Emerald Ash Borer Preparedness Plan

Richford, Vermont

May 27, 2014

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Executive Summary

The Emerald Ash Borer is an invasive insect that has killed millions of trees through the United State and Canada. As of 2014, the insect has been found in isolated pockets surrounding Vermont in Massachusetts, New York, New Hampshire, and Quebec. As of 4/13/2014 no detection has been made in Vermont, but from data and experience gathered in other states it is inevitable that it will eventually be found in our communities. The insect causes almost 100% mortality of all native ash species within approximately 10 years. It also often goes undetected for several years until mortality starts to be widespread and therefore more noticeable.

Ash of all three Vermont species , White ash; Fraxinus ameicana, Green ash; Fraxinus pensylvanica, an d Black ash; Fraxinus nigra are all commonly found growing along the public road Right of Ways, and often planted to public spaces.

Within a few years of being established, the insect will be the cause of widespread mortality. The large number of dead and dying ash along the roadside could cause a significant financial burden to the town of Richford to remove hazardous trees, and would cause a public safety hazard.

This Emerald Ash Borer preparedness plan, which has been developed with the assistance of the Richford Conservation Commission, the Town of Richford Road Commission, The University of Vermont and the Department of Forest, Parks and Recreation, is designed to provide a plan to address the public safety concerns and minimize the impact to the town budget by inventorying the ash on the most traveled roads in Richford, and to provide a plan to preemptively remove the ash along the roadside over a period of ten years. This ten year time frame will enable the town to remove trees systematically within an approved budget. The ten year plan will also minimize the overall impact to the roadside tree canopy and alleviate public concerns of removing currently healthy trees. The plan can also be changed if research provides a means to effectively control the Emerald Ash Borer.

The roadside removal of ash trees has two goals: to remove a public safety hazard and to minimize the financial burden to small communities. This strategy is very different than what is recommended for interior forest ash trees. The department of Forests, Parks and Recreation discourages preemptive salvage of ash in the forest, and will not approve any Use Value Appraisal Plan that recommends such treatment. Where safety is not the prime concern, the department feels the value of ash remaining in the forest is greater than the value of the wood product that may be lost. Lowering the percentage of ash or harvesting the largest diameter ash in a woodlot may be allowed if done in conjunction with other silvicultural activities, but allowing the ash to respond in the natural environment can only happen if ash remains a component of the landscape.

The very best way to prevent the Emerald Ash Borer from entering our community is to not move firewood. The larval stage of the insect is the damaging agent, and this stage remains under the bark of ash for most of the year. If firewood is moved from an infected area the larvae will emerge as an adult from the firewood in the spring , mate, lay eggs in living trees and start the destruction, so DON”T MOVE FIREWOOD.

I. Introduction

Purpose of Plan

By implementing the provisions in this management plan, the Town of Richford is attempting to mitigate the disruption to the Town Road Budget for removal of hazard roadside trees caused by a pending infestation of the Emerald Ash Borer (EAB). Taking a proactive approach to this infestation enables the Town to address public needs in an efficient and effective manner. It will also allow the Town to use best management practices, the most recent scientific findings, and the Town's roadside tree inventory data to minimize costs and distribute them over a manageable time period, as well as lessen the social and economic impact that such an infestation will have on the quality of life in our community.

In particular, the plan will outline the Town of Richford's objectives and the approaches that will be used to meet the current or anticipated impact of Emerald Ash Borer (EAB) on our roadside trees. It will serve as a blueprint that the town road crew and residents can follow with a high degree of confidence, rationality, and order. The plan will also provide for public education and communication opportunities.

The plan is based on the most recent scientific studies and recommendations from key partners and multiple state and federal agencies. As this is a living document, updates to this plan will be made as new information and recommendations are released.

Applicability

This plan applies throughout the Town of Richford on roads established as priority areas by the Town Road crew. Education efforts will be targeted toward private properties where a tree may pose a safety hazard to adjacent public right-of-ways, other public properties, and adjacent property owners.

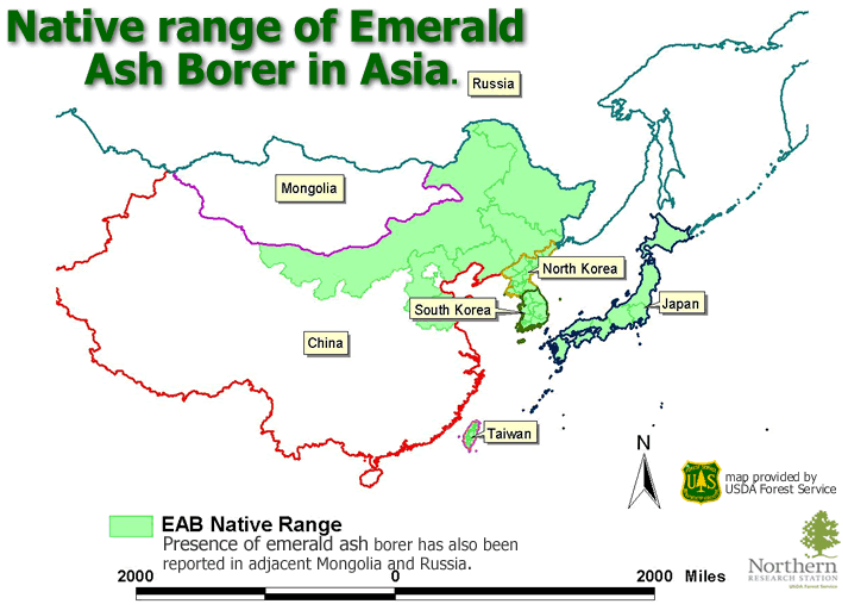
Administration

The Town Road Foreman through the direction of the Town Select Board and with educational and inventory assistance from the Richford Conservation Commission will be responsible for implementing this program and seeing that program provisions are carried out.

II. Emerald Ash Borer (EAB)

History

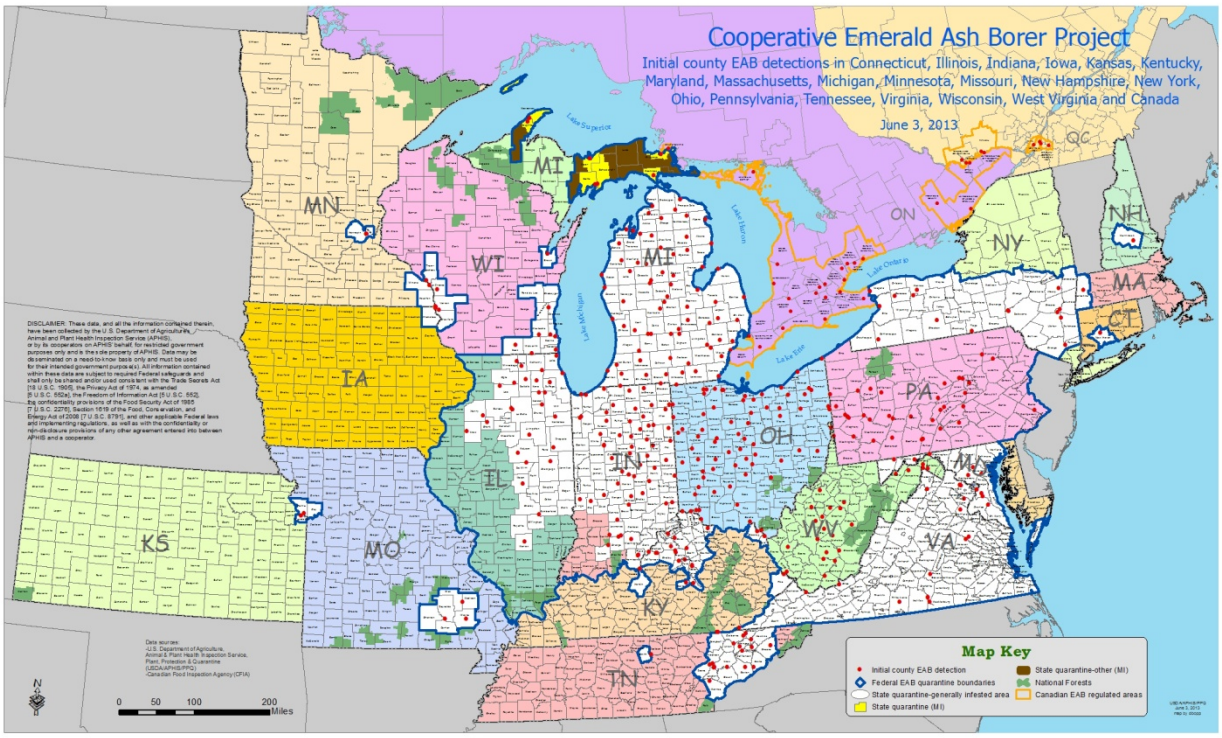
Emerald Ash Borer (*Agrilus planipennis*) is a non-native wood-boring insect that feeds on North American ash trees. EAB is native to Asia, in particular northeast China, Korea, Japan, Taiwan, and a small area in adjacent Russia and Mongolia.EAB is thought to have been introduced to southeastern Michigan through solid wood packing material, such as crates and pallets, originating from Asia. The insect was found in 2002, but is believed to have arrived in the early 1990's. Experts suspect that the insect was present for 12 years before it was identified.
In its native range, EAB feeds on a variety of plant species and is only considered a minor pest. This is partly due to the fact that Asian ash trees have been able to develop co-evolutionary resistance to EAB attacks and populations are also kept in check by predators and pathogens. However, this is not the case in North America where ash trees have no natural resistance and EAB has few predators. In North America, woodpeckers and a native wasp have been shown to attack EAB eggs and larvae, but with little impact on populations. In addition, research is being conducted with three species of wasps from China that show some promise of control (refer to *Section V – Preparation, Detection, and Control* for more information).



EAB Native Range
Source: USDA Forest
Emerald Ash Borer
Source: Wisconsin

In North America, EAB attacks all ash trees in the genus *Fraxinus*, including green ash (*F. pennsylvanica*), white ash (*F. americana*), black ash (*F. nigra*), and other native species in the same genus. Mountain ash (*Sorbus* spp.), not a true ash, is unaffected. EAB is known to attack both healthy and declining ash trees and can infest branches as small as one inch in diameter. Left on its own, EAB can travel ½ mile to several miles per year during its flight period.

However, due to human activities EAB has spread over much greater distances than it could have moved naturally. The number one human activity that has lead to the spread of EAB is the movement of firewood. In addition, the movement of nursery stock has also played a role in its movement. EAB has had a devastating effect on North American forests and has been compared to the effects of chestnut blight and Dutch elm disease. To date, EAB has killed millions of ash trees and has been found in 19 states, and Ontario, Canada. If it is not contained or its effects mitigated, it will continue to infest and kill all species of ash tree in the genus *Fraxinus*.



Distribution map of Emerald ash borer as of October 2013

In addition, if left unchecked, EAB could result in the losses of millions of dollars to the lumber and nursery industries as well as urban communities. Preliminary findings by the USDA Forest Service estimate that EAB's potential impact to the national urban landscape is a potential loss of between 0.5 to 2 percent of the total leaf area (30-90 million trees) and a value loss of between $20-60 billion. In addition, if EAB is not contained or eradicated, it could cause approximately $7 billion in additional costs to state and local governments and landowners to remove and replace dead and dying ash trees in urban and suburban areas over the next 25 years. (New Pest Response Guidelines, Emerald Ash Borer *Agrilus planipennis* (Fairmaire), USDA-APHIS 2008.)

Identification and Lifecycle (Source, http://www.emeraldashborer.wi.gov/index.jsp.)

Emerald ash borer adults are very small, metallic green beetles. They are only 3/8 -1/2 inch long and 1/16 inch wide (about the size of a cooked grain of rice). Adult emerald ash borers emerge from beneath the bark of ash trees in late May through mid-July, creating a D-shaped exit hole as they chew their way out of the tree. Adult beetles are most active during the day and prefer warm, sunny weather. They never wander far from where they exit a tree (less than one mile) in search of a mate.

Emerald Ash Borer
Source: Wisconsin Emerald Ash Borer Information Source

Once they find a mate, the female will lay 60 – 90 eggs, one at a time, in the crevices of ash tree bark. The adult beetles will feed lightly on ash tree leaves, but do not cause much harm by doing so. The adult beetles live a total of three to six weeks. Emerald ash borer eggs are very small (1 mm), difficult to find and are rarely seen. Female adult beetles deposit them in the bark crevices and as larvae hatch from the egg, they immediately chew their way into the tree. Emerald ash borer larvae are white and slightly flattened, with a pair of brown pincher-like appendages on the last abdominal segment. Their size varies as they feed under the bark on the ash tree's tissues and grow. Full grown larvae average 1½ inches in length. They wind back and forth as they feed, creating characteristic S-shaped patterns called galleries under the bark (starting in the phloem and extending into the xylem layers). Larvae will feed under the bark for one year and often two years in healthier trees, and can survive in green wood, such as firewood, even if the tree is no longer standing.

Emerald Ash Borer Larvae
Source: Michigan State University

In autumn, after feeding under the bark, larvae will create a chamber for themselves in the tree's sapwood. They stay in this chamber over winter and pupate in the spring, turning into adult beetles. The adults emerge from the pupal chamber and then emerge from the tree through D-shaped exit holes, completing the life cycle. The pupae, like the larvae, cannot be seen unless the bark is pulled away from the tree.

Emerald Ash Borer Galleries
Source: University of Wisconsin, Department of Entomology

There are numerous metallic green insects common to the northeast that could easily be confused with EAB. In addition, there are several native pests other than EAB that attacks ash trees.

Ash Tree Identification and Symptoms

Since EAB attacks only ash trees, monitoring for its presence means knowing how to identify ash. Ash trees are most easily identified by their compound leafs (leafs are composed of 5-11 leaflets) and opposite branching pattern where branches, buds, and leaves grow directly across from each other not staggered. The only other oppositely branched tree with compound leaves is boxelder (*Acer negundo*), which almost always has three to five leaflets. The bark on mature ash trees is tight with a distinct pattern of diamond-shaped ridges. On young trees, bark is relatively smooth.

Opposite branching and buds.
Source: WDNR EAB Field Guide


Green ash compound leaf
Source: WDNR EAB Field Guide


Example of diamond pattern bark typical of green and white ash.
Source: WDNR, Brian Schwingle

It is important to remember that since EAB is a wood-boring insect and spends most of its life under the bark of the tree, it is difficult to detect in ash trees. It is also difficult to detect because the decline of infected ash trees is usually gradual. Looking for visible signs and symptoms is one method for detecting EAB. Symptoms of an infestation might include dead branches near the top of a tree or wild, leafy shoots growing out from its lower trunk. However, D-shaped exit holes and bark splits exposing S-shaped tunnels are significant signs of EAB. One sign that a tree has become infested by EAB is bark with a mottled appearance and/or jagged holes, both caused by woodpeckers looking for prepupal larvae. Another sign are the D-shaped exit holes present on the branches and the trunk left by emerging adults. For D-shaped holes to be present a tree has to be infested for at least one year. Since EAB prefers warm sunny areas of the tree, the infestation usually begins in the tops of ash trees making it difficult to find D-shaped holes in the early stages of infestation.


Woodpecker damage to EAB infested trees.
Source: USDA-Forest Service


EAB adult emerging through D-shaped Exit hole. Source: WDNR EAB Field Guide

In addition, if a tree has EAB, the bark may split vertically above larval feeding galleries. When the bark is removed from infested trees, the distinct, frass-filled larval tunnels that etch the outer sapwood and phloem are readily visible on the trunk and branches. An elliptical area of discolored sapwood, usually a result of secondary infection by fungal pathogens, sometimes surrounds larval feeding galleries. The S-shaped tunnels excavated by feeding larvae interrupt the transport of nutrients and water within the tree during the summer, causing foliage to wilt and the tree's canopy becomes increasingly thin and sparse as branches die. Many trees appear to lose about 30% to 50% of the canopy after 2 years of infestation and trees often die after 3-4 years of infestation. Often at the margin of live and dead tissue, epicormic shoots may arise on the trunk of the tree. Dense root sprouting sometimes occurs after trees die.

Epicormic branching and dying branches possibly associated with infested ash tree.
Source: WDNR, EAB Field Guide

III. Tree Inventory

The first and most important step in managing a community's urban forest resource and preparing for EAB is to conduct a tree inventory. A tree inventory is the process of counting, characterizing, and recording information about the public and sometimes private trees that make up the urban forest or the stand of trees in woodlots. It is a useful tool that documents important information related to the total number of trees. The most common type of data collected in tree inventories are: location, land use, species, size, condition, site information, and maintenance needs. The goal of any community tree inventory is to provide information essential for management in a timely fashion, at a reasonable cost.

Street tree inventories document and help with management of trees along roads and within the public right-of–ways. Park inventories document the publicly owned trees away from streets and right-of-ways. These trees comprise a smaller part of the entire community tree population, but may be the most important part of the urban forest to many residents. They make up the more natural areas of communities and are usually a place of refuge or recreation for residents.

Documentation of street and park trees is useful for identifying trees a Town is responsible for maintaining. This information can then be used to identify areas of susceptibility (i.e. high ash component), low species diversity (species and/or age), and future planting opportunities. The information can also be used to document a risk assessment program where trees prone to failure are identified and can be preemptively dealt with. Additionally, in the case of an accident, being able to produce a risk assessment and work history log indicates the community's active role in maintaining safe trees. Finally, all these items from an inventory can be used to develop a community forest management plan that provides direction for urban forestry initiatives.

The town of Richford enlisted the help of four trained and qualified UVM students taking a NR 25 - Measurements and Mapping course to conduct a roadside tree inventory on November 10th and 17th 2013. The inventory covered approximately 18 miles of roads prioritized and identified by the Town Road Commissioner, John Nutting. Two volunteers at a time traveled the roads marking the ash trees with a Garmon GPS. The roads were inventoried one side at a time; North or East first and then turned to travel South or West. The only data taken was the location of the trees to determine concentration of trees on any a particular road. The GPS co-ordinates were downloaded and mapped on a town road later with an orthophoto layer to shown reference and contact, as well as a surface water and wetland layer for additional context. Trees were inventoried within the town ROW (26 feet from center line) at a diameter of 6 inches and greater.

Inventory results

Altogether there were a total of 548 Ash trees sampled on 9.5 miles of roadway in the town of Richford, Vermont. A majority of the trees sampled on each roadway had a diameter at breast height of 6-12 inches; McAllister Road was the only road to have the same number of trees with a DBH of 6-12 inches and 12-18 inches (table 1). Hardwood Hill was the only road to have trees with a DBH of 36-42 inches. Hardwood Hill and South Richford Road had the most Ash trees present on them (figure 1). However, South Richford Road's density was less than that of Hardwood Hill's; South Richford Road is 3.4 miles while Hardwood Hill is 2.2 miles (figure 2). McAllister Road also showed a higher density of trees per mile than that of South Richford Road and Guilmette Road.

Overall the health condition for Ash trees present on these roadways was good (table 2). The roadway with the highest percentage of trees in poor condition was Guilmette Road. The ownership of property where the Ash trees were sampled was almost uniform across the four different roadways. All four roadways consisted of either an almost 50/50 private to town ownership (McAllister and South Richford Road) or a 40/60 private to town ownership (Guilmette Road and Hardwood Hill) (table 3).

As the main purpose for this inventory was to get a brief overview of the amount of ash trees that might be expected throughout the town to better prepare for the eventual infestation of Emerald Ash Borer, some recommendations can be extrapolated from this inventory. First Guilmette Road should be of possible current concern with the largest amount of poor condition trees which may cause a current hazard to the town. These trees should be noted for future storm events or removed at the town's discretion. For the larger picture of Emerald Ash Borer preparedness, the town should continue to survey roads to get a better picture of the town as a whole since these 9.5 miles are a small part of the 43 square mile township. It can only help to have more complete documentation and understanding of areas which may need more attention than others. Hardwood Hill should be monitored as a possible area of interest in regards to Emerald Ash Borer, as this road has the highest density per mile, town ownership, and largest trees present of the four roads sampled and thus can be considered the greatest financial burden to the town if an Emerald Ash Borer infestation were to break out.

While this brief survey helps to give an idea of what the town might be dealing with, the Richford Conservation Commission hopes to conduct future surveys in order to have an even clearer picture of the current abundance and condition of ash trees on town land.

Table 1.) The number of individual Ash trees sampled with DBH for four different main roadways in Richford, Vermont; sampled on November 10th, and 17th, 2013.

	Number of individual Ash trees with DBH:						
Roadway sampled	6-12"	12-18"	18-24"	24-30"	30-36"	36-42"	**Total**
Hardwood Hill	89	56	5	3	1	4	**158**

McAllister Road	41	41	18	9	6	**137**
Guilmette Road	59	19	3	1	2	**84**
South Richford Road*	96	49	19	4	1	**169**

* There are 171 tree coordinates for this road; however, this table as well as sub sequential tables are based off of 169 trees because data is missing for two trees.

Table 2.) The health condition percentage of Ash tree's sampled for four different main roadways in Richford, Vermont; sampled on November 10th, and 17th, 2013.

Health condition percentage of Ash trees sampled

	Poor	Good
Hardwood Hill	3%	97%
McAllister Road	4%	96%
Guilmette Road	15%	85%
South Richford Road	3%	97%

Table 3.) The owner percentage of Ash tree's sampled for four different main roadways in Richford, Vermont; sampled on November 10th, and 17th, 2013.

Owner percentage of Ash trees sampled

	Private	Town
Hardwood Hill	40%	60%
McAllister Road	52%	48%
Guilmette Road	43%	57%
South Richford Road	51%	49%

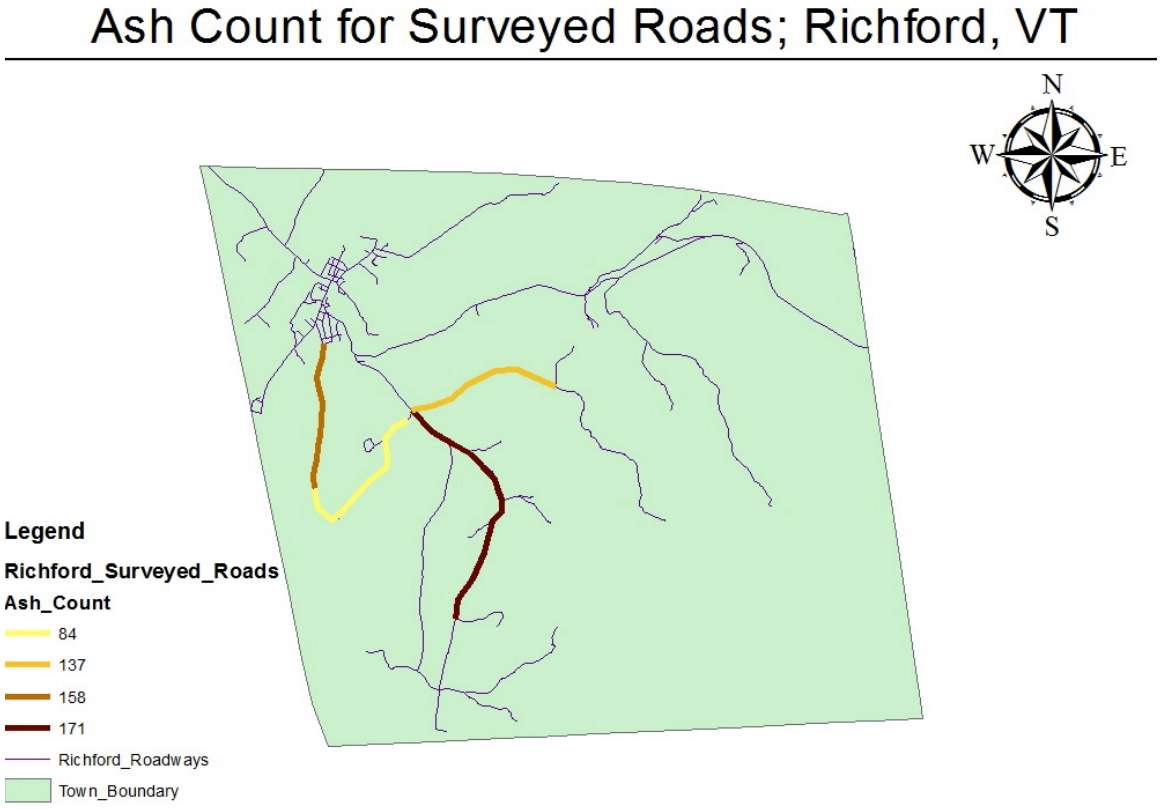


Figure 1.) Map showing how many individual trees were sampled on four different main roadways in Richford, Vermont on November 10th, and 17th, 2013.

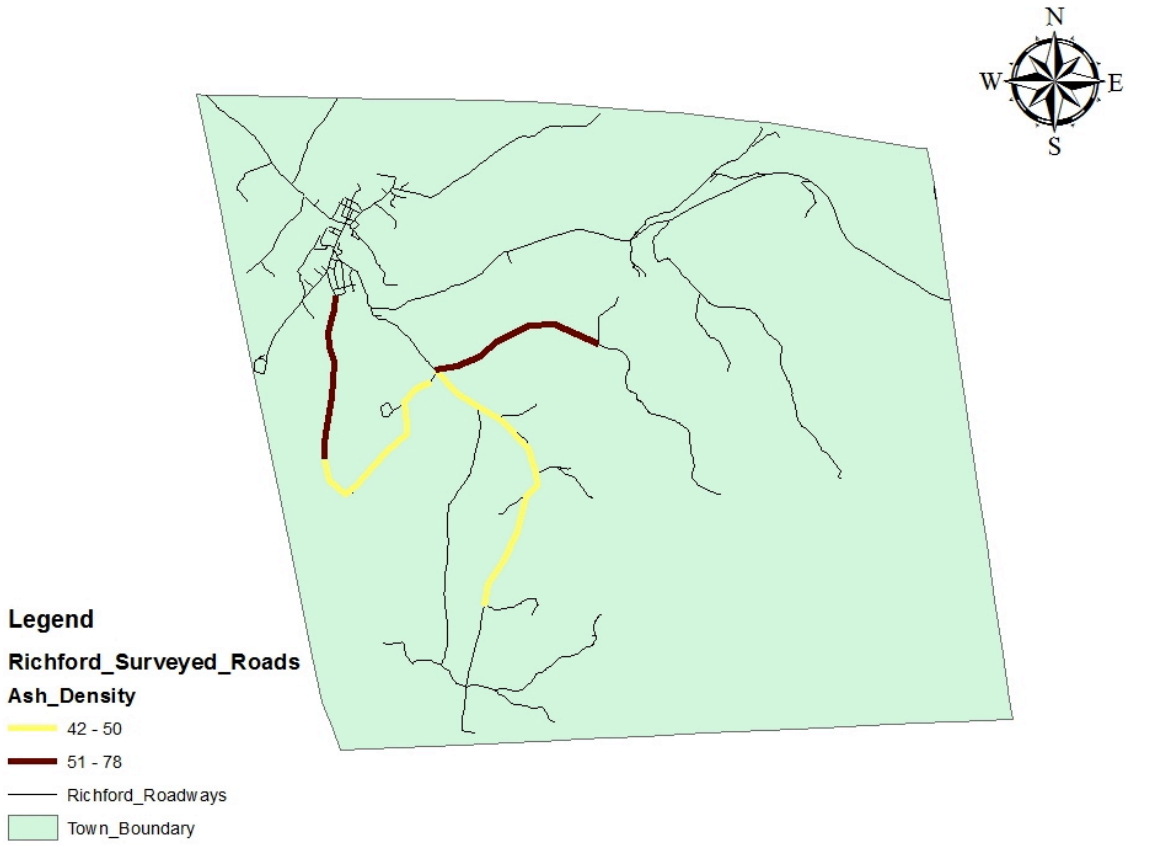


Figure 2.) Map showing the density of trees per mile on four different main roadways in Richford, Vermont on November 10th, and 17th, 2013.

Report By: Travis Hart, Emily Saber, Dani Marini & Ethan Ducharme : University of Vermont

IV. Key Stakeholders and Resource List

Representing Role/Responsibility	Name	Contact
Mayor/Town Manager/ Selectboard Chair	Linda Collins	Phone: 802 848-3587 Email:
Public Information Officer		Phone: Email:
Volunteer Forest Pest First Detector(s)	Annette Goyne Gregg Campbell	Phone: 802 933-2416 Email: agoyne@richfordk12.net Phone: 802 848-324-4682 Email: campbellforestry@yahoo.com
Tree warden/City arborist	Daniel Parsons	Phone: 802 848-3328 Email:
Tree Board Member(s)		Phone: Email:
Municipal Utility Representative		Phone: Email:
Solid Waste District Delegate	Mary Robinson	Phone: 802 848-3107 Email: merob@myfairpoint.net
Conservation Commission Member	Annette Goyne	Phone: 802 933-2416 Email: agoyne@richfordk12.net
Planning Commission Member	Mary Robinson	Phone: 802 848-3107 Email: merob@myfairpoint.net
Director of Parks/Recreation Committee Member	Chris Martel	Phone: 802 848- Email:
Local Emergency Management Coordinator		Phone: Email:
Director of Public Works/ Road Foreman or Commissioner	John Nutting	Phone: 802 848-3379 802 848-3440 Email:
Local tree/forest professionals	Nancy Patch County Forester	Phone: 802 524-6501 Email: nancy.patch@state.vt.us
Certified pesticide applicators in category 3A. Go to http://www.vtinvasives.org/pesticide-treatment for an updated list	Gregg Campbell	Phone: 802 848-324-4682 Email: campbellforestry@yahoo.com
Certified arborists/tree removal contractors. Go to: http://www.isa-arbor.com/		Phone: Email:
Volunteer partners: **Richford Conservation Commission**		Phone: 802 933-2416 Email: richfordconservation@gmail.com
Vermont Coverts Cooperators. Contact Lisa Sausville at 388-3880 or lisa@vtcoverts.org		Phone: Email:
Conservation Commission		Phone: Email:
Master Gardeners. Contact Lisa Chouinard at master.gardener@uvm.edu or (802) 656-9562	Gregg Campbell	Phone: 802 848-324-4682 Email: campbellforestry@yahoo.com
SOUL Tree Stewards. Contact Kate Forrer at Katherine.Forrer@uvm.edu or (802) 223-2389	In Richford: Gregg Campbell	Phone: 802 848-324-4682 Email: campbellforestry@yahoo.com
Other:		

Roadside Pest Planning Team

Name	Responsibility	Contact
John Nutting	Town Road Crew Foreman	Phone: 802 848-3379 802 848-3440 Email:
Annette Goyne	Richford Conservation Commission	Phone: 802 933-2416 Email: agoyne@richfordk12.net
Gregg Campbell	Richford Conservation Commission	Phone: 802 848-324-4682 Email: campbellforestry@yahoo.com
Dan Parsons	Richford Tree Warden	Phone: 802 848-3328 Email:
Debbie Foote	Richford Conservation Commission	Phone: 802 848-3993 Email: dfoote57@hotmail.com
		Phone: Email:

V. Tree Management Considerations

Monitoring and Detection

One of the first lines of defenses against EAB is to monitor for the pest. It has been estimated in many instances where EAB was found, that EAB was usually present in the community for a number of years before it was detected. If a new EAB infestation can be detected while it is still limited in scale, it may be more controllable. In addition, identifying infestations early will give municipalities more time to implement management strategies before ash trees in the community are in a late stage of decline and become hazardous, ultimately saving money. To date, the State of Vermont is and has been conducting survey and detection efforts across the state in hopes to detect EAB early. Probably the most well know effort is the use of the purple traps, which was used for the first time in 2007. The traps are made of a purple corrugated plastic board that is coated with non-toxic glue. Research shows that EAB is visually attracted to purple and to increase the attractiveness of the trap to the beetles, it is baited with a lure (Manuka oil). The traps are 24" in length, triangular in shape, and open in the center. Traps are placed in the tree canopy prior to the start of adult EAB emergence and are left hanging through the end of seasonal beetle flight. Residents are encouraged to report any tree suspected of having EAB. Cases can be reported by notifying Vermont Forest parks and recreation.

Another method of early detection is collecting samples of Bupestrid beetles caught by Cerceris Wasps. After laying her eggs in a pencil-size hole in hard-packed soil, a female Cerceris Wasp will hunt for a Bupestrid beetle. The wasp's sting will immobilize the beetle, allowing the wasp to drop it into the hole where her eggs are laid. Upon hatching, the wasp larvae will feed on the Bupestrid beetle. The Emerald Ash Borer is a member of this beetle family and would be potential bait for the Cerceris Wasp. Vermont is home to native Bupestrid beetles which are of no concern to local ash trees, but which provide a necessary element in the life cycle of the Cerceris Wasp. Monitoring the types of Bupestrid beetles found in a Cerceris Wasp colony is a way to detect the presence of EAB or determine its absence. For the past two summers, members of the Richford Conservation Commission have monitored a colony of Cerceris Wasps, one of the largest colonies in the state, at the Richford Playground. At the height of the breeding season in July, the number of nests has been counted, wasps have been netted and any Bupestrid beetles released by wasps in nets or accidentally dropped on the ground have been recorded and gathered in vials for state records. The goal is to gather at least 50 beetles

per summer. It is estimated that if there are no Emerald Ash Borers in this amount of beetles, then it is likely that this invasive pest is not yet in our area. The Richford Conservation Commission plans to continue this Citizen Science initiative and collaborate with the UVM Extension Service statewide efforts to monitor for EAB.

Removals

To date, communities in North America have not successfully eradicated EAB once detected. Symptoms of EAB are slow to appear, making initial infestations hard to detect.
Once EAB is found it is usually estimated that it has been present for 3-5 years. As the population builds, EAB eventually infests and kills all varieties of ash trees in the area.
Once ash trees are infested with EAB, they typically decline and die over a period of 2-3 years. The burden of dealing with hundreds to thousands of dead and dying trees in a short period of time can place an enormous strain on a Town's budget, personnel, and resources.
Management options vary and there is no one all-inclusive method.
Management options are typically divided into two categories: preventative (preemptive) or reactive management efforts. Preventative efforts entail education, and preemptive removals. By preemptively treating or removing ash trees before the arrival of EAB in the community, the strains placed on a community can be minimized and provide flexibility in tree budgets. In addition, it can potentially diminish the movement of EAB across the landscape by making it difficult for dispersing beetles to find host trees. Where reactive management, delays actions taken until EAB has arrived. It usually entails removing a tree once it is dead or infested with EAB. With both management options, removal costs are significant. The advantages and disadvantages of conducting preemptive vs. reactive tree removals include the following:

Preemptive Removals: Removing ash trees not infested with EAB

Pros:	Cons:
• Opportunity to spread removal costs over longer time frame. • Reduces problem of dealing with many dead and/or hazardous ash trees at one time. • Opportunity to start the replanting/recovery process right away. • Greater flexibility in organizing removal and routine work schedules.	• Immediate impacts to tree canopy and aesthetics. • Removing healthy ash may create negative feeling in the community. • Does not take into account that research may find an effective control of EAB.

• Ability to utilize ash wood for products or use it as a local source of firewood.	

Reactive Removals: Removing ash trees which are either infested with EAB or dead

Pros:	Cons:
• Delayed impacts to tree canopy and aesthetics. • No negative public perception or removing healthy trees. • Delayed budgetary impacts until EAB hits. • Further EAB research may offer effective control, minimizing need for removals.	• If no action is taken to control EAB infestations, studies have shown that the rate of spread will be much faster. • Budget impacts can be severe once EAB is in community. • Replanting funds may not be available due to extreme removal costs.

The following elements of the Town's EAB Readiness Plan are suggested and are subject to Periodic revision as new information about EAB is available and as EAB moves across the state. The plan is also subject to change should state and federal policies dictate or as budgets are altered. In order to prevent or slow the spread of EAB, the Town of Richford will prioritize the treatment and removal of public ash trees by using data from the tree inventory. In addition, an estimated budget and timeframe will be generated.

Public trees – Removals
A preemptive management strategy is recommended for the Town of Richford.

Removal Plan

The first step in the removal plan is to develop a town ordinance to allow for the removal of ash trees without having a public hearing prior to each removal. Under state statutes the town tree warden may designate trees for removal if posing a hazard. The ash trees have the potential to be infected by Emerald Ash Borer but currently are not infected. If the town waits for the insect to be detected, the cost of removal of hazard trees may become unmanageable. The town Ash Tree Ordinance will allow the ash concentration to be lowered slowly over time to minimize the impact to the town for the cost of removing hazardous trees. The ordinance includes the requirement to hold an annual hearing for the removal of ash trees. If conditions change, the ordinance need not be implemented or it can be withdrawn or changed.

To reduce the impact to the town road budget, a plan to reduce the concentration of ash within the town right-of–way is designed over a ten year period, removing approximately 10% of the ash from the 2013 ash inventory each year, or approximately 54 trees per year. The ten year time frame takes into consideration the possibility that research may find an effective control for the Emerald Ash Borer, and the negative impact that tree removal will have on the overall tree canopy, as well as public sentiment. This plan also provides the ability to use the ash wood for local products before a possible quarantine limits movement of the wood.

It is recommended that the roads with the highest concentration of ash as well as the larger trees be targeted first, but the decision of which roads to prioritize and which trees to be removed is left to the Town Road Commissioner based on planned work load each summer. The road crew will be supplied with the inventory maps and as a tree is removed, it will be

crossed out on the map. At a designated time each year, the road commissioner will communicate with the Richford Conservation Commission to identify which trees were removed so the maps can be updated annually.

The cost of removal per trees is on average $ 60 / tree. The recommended budget for annual tree removal would therefore be $3,240.

VI. Community Education and Outreach Strategy

The Richford Conservation Commission will be in charge of public outreach. The Outreach Plan includes:

1) Provide the Town Clerk's Office and the Arvin A. Brown Public Library with informational materials on EAB and the "DON'T MOVE FIREWOOD" campaign.
2) Provide links to EAB and Ash tree information from the Richford Conservation Commission website and the Town of Richford website.
3) Conduct informational events annually, describing EAB and its current status through efforts such as: attendance at the Richford Farmer's Market, workshops for the public as well as elementary, middle and high school students, distribution of information at Richford's Fourth of July Parade and at the Richford Conservation Commission River Fest celebration and similar events.
4) Write press releases periodically for local newspapers addressing EAB and the tree removal work.
5) Maintain a dialogue with conservation boards in neighboring towns (Enosburgh Falls, Bakersfield, Montgomery, VT and Sutton QC) to stay abreast of local efforts, concerns and spread of EAB and to collaborate in Outreach efforts.
6) Provide a copy of this plan to the Richford Select Board, Road Commissioner, Planning Commission, and Conservation Commission. Place one copy at the library, Town Clerk's office, the high school and Cold Hollow Career Center.

VI. Disposal and Utilization

EAB Regulations for Quarantined Areas

In order to prevent further spread of EAB through artificial (human assisted) means, the following materials are regulated in quarantined areas:
• Ash trees, limbs, branches, and roots
• Ash logs, slabs, or untreated ash lumber with bark attached
• Cut firewood of all non-coniferous species
• Ash chips and ash bark fragments larger than one inch in two dimensions
• Mixed wood residue that may contain ash

• Any wood items which could harbor living EAB eggs, larvae, or adults and thus transmit an infestation.

For practical purposes, the minimum level of quarantine will be at the county level. However, additional surrounding counties may be quarantined because of the possibility of natural EAB spread, and in order to allow for the processing of regulated articles. USDAAPHIS will primarily regulate interstate movement of regulated materials.

While movement of regulated material anywhere within a quarantine area is legal, caution should be placed on the movement of material across large expanses of the quarantine to limit any further spread of EAB. Quarantines will primarily affect nurseries, firewood dealers and users, and mills. Compliance agreements are the most common tool used to allow industries to conduct business and move affected material while protecting areas of the state not yet affected by EAB. Compliance agreements allow for the movement of regulated material from quarantined areas to non-quarantined areas from October 1 to March 31 and require all material to be processed according to legal specifications by April 30. Under this treatment schedule, all life stages would be destroyed prior to adult emergence. The dates are determined based on the life cycle of EAB. EAB is in its larval stage under the bark of the trees from approximately October 1 to May 1, thus when transporting material during this time spread is minimized. However, due to EAB typically emerging from the trees in its adult “flight” stage between May 1 and September 30, no untreated material can be moved outside quarantine areas during this summer period. Listed below is a summary of EAB regulations by industry

Nurseries
Ash nursery stock is prohibited from being distributed outside of the EAB quarantine area.

Mills & Loggers
Ash logs cannot be moved out of the quarantine area during the adult flight period (roughly April 1 through September 30) unless fumigated or debarked. From October 1 through March 31, untreated ash logs may be allowed to be moved to an approved mill outside of the quarantine area for processing by April 30. Bark and wood waste must be processed by April 30. These processes must be approved by state or federal agriculture agencies.

Firewood Producers & Users
All hardwood firewood is prohibited from distribution outside the EAB quarantine area unless it has been heat treated, fumigated or debarked (plus removal of ½ inch of wood). These processes must be approved by state or federal agriculture agencies.
Firewood not for commercial sale (homeowner use) may be moved within the quarantine area but users should avoid moving firewood any distance from the area the wood originated from to reduce further spread of EAB.

Green Lumber Manufacturers
Ash lumber will need to be processed in an approved manner, such as complete removal of bark (plus ½ inch of wood), kiln drying by approved standards, or fumigation prior to distribution out of the quarantine area. All processes will need approval by state or federal agencies. Contact officials for further information.

Pallet Producers
Ash lumber (generated from ash from the quarantine area) used to make pallets will need to be processed in a manner approved by state or federal agencies. Contact officials for further information.

Wood Waste
Wood waste from pruning, storm damage, or removals should not be moved from the point of action in order to reduce the spread of EAB. Locations for wood waste drop-off may be established in the near future. Contact officials for more information.

Disposal Site: One aspect of reducing the spread of forest pests is properly disposing of or utilizing the wood, brush and stump grindings generated by the removal of infested trees. The disposal method and government regulations that apply to the movement, storage and disposal of woody material vary by pest. Collaborating with adjacent towns on wood disposal areas, chipping equipment, tree care crews, and utilization of ash materials – e.g., chip marketing, will save staff time and resources. Consider how to best utilize the wood to minimize environmental impact, offset disposal costs, or even create a value-added product.

1. **Locate at least one wood disposal site in your town or nearby.**
The purpose of a debris disposal yard is to help prevent wood which could potentially house forest pests, such as the emerald ash borer (EAB) or hemlock woolly adelgid (HWA), from being transported out of a quarantined area. They can be used as staging sites for wood processing, such as chipping, grinding, and debarking, and related marketing activities. The yards also serve as temporary or emergency storage sites when trees are removed. They allow municipalities, tree service companies, utilities and individuals to drop off cut material for processing and disposal in a manner to prevent artificial spread of EAB and HWA. Disposal sites or wood recycling centers may also accept various species, not just ash and hemlock, and can make wood disposal more efficient and economical. Locate at least one wood disposal site in your town or nearby.

Site 1 – Location: Richford Sewer Plant (State-certified wood disposal fire pit)

Contact Name/Role: John Nutting, Town Road Crew Foreman

Phone: 802 848-3379 Mobile: 802 848-3440

Site 2 – Location: _____

Contact Name/Role:

Phone: Mobile: