

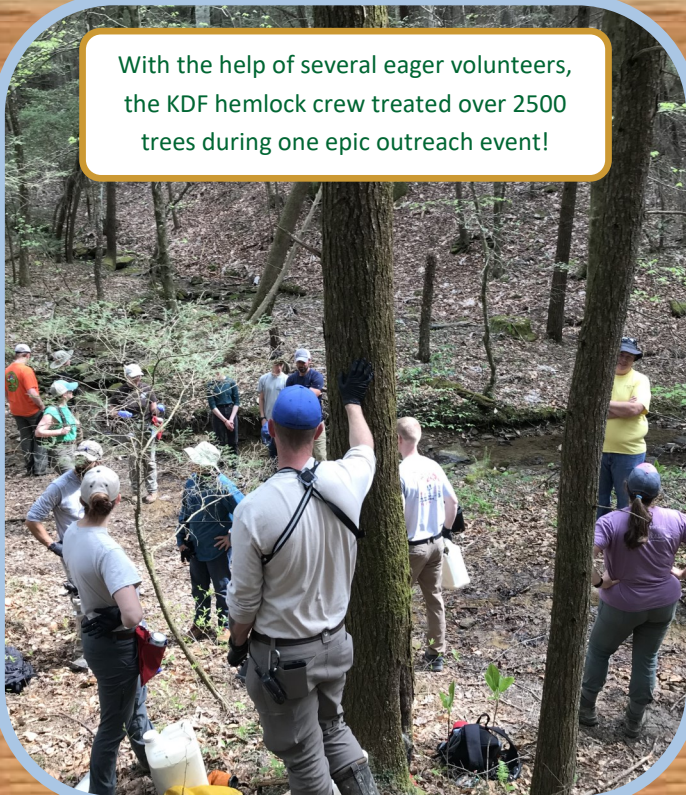
# 2022 Forest Health Highlights

from the Kentucky Division of Forestry



Our tiny helper, the predatory beetle *Laricobius osakensis*, can be seen here feasting away on the hemlock woolly adelgid, the invasive insect responsible for killing our precious hemlock trees.

Kentucky is home to nearly 13 million acres of some of the nation's most diverse woodlands. Yet, this valuable resource is under attack. The most severe threats to our forests are insects, diseases, invasive plants, and bouts of extreme weather. This document touches on the most influential of these disturbances and provides an up-to-date review of their impacts within the Commonwealth over the past year.



With the help of several eager volunteers, the KDF hemlock crew treated over 2500 trees during one epic outreach event!



1200 stingless wasps, contained within the orange vial seen below, were released at Knobs State Forest this summer in hopes of keeping the emerald ash borer at bay.

# EXOTIC INSECT PESTS

## EMERALD ASH BORER

Since its initial discovery within US borders in 2002, this exotic pest has continued to cover new ground throughout the country and can now be detected in 36 states (Figure 1). Naturally, this small beetle can only disperse a few miles per year on its own. Therefore, these expansions are often caused by human assists such as the movement of firewood or other infested material. This pattern is mirrored within the Commonwealth as this pest continues to pop-up in new western counties.

Infestations of the emerald ash borer (EAB) were first confirmed in Kentucky in 2009. A quarantine of 20 northern Kentucky counties, located in the region between Louisville and Lexington, was initially established. In the following years, additional EAB infestations were found in nearby counties and the state quarantine was expanded. In April of 2014, the county quarantine system ended and the entire state was added to the USDA APHIS list of regulated areas. This regulated region is historically the largest area in the nation that has been under Plant Protection and Quarantine. As such, APHIS proposed to remove the domestic quarantine and refocus their efforts on biological control of this exotic pest. This proposal was approved and took effect in January 2021.

EAB has been confirmed in 103 Kentucky counties to date (Figure 2). Ever since its arrival, EAB activity has led to mass mortality throughout our northeastern counties and decline continues to spread westward (Figure 3). In 2022, EAB was confirmed in four new counties: Allen, Butler, Ohio, and Union, and will eventually impact ash resources across the entire state as the infestation continues to spread into western Kentucky. Infestations in the neighboring states of Indiana, Illinois, Missouri, and Tennessee can only aid this expansion within the coming years.

The Kentucky Division of Forestry (KDF) will continue to monitor EAB's progress in 2023. In line with the USDA's regulatory changes, KDF's Forest Health Program applied for the National EAB Biological Control Program and was accepted in 2022. Please look to the following page for more details about this new endeavor.

Figure 1: 2022 USDA APHIS National EAB Map

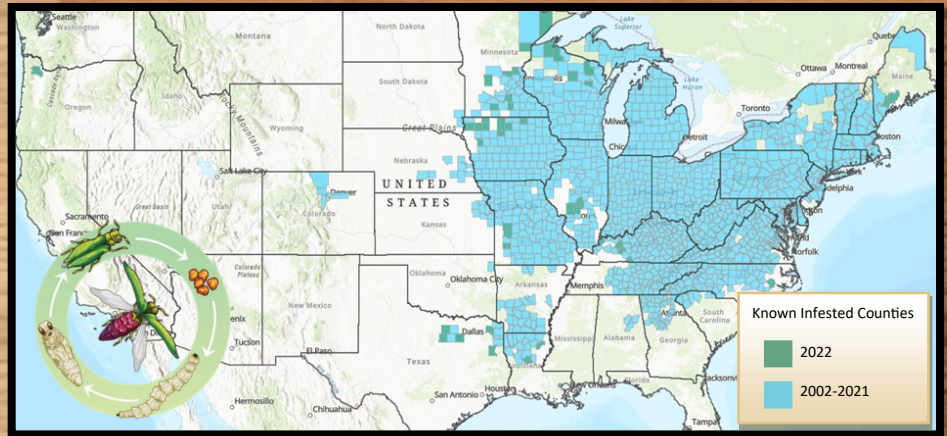


Figure 2: Kentucky Counties with Confirmed EAB Infestations

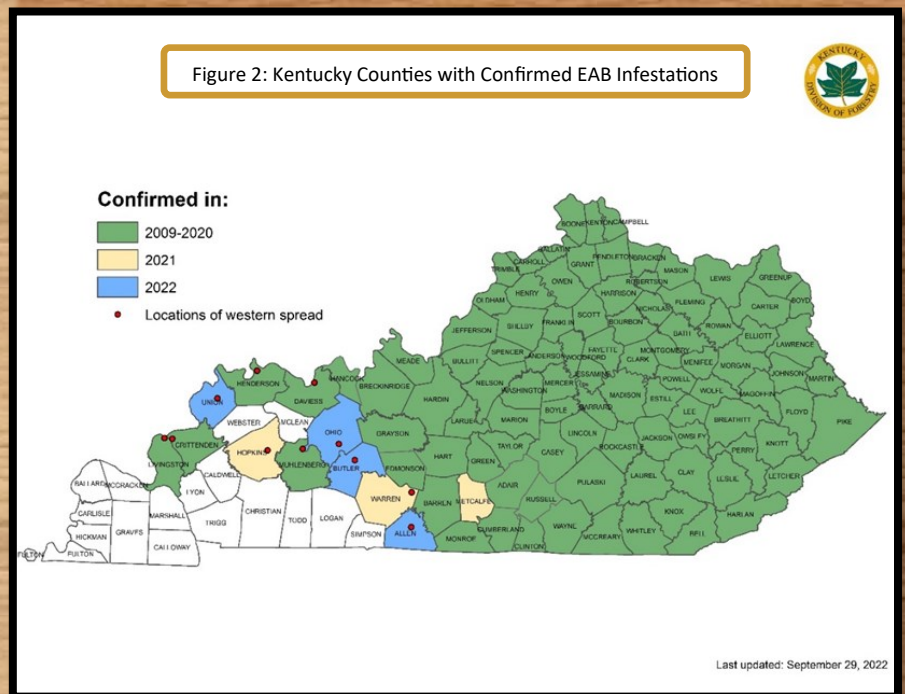
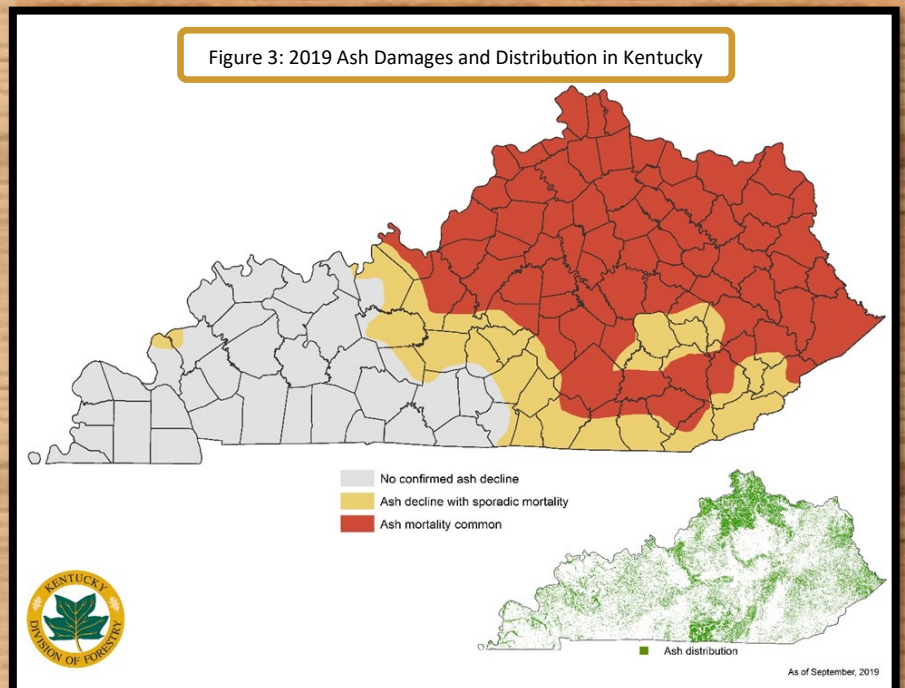


Figure 3: 2019 Ash Damages and Distribution in Kentucky



# EMERALD ASH BORER CONTINUED...

## EAB PARASITOID RELEASE AND RECOVERY PROGRAM

Once the deregulation of this exotic pest took effect, the USDA APHIS channeled all funding into a National Biological Control Program, otherwise known as the EAB Parasitoid Release and Recovery Program. KDF applied for this program in 2021 and was accepted for the release of *Oobius agrili*, the specialist EAB egg parasitoid (Figure 4).

During the 2022 field season, 1200 *O. agrili* pupae were released at Knobs State Forest in Bullitt County. The parasitoids were produced and supplied by the USDA EAB Parasitoid Rearing Facility in Brighton, Michigan. The parasitoids made the long journey to Kentucky in the orange vials that you can see Maddy Richmond, our Forest Health Intern, deploying here (Figure 5). The parasitoids were released on several EAB-infested white ash trees within the State Forest in the hopes that they will parasitize any freshly laid EAB eggs. During this process, the adult female wasp uses her needle-like ovipositor to lay a single egg inside of each EAB egg.

Then the parasitoid larva will hatch inside the EAB egg and devour it from the inside out (Figure 6)!

KDF will continue releases next season, followed by a recovery attempt in year three.



Figure 5: Maddy Richmond, Forest Health Intern, deploying parasitoids on an infested white ash tree in Knobs State Forest.

Figure 4: Adult female *Oobius agrili* ovipositing into an EAB egg.



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Figure 6: Parasitized EAB eggs at various stages of development.



Bugguide.net

0.5 mm

# EXOTIC INSECT PESTS

## HEMLOCK WOOLLY ADELGID

The eastern hemlock is considered a foundation species within the riparian habitat in which it's found (Figure 7). However, this integral species is under attack from the hemlock woolly adelgid (HWA). This pest is an exotic species with origins from Japan and was first detected in the eastern United States during the 1950s. It wasn't until 2006 when this insect invader was first discovered in Kentucky. Approximately 98% of Kentucky's hemlocks are found in the eastern one-third of the state. In this region, infestations currently occur in 32 counties resulting in decline and mortality (Figure 8).

The KDF's Forest Health Program has a field crew responsible for treating hemlocks to prolong the survival of this ecologically significant tree. Chemical insecticide treatments are employed in order to suppress HWA populations (Figure 9). Treatments began in 2009 on Kentucky State Forests and has since expanded to include properties managed by Kentucky State Parks, Office of Kentucky Nature Preserves, KDFWR Wildlife Management Areas, and Daniel Boone National Forest (DBNF). Since 2009, KDF has chemically treated approximately 225,000 hemlock trees!

Recently, KDF has also released two species of predatory beetles that feed especially on HWA within the DBNF in hopes of creating a future field insectary site. In the past, Kentucky has struggled with predatory beetle establishment. However, in 2020 KDF made their first recovery of both the adult and larval forms (Figure 10). Identification was confirmed in 2021 by the Beneficial Insects Lab at Virginia Tech. Future releases will take place adjacent to previous release sites to augment the formerly established population. In 2022, 8 adults and 26 larvae were collected from the field insectary site. This is exciting news for the future of our precious hemlocks as we are well on our way to a robust predatory beetle population! We will continue to improve upon this integrated pest management approach in 2023 with further chemical and biological control of this invasive pest.

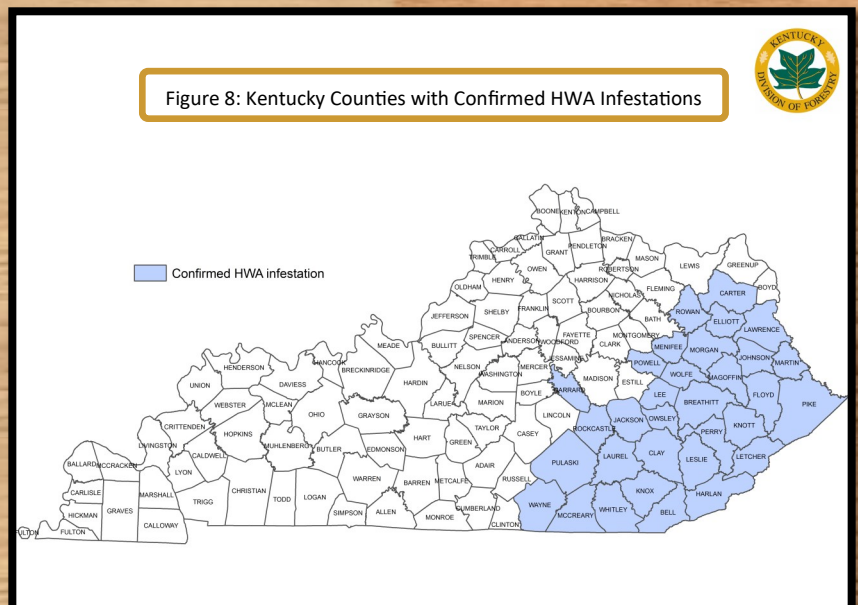
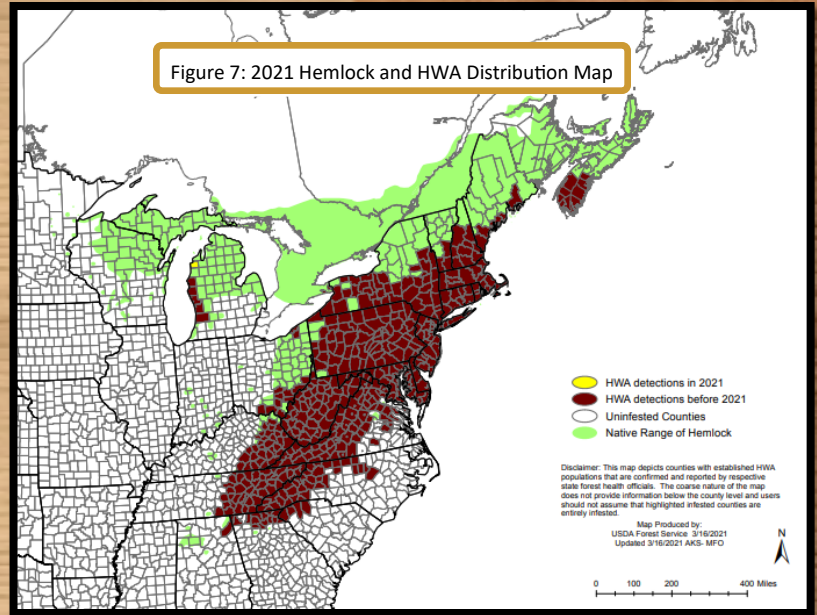


Figure 10: *Laricobius osakensis* larva seen feasting away on HWA eggs.



Figure 9: Kenna Smith, HWA Crew Lead, treating a hemlock using a soil drench technique.

# NATIVE INSECT PESTS

Exotic pests aren't the only insects damaging our woodlands. There are also a number of native insect pests that locally impact our forests every year. Yet, the significance of these native pests fluctuates over time. While these native insects typically don't cause the same level of damage as their non-native counterparts, they can become an issue when coupled with additional stressors such as drought. KDF is constantly on the look-out for damages from such native pests.

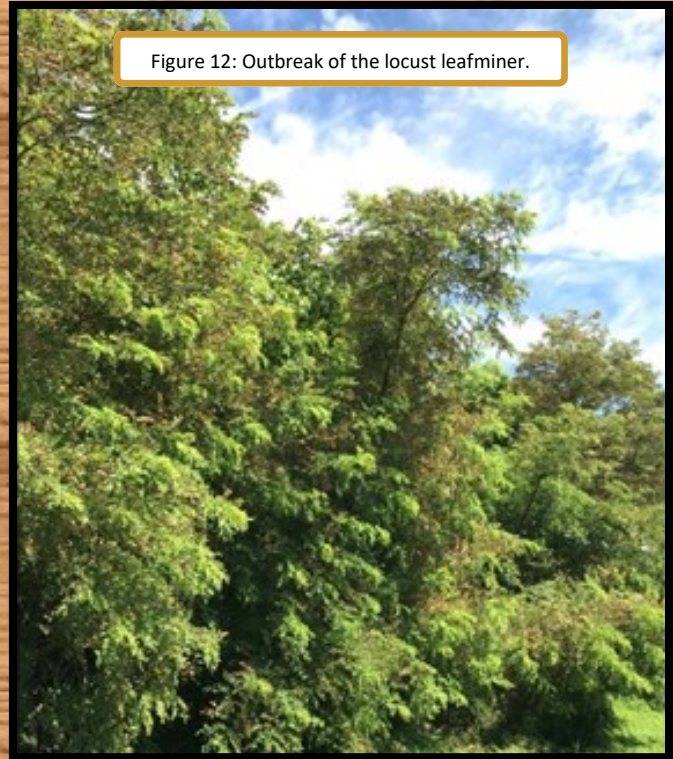
## LOCUST LEAFMINER

Outbreaks of the locust leafminer (Figure 11) are very common in Kentucky. These outbreaks (Figure 12) vary in intensity and location from year to year. This year, damage was detected across much of the state's northern, eastern, and central counties. No formal surveys take place to record this pest annually due to the persistent damage year to year, but rather general observations are used to record hotspots that experience damage each year.

Figure 11: Locust Leafminer adults and their feeding damage.



Figure 12: Outbreak of the locust leafminer.



Much of eastern and central Kentucky experience periodical outbreaks of the yellow poplar weevil. Generally, this native insect is considered a minor pest, but the weevil was reported at higher than normal levels again this year. In 2021, no evidence of this insect was reported. However, this was only a short break from this forest pest as it had reoccurring outbreaks for four consecutive years (2016-2020). Feeding damage has been observed in locations across eastern Kentucky. This year's damage seems to be less severe and not as widespread as in previous years. No major decline has been documented from the recent infestations, though periods of drought that occurred this year could lead to future localized decline.

For more information, please see the pest alert on the following page.

# NATIVE INSECT PESTS

JULY 12, 2022



## FOREST HEALTH PEST ALERT

### YELLOW POPLAR WEEVIL

**The Issue:** This month, we have started to notice browning tulip poplars (Figure 13) across portions of eastern Kentucky. After completing preliminary ground surveys, we have identified the culprit to be the native forest pest, the yellow poplar weevil.

**Identification and Biology:** The yellow poplar weevil is actually a type of beetle although some people misidentify it as a tick! Adults (Figure 14) are ~1/4" long, black, and equipped with long snouts. The juveniles or grubs are smaller in size, white, and legless. Feeding begins in April and continues through July. During this time, three different life stages will cause visible damage to the tree's foliage. The initial damage occurs in April and is caused by the first adult generation. These adults then mate and lay eggs along the underside of the leaf's midrib. In May, the grubs hatch and feed as leaf miners until they become the second generation adults. In June, the new adults continue to feast on the tree's foliage until they become inactive and drop into the leaf litter to overwinter. This results in two generations per year of this pest in KY.

**Hosts:** This insect has a strong preference for tulip poplar (Figure 15), but has also been observed feeding on sassafras and magnolia.

**Symptoms:** Symptoms begin on foliage as tiny holes that resemble grains of rice (Figure 16), but can progress to scorching and eventual leaf drop in the worst outbreaks.

**Distribution:** Past feeding damage from this insect has been observed in the following counties: Adair, Bath, Bell, Bourbon, Boyd, Breathitt, Carter, Casey, Clark, Clay, Elliott, Estill, Fayette, Fleming, Floyd, Garrard, Greenup, Harlan, Jackson, Jessamine, Johnson, Knott, Knox, Laurel, Lawrence, Lee, Leslie, Letcher, Lewis, Lincoln, Madison, Magoffin, Martin, McCreary, Menifee, Montgomery, Morgan, Nicholas, Owsley, Perry, Pike, Powell, Pulaski, Rockcastle, Rowan, Russell, Wayne, Whitley, and Wolfe. If you see damage in your county, PLEASE REPORT.

Figure 14: Adult

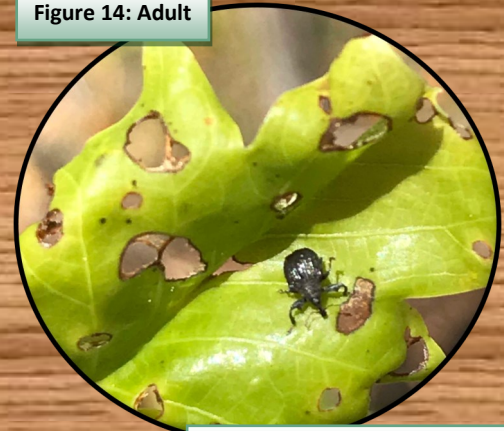


Figure 15: Infested Poplar Tree



Figure 16: Feeding Damage



Figure 13: Browning Tulip Poplar Trees

Alexandra Blevins: KDF Forest Health Specialist

[alexandra.blevins@ky.gov](mailto:alexandra.blevins@ky.gov) or (502) 382-1720



# INVADERS ON THE HORIZON

There is also a myriad of pests that have yet to make their way into Kentucky. These looming threats would cause extensive damage to our forests, which is why they demand our attention and awareness. These pests may never make it to Kentucky. It all depends on the quarantines put in place by the federal government and additional regulatory efforts by various state and private stakeholders. Even under these strict guidelines, we each must do our part to ensure that we aren't moving infested material.

## SPONGY MOTH

Spongy moth (Figure 17) surveys have been conducted since 2005 through various agencies and programs. This pest is not yet established in Kentucky, although it has been detected every year since the surveys began. The Forest Service, an agency of the U.S. Department of Agriculture and Kentucky's Office of the State Entomologist (OSE) annually trap for this invasive species using detection surveys through USDA APHIS and Slow the Spread programs. In 2022, the OSE set traps in 82 counties across the state. 45 of these counties had positive trap catches; these include: Bath, Boone, Bourbon, Boyd, Bracken, Breathitt, Carter, Clark, Clay, Elliott, Estill, Fayette, Fleming, Franklin, Garrard, Greenup, Harrison, Jackson, Jessamine, Knott, Lawrence, Lee, Leslie, Letcher, Lewis, Lincoln, Madison, McCreary, Menifee, Mercer, Montgomery, Morgan, Owsley, Perry, Powell, Pulaski, Robertson, Rowan, Scott, Shelby, Spencer, Trimble, Washington, Wolfe, and Woodford. A total of 188 moths were captured in this detection survey with Greenup, Lee, and Perry counties having the most positive detections with 21, 10, and 9 moths captured respectively. Furthermore, in an effort to bring awareness to this forest pest, the OSE implemented the first-ever Citizen Scientist trapping program in 2022. 44 additional counties were monitored under this new initiative with 8 counties having positive detections. These counties include: Bath, Boyd, Harlan, Johnson, Lewis, Madison, Rowan, Taylor. 13 additional moths were captured in these traps.

Eight additional counties were monitored with Slow the Spread (Figure 18) funding. Six out of the eight counties had positive detections with a total of 97 moths captured. These counties include: Floyd, Johnson, Lawrence, Letcher, Martin, and Pike. Lawrence, Martin and Pike counties had the most positive detections with 16, 18, and 56 moths captured respectively. The Forest Service also monitored for the spongy moth within the Daniel Boone National Forest and found one moth during their detection surveys.

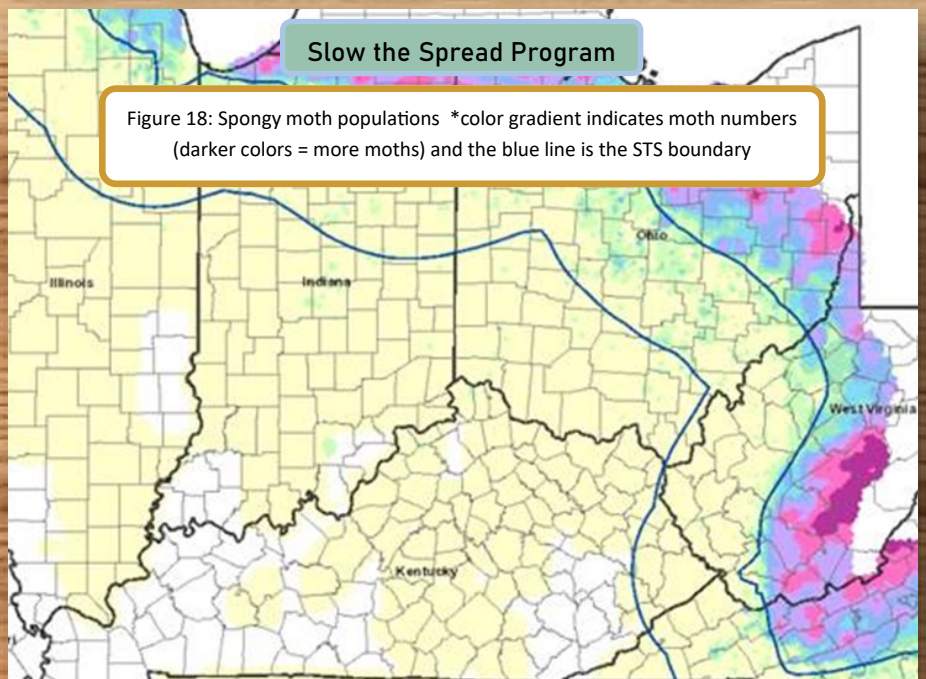
Kentucky saw a surge in spongy moth populations in 2022 with a total of 299 moths captured throughout all state and federal programs. This is a significant increase from the 30 moths captured last season and the 4 moths captured in 2020.

Figure 17: Spongy Moth Caterpillar



Slow the Spread Program

Figure 18: Spongy moth populations \*color gradient indicates moth numbers (darker colors = more moths) and the blue line is the STS boundary



# INVADERS ON THE HORIZON

## ASIAN LONGHORNED BEETLE

The Asian longhorned beetle (ALB) continues to be a potential pest of concern for Kentucky (Figure 19). Although ALB has not been found within the Commonwealth, in 2011 it was discovered in Clermont County, Ohio, a mere 10 miles from our northern border. More recently, ALB was confirmed in Charleston County, South Carolina in June 2020. To date, eradication efforts are still underway at both the established OH infestation as well as the novel SC infestation. Here are the common signs of ALB activity. The females chew oviposition pits on host trees, most commonly maple, and lay a single egg beneath the bark. Then the larvae hatch and feed on the sapwood for a short period of time before moving into the heartwood. When adults emerge, they create noticeably round exit holes that can be as large as a dime (Figure 20). KDF continues to work with various agencies to educate the public on ALB identification and signs of infestation.

Figure 19: Asian Longhorned Beetle Adult



Figure 20: ALB Feeding Damage



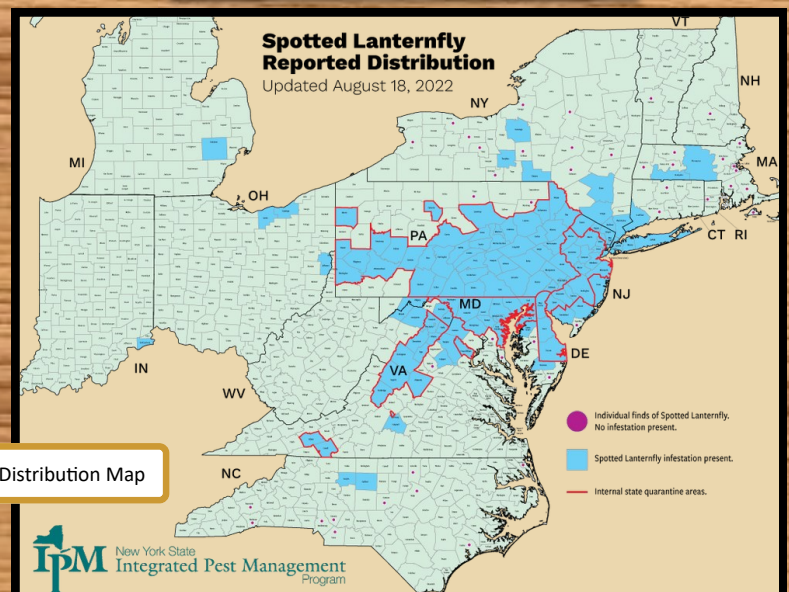
## SPOTTED LANTERNFLY

The spotted lanternfly (SLF) is a relatively new invasive insect to the US with origins from Asia. It was only first discovered in Pennsylvania in 2014. It can be described as beautiful, but it is also dangerous (Figure 21). Don't be fooled by its name, this insect isn't a fly at all. It is actually a hemipteran which uses its characteristic, piercing and sucking mouthpart to steal nutrients right out of its host plant. It is thought that the tree of heaven is their primary host species, but they also show preference towards red maple, black walnut, and various other fruiting trees and vines. Damage from this insect's aggregate feeding behavior can weaken the host, leaving it susceptible to other stress agents. These insects also produce ample amounts of honeydew, or liquid excrement, that transforms into black sooty mold. Although the SLF hasn't been found in Kentucky, it was recently discovered just two miles north of the border in Vevay, Indiana in July 2021. More recently, this pest was found within Cincinnati's city limits in October 2022. Currently, there is no federal quarantine in place for this pest. Yet, some states have taken it upon themselves to provide regulations for their infested areas (Figure 22). KDF is working with various agencies to educate the public on SLF identification and signs of infestation.

Figure 21: Spotted Lanternfly Adult



Figure 22: National SLF Distribution Map





# DISEASES

## THOUSAND CANKERS DISEASE

Thousand cankers disease (TCD) of eastern black walnut is caused by the fungal pathogen, *Geosmithia morbida* and its insect vector, the walnut twig beetle (WTB). It was first recorded in the eastern United States in 2010. Yet, neither the pathogen nor the vector of TCD have been confirmed in Kentucky even though there have been confirmed cases in the neighboring states of Indiana, Ohio, and Tennessee (Figure 23). A monitoring program has been conducted within the Commonwealth for many years, and thus far, no beetles have been found. KDF's TCD monitoring and trapping program conducts general walnut decline/TCD surveys and an annual trapping effort in areas where symptomatic walnut occur or areas at high risk for WTB introductions.

During the 2022 field season, trapping (Figure 24) for the WTB resumed after a break in 2021 due to a capacity transfer that was made to meet the needs of the EDRR trapping effort. Survey work also picked up in 2022 as a new Forest Health Intern was trained in on-the-ground monitoring techniques and completed several TCD surveys in new counties. In addition, educational outreach about this disease and its vector was pushed through social media to bring awareness to the public.

Potential WTB specimens captured during this season's trapping effort were sent off for expert identification. All specimens came back as different species resulting in negative confirmation of the vector. Thus, neither the fungus nor the insect vector were confirmed. However, we did collect several *Stenomimus pallidus* weevils (Figure 25) that were of high interest. This is the species of weevil that was found to be carrying *G. morbida* in IN. These insects were sent to UT: Knoxville for molecular testing and they also came back negative for traces of TCD. New ground surveys and trapping efforts will continue in the 2023 field season.

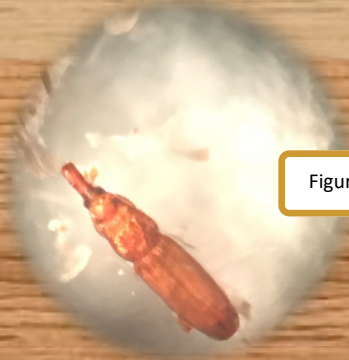
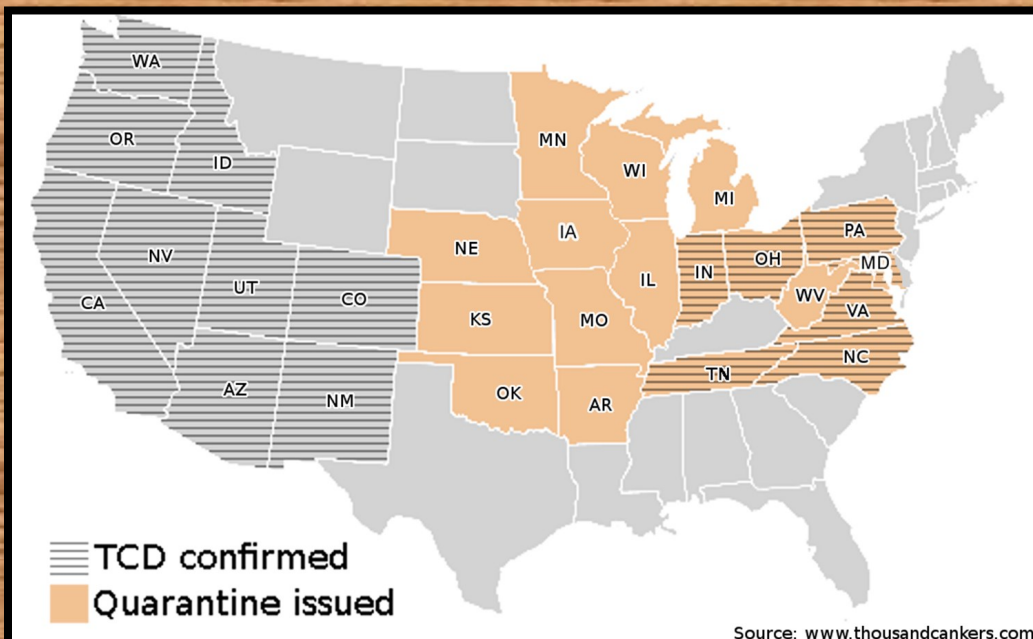


Figure 25: *Stenomimus pallidus* weevil

Figure 24: Funnel Trap in a Black Walnut



Figure 23: Distribution of Thousand Cankers Disease



Source: [www.thousandcankers.com](http://www.thousandcankers.com)

# DISEASES

## LAUREL WILT DISEASE

In 2019, Laurel Wilt Disease (LWD) was first documented in Kentucky in Christian, Todd, and Logan Counties. LWD was initially confirmed inside the Fort Campbell Army Base after large sassafras trees were reported dead. After this primary detection, ground surveys were used to learn the extent of the outbreak. In 2021, three additional counties were added to the map. Those counties include: Caldwell, Hart, and Warren (Figure 26). In 2022, no new county detections were confirmed although samples were tested from Clark, Grayson, and Lyon counties. Regardless, LWD has now been confirmed in counties ranging from the extreme southern and northern borders of Kentucky. It appears that the positive detections are following major interstate corridors, such as I-65 which travels from southwestern Kentucky into the city of Louisville. Investigation of these potential vector pathways will continue to be a top priority next season.

Redbay ambrosia beetles vector this disease by boring into the host and transmitting the pathogen within the wood. A single beetle can transmit enough spores of the lethal fungal pathogen, *Harringtonia lauricola*, to kill a tree. The fungus infects the xylem, blocking off the vascular system, causing rapid wilt and eventual mortality. Death can occur within weeks to months after being infected. Yet, there is evidence to suggest that sassafras can surpass the initial infection and survive for an extra year or two before succumbing to the disease. Signs of beetle activity include very small circular holes in the bark, occasionally accompanied by thin sawdust toothpicks of waste. Other symptoms to look for include early fall coloration or wilting of leaves on suspect trees that may remain attached for months (Figure 27). In most infected trees and shrubs the fungus causes distinctive, dark staining within the sapwood (Figure 28).

It is important to note that this disease complex is specific to plants within the Laurel Family. Sassafras and spicebush are the only two species found in Kentucky that LWD is known to attack. As of now, we only know of severe impacts to sassafras. However, the first observations of infection in wild spicebush were documented and confirmed within the Fort Campbell Army Base in 2020. There will be more to come with work surrounding this alternative host plant.

In 2022, a pilot study in cooperation with the University of Kentucky, Bartlett Tree Experts, and Rainbow Tree Company will examine the efficacy of a fungicide treatment as a method to combat this disease in municipal trees. Trials will continue in spring of 2023. The Commonwealth could need this more than we know as the national champion, and possibly, the world's largest sassafras tree is located in Owensboro, Kentucky.

Figure 27: Foliar Symptoms of LWD



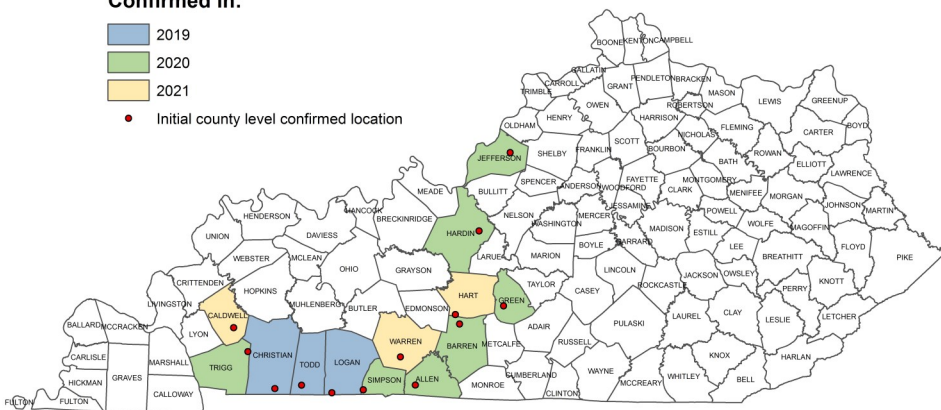
Figure 26: Laurel Wilt Distribution Map



### Confirmed in:

- 2019
- 2020
- 2021

● Initial county level confirmed location



Last updated: October 21, 2021



Figure 28: Sapwood Staining

# LAUREL WILT DISEASE CONTINUED...

## LAUREL WILT DISEASE CONFIRMED IN SPICEBUSH

As previously mentioned, the first-ever infected spicebush has been found in the wild. This is terrible, yet exciting, news since past research had suggested that the redbay ambrosia beetle didn't show a strong preference for spicebush in the laboratory setting. We now have evidence from the field to suggest otherwise. Please make yourself aware of the following tell-tale signs as we need all the help we can get to find new locations of infection across the region. As you can see, spicebush displays the same symptoms as sassafras when affected by LWD. Early fall coloration in the form of golden-hued foliage can be seen in the summer months (Figure 29). Frass toothpicks left behind by the beetle vector litter the boles of infected spicebush (Figure 30). The iconic staining of the sapwood can be seen in the cross-section of this freshly cut sample (Figure 31). And the final stages of wilt that dry out not only the leaves, but also the fruit, which marks the lethal blow (Figure 32).

Figure 29: Early Fall Coloration in Spicebush



Figure 30: Frass Toothpicks Hanging from Spicebush Bole



Figure 31: Spicebush Sapwood Staining

Figure 32: Wilted Leaves and Fruit of Spicebush



## NEVER STOP LEARNING

Please check out these co-authored publications on LWD here in Kentucky and beyond!



**Spread, Vector Flight Behavior, and Impact of Laurel Wilt in Sassafras Beyond the Gulf-Atlantic Coastal Plain** by Albert E. Mayfield III, Rabiw O. Olatinwo, Jaesoon Hwang, Bryan T. Mudder, Alexandra Blevins, and Stephen W. Fraedrich in *Journal of Forestry*

**First Report of Laurel Wilt Caused by *Harringtonia lauricola* (previously *Raffaelea lauricola*) on Northern Spicebush in Kentucky and Tennessee** by Madison J. Eaton, Julie Beale, Sara Long, Tyler Dreaden, Alexandra Blevins, Albert E. Mayfield, Megan Buland, Denita Hadziabdic and Ellen Crocker in *Plant Disease*



# EXTREME WEATHER

2022 was a devastating year for severe weather in Kentucky with multiple extreme events causing noticeable damage throughout the Commonwealth. The year began in the worst way imaginable with the most catastrophic tornado outbreak in US history. Lives, homes, and whole communities were lost. And we are still dealing with the aftermath of this chaos today.

On the night of December 10th 2021 into the early morning hours of December 11th, a massive storm system moved through the state. During this time, Kentucky was hit by 7 tornadoes. The National Weather Service (NWS) confirmed a total of 21 touchdowns by radar as well as on-the-ground surveys. These supercells left behind a path of massive destruction in their wake. Widespread and significant damage was recorded. The final report from the NWS classified these damages, using the Enhanced Fujita scale, as ranging from an EF0 to an EF4. An EF4 tornado has enough power to turn large vehicles into projectile missiles! And this is what Kentuckians witnessed in the aftermath of this outbreak.

The worst of these tornadoes, the long-track EF4, covered approximately 165 miles within Kentucky alone! It wreaked havoc in counties all the way from Fulton to Breckinridge, reaching top wind speeds of 190 MPH. A state of emergency was immediately declared and KDF staff were called into action once again. A total of 36 KDF employees were deployed to aid in rescue and recovery missions in western and central regions of the state. They removed debris, down trees, and broken limbs from powerlines and roadways to clear access for emergency responders. Over 11,000 disaster claims were made following these violent storms and we are still working to clean up the residual chaos.

Once it was possible, our Forest Health Program got a drone in the air to inspect the severity of damage to our forestlands. As you can see from the images below taken in Taylor County, which was hit by an EF3, the damage was indiscriminate. The straight-line winds caused trees to completely uproot, tops to be broken, trunks snapped in half, and branches became a mangled mess. After the drone survey, an aerial detection survey took place to track the worst damages within each tornado's path. The damages seen from the drone survey were mirrored during this broad-scale detection flight. In addition, it was observed that all species, hardwoods as well as pines, and all age classes experienced some level of damage from these brutal winds. Over 7,300 acres of timber damage were documented. Using the data collected during the aerial survey, KDF was able to provide a map of the county level damages to timber in western and central Kentucky. All KDF Programs are continuing to work together to provide further assistance to our fellow Kentuckians affected by this tornado outbreak. Once landowners are ready to reforest their lands, we will be ready and waiting to serve.



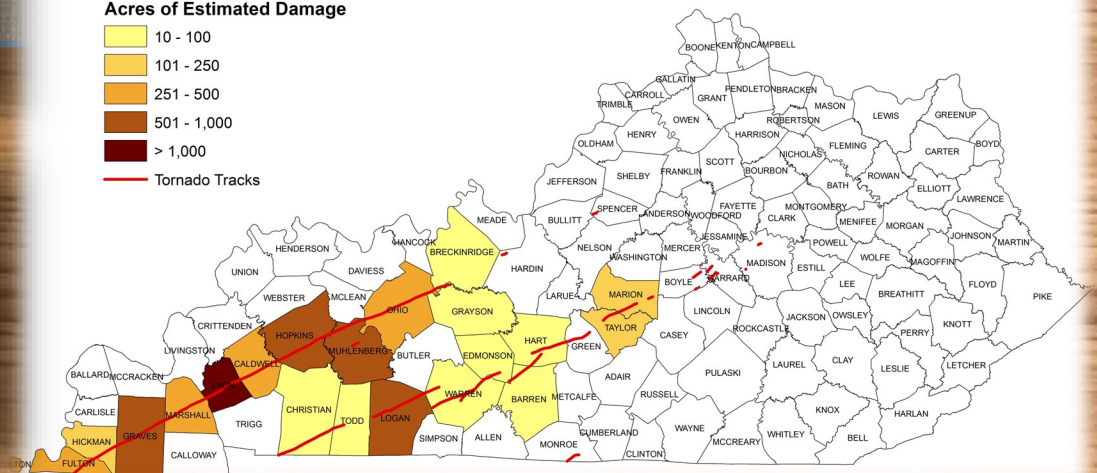
Acres of Estimated Timber Damage  
December 10 & 11 Tornadoes



### Acres of Estimated Damage

- 10 - 100
- 101 - 250
- 251 - 500
- 501 - 1,000
- > 1,000

Tornado Tracks



# EXTREME WEATHER CONTINUED...

## FLOODING

In July of 2022, Kentucky was hit with yet another devastating natural disaster. From July 25th to July 30th, the Commonwealth received multiple storm complexes that brought substantial precipitation, flash floods, and severe river flooding to eastern Kentucky. During this five-day period, rainfall was upwards of 4 inches per hour at its heaviest. Radar recorded estimates of 14 to 16 inches of rain in the worst hit areas. All other impacted areas received approximately 6 to 10 inches of rainfall. This excessive amount of precipitation caused catastrophic damage in the Appalachian region of the state. 39 lives were lost, countless homes were destroyed, and entire communities were swept away due to this extreme weather event. The damage to infrastructure in this region was comparable to the December 2021 tornado outbreak, and as such, will take years to restore.

The peak of this event happened over July 27th and 28th. The majority of the rain fell over the course of these two days. During this timeframe, 10 flash flood warnings were issued and 3 flash flood emergencies were declared. The most heavily impacted areas were between northern Clay and southern Owsley counties and east to southern Breathitt and northern Leslie counties, including Perry, Knott, and Letcher counties. The highest rainfall report came out of Knott County, where 14 inches fell in total. This bout of severe weather is yet another historic event for Kentucky's record books. Just as with the tornado outbreak, KDF was immediately brought into the emergency response efforts on July 28th for Mobilization. 90 employees were deployed for on-the-ground assistance with debris removal as saw crews, while 10 personnel coordinated response efforts at Kentucky's Emergency Operations Center (EOC). KDF personnel were staffed at EOC until the mobilization was terminated on September 9th.



# EXTREME WEATHER CONTINUED...

## DROUGHT AND WILDFIRE

As unfathomable as it seems, Kentucky began to experience drought conditions soon after the severe flooding event of July 2022. By October of 2022, much of the state's landscape became very dry. As you can see in the Drought Monitor Map below, by October 25th approximately 90% of the Commonwealth was facing some level of drought. The far western counties being the hardest-hit region were suffering from extreme drought conditions. The other western counties and some of central Kentucky were dealing with severe drought conditions, while the remainder of central Kentucky into the eastern portion of the state were experiencing moderate drought to abnormally dry conditions respectively. All in all, this was not a good place to be in during the fall fire season which occurs during October 1st – December 15th. This became very evident as fires quickly broke out across the entire state.

In November, the situation became so overwhelming that KDF entered into Phase 1 Mobilization and had to call upon five other states for additional resources. At this time, all KDF resources were engaged in wildland fire activity. Once all of our in-state resources were committed, crews from Virginia, Mississippi, Arkansas, Pennsylvania, and Texas were requested. This was quite the unprecedented wildland fire event for our state with the last mobilization occurring in 2016 and out-of-state resources rarely being requested.

### U.S. Drought Monitor Kentucky

**October 25, 2022**  
(Released Thursday, Oct. 27, 2022)  
Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
<b>Current</b>	0.91	99.09	82.22	39.11	4.94	0.00
<b>Last Week</b> <small>10-18-2022</small>	14.09	85.91	69.88	10.47	0.00	0.00
<b>3 Months Ago</b> <small>07-26-2022</small>	66.41	33.59	14.10	8.19	0.38	0.00
<b>Start of Calendar Year</b> <small>01-04-2022</small>	100.00	0.00	0.00	0.00	0.00	0.00
<b>Start of Water Year</b> <small>09-27-2022</small>	66.98	33.02	3.31	0.00	0.00	0.00
<b>One Year Ago</b> <small>10-26-2021</small>	100.00	0.00	0.00	0.00	0.00	0.00

Intensity:

	None		D2 Severe Drought
	D0 Abnormally Dry		D3 Extreme Drought
	D1 Moderate Drought		D4 Exceptional Drought

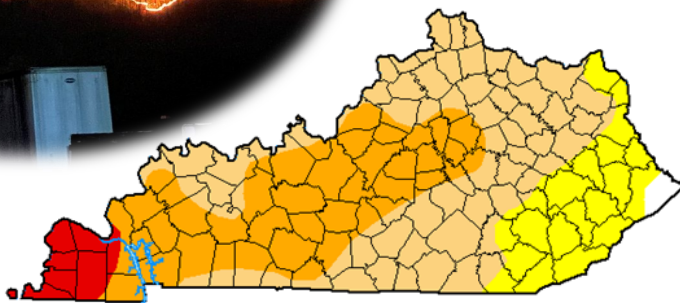
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

Author:

Adam Hartman  
NOAA/NWS/NCEP/CPC



[droughtmonitor.unl.edu](https://droughtmonitor.unl.edu)



# FOREST HEALTH ASSISTANCE IN KENTUCKY

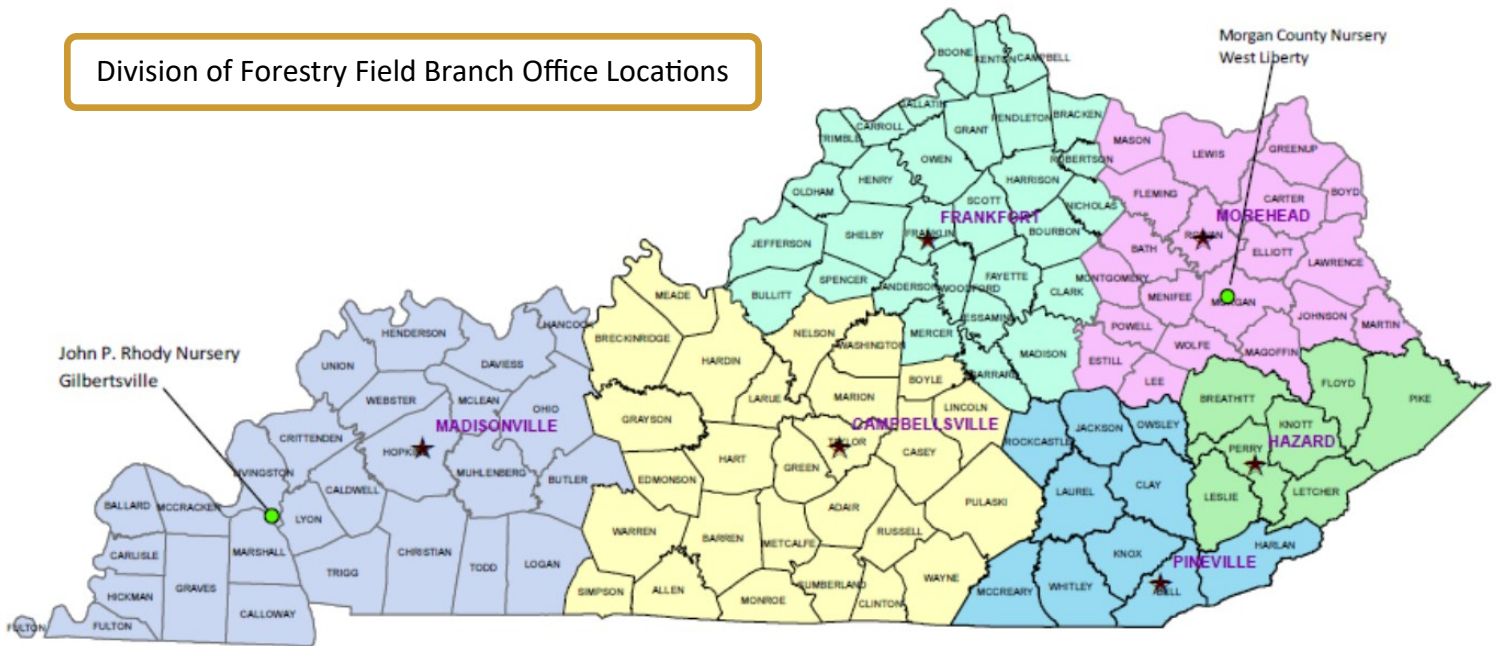
Kentucky Division of Forestry  
 Sower Complex  
 300 Sower Boulevard – 4th Floor SE  
 Frankfort, KY 40601  
<http://forestry.ky.gov>  
 (502) 564-4496



University of Kentucky Forestry Extension  
 Thomas Poe Cooper Building  
 730 Rose Street  
 Lexington, KY 40546  
[forestry.extension@uky.edu](mailto:forestry.extension@uky.edu)  
 (859) 257-7597



## Division of Forestry Field Branch Office Locations



### Field Office Contact Information

Campbellsville	Frankfort	Morehead	Hazard	Madisonville	Pineville
Seth Dykes	Matt Haywood	James MacDonald	Jake Hall - Detailed	Chuck Porter	Deanio Carmical
120 Gaines Drive	105 Corporate Dr, Ste 1	255 Rodburn Hollow	154 Grand Vue Plaza	625 Hospital Drive	12008 US Hwy 25E
Campbellsville, KY 42718	Frankfort, KY 40602	Morehead, KY 40351	Hazard, KY 41701	Madisonville, KY 42431	Pineville, KY 40977
270-465-5071	502-573-1085	606-783-8625	606-435-6073	270-824-7527	606-337-3939

### References:

- USDA APHIS provided the Federal Quarantine Maps
- Photos with image numbers are courtesy of Bugwood.org

Brought to you by:  
 Alexandra Blevins  
 KDF Forest Health Program Coordinator  
[Alexandra.Blevins@ky.gov](mailto:Alexandra.Blevins@ky.gov)  
 (502) 382-1720