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RE: Emerald Ash Borer Early Detection Project

## **Background**

The emerald ash borer (EAB) is an invasive species in Ontario that feeds on all species of natural occurring ash trees in Ontario. The beetle was first detected in 2002 in the Windsor area of Canada. Analysis shows that it had been present for many years prior to that. Since its discovery, EAB has expanded its range and has now been spotted through southern Ontario and Quebec. Additionally, it has been detected in Manitoba, New Brunswick, and just recently Nova Scotia as well as some 35 states in the United States. The closest area to Muskoka that EAB has been spotted is Ramara county, near Orillia. An up-to-date map on the distribution of EAB and the regulated areas can be found at the Cooperative Emerald Ash Borer Project's website.

Emerald ash borers have been seen attacking all five native ash species in Ontario. Green, white, black, and pumpkin ash have very high mortality rates, with blue ash being the only native ash species that is somewhat resilient. The adult stage of EAB typically emerges in early and late June and disperses at a rate of 10 km per year on average. However, most emerald ash borers only disperse a short distance provided that suitable host trees are nearby. EAB is a hardy parasite able to survive temperature of -30°C by using antifreeze compounds. It is very likely that EAB can survive in any area of Canada where ash is present. Currently, woodpeckers are the only native animals that feed on EAB, though there has been research done to see if introduced parasitoids could be an effective control.

The main cause of ash tree death from EAB is due to the feeding of the larvae. The larval stage of the beetle feeds on and destroys the phloem and xylem layers of the tree. This prevents the flow of vital nutrients throughout the tree, eventually killing the tree. This is similar to a process called girdling, which removes the outer ring of bark to prevent nutrients from flowing through the tree. By the time the tree shows symptoms of EAB infestation, the tree is usually already in serious decline.

Ash trees provide a number of benefits, both in urban and natural landscapes, so the removal of them will have a significant effect. Ash is planted extensively in urban environments because it thrives in disturbed habitats. In urban environments, trees can improve air and water quality, remediate soils, and provide shade. They're also used frequently as a shoreline stabilizer to prevent erosion.

## **Project Description**

Muskoka Conservancy's Emerald Ash Borer Early Detection Project was launched in 2015 and was started to monitor the health of Muskoka's forest ecosystems and to detect whether EAB was present in Muskoka. This is the fourth year of the project, with 20 traps being purchased and placed throughout Muskoka this year. In the past, 24 traps were used to detect EAB, but this year only 20 were used. An analysis of past results, location, and traffic of the sites was conducted to ascertain which sites to remove. This year's project was funded by both the Town of Gravenhurst and the Town of Bracebridge, with assistance in the form of staff hours from Bioforest, a Canadian urban forest pest management company.

The sites used this year were all chosen in previous years as good representative trees. They are located in open, high traffic areas that facilitate the hanging of traps. Using the same selection of trees allows for a continuing data set and allows us to compare tree health from year to year. Some sites may need to be reassessed, as a few traps were impacted by inclement weather conditions and lost some of the results we could have acquired. Rain and wind can wash the glue of the trap and remove bugs that were previously trapped. Notes were made at these site locations and if the project continues, different sites may be selected.

## **Results**

The traps were checked and removed on September 14<sup>th</sup>. Elsa Cousineau, a Technical Specialist from Bioforest, was present to identify any emerald ash borers that were caught on the trap. In total, 19 traps were successfully hung and analyzed, while one trap fell during the summer and didn't give proper results.

Of these 19 traps, two separate traps captured a single EAB specimen each. No further testing was required, as they were definitively identified as EAB. These specimens were found at Sopher's Bay Landing near Gravenhurst and Golden Beach Road in Bracebridge. The trees on both properties were in decline and other ash trees in the vicinity showed signs of decline or death as well.

## **Project Successes**

This project was intended to monitor for the presence of EAB in the Muskoka region. The traps are also used to monitor populations of bugs that are present. EAB was detected in Muskoka this year, but the presence of only a single individual at each of the two affected sites is not enough evidence to definitely conclude anything about the overall population, but it suggests may still be low. Trees that showed potential EAB damage were also noted when putting up traps and the health of surrounding trees was assessed when EAB was detected at a site. Both these actions were critical for this year, as the presence of EAB was confirmed in the District of Muskoka. This baseline documentation gives us a significant head start to carefully consider the best course of action to deal with EAB. This project has also generated a lot of outreach opportunities with landowners. When talking with landowners while removing the traps, many of them mentioned the interest that others had in the traps. Additionally, an advertisement was

put in the Bracebridge tax bill, advising about the dangers of EAB. These outreach activities helped build an awareness of invasive species, which could prove useful as we move towards next steps.

The partnership between Muskoka Conservancy, the Town of Bracebridge, the Town of Gravenhurst, and Bioforest has shown to be very important for the success of this project. This project was able to detect the presence of EAB at an early stage, while the population is still low. Support from the towns allowed us to continue the project this year, which has turned out to be the crucial year in EAB detection. An early discovery of EAB gives us time to prepare a treatment plan and to assess the next steps to take to manage this species.

### **Recommendations**

With the discovery of EAB in Muskoka, the steps moving forward are much different than previous years. Below are a few options for consideration, but they are not a definitive resource on the subject. One recommendation is to investigate the different options for management of EAB, so that the Towns and potentially the District have a cohesive plan moving forward. There are three generally accepted actions that can be taken:

- 1) Do nothing and remove damaged/dead trees as necessary,
- 2) Treat all trees,
- 3) A combination of the above that treats some trees and removes or replants others

All of these options have different merits and drawback as well as different costs associated with them. Consulting with other municipalities and organizations on the best way to deal with EAB is recommended. Additionally, if an urban tree inventory has not been completed, we recommend that one be completed as soon as possible. Continued monitoring of the populations and infestation areas is also very beneficial to controlling the spread and increasing the knowledge of the presence of EAB in Muskoka. Muskoka Conservancy is willing to continue with our support of the project as well as to provide resources to assist in the planning phase.

### **Acknowledgements**

We would like to thank both the Town of Bracebridge and the Town of Gravenhurst for their support for this project and their financial contributions. Without their assistance, we would be unable to continue this valuable project.

We would also like to thank Bioforest and their staff for the donation of time and expertise in both this project and with assistance as we move forward. Their experience dealing with EAB is hugely beneficial to this project.

Finally, we'd like to thank all the Muskoka Conservancy volunteers and members who have assisted us throughout the year and have continued to allow us to use their property. Their contribution to the outreach of this project cannot be understated.

