



Forest Leaves

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Spongy Moth: A Few Bad Years

Adapted from the PA DCNR Bureau of Forestry *Forest Focus* Newsletter, Fall 2023; (special thanks to Bureau of Forestry's Ryan Reed and Rosa Yoo for contributions)



Check out this issue's articles on spongy moths, predicted to be prevalent in many areas of Pennsylvania in 2024.

Photo by Jim Altemus.

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Unfortunately, 2024 is predicted to be another bad year for spongy moth (*Lymantria dispar*, formerly known as “gypsy moth”) defoliation. This will be the third consecutive year of heavy defoliation in Pennsylvania, with outbreak levels in 2022, 2023, and again predicted for 2024. These voracious caterpillars strip the leaf canopy in many areas of the state. Spongy moths are known to target oaks, and many stands of oak were hit hard. If you noticed some barren mountaintops that resembled more of a winter landscape during the summer months, you are not alone.

Will Defoliation Kill Trees?

When a tree is stripped of its leaves, it is known as defoliation. This condition weakens the tree as it uses up valuable reserves to regrow leaves. It is important to note that it’s too early to tell if a recently defoliated tree will die. “When spongy moth defoliation is combined with other stressors such as late frost and drought, trees have a more difficult time recovering. Trees that were heavily defoliated over the last two years are weakened and will be especially susceptible to mortality if heavily defoliated again this upcoming growing season,” said DCNR Bureau of Forestry Forest Health Division Chief, Rosa Yoo.

Don’t Wait Until Next Spring!

The best time to plan for spongy moth treatment is not while the damage is actively occurring, but rather in the prior fall or early winter. Successful treatment begins long in advance with egg mass surveying and planning during the preceding year. It’s already 2024, but you still may have a small window in which you can take action. When egg mass surveys reveal that the spongy moth population has

exceeded a certain threshold, treatment is recommended during the following spring. See *A Guide to Spongy Moth Egg Mass Surveying* on page 2 of this newsletter for more information.

Go with the Pros

The best way to treat for spongy moths in forested areas is via aerial application (helicopter or fixed-wing aircraft), targeting a specific stage in caterpillar development, so timing is critical to effectiveness. If your forest has been impacted heavily by spongy moth, you may wish to have your woodlot treated by professional pilots who use highly specialized equipment. Because of the costs involved in spraying, neighboring forest landowners with smaller acreages often try to pool together. You can find a list of aerial applicators at www.dcnr.pa.gov/Conservation/ForestsAndTrees/InsectsAndDiseases/SpongyMoth/Pages/default.aspx.

Individual tree treatment options are also available for trees in yards, parks, or along streets. Contact your local tree care professional for treatment options that work best for your situation.

Spongy Moth, continued on page 5



Spongy moth females laying their eggs. Photo by Jim Altemus.



PennState
College of Agricultural Sciences

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Guide to Spongy Moth Egg Mass Surveying

By Sarah Wurzbacher, Former Forestry Extension Educator, Penn State University

Systematically survey egg masses of spongy moth in fall and winter to assess the risk of damage in spring and decide whether aerially spraying control agents is worthwhile.

Lymantria dispar, commonly known as spongy moth (formerly “gypsy moth”), is an insect that can cause significant damage to trees when populations are high. During those times, the population and impact are not equally distributed across the state or region. It is important to keep an eye on the damage and evidence of insect activity that occurs locally in your forest.

Aerial spray programs may not be worthwhile where spongy moth populations and the level of damage are moderate to low. Deciding when conditions warrant the consideration of an aerial spray intervention can be tricky—how much is too much? This article discusses the threshold conditions when an aerial spray action might be beneficial to a forest parcel and how to assess those conditions in a systematic way. These protocols are used by the PA DCNR Bureau of Forestry Division of Forest Health, but they are relevant and usable for all forest landowners and managers in the region.

Estimating 2024’s potential spongy moth population in your area is done by focusing on the insect’s egg masses, from which the next year’s caterpillars will hatch. The key number that helps you make decisions about control options for 2024 is the number of egg masses per acre that you find in your forest in the fall/early winter, after 2023’s insects have finished egg laying. To determine the density of egg masses in a given parcel of forestland, you will need to visit a few locations in your forest where you will spot and count egg masses using a standard survey method. You can conduct an accurate survey anytime between late summer and early spring.

Here’s the step-by-step process:

Step 1: Choosing Where and How Much to Survey

Depending on the size of your forest, you may need to sample more or less intensively to get an accurate average egg mass density that is representative of the whole area. Most private forest landowners own less than 40 acres of land. For those folks, sample a minimum of two survey plots across the parcel.

Larger parcels of forestland will need more sampling. A 40 to 70-acre parcel should have a minimum of three plots. A 70 to 200-acre parcel should have four. For even larger parcels, add a minimum of one more survey plot for every additional 100 acres. You should err on the side of taking more survey plots than the minimum if you discover widely variable conditions, if your egg mass densities are close to decision-point thresholds, or if you suspect that spongy moth is likely to blow into your forest from a neighboring area.

When choosing spots to conduct your survey, try to distribute the plots throughout the tract and select locations that seem representative of the typical conditions in the area. For this survey procedure, instead of choosing a truly random location, it is best to center the plot on a tree that is a favorable host for spongy moth, like a mature oak. If oaks are not present, choose a black cherry, American beech, or aspen. You should also try to conduct your survey on a clear day when the sun is high in the sky so that you will be better able to see egg masses high in the forest canopy.

Use the buddy system when surveying. A partner is beneficial both for safety as well as to provide a second pair of eyes to help find egg masses.

Step 2: Survey the Plot

From the “center” tree you choose, search for and count all visible egg masses within a circular plot with a radius of 18.6 feet. This plot size is 1/40th of an acre.

It’s easiest to start by counting the egg masses located on your center tree. You’ll want to search for egg masses from the very bottom of the trunk all the way up into the canopy of the tree. Egg masses tend to be laid in sheltered locations, like the undersides of branches, but can be found anywhere in a tree. You’ll need



A typical spongy moth egg mass. Photo courtesy of Bugwood.org.

a pair of binoculars to see high into the canopy. When counting egg masses on a tree, be careful not to count the same egg mass more than once. It helps to scan the tree systematically—top to bottom or bottom to top—through your binoculars. For large trees, you may need to choose more than two vantage points to see all around the stem. Small to medium trees will usually only require examination from two opposed vantage points.

Survey other trees within the plot in the same way. The center of a tree should fall within the 18.6 foot radius to be included in the survey. Foresters often use a measuring tape called a logger’s tape for this, but you might find it easier to bring a length of rope that you measure in advance at 18.6 feet.

You should also look down and try to count egg masses that have been laid on objects on the ground, such as fallen branches and rocks. Sometimes you might need to move objects or leaf litter so that these surfaces can be seen. Snow can hide these egg masses if you are surveying in winter.

At this point, you should have a total number of egg masses that you counted within a 1/40th acre plot. To convert this observation to an estimate of egg masses per acre, you just need to scale up the measurement. Forty of your survey plots approximates one acre in size, so you need to multiply your count in the plot by 40. For example, if you found 25 egg masses on a 1/40th acre plot, you would calculate that:

$$25 \text{ egg masses per } 1/40 \text{ acre} \times 40 = 1,000 \text{ egg masses per acre}$$

This is your total egg mass density measurement for this survey plot.

Step 3: Calculate and Subtract the Ratio of Old Egg Masses

Spongy moth populations rise and fall in cycles. Egg masses from prior years may persist on trees, even though they are spent and no new insects will hatch out of them. These should not be included in your final egg mass density counts.

Up close, it’s easy to see which egg masses are new and which egg masses are from prior years. New egg masses feel hard and full when you press on them. They are usually darker in color and appear less ragged than old egg masses, which tend to feel soft and spongy.

Egg Mass Survey, continued on page 6

Make Like a Tree and Chill

By Jeff Osborne, Forest Stewardship Program Associate, James C. Finley Center for Private Forests at Penn State

As days shorten and temperatures drop in the temperate zones, many woody plants begin physiological changes to conserve energy and protect their above-ground cells from freeze injury. One very noticeable change is when deciduous trees drop their leaves. Trees also prepare for winter in more surreptitious ways. These include moving water into extra-cellular space and changing the chemical makeup of cellular fluid so that it freezes at a lower temperature, preventing cellular rupture during periods of extreme cold. The above-ground portions of plants generally exhibit more change and can withstand lower temperatures than the below-ground portions. Understanding a few aspects of the cold weather-induced changes can help you in a practical sense in the forest and on your homestead.

One concept that has been researched, although more heavily in orchard fruit trees than in forest trees, is chill hours. Deciduous trees begin a process of acclimatizing to winter in early autumn. This may be referred to as rest or dormancy. Many researchers break this into three periods: early-rest, winter-rest, and after-rest. During early-rest, plants prepare for colder temperatures. During the after-rest period, plants are waiting for warmer weather and longer days to spring forth and grow again. The exact physiological process of the stages of dormancy is still being researched. During winter-rest, deciduous trees in the temperate zone are accumulating “chill” hours. There have been different scales to enumerate chill hours, but generally every hour the stem



The above picture, taken in Centre County on December 18, 2023, shows a viburnum shrub that is flowering after a warm spell in late November. These flowers will die soon and not produce fruit. This shrub also has many dormant buds which may wait until spring to open.

spends above 35 degrees and below 45 degrees Fahrenheit equals one chill hour. Some plant species have minimum numbers of chill hours that must be reached before they can respond to warming temperatures. Ranges for chill hours required for different species and cultivars of those species have been determined by cutting twigs and then placing them in favorable bud break temperature, moisture, and light conditions. The number of chill hours is then determined from October 1 to the time the twig was cut by adding the number of hours the twig spent between

35 and 45 degrees Fahrenheit. Twigs cut from most apple trees in early November will not break bud, and few will break bud if cut from trees in December.

As of early January, most of Pennsylvania has accumulated 600-1000 chill hours. By the end of March, the state should have accumulated over 1400 chill hours, which is enough for most species with noted hour requirements.

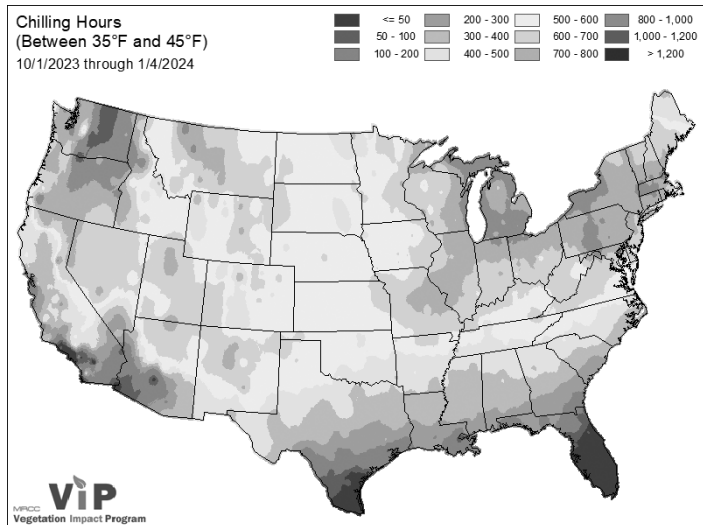
Many temperate forest trees require 1000-1500

chilling hours for normal bud-break and growth. If a tree with this requirement does not experience enough chill hours, it may have poor bud break, both vegetative and flower buds, and poor fruit production. There are apples which only require around 200 chill hours, such as granny smith, but most are only hardy from zone 6 and warmer. Practically speaking, chill hours shouldn't be much of a concern to your established trees and shrubs, as the minimums required are often exceeded during our normal winter weather. If you are attempting to start new plants by taking cuttings and growing them in a greenhouse, you should take your cuttings closer to spring to ensure those chill hour requirements have been met.

There has also been research on the lowest temperatures roots can sustain without dying. Many roots are killed at temperatures under 20 degrees Fahrenheit. Other species' roots can survive lower temperatures, like white spruce which can survive down to -10 degrees Fahrenheit. Temperatures low enough to kill roots are generally only experienced in the first couple inches of the soil. Root death due to cold is not a major concern with established trees but is a consideration if you have potted plants or newly planted small seedlings or smaller landscape plants.

Many seeds dropped in autumn are also dormant through the winter. There are several types of seed dormancy: seed coat, embryo, morphological, combined, double, and secondary dormancy. These are covered in more detail in the US Forest Service publication, *The Woody Plant Seed Manual* (available online at <https://nrgr.net/publications/wpsm>). Some of the required dormancy processes for many species are carried out over winter so they are ready to grow when the days are longer and temperatures are warmer. The woody plant seed manual covers dormancy requirements for many common woody species, so it is a great resource if you are trying to grow trees and shrubs from seed.

There are many research articles and Extension articles covering these topics. So as the winter weather forces you to stay off the roads and stay warm inside—make like a tree and chill—you can take this time to learn more about your favorite species and how they react to and try to remain competitive despite freezing weather and darker days.



As shown on this map, most of Pennsylvania has accumulated 600-1000 chill hours through early January 2024.

Map courtesy of Midwestern Regional Climate Center.

SFI® Releases New Urban and Community Forest Sustainability Standard

By Chuck Coup, PA SFI Implementation Committee Program Manager

The Sustainable Forestry Initiative (SFI) launched its New SFI Urban and Community Forest Sustainability Standard in 2023 and recognized the contributions of its partners in the standard development process during the International Society of Arboriculture 2023 Annual International Conference last August.

“This marks a new and important chapter in SFI’s mission to advance sustainability through forest-focused collaboration,” said Kathy Abusow, President and CEO of SFI. “Finally, a standard exists for urban and community forests, and we have an opportunity to make a difference for millions of people across North America, and potentially globally.”

More than two years ago, SFI and its partners—American Forests, Arbor Day Foundation, the International Society of Arboriculture (ISA), the Society of Municipal Arborists, and Tree Canada—saw a need and an opportunity to provide leadership in urban and community forestry and raise the profile of their importance as green infrastructure and nature-based solutions to human health, disparity, and environmental sustainability. The new SFI Urban and Community Forest Sustainability Standard will contribute to the resiliency and sustainability of communities, large and small, using trees and forests as natural solutions to improve community health and address the challenge of climate change.

The new SFI Standard is appropriate for organizations that own, manage, or are responsible for urban and community forests. SFI and its partners look forward to raising awareness and promoting the

new SFI Standard to achieve certifications among government organizations (municipalities, counties, states, provinces), Indigenous Peoples, community groups, healthcare organizations, universities, corporate campuses, and many others.

Urban forests provide many social and economic benefits, including improved health and well-being, social cohesion and accessibility, outdoor learning environments, reduced air pollution, and improved urban design. They are also critical for climate change resilience and to promote nature-based solutions. Considering the value of the benefits and how many people around the world live in cities and towns, maintaining the vitality of these resources is essential.

The standard development process included two public comment periods, multiple pilots, and a “red team” review by an external group of experts. Thank you to our partners—American Forests, Arbor Day Foundation, the International Society of Arboriculture, the Society of Municipal Arborists, and Tree Canada—as well as the SFI Urban and Community Forest Sustainability Standard Development Task Group, who collaborated to develop the Standard.

“Trees are key to healthier, happier, safer communities, and standards are key to more sustainable urban forests. This is an inflection point in urban and community forestry. It has been an honor to be a part of developing this new tool,” said Paul Johnson, Senior Director, Urban and Community Forest, SFI.

Quick Facts

- Forest certification has existed for decades; however, a standard has not

yet existed for urban and community forests.

- Standards and their associated certifications are effective at increasing engagement and improving performance. They are sector-developed guidelines for the appropriate planning, management, and care of a resource and their associated benefits and risks. Standards do not merely provide a roadmap to sustainable management; they also allow organizations to prove their efforts through third-party certification.
- The SFI Urban and Community Forest Sustainability Standard promotes sustainable urban and community forests based on 16 objectives.
- Organizations from all facets of the urban and community forest sector may seek certification, including governmental organizations (i.e., municipalities, counties, states, provinces), non-governmental organizations, Indigenous Peoples, community groups, healthcare organizations, educational organizations, corporate organizations, and others.
- Urban forests increase our quality of life by promoting mental well-being and encouraging physical activity. They reduce air pollution, cool temperatures in the summer, and protect biodiversity. More than 80% of Americans and Canadians live in cities.

For more information about the PA SFI® Implementation Committee, visit their website at www.sfiopa.org or call 888-734-9366.

What our partners are saying...

“As the global credentialing organization for arborists and urban foresters, we understand the importance and value of this new standard. Standards and their associated certifications are effective at increasing engagement and improving performance. ISA certification and qualification holders will be key subject matter experts for the organizations looking to achieve this new SFI Urban and Community Forest Sustainability Standard.”

- Caitlyn Pollihan, CEO and Executive Director, ISA

“The new SFI Urban and Community Forest Sustainability Standard is a great complement to the Arbor Day Foundation’s Tree City USA program as it inspires continued growth, sophistication, and management of trees in

our cities and towns. Urban forests provide countless social, economic and environmental benefits for communities, and maintaining the vitality of these resources is essential.”

- Dan Lambe, President, Arbor Day Foundation

“This new standard recognizes the tremendous value urban and community forests have in storing carbon, abating stormwater, filtering air and water, providing wildlife habitat, and creating jobs. Our urban forests not only contribute to local economies, they’re critical infrastructure to mitigate climate change, improve quality of life, cool cities, and save lives. By providing a standard that gives benchmarks and guideposts, any best practices brought forward will benefit all urban forests consistently, fortifying the health

and resilience of urban and community tree canopy into the future.”

- Jad Daley, President and CEO, American Forests

“The Society of Municipal Arborists, as the professional membership association for the people who make or support daily tree planting and care decisions in communities, is thrilled to support SFI’s new Urban and Community Forestry Sustainability Standard. Our members are on the front lines of urban forestry work and every day, their decisions impact millions of trees and people. The SFI Standard will take their work to new heights while also providing an opportunity to acknowledge the amazing work being done.”

- Leslie Berckes, Executive Director, Society of Municipal Arborists

Pennsylvania Forestry Association: Events and Programs Update

By Matt Sampson, Pennsylvania Forestry Association President

The 137th PA Forestry Association (PFA) Annual Symposium was held on November 4. During the event our 2023 PFA awards were announced as follows:

- Joseph T. Rothrock Conservationist of the Year Award: Pennsylvania DCNR Bureau of Forestry.
 - Sandy Cochran Award for Excellence in Natural Resources Education: Pam Ulciny.
 - Mira Lloyd Dock Outstanding Woman Conservationist Award: Nancy Baker.
- 2023 was a busy year for PFA. In addition to our regularly scheduled meetings, banquet, and symposium, PFA had a presence at the PA Timber Show, Ag Progress Days, Forest Landowners Conference, PA Farm Show, State College Fall Fest, and Grey Towers Society of American Foresters Conference.

Key events for 2024 include:

- Pennsylvania Farm Show: January 6-13.
- Conservation Fundraiser Banquet: March 2, Ramada Inn, State College, PA. Every year we look forward to holding this event! Join us for an evening of games, drawings, auction items, a buffet dinner, and a chance at winning \$10,000. Only 350 tickets at \$100 each are sold for the \$10,000 drawing. Tickets go fast, so contact the PFA office at 800-835-8065 for availability.
- PFA Annual Tree Planting Rambles: April 19-20.
- Ag Progress Days: August 13-15.
- 8th Annual Log-A-Load for Kids Charity Shoot: October 4. This is a fun sporting clays event that has raised over \$35,000 for PA children's hospitals.

- Walk In Penn's Woods: October 6. Host a walk or join an organized walk at one of the dozens of sites across the state!
- Annual PFA Symposium and Awards Event: November 16. The date has been set, and the theme will be determined in the coming months.

Keep an eye out for more details on all PFA events and activities in the *Pennsylvania Forests* magazine, on Facebook, and on the PFA website.

In closing, PFA welcomes new board members Sarah Wurzbacher, Michael Barton, Guy Dunkle, and Alex Storm.

For more information about PFA, visit their website at www.paforestry.org or call 800-835-8065.

Pennsylvania Tree Farm: Why Should I Be a Tree Farmer?

By Susan Benedict, PA Tree Farm Committee Chair

I frequently get asked the question, "Why should I be a Tree Farmer?"

To my mind, there are several good reasons. This is my list:

I get advocacy for my Tree Farm issues on a national level. The American Tree Farm system is part of the American Forest Foundation. Their advocacy of forestry issues is unparalleled at the national level. I know this because I used to be part of their National Public Affairs Committee and saw firsthand how effective their advocacy is and how it translates to actual legislative successes for forestry issues.

I get a membership to the Pennsylvania Forestry Association (PFA). PFA is a dynamic active association which provides benefits like answers to my forestry

questions, contacts to consulting foresters and other forestry professionals, and a top-notch magazine with articles pertaining to issues or questions I have about my land.

I can get help to find a consulting forester or to contact a PA service forester to help me design a forest management plan that reflects my goals and objectives for my property. A plan is important to help guide work I want to do to improve my land.

I get regular inspections of my tree farm, which helps me ensure that I am meeting my plan goals with best management practices.

I belong to a community of like-minded individuals who are willing to help me if I have questions.

Finally, when dealing with forestry and other natural resources professionals, being part of the Tree Farm System helps them to understand that I have a tree farm plan with goals and objectives that are important to me and guided by best management practices. If they make proposals to me for using my land, they know they must work within my plan. This is very helpful in any negotiations I may have with logging, wind, solar, carbon offset, or natural gas companies about land utilization.

For more information about the PA Tree Farm program, visit their webpage at www.paforestry.org/treefarm.

Spongy Moth, continued from page 1

What Has DCNR Done to Combat the Problem?

In the spring of 2023, the DCNR Bureau of Forestry sprayed over 290,000 acres of state forest, state park, and national forest lands in Pennsylvania. This total represents one of the largest suppression programs in recent history. Also in 2023, the Pennsylvania Game Commission joined DCNR in the effort to control spongy moths by spraying over 100,000 acres of state game lands.

In another positive development, the DCNR Bureau of Forestry Division of Forest

Health managers noticed a substantial uptick in private land spraying in 2023, demonstrating the power of the private sector in the total effort to control spongy moths.

Private Forest Landowners Can Help Control Spongy Moths

Pennsylvania is blessed with roughly 17 million acres of forest lands. Of this total, only about 30 percent is publicly owned. As caretakers of 70 percent of Penn's Woods, private landowners can claim an important role in helping to manage the spongy moth population.

The DCNR Bureau of Forestry offers spongy moth management information for concerned forest landowners and can even visit your property to advise. To arrange for a site visit, please contact your county service forester. You can find your county service forester and more at www.dcnr.pa.gov/Conservation/ForestsAndTrees/ManagingYourWoods/Pages/default.aspx.

Read the full article at elibrary.dcnr.pa.gov/GetDocument?docId=7868320&DocName=What Can We Do About Spongy Moth Forest Focus Fall 2023.pdf.

At the Finley Center: Looking Ahead for 2024

By Allyson Muth, Director, James C. Finley Center for Private Forests at Penn State

Happy New Year to you all!

At the Finley Center, our small staff use the end of the year to wrap up projects, finish out reports, and eventually take a pause to rest, regroup, and prepare for the year ahead. With the new year upon us, we are looking to two big efforts that we are excited to share more about.

We've been teasing the results of the recent Forest Landowners Survey for a while now and will soon be starting a series of presentations and workshops to share what we learned.

We used a different sampling methodology this iteration, in hopes of being able to look more closely at the values landowners hold for their land and the actions they undertake when things may be limited by parcel size and access to resources. We divided our landowner population into four quantiles, based on property size and numbers of landowners, so that we could look at different ways property size may influence how landowners view and care for their woods.

Estimates of the numbers of forest landowners in Pennsylvania vary between half a million (USDA Forest Service) and three-quarters of a million (past studies conducted by Penn State), but somewhere



THE JAMES C. FINLEY CENTER FOR PRIVATE FORESTS

between 60 and 70% of those ownerships are held in properties less than 10 acres in size. With federal cost share monies being limited to properties of 10 acres and up, we wanted to better understand how owners of smaller properties were addressing stewardship of their forests. Where access to resources, like cost share, becomes more readily available, we wanted to understand how landowners of larger properties were caring for their land in small- and large-scale ways. As we further parse the data and look at the differences, we know that landowners care a lot about their land and want to do things that will leave it in good condition. Access to resources will always be challenged by sheer numbers of landowners who want to have help and those available to offer it. Our hope is that this research will help professionals and agencies guide ap-

proaches to education and access so that landowners seeking to care well for their woods can find the resources they need to do so. Stay tuned.

Regular readers of *Forest Leaves* frequently see news about the Pennsylvania Forest Stewards volunteer program (with many of you being members). In 2024, the PA Forest Stewards are continuing a “futuring” effort to assess where we've been, benchmark our volunteer program against others, and consider ways to scaffold a strong program for the 21st Century, further strengthening the volunteer corps to support expansion of landowner education and engagement. A small committee of committed volunteers are collecting information and conducting interviews to lay the foundation of understanding from which we can assess and revamp, and we look forward to sharing with you the new opportunities this assessment will provide.

We hope the holiday season was a time of joy, health, and rest for you all, and that you're looking ahead to what a new year can bring for you and the woods you care about. Thanks for being a loyal reader of *Forest Leaves* and thanks for your support of our efforts.

Egg Mass Survey, *continued from page 2*

However, these differences are hard to see in high locations or through binoculars. Therefore, we'll use an estimate from a small, up-close area of what proportion of visible egg masses are “old” and adjust our total counts based on that ratio.

For example, let's say you arrive at a survey location where you start by counting all egg masses on the bottom three feet of a tree trunk. You count 10 egg masses but find that two of them are powdery and fragile, evidencing that they are from last year and should not be included in the count. At this spot, you would calculate the proportion of old egg masses this way:

$$(2 \text{ old egg masses} / 10 \text{ total egg masses}) \times 100\% = 20\% \text{ old egg masses}$$

In this scenario, you would assume that 20% of the total egg masses you count are from a prior year and should eventually be subtracted from your total. Only the corresponding 80% are new egg masses worthy of counting.

Let's take our prior example. We counted a total egg mass density of 1,000

egg masses per acre. If 20% of these are assumed to be old egg masses, our true density of new egg masses is actually only 80% of the total we counted, or 800 egg masses per acre.

This density measurement, which incorporates the plot count, plot size, and new-to-old egg mass ratio, gives you a final, accurate number that you can use to make decisions.

Step 4: Making Decisions from Data

At the end of your survey, you should have egg mass density estimates for a number of survey locations in your forest. Consider the average and the spread of these numbers and compare them to the threshold densities used by many forest managers to help decide when conditions warrant aerial spray control. Be aware, these “spray thresholds” are helpful in framing your decision about when a spray application might be beneficial but are not hard-and-fast rules; also consider your level of risk acceptance and other factors.

Data from the US Forest Service show a clear relationship between the density

of egg masses and increasing damage to trees, measured by defoliation. We can use this information when we decide what level of damage we hope to prevent and what corresponding egg mass density triggers the need for treatment.

If your goal is to prevent noticeable defoliation, around 30%, treatment should be considered when you count between 500 and 750 egg masses per acre. If you hope to prevent loss of tree growth, which occurs above 40% defoliation, the threshold for treatment might be 700 to 900 egg masses per acre. If mortality, or the death of trees, is the main concern, consider a threshold of 1000 to 1400 egg masses per acre. Err on the lower side of these ranges or define your own lower density threshold value if your forest contains a lot of oaks, if the stand has experienced significant stress or a harvest in the last five years, if unusually high-value or specimen trees are involved, or if you are risk-averse.

Go to <https://extension.psu.edu/guide-to-gypsy-moth-egg-mass-surveying> for the full article.



Upcoming PA Forests Webinars



PA FORESTS WEB SEMINAR CENTER

<https://extension.psu.edu>

The Pennsylvania Forests Online Web Seminar series is held September through June on the second Tuesday of each month, at 12 p.m. and 7 p.m. Webinar topics are geared toward private forest landowners as well as the general public. Webinars are free; registration is required.

Upcoming webinar topics:

February 13, 12 p.m. and 7 p.m.:

Seeing Forests 360 degrees (<https://extension.psu.edu/pennsylvania-forest-seminar-seeing-forests-360-degrees>)

March 5 (date change!), 12 p.m. and 7 p.m.:

Lumber History: Women in Forestry

April 9, 12 p.m. and 7 p.m.:

Introduction to Working Buffers You Can Eat! (<https://extension.psu.edu/pennsylvania-forest-seminar-introduction-to-working-buffers-you-can-eat>)

Woods and Wildlife News and Notes: The Latest News from the Forestry and Wildlife Extension Team

Penn State Extension's team of Forestry and Wildlife experts publishes an e-newsletter, *Woods and Wildlife News and Notes*, containing the most recent information, events, demonstrations, partnerships, and activities coming from the team. *Forest Leaves* shares the titles and thumbnails of these articles with you each quarter.

If you want to check out any of these articles, it's easy! Go to <https://extension.psu.edu> and type the article title in the search bar.

Forest Snapshot

This bi-monthly article is a collection of forest health observations, plant and animal phenology, important upcoming dates, and hunting season changes.

Wildlife Conservation History in Pennsylvania: Part 1

The history of wildlife conservation in Pennsylvania is a tale of abundance, exploitation, and restoration. This video covers from European settlement to the end of the 19th century.

Chronic Wasting Disease Update for White-tailed Deer Hunters and Landowners

Chronic Wasting Disease is a serious threat to white-tailed deer. Hunters and landowners must respond to recommendations for reducing the spread of the disease and protecting themselves.

Black Bears

Black bears are the smallest and most common of the three bear species found in North America, and the only species found in Pennsylvania.

Wildlife Conservation History in Pennsylvania: Part 2

The history of wildlife conservation in Pennsylvania is filled with courage and

devotion. This video covers 20th century progress to restore and protect both habitat and wildlife.

Seed Selection for Planting Resilient Forests

Planting of seedlings to restore, reforest, and supplement natural regeneration, is likely to continue to increase in importance in our region as a management strategy to ensure forest health and productivity now and in the future. As any experienced forester or landowner will attest, choosing the appropriate seed sources is extremely important. A seed source that is genetically well adapted to the planting site's climate and environmental conditions is critical to ensure planting success and future forest productivity.

Above a Pennsylvania Hawk Watch

Above a Pennsylvania hawk watch on Stone Mountain, the global saga of fall migration is played out each year. Explore migrating raptors and the wonders of a hawk watch in this video.

Forest Stream Origins

The origins of forest streams are often misunderstood. They involve subsurface conditions, slope, trees, precipitation, snow melt, runoff, and groundwater.

Requesting the *Woods and Wildlife News and Notes* newsletter's delivery to your personal inbox involves the same opt-in process you may have already used to communicate your areas of interest among the full suite of Penn State Extension offerings. To make sure you are on the distribution list, visit the Penn State Extension website to manage your email preferences (<https://extension.psu.edu/forestry-team-sign-up>), and select any of the "Forest and Wildlife" topic areas of interest.

FOREST LEAVES Winter 2024

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Calendar contributions and news items are welcome. Submissions for the next hardcopy issue of *Forest Leaves* are due:

March 1, 2024

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- PA DCNR Bureau of Forestry www.dcnr.pa.gov/about/Pages/Forestry.aspx
- The PA Tree Farm® Program www.paforestry.org/treefarm
- The PA Forestry Association www.paforestry.org
- The PA SFI Implementation Committee www.sfiopa.org
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- The James C. Finley Center for Private Forests ecosystems.psu.edu/research/centers/private-forests
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and contributions! Send them to
the address shown above.

NEXT DEADLINE:
March 1, 2024

Regional Forest Landowner Conferences Happening in February and March 2024

Here are three forest landowner conferences taking place in various regions of Pennsylvania during the coming weeks. These are excellent opportunities to connect with others and learn more about caring for your woods.

Clarion Woodland Owners Conference
February 10, 8:45 AM - 12:00 PM
PennWest University Grunenwald Science
and Technology Center
80 Greenville Avenue, Clarion PA 16214

This conference will help you make sustainable management decisions for your forestland so that a healthy and diverse forest remains for many years to come. Topics covered include how to attract more birds to your woods, effects tree defects have on lumber, invasive species control, and current chronic wasting disease information. See the full agenda and register at: <https://extension.psu.edu/woodland-owners-conference> by February 2 if you plan to attend. Space is limited; early registration is encouraged.

Woodland Owners of the Southern Alleghenies (WOSA) Annual Conference: Goods from the Woods

Saturday, March 9, 8:30 AM - 4:30 PM
Bedford American Legion
3721 US 220 Business, Bedford PA 15522

Keynote Speaker Seth Cassell, Pennsylvania State Forester and Director of PA DCNR Bureau of Forestry, will share at this event. Tentative topics include: Growing Ramps, Foraging for Wild Mushrooms, Growing Pawpaws, and more. There will also be a chainsaw raffle, silent auction, door prizes and vendors. Find information at <http://www.thewosa.org>.

12th Annual Dauphin County WOA Woodland Owners Conference

Saturday, March 16
Dauphin County Agriculture &
Natural Resources Center
1451 Peters Mountain Road
Dauphin PA 17018

Save the date for this full day conference. Details will be posted on the Dauphin County Woodland Owners Association website: <https://dcwoa.org>.

Forest Leaves Calendar of Events

Tuesdays-Saturdays, until March 23.
Saturday, February 10. Butterflies and Moths Collections at the Ned Smith Center for Nature and Art, Olewine Gallery. www.nedsmithcenter.org.

Saturday, February 10. Clarion Woodland Owners Conference (see left).

Saturday, March 2, 3-10 PM. PFA 2024 Conservation Banquet. Ramada Inn and Conference Center, State College, PA. Tickets required. 800-835-8065.

Saturday, March 9. Woodland Owners of the Southern Alleghenies Annual Conference (see left).

Saturday, March 16. Dauphin County Woodland Owners Association Annual Conference (see left).

For the most up-to-date listing, visit ecosystems.psu.edu/research/centers/private-forests/events. If you have an event to share, send information to Jeff Osborne, jao5194@psu.edu.