planted in a park-like pavement free location. Deep mulch piled like a volcano aggravates water problems because much of the rain will roll off rather than penetrate the soil at the tree base. Also, the base of the trunk is buried as if the tree has been planted too deeply. This can cause the tree to develop a second set of roots and wreak all sorts of havoc from girdling the trunk to making it even more difficult for a tree to get water from the soil. Scale insects can only make this tree's problems worse.



These maple twigs are encrusted with enough oystershell scales to kill a branch.

Oystershell scales are among the more common armored scales that attack trees and cause dieback. They can be easily identified by their oystershell shape. They feed on a wide variety of plants and shrubs, including maple, ash, dogwood, elms, and lilac. When they insert their long wiry stylet mouths into woody tissue to extract plant sap, they damage the vascular system and reduce production of new leaves on stems. Scale insects thrive when plants are stressed a lack of water and increased temperatures. Planting trees and improperly covering them in mulch can allow scales to rapidly build their number and outstrip the capacity of beneficial insects to control them.



Oystershell scales have a distinct shape. These scales winter as eggs that hatch into the crawling stage in late May when black locust is in bloom.

Oystershell scales can easily be recognized by the small, gray or brown oyster-like shells are present as bumps on branches and twigs. Unlike the closely related soft scales, these insects will be dry and not coated with a sticky liquid excrement. All life stages of this scale can be separated from the plant tissue by flipping them over with a fingernail. This flipping process will not rip the

plant surface. If you remove a bump on a plant and the tissue rips, this means the plant has produced a gall or swelling in response to an insect or disease.

Scales winter as eggs beneath the scale cover of a female. Eggs hatch into crawlers in May after black locust is in full bloom. This is the stage where scales move to different parts of the plant, or are blown in the wind to nearby trees or shrubs. Once feeding commences, these insects become flattened and clear and are known as settled crawlers. A second generation of crawlers is produced from late July to early August. Partial third generations occur in some years.



Dark colored electrical tape can be wrapped around a twig sticky side out is a great monitoring tool.

Now is a good time to monitor for periods of crawler activity by wrapping scale infested twigs or branches with a single band of clear sticky tape or dark electrical tape so the sticky side faces out. Crawlers that emerge from scales are easy to see when they get stuck in the glue. Scales in the crawler stage are easily killed by pesticides.

Consider pruning out heavily infested dying branches. Foliar sprays of pyriproxifen, buprofizen, neem oil, or azadirachtin can be quite effective against crawling and settled stages of scales with minimal impact on natural enemies that help control this pest.

Links.

General information about scale insects [How to fix problems with scale insects](#)

Information about other scale insects [Purdueplantdoctor.com](#)

Spotlight on Weeds: Prostrate Spurge (*Euphorbia humistrata*)

(Aaron Patton), (Leslie Beck) & (Kyle Daniel, daniel38@purdue.edu)

Biology: Prostrate Spurge (*Euphorbia humistrata*) is a summer annual broadleaf weed that can be found in dry/sandy and/or nutrient-poor soils along with compacted, weakened or disturbed turfgrass and landscape sites. Look for it first in driveways and sidewalks or in potted plants in a landscape or nursery as temperatures start to get warmer. Prostrate spurge can also be

found in cultivated fields, brick walls, and parking lot cracks. It germinates from seed in June and July in Indiana and spreads via low-growing prostrate stems than form a dense mat. Its ability to establish and grow in multiple soil/climate conditions and highly compacted soils, as well as its ability to withstand low mowing heights, make prostrate spurge a common weed throughout the state of Indiana.



Figure 1. Growth habit of prostrate spurge.

Identification: Prostrate spurge is a low-growing summer annual weed in Indiana. The plant is anchored by a central shallow taproot and, as suggested by its common name, it forms a ground-hugging mat with prostrate stems that grow outward. The plant produces these spreading stems along with viable seed very quickly, often within a couple of weeks after germination.



Figure 2. Growth habit of prostrate spurge.

The leaves of prostrate spurge are pale green, hairy, egg-shaped, widest at the apex, and located opposite of each other on the stems which are pinkish in color and distinctly hairy. Prostrate spurge continually flowers from July to September and produces large quantities of viable seed throughout its life cycle. These flowers are small but numerous, originate from the base of leaves located on the upper-stem, and are composed of several male and female flowers within a cluster. It produces a fruit that

consists of a 3-lobed, 3-seeded capsule with stiff hairs on its surface.



Figure 3. Pale green leaves of prostrate spurge.

Prostrate spurge is very difficult to distinguish from other spurge species, particularly spotted spurge (*Euphorbia maculata*). In fact, some taxonomists consider the two plants to be the same species. An identifying characteristic of both species is a small reddish-brown splotch at the mid-vein/base of the leaves which acts almost as a camouflage; thus, making the weed difficult to distinguish from the desired turf. The primary difference between these two species is that spotted spurge leaves are often darker in color and the nodes do not produce roots when they come into contact with the soil.



Figure 4. Flowers of prostrate spurge on the upper stem.

Additionally all spurges exude a milky/white sap when damaged that can be toxic to animals if ingested.



Figure 5. Spurge will exude a milky white sap when injured.

Cultural control: None known specifically for prostrate spurge. Proper turf management such as adequate mowing heights, irrigation, and fertilization will help to produce a dense, aggressive turf which is the greatest defense against invading weeds. Prostrate spurge also thrives in compacted soils; thus, soil cultivation (hollow-tine aeration) may aide in management of the weed. Due to its shallow taproot, prostrate spurge can often be hand pulled when populations are small enough; however, it is important to remove weeds as soon as possible due to its ability to produce copious amounts of viable seed very quickly after germination.

Biological control: None known specifically for prostrate spurge.

Chemical control: Control options for prostrate spurge can include both pre- and postemergence herbicides. Preemergence control can be achieved with spring applications of isoxaben (Gallery, Isoxaben) prior to germination in summer. Dinitroaniline herbicides (such as Barricade, Pendulum) can also be applied for prostrate spurge control though the results are often less consistent than applications of isoxaben.

Spurge can be controlled in the landscape with most postemergence herbicides, including contact and systemic herbicides. Typically glyphosate is used to control via postemergence application as a general weed management program.

Once spurge germinates, control in cool-season turf can be achieved with applications of two- or three-way mixtures of 2,4-D, dicamba, MCPP, or MCPA which are available in multiple product formulations at local retailers. Repeat applications may be necessary due to the germination of new seedlings.

Asian jumping worms: ID, impact, and prevention

(Elizabeth Barnes, barne175@purdue.edu)

Jumping worms (a.k.a. snake worms, crazy worms,

***Amyntas* spp.)**

While you're gardening in the coming weeks keep your eyes peeled for jumping, wriggling worms. Asian jumping worms are spreading in the Midwest and they can do serious damage to your yard.

Where are they from?

No one is sure exactly how jumping worms were introduced into North America but it's likely that they were brought over from Asia in soil used for potted plants, landscaping material, or agricultural material.

What do they do?

These worms are hungry and reproduce quickly! Unlike most other earthworms which prefer lower layers of soil, jumping worms prefer the top layer where organic material needed for plant growth is concentrated. They quickly eat the organic matter in the topsoil which makes it difficult for plants to grow and other soil animals to survive. In forests this change can greatly reduce the number of plants in the understory and in gardens or other maintained landscapes it can make it difficult to keep plants alive.



Sign of jumping worms: "Coffee ground" soil

- Grainy
- Little loose organic matter
- Small slightly compact pieces (worm castings)

Photo credit: Purdue Plant and Pest Diagnostic Laboratory



Uninvaded soil

- Higher ratio of organic matter to "sand"
- Loose organic matter
- No or few small compact pieces

Photo credit: Maria Barnes

What do they look like?

Jumping worms get their name from their distinctive behavior. As a defense against predators they thrash wildly and twist their bodies when touched. Jumping worms are shiny, slightly iridescent, and grey-brown rather than the duller red-brown seen in other earthworms. They have large bodies (4-8 in) with a milky-white ring around them. Even if you don't see one of these worms you might notice signs of their presence. Soil in heavily invaded areas takes on a distinctive grainy, coffee ground-like consistency.



Jumping worm (*Amyntas agrestis*)

- Thrash and twitch
- Shiny, slightly iridescent, and grey-brown
- Milky-white ring (clitellum)
- Mostly dry

Photo credit: Purdue Plant and Pest Diagnostic Laboratory



Common earthworm (*Lumbricus terrestris*)

- Wiggle gently
- Dull red-brown
- Red-ish ring (clitellum)
- Slimy

Photo credit: Joseph Berger, Bugwood.org

How do they spread?

Jumping worms are usually spread through the movement of soil, compost, and mulch as well as for fishing bait and for vermiculture. They can also be spread in dirt trapped in tractors and other machinery. Worms may be transported as adults or as small cocoons so it is easy to miss them.

What can you do?

Unfortunately, there is currently no good way to eradicate them. However, you can minimize their spread on your property and to other areas. Following these tips will reduce the chance of spreading jumping worms and their cocoons!

- Check any plants, soil, or compost you buy for worms before you use it.
- If possible, remove the soil from any plants you buy for your landscape and throw it away in a sealed plastic bag.
- If you have jumping worms on your property, avoid moving organic matter (like compost and soil) from invaded areas to new areas or running machinery through invaded areas.
- If you find any jumping worms, put them in a sealed bag and throw them in the trash. Do not put them back in your yard or compost pile.
- Clean dirt off any machinery before you move it to a new area.
- If you buy worms for fishing or vermiculture make sure they're not jumping worms (*Amyntas* spp.).
- Don't dump fishing bait or vermiculture worms on the ground when you're done with them. Put them in a sealed container or bag and throw them in the trash.

If you think you've seen this worm or any other invasive species, report it! Follow the steps we recommend on reportINvasive.com:

- [The GLEDN Phone App](#)
- [EDDMaps](#)
- 1-866 NO EXOTIC (1-866-663-9684)
- depp@dnr.IN.gov

Resources

[Video of a jumping worm](#)

[Illinois Jumping Worm Fact Sheet](#)

[Wisconsin DNR Jumping Worm Page](#)

[Cornell Extension Jumping Worm Page](#)

Image credit: Tina Reynolds on flickr

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