Ash Inventory Report for EAB Preparedness; Richford, VT

Introduction:

The Emerald Ash Borer is a small colorful beetle that bores into wood (Borer 2010). The borer emerges from holes in the trunks of ash trees and the females lay their eggs in the crevices. Once hatched, the larvae burrow under the bark and eat through the cambium causing trees to lose the ability to transport nutrients (Borer 2010). Essentially, this causes the ash trees to slowly starve and die. A few signs of the emerald ash borer are crown dieback, sprouts in the middle of the base of the trunk, and cracked bark with borer holes (Borer 2010).

Emerald Ash Borer was first detected in the United States in Michigan during 2002, and has since infected and destroyed millions of ash trees across the country. (Borer 2010). It is believed to have entered the country through shipping material. Currently it is causing problems in Ontario, Canada and is quickly spreading its way down. Richford, VT is a small town in northern Vermont that resides on the border of Canada. Because they are so close to Canada, the town of Richford is anticipating the arrival of the Emerald Ash Borer sometime in the future.

As a result, taking inventory of ash trees on roads of most concern is necessary. In completing this project, we aim to inventory, measure, and assess the condition of all ash trees on designated roadways, complete various maps and develop a summary and recommendations for the town of Richford on the present ash trees. It is a hope of ours to submit deliverables to the town of Richford, including GPS locations of all ash trees, a GIS map and Google Earth map displaying the trees, and a written document summarizing the overall condition of the town and their ash trees. Our overall goal is to assist the town of Richford, VT and help them prepare for the arrival of the Emerald Ash Borer.

Methods:

An on the ground approach was taken to be able to assess the town of Richfords ash tree conditions. The first step in our process was being able to identify the signs of (EAB). Each of our lab members familiarized ourselves with what the signs looked like when EAB was present. We then needed to make sure we were confident identifying all three species of ash trees that are present here in Vermont, Green Ash, Black Ash, and most commonly in our area, White Ash.

Once in Richford, we met with our sponsor to go over the roads that were going to be assessed. We decided upon, Hardwood Hill, McAllister Road, Guilmette Road, and South Richford Road. We choose a simple yet effective approach to be able to assess all the trees on these roads with the limited time we were given. We decided to split into two groups, each group taking one road, one group would walk taking the shorter road and one that was driving would take the longer road. In order to make measurable results, we were given forms by the town of Richford where we could count and mark each individual tree, mark its overall condition, which side of the road it was on, whether it was town or private land, and the trees DBH. The chart had boxes where we could place a checkmark in each spot where the tree fit best. Condition was listed as either “good” or “poor”, DBH ranged from 6-12”, 12-18”, 18-24”, 24-30” etc. Side of road was also determined, left or right side was marked, as well as how far off the center of the road the tree was located, <25 feet indicated that it was on private land, any less was town land.

The procedures varied slightly from the group walking to the group driving in order to be most efficient. The walking group would walk up to each ash tree individually that was spotted while walking, mark its point with the gps provided, take the DBH, and fill out the rest of that data on the data chart, getting an exact location of the tree. The group that was driving, in order to be most efficient, stayed in the car and marked points on the road directly out from where the tree was spotted. They would then estimate the DBH being as accurate as possible as well as taking down the other data and recording it.

Once all the trees were marked on GPS and data was recorded for each tree all of the GPS points were uploaded into Google Earth to get a visual of what our data looked like. We then went into Google Earth and edited each individual point so when each point is selected it tells you the DBH, health of the tree, whether its on town or private land, and which side of the road it is on. Special notes were also made of each tree that we felt was important to recognize, examples included, ash trees that had been cut, trees that were hanging over power lines, and trees of exceptionally large size. A GIS map was also made of the transects we ran with the trees along each transect. Both maps, as well as well an overall summary of the condition of the trees recorded, was provided to the town of Richford in order for them to take proper precautions for the potential invasion of Emerald Ash Borer into Vermont.

Results:

All together there was a total of 548 Ash trees sampled on 9.5 miles of roadway in 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 tee's 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 tree's 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).

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%

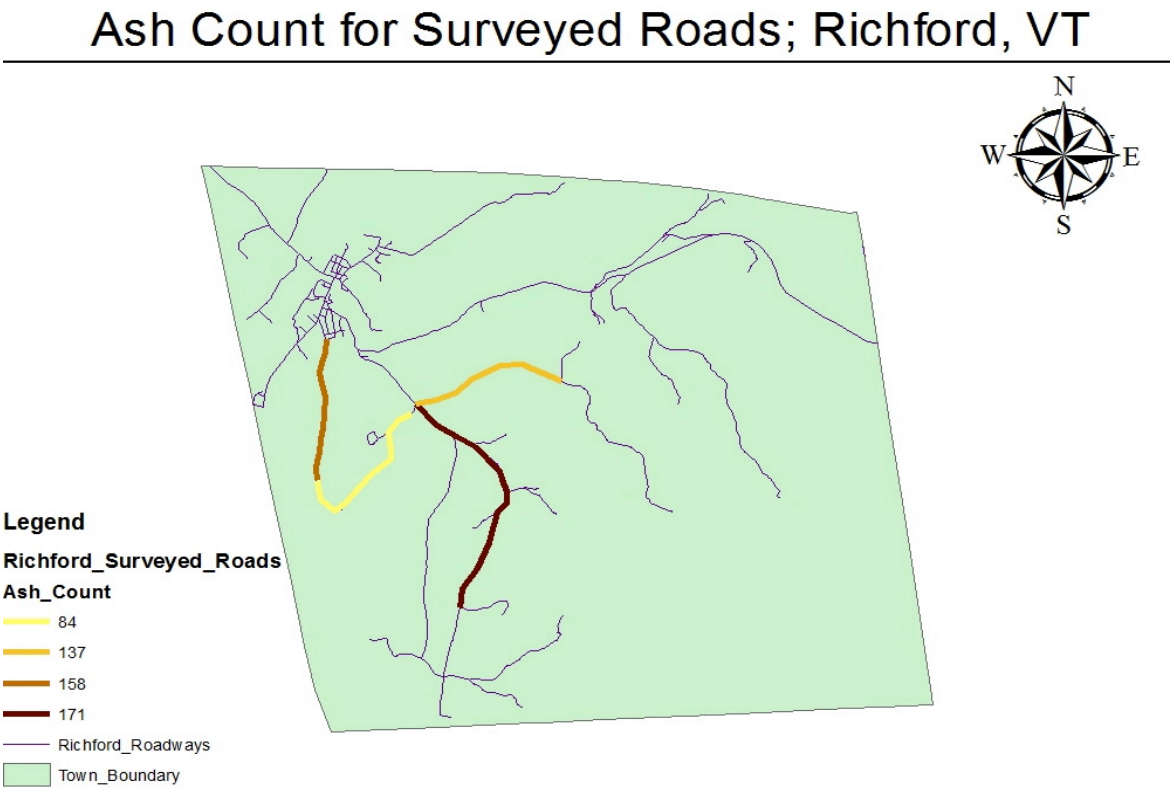

Figure 1.) Map showing how many individual trees were sampled on four different main roadways in Richford, Vermont on November 10th, and 17th, 2013.

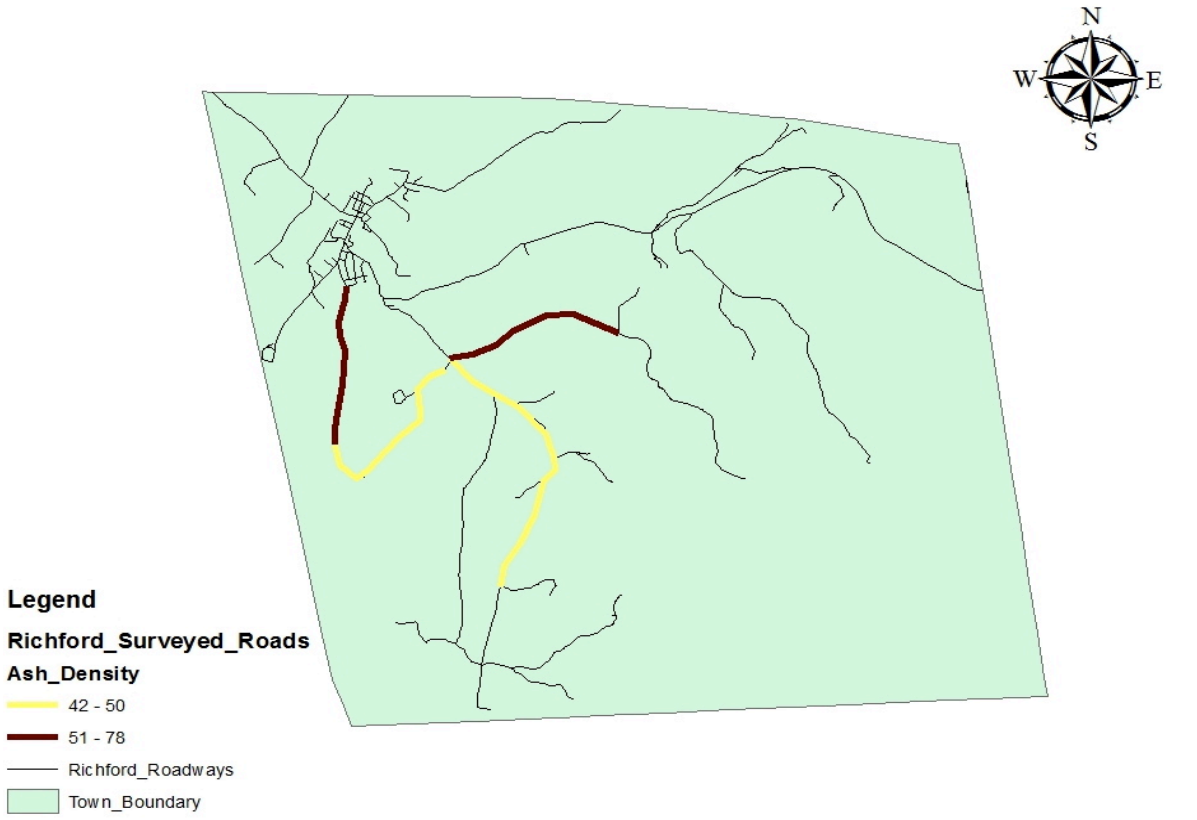

Figure 2.) Map showing the density of trees per mile on four different main roadways in Richford, Vermont on November 10th, and 17th, 2013.

Discussion:

The town of Richford is certainly at risk of an Emerald Ash Borer infestation being extremely close to the Canadian border where infestations have already been previously documented (USDA 2013). We found through this quick inventory that ash is indeed prevalent in the area. With 550 ash trees within the surveyed 9.5 miles (548 with data as mentioned above) there are vast possibilities for the pest to get a foothold within the town when it eventually arrives. With densities between about 40-80 trees per mile on these four roadways there is a good chance that similar densities could be found elsewhere throughout the town.

Currently the ash trees present are in generally good health as the vast majority of trees, 521 of 550, were noted as in good condition after the inventory. There were relatively few individual trees, 29 of 550, that were considered as in poor condition with the majority of these

being along Guilmette road with 13 trees recorded as in poor condition. It should be noted that most of these trees were of relatively young growth as many were within the smallest (6-12”) DBH class and in many cases many smaller saplings could be found surrounding these younger trees. This may be a reason why the ash in the town are seen in mostly good condition.

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 there are some recommendations that 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, first we recommend that the town 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. Second, we recommend that Hardwood Hill be monitored as a possible area of interest in regards to Emerald Ash Borer. Hardwood Hill 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 will help to give an idea of what the town might be dealing with future surveys should be encouraged. From this survey we have a few notes to improve any future endeavors. First walking roadways while good for getting precise GPS locations and not missing trees, is relatively slow and could take longer. If walking roadways it is recommended to do this on smaller roads and in warmer seasons. Using a vehicle with one person driving and one recording GPS and other data worked well and is recommended for future sampling. This allowed for a quicker survey of the longer roads and while not achieving precise locations for GPS was fine with estimates of distances from the center line of the road. Overall the preciseness of the GPS was less important, as a GPS coordinate combined with the other data including distance from center, side of road and DBH class was decided to be enough to find the trees by all involved parties. For a rapid assessment that still retains a high level of preciseness this method is recommended for future surveys. One last recommendation is to not go too fast as we

believe this may have been a problem encountered which led to an error in data collection for a section of South Richford road which could be avoided by making sure if working in pairs to work at the same pace in any future endeavors.

Literature Cited

USDA. 2013. Cooperative Emerald Ash Borer Project: Initial county EAB detections in North America.

Borer, Emerald Ash. "Emerald ash borer." Accessed online at http://www.emeraldashborer info on 29 (2010).