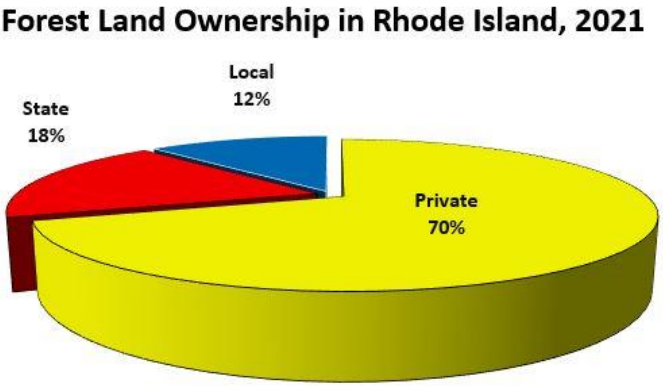
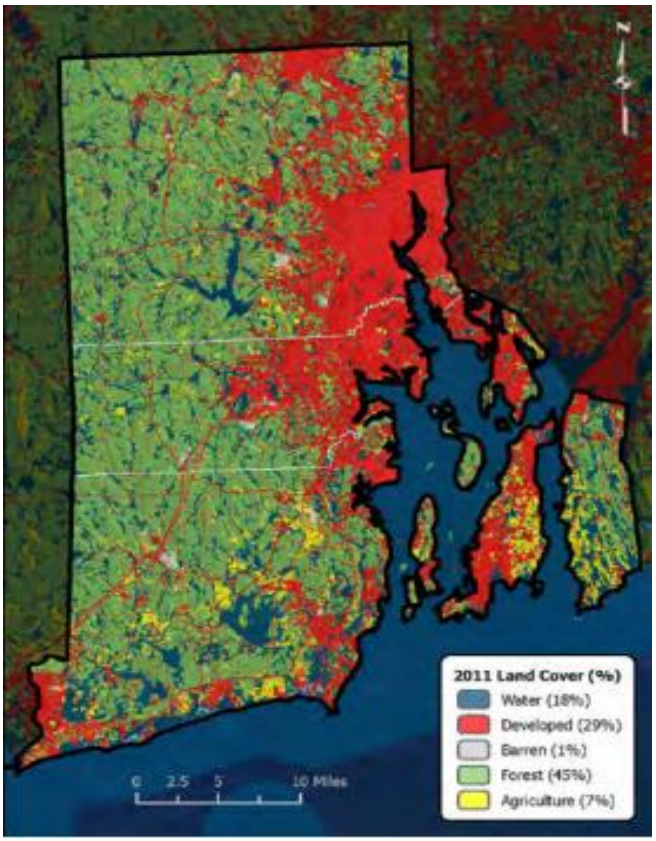
USDA United States Department of Agriculture

2024 Forest Health RHODE ISLAND *highlights*

Forest Resource Summary

Rhode Island's forests are 70 percent privately owned, largely by families and individuals who view their land as a source of enjoyment and a resource to be protected. Other private ownerships include corporate, tribal, conservation groups and clubs. The remainder of the forest land is in State or local town ownership.





According to the most recently available USFS Forest Inventory & Analysis, there are approximately 372,000 forested acres in Rhode Island. Rhode Island's forests are considered second growth and approximately 96% is classified as timberland, forest land that exceeds the minimum level of productivity and is technically available to harvest. The most common species include red, eastern white pine, black birch, scarlet oak, and yellow birch with Oak-Hickory forest type comprising over 60% of the forest land.

Forest composition has been affected in the past by widespread pests and diseases, including chestnut blight (*Cryphonectria parasitica*) and Dutch elm disease (*Ophiostoma ulmi*) and faces new challenges with the widespread impact of Emerald Ash Borer (*Agrilus planipennis*) and Beech Leaf Disease (associated with the nematode *Litylenchus crenatae mccannii*).

Forest Service
Northeastern Area
State and Private Forestry

Rhode Island
Department of Environmental Management
Division of Forest Environment

November 2024

"In the forest and wood products sector, 513 firms generated 2,496 jobs with $408 million in gross sales in 2016. The total economic impact of the forest and wood products sector, including the spillover effects across all sectors of the Rhode Island economy, is estimated at $716 million annually, with 4,844 jobs arising from this economic activity."
-*"The value of Rhode Island Forests" A Project of the Rhode Island Forest Conservation Advisory Committee and the Rhode Island Tree Council; 2020.*

Forest Canopy Survey

In 2024, approx. 15,400 acres of forest damage were mapped through forest canopy surveys (aerial and ground survey, Fig. 1). The most notable damage causal agents were winter moth (6,752 acres damage) and beech leaf disease (3,628 acres damage). Damage from white pine needle disease complex (2,832), emerald ash borer (1,102 acres damage), fall cankerworm (889 acres damage), and flooding (189 acres damage) was also observed in 2024.

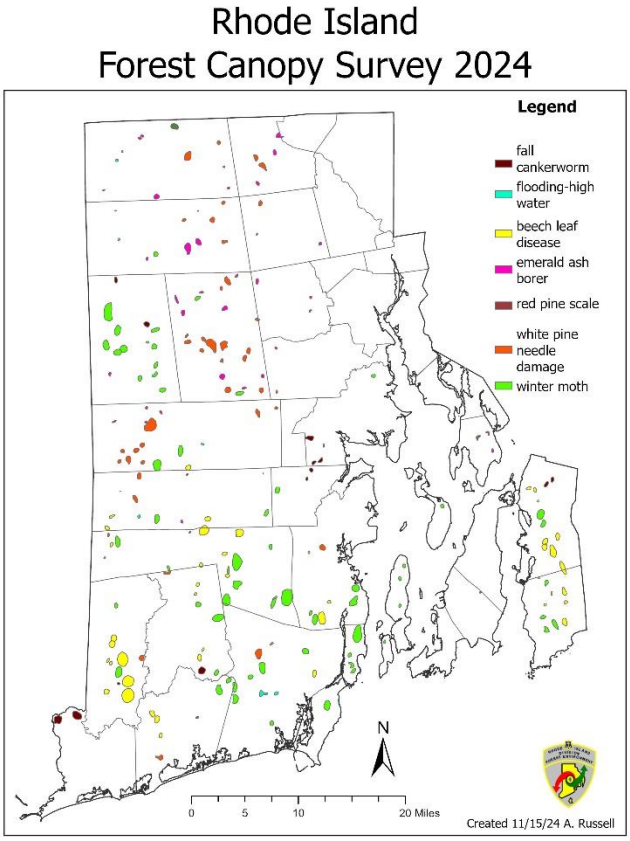


Figure 1. RIDEM Forest Health Program forest canopy survey results, 2024.

Forest Insects and Diseases

Winter moth

Winter moth defoliation was sustained in 2024 at levels similar to 2023. Approximately 6,752 acres of damage to the forest canopy due to winter moth was observed. Although this is a reduction in documented defoliation compared to 2023 (8,857 ac.), the resurgence of winter moth is ongoing and continues to be a concern.

In late May, biocontrol collection efforts for the parasitoid *Cyzenis albicans* were conducted by staff from RIDEM DFE/DAG and the URI Biocontrol Lab. The goal of this project was to attempt to collect *C. albicans* parasitoids from areas previously recovered in RI to redistribute to areas currently experiencing a resurgence. RI FHP had high hopes of successfully collecting *C. albicans* because of recoveries of the parasitoid at six out of eight previous release sites in 2018. Collection sites were selected based on proximity to (1) previous *C. albicans* release sites and (2) areas of significant defoliation in 2024. Nearly 7,000 winter moth caterpillars were collected from six sites.

Caterpillars were transferred to the Elkinton/Andersen Lab at the University of Massachusetts for rearing. Out of 5,742 pupae dissected, only 66 were parasitized with *C. albicans* (Table 1), averaging a parasitism rate of 1.2% across all sites. Researchers speculate that more time is needed for *C. albicans* populations to build in

response to the winter moth resurgence. However, it is possible that the low rate of parasitism in RI indicates that RI's climate or phenology are not suitable for long term *C. albicans* establishment.

Table 1. 2024 Cyzenis albicans collection results from UMass. Note: some caterpillars died during rearing due to handling stress, fungus, etc.

Site	**# caterpillars collected**	**# winter moth pupae reared**	**# *C. albicans* pupae reared**	**% *C. albicans* pupae**
Flat River Rd	1364	1265	2	0.2
Francis Carter Preserve	1960	1469	7	0.5
URI East Farm	1023	915	31	3.3
South Farm Preserve	1006	827	5	0.6
King Preserve	1069	801	3	0.4
Whitehead Preserve	503	399	18	4.3
Total	6925	5676	66	1.2

Pheromone trapping to quantify adult winter moth densities continues in 2024. Traps were deployed in late October/early November and will remain active until late December. Traps have been deployed at five locations in towns where extensive winter moth defoliation was either (1) historically documented, or (2) observed in 2024 (Table 1).

Table 2. Winter moth trapping locations for 2024 trapping survey.

Town	**County**	**Date set**
Hopkinton	Washington	11/1/24
Kingston	Washington	11/15/24
Little Compton	Newport	10/31/24
West Greenwich	Kent	11/1/24
Foster	Providence	11/1/24

Fall cankerworm

Populations of the native defoliator fall cankerworm were observed causing small pockets of observable defoliation in areas of all five counties in 2024. A total of 889 acres were observed to be impacted by fall cankerworm defoliation, which is a slight reduction from 2023. While repeated defoliation in both 2023 and 2024 was observed in some areas, level of defoliation at these second-year locations was often less severe in 2024. This suggests native natural enemies are responding and reducing cankerworm levels. While we do not expect long term impact from these pockets, DFE will continue to monitor populations and potential forest impact in spring 2025.

Emerald ash borer

Emerald ash borer (EAB) has been documented in every county, and nearly every town in Rhode Island. Ash decline is prevalent and mortality via aerial survey continues to be documented. In 2024, 1,102 acres of new (not observed in 2023) ash mortality due to EAB was observed.

Historically, DFE, partnering with URI, utilized biosurveillance and funnel trap surveys to detect and delimit the extent of EAB in Rhode Island. Although it is evident that EAB has spread state-wide, DFE continues to support URI in their goals to monitor EAB population densities in known sites and identify locations for biocontrol release efforts through biosurveillance and funnel trap surveys.

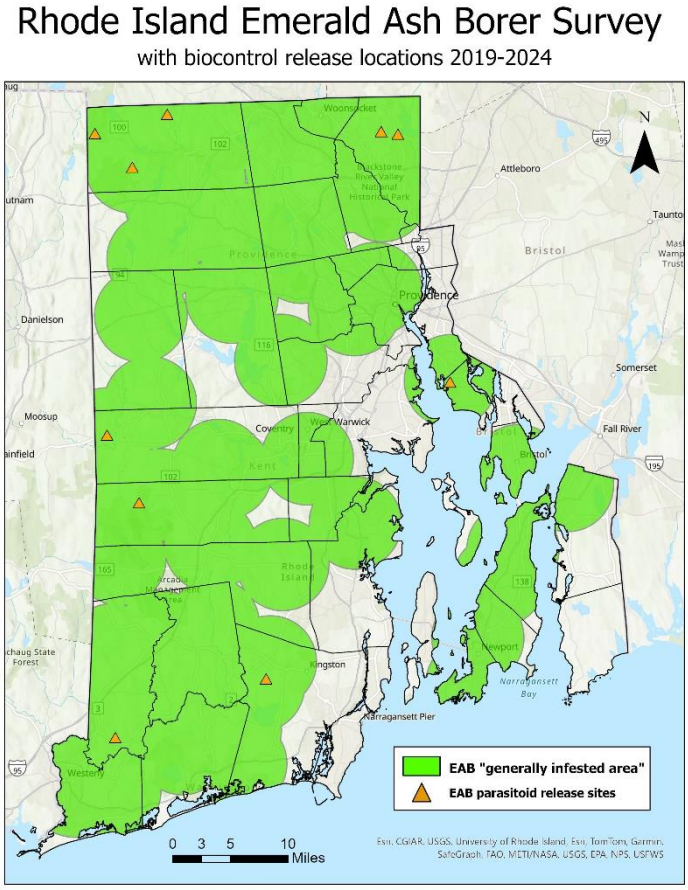


Figure 2. Areas of Rhode Island considered "generally infested" (green areas) are within a three-mile buffer of where EAB has been collected. Biocontrol release sites are indicated on map with an orange triangle.

Emerald Ash Borer Biocontrol

DFE supports URI to slow the spread of EAB through biocontrol releases of the parasitic wasps *Spathius galinae*, *Tetrastichus setifer*, and *Oobius agrili,* sourced from the USDA APHIS rearing facility in Brighton, MI. Since 2019, URI has released approx. 76,700 wasps between 10 sites. In 2024, URI and DFE conducted the first year of releases at three sites in Washington (1200 *O. agrili,* 1162 *T. planipennisi,* and 758 *S. galinae*), Kent (1,200 *O. agrili*, 1,156 *T. planipennisi*, and 898 *S. galinae*), and Bristol (1,200 *O. agrili*, 1,104 *T. planipennisi*, and 548 *S. galinae*) Counties. Yellow pan trapping to monitor for recovery was conducted at two sites in Providence County. Yellow pan trap samples are currently being processed.

Southern pine beetle

In 2024 southern pine beetle (SPB) traps were deployed at 12 sites by three partners: DFE, URI, and NBNERR. Traps were distributed throughout the extent of pitch pine in Rhode Island (Washington, Kent, and Newport Counties). Six of the 12 traps were removed at the end of the spring 6-week trapping period, while six traps were kept in operation through the date of this publication (November). Note trap counts include the addition of two new sites in 2023 (NBNERR).

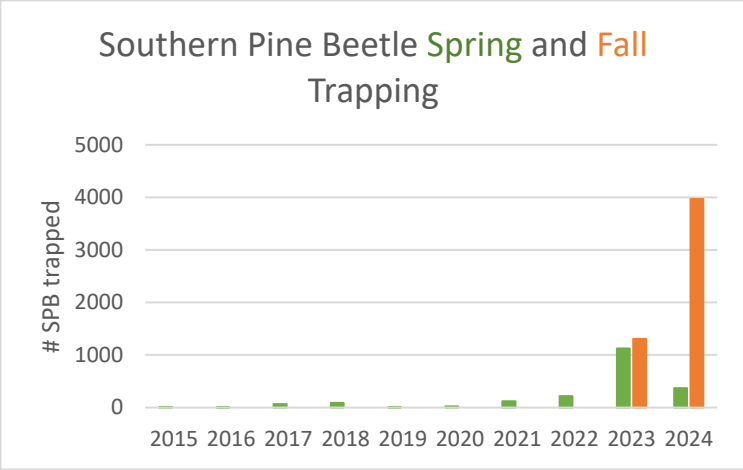


Figure 3. Total number of SPB trapped during the 6-week spring and 8-week fall trapping periods. Note: the number of traps deployed in 2023 and 2024 include the addition of two traps on Prudence Island.

While 2024 marked the first year since 2019 that spring numbers were lower than the previous year, spring trap catches in 2024 (371 beetles) were still higher than any year between 2015-2022 (217 beetles at its highest in 2022). Trapping beyond the 6-week spring period was initiated in 2023. Fall trap catches in both 2023 and 2024 were markedly higher than most years' of spring trapping. Moreover, there was a steep increase in total number of SPB trapped in fall 2024 (3970 beetles) compared to even fall of the previous year (1310 beetles, representing a 3-fold increase). Figure 4 shows the accumulation of beetles in trap catches over time at one of the Prudence Island sites. Interestingly, nearly 90% of the beetles caught at this site were accumulated after September 1st, well past the spring advisory window that comes from the south. The differences in SPB numbers trapped among seasons and years in RI is notable and builds on the narrative that SPB in the northeastern US does not behave the same as SPB in the southeastern US. Our data showing the increase in number of trapped over time qualifies SPB as a top forest health concern in RI and response planning with partners is ongoing.

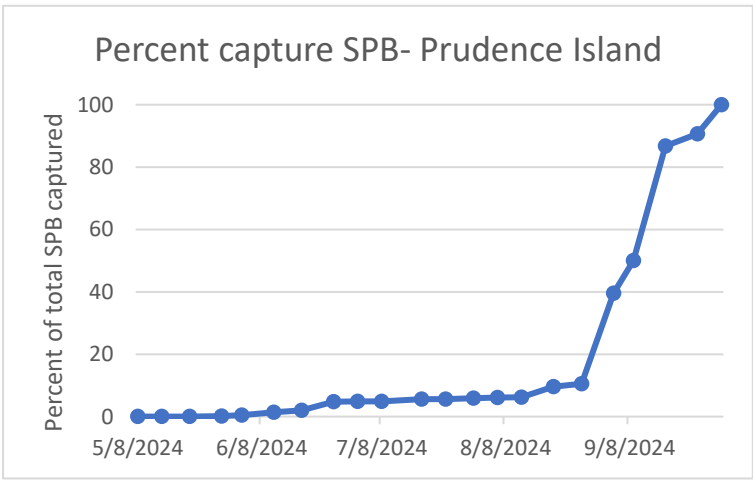


Figure 4. Percentage of trap captures accumulating over time at one of the Prudence Island trapping sites.

The three partners involved in SPB monitoring also supported a regional USFS STDP experiment investigating the effectiveness of enhanced SPB lure combinations in the fall of 2024. Each partner (DFE, URI, and NBNERR) deployed a transect of SPB lure combinations at one of each of their trapping sites. Samples were sent to the University of Georgia for processing.

Hemlock woolly adelgid

Winter morality of hemlock woolly adelgid (HWA) was monitored at four locations in Rhode Island in 2023-2024. Average winter mortality between the four sites was 16%, marking a great reduction compared to 2022-2023 (where a polar vortex event in February 2023 resulted in a 98% knockback). Favorable survival of sistens due to mild winter temperatures resulted in an abundant progrediens generation.

Biocontrol predator releases continued in 2024. Excitedly, DFE conducted the first RI releases of the *Leucotaraxis* predator silver flies in the spring (Fig. 5). Three releases containing both *Le. argenticollis* and *Le. piniperda* were released at one site in Washington County between April and July 2024. A total of 3,036 *Leucotaraxis* spp. were released. This release site was specifically chosen, as it pairs a previous *Laricobius nigrinus* release with the new *Leucotaraxis* releases. Research suggests that the impact of HWA biocontrol predators is most effective when both predators are released at a site. Silver flies were sourced from researchers from Cornell, Virginia Tech, and North Dakota State University.

Figure 5. Leucotaraxis spp. silver flies were released for the first time in RI in spring 2024.

New releases of the predator beetle *L. nigrinus* were also conducted in 2024. Two smaller spring releases of *L. nigrinus,* totaling 263 beetles, were conducted at one location in Washington County. Additionally, 900 field collected *L. nigrinus* were collected from the Delaware Water Gap Recreation Area in Layton, New Jersey and redistributed to a site in Glocester, RI in November 2024. This marks the first release of *L. nigrinus* in Providence County.

Rhode Island's eastern hemlock trees continue to decline due to HWA, and stress may be exacerbated by the presence of heavy elongate hemlock scale (EHS) and abiotic stressors.

Beech leaf disease

Beech leaf disease (BLD) has been detected in all 5 Rhode Island counties and is likely be found in every town with the presence of American beech trees. Approximately 3,600 acres of forest damage attributed to beech leaf disease was observed in 2024 during forest canopy surveys. This is a 7.5-fold increase in the observed beech leaf disease damage compared to 2023, showing that the progression of beech leaf disease continues to be rapid and severe (Fig. 6).

Figure 6. Photograph taken during spring aerial detection survey showing notable beech defoliation and dieback in Washington County.

DFE and URI measured the six long-term beech leaf disease monitoring plots in September 2024, part of a region-wide effort led by the USFS. One plot per county have been established, except for Newport County, where two plots were established. Beech health in all plots has declined significantly. Fewer secondary leaves were produced in 2024 compared to 2023, making nearly all trees look sickly. Even though no additional trees died in 2024, the trees looked worse, and we expect more tree deaths in 2025. Additionally, besides observing many BLD symptoms, the Washington County site had significant defoliation caused by fall cankerworms *Alsophila pometaria*. In the Kent, Providence, and Newport County sites, some of the symptoms looked different than those caused by BLD; they were more like the fungal disease anthracnose. Three samples were collected and, besides BLD, anthracnose was confirmed in all of them after the samples were diagnosed in the laboratory. Results of the BLD plot monitoring are representative of the current state of most beech stands in Rhode Island.

White pine needle damage

Figure 7. White pine trees showing browning needles and thin crowns amidst defoliation due to WPDN in late May.

The white pine needle disease complex responsible for white pine needle damage/decline (WPND) caused 2,832 acres of forest damage in spring 2024. This was not unexpected when considering the heavy amount of precipitation received in May and June of 2023. Disease symptoms were most severe in Providence and Kent Counties, where crowns were visibly thinned due a large portion of previous years' needles turning brown and dropping in mid- to late- May (Fig. 7). New needles were also visible stunted. WPND is predicted to continue to be prevalent in the spring of 2025, due to the heavy amount of precipitation received in May and June of this year (see section of spring precipitation below).

Abiotic Factors

Spring precipitation

According to the Northeast Regional Climate Center, the spring of 2024 was decidedly warm and wet. May was the 6th wettest spring on record, deviating 189% of normal. Wet conditions were particularly conducive to several forest pathogens that were noted this year. These pathogens included but are not limited to the white pine needle disease complex, anthracnose on a suite of hosts, and *Phyllosticta* and *Didymosporina* leaf spots on sugar maple, all causing early defoliation of their hosts in many cases.

Fire

For 2024, the number of fires is down compared to the last 2 years. There were 59 fires in 2024, burning 50.5 acres, however 30 of those fires have occurred in the last 3-week period (10/20/24 to 11/14/24) with new fires occurring every day. This fall has seen record setting dry conditions for this time of year.

Outreach

Slow the Spread/Don't Move Firewood Outreach

DFE continued its yearly distribution of information and posters about EAB and other invasive wood boring insects, promoting the "Don't Move Firewood" message, visiting 33 campgrounds, RV resorts, and other facilities where the movement of firewood was a concern (Fig. 6).

Figure 8. "Don't Move Firewood" poster.

References

Forest Land Ownership

USDA Forest Service. 2021. Forests of Rhode Island, 2021. Resource Update FS-242. Madison, WI: U.S. Department of Agriculture, Forest Service. 2p. https://doi.org/10.2737/FS-RU-242

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Rhode Island Climate Data

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Forest Health Programs

State forestry agencies work in partnership with the U.S. Forest Service to monitor forest conditions and trends in their State and respond to pest outbreaks to protect the forest resource.

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