

Black Ash Documentation and Cultural Management in Vermont Public Forests

NR 206 - Environmental Problem Solving & Impact Assessment
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Abstract

For our project, we partnered with Charlotte Cadow and the Vermont Urban and Community Forestry (VT UCF) program to aid Vermont municipalities with the management of black ash in their forests and community lands, with detailed consideration of the species' ecological and cultural significance. Given the current emerald ash borer (EAB) invasion throughout the northeast and Vermont, there is no time to waste – it is critical to bring attention to and address this urgent issue. Black ash is the most susceptible species of ash to EAB and is imperative to both Abenaki culture and Vermont's forest ecosystems.

To address this problem, we collected observations of black ash trees in three distinct community forests using iNaturalist. We combined this with public data to develop an extrapolated map of potential black ash locations in town forests across Vermont. From here, we met with Kerry R. Wood, an Abenaki basketmaker, to discuss the needs of the indigenous basket-weaving community concerning black ash management. For a final deliverable to share with community members, we created a resource package that includes our synthesized research and insights learned, recommendations for ecological and cultural management of black ash, an ArcGIS StoryMap containing our map of black ash in Vermont, and a list of helpful resources and contacts related to these topics.

While we initially began the project with the idea of promoting the harvest of black ash for basket making, we discovered throughout the semester that there were many challenges to accomplishing this, and we subsequently shifted our focus. We recognized that preserving legacy black ash trees in forest "lifeboats" is required to ensure the species can be appreciated by future generations. The final presentation of our findings brought attention to the significance of this problem and inspired dialogue among attendees regarding what barriers exist, what needs to be addressed next, and how we can all play a role.

Acknowledgements

We want to acknowledge and thank VT UCF and Joanne Garton for allowing us to help further the preservation of black ash and Charlotte Cadow for her encouragement, guidance, and knowledge throughout our project. In addition, we extend our gratitude to Hyla Howe and Laura Edling for providing a framework for our journey and their willingness to respond to our questions and listen to our concerns. To Kerry R. Wood for taking the time out of her busy schedule to meet with us and share her experience within the indigenous basket-making community, helping round out our understanding of this issue, and inspiring us. Lastly, we'd like to thank the Town of Ferrisburgh, the Audubon Center in Huntington, and the Town of Williston for allowing us to investigate their woodlands for our initial data collection.

Introduction

Black ash (*Fraxinus nigra*) is a significant component of the forest structures within Vermont that regulates water flow and facilitates important nutrient cycles (Toczydlowski, 2020). In addition, black ash is a notable species in indigenous culture; in the Abenaki origin story, people were formed from the ash tree (Drake, 2022). Trees that meet specific requirements can be processed into splints utilized for basket-making, a long-standing indigenous tradition. Weaved goods like baskets have proven integral to the establishment of the Abenaki economy (Hansen, 2009). The emerald ash borer (*Agrilus planipennis*), which originated in Asia and was identified in the United States in 2002, poses a substantial threat to black ash. After initial infestation, an individual tree will succumb to EAB in a matter of 3-5 years (Vermont Parks and Recreation, 2021). As of June 2022, EAB has been identified in 36 states and all but one county in Vermont. The inevitable dieback of the species will trigger significant ecological responses and reshape integral indigenous traditions.



Figure 1. Two baskets woven by Kerry Wood, local Abenaki basketmaker, using black ash splints.

For this project, we worked alongside Charlotte Cadow, the Black Ash Inventory and Outreach Coordinator of Vermont Urban and Community Forestry (VT UCF). Charlotte works to build awareness of black ash, specifically through the lens of the emerald ash borer (EAB) infestation, which threatens to eradicate the species. In conjunction with outreach, Charlotte aims to further the conversation surrounding indigenous access to black ash. Charlotte has been compiling data on black ash across various locations over the extent of Vermont, including bole height, dbh, and canopy health. This information has been added to the citizen science iNaturalist project entitled "Vermont Black Ash Inventory," to which anyone can add their own observations. To help expand upon this project, we ventured to several town forests to conduct

black ash population assessments. With this, along with the data points within the iNaturalist project, we created an interactive story map using ArcGIS that highlights black ash observations and potential locations throughout the state where the species may be present.



Figure 2. Group member Lauren taking the dbh of a black ash in the field (left), a black ash canopy- an important indication of trees health and possible EAB infestation (right)

Currently, not every town forest has a management plan and the vast majority lack discussion on plans for how to deal with EAB. Our goal is to provide information and resources that can eventually lead to the creation and implementation of management strategies to help protect black ash across Vermont towns. As a response, we created a resource packet which suggests management strategies and provides relevant contacts to be sent to all Vermont town forests that we indicated may have black ash, as well as other interested recipients.

Strategies

Our goal is to ensure that managers of Vermont town forests have the necessary resources to make educated and reinforced decisions regarding the inventory, management, and cultural significance of black ash. The following objectives outline our plan used to achieve this goal:

- **Objective I:** Complete black ash inventory (dbh, canopy cover, bole height) of Mud Pond, the Audubon Center in Huntington, and Ferrisburgh Municipal Forest by October 7th.
- **Objective II:** Use inventoried and public data (soil, topography, public forest boundaries, and landscape characteristics) to create an extrapolated map of potential black ash locations in Vermont town forests by October 21st.

- Objective III: Create a digital resource package which includes a management plan outline, cultural access information, and compiled research, useful websites and articles, contacts, and extrapolated map by November 18th.
- Objective IV: Send the digital resource package to public forest managers of the areas that we identified with black ash through the extrapolated map, as well as forests known to have black ash, by December 9th.

To create the objectives and flesh out our ideas for this project, we utilized a multitude of problem-solving methods. After meeting with our community partner and learning more about our project, we followed the steps outlined in DOC'S KEY, which allowed us to realize what we were trying to accomplish throughout the course of the semester. Delving into each step of this asset made us consider a wide variety of routes to look at before we settled upon the direction we chose.

Many of the decisions we made were formulated in a hive-mind mentality during our group meetings with our community partner in the field and on campus. Our community partner, Charlotte Cadow, was very helpful in aiding us with our initial research and guiding us throughout our project. Charlotte provided us with information on black ash identification, iNaturalist indexing, and invaluable contacts for other stakeholders involved with Vermont's town forests. As a group we also met with Kerry Wood, a fantastic intellectual source for indigenous basketry, as she is one of a few select individuals knowledgeable on basket making in the entire state. The insight Kerry provided us with altered the course of our project and is imperative to the future success of indigenous access in Vermont town forests. The Howe Library on the University of Vermont's campus study rooms are a physical resource that we leveraged almost every lab session. Having a private space to converse as a group definitely assisted in our project's success and group bonding throughout the semester. Additionally, during our time in the study rooms, we were collectively able to work on our ArcGIS deliverable through the monitor in the room, allowing us to function as a collective consciousness and integrate everyone's ideas simultaneously.

Given that the main goal of this project was to create resources that forest managers can use to learn more about the cultural and ecological significance of black ash in the state of Vermont, we will be able to measure our success by the completion, conveyance, and receptivity of our products. On smaller scales, we can determine our rate of success by assessing how much work we completed each week compared to our semester-long Gantt chart and weekly agendas. One measure of our accomplishment for the project was the level of engagement we received regarding our presentation and resource package. Along with this, it was exciting to see that our presentation led to a very involved discussion between all of the people present after the conclusion of it. Hopefully many people that receive our products will implement the findings that we have highlighted into their management.

Results & Deliverables

I. [Story Map](#)

Our first deliverable was the creation of a map of black ash observations from our own field visits as well as from the Vermont Black Ash Inventory iNaturalist project. We added additional data including municipal land boundaries, black ash natural communities, soil types, and other helpful resources. This map will provide insight for foresters into the potential presence of black ash in their town forests- knowing the existence and abundance of black ash will aid in the formation of management plans in preparation for potential EAB infestation. The map was integrated into an ArcGIS StoryMap for easier visualization and interpretation by viewers, hopefully expanding its use. By having a greater understanding of individual town stands, the hope is that foresters can get ahead of EAB and better protect their black ash.

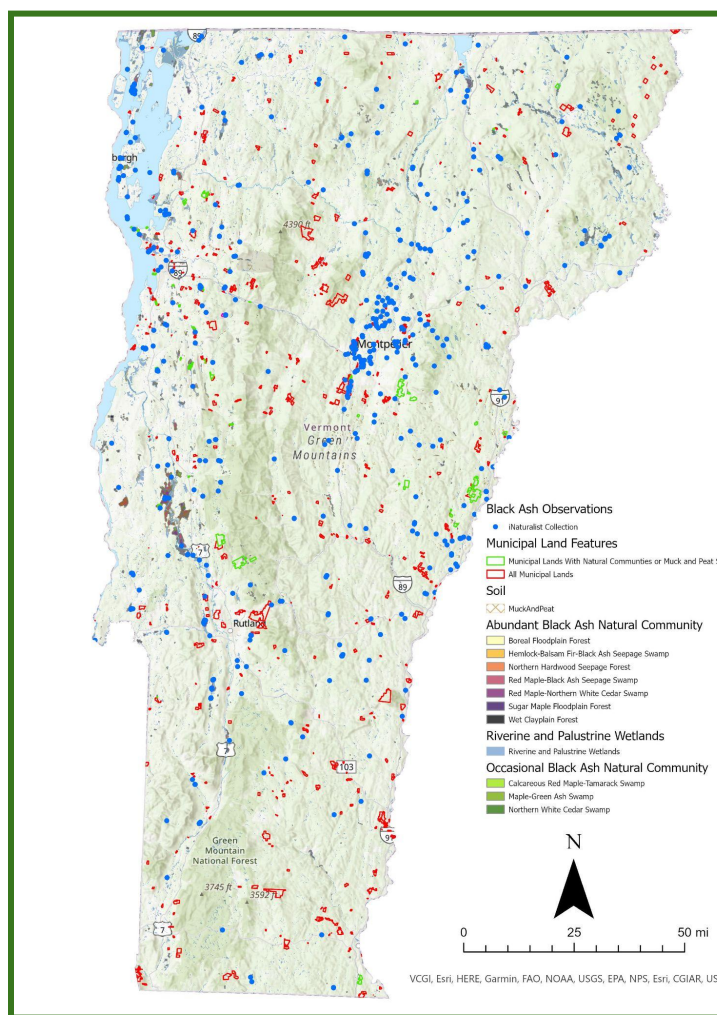


Figure 3. Map of black ash observations, expected locations, and municipal forests in VT. A link to the interactive story map is also embedded within this section's subtitle for further viewing.

II. [Resource package](#)

Knowing the distribution of black ash is important, but without any recommendations for knowing how to proceed with this knowledge, it loses its value. Within this resource packet we've included cultural access recommendations in terms of preservation, management recommendations, our story map containing black ash distribution, resources that provide more insight into formulating plans and understanding the significance of the black ash, as well as a link to our final presentation. Our hope for this deliverable was to cultivate a collection of recommendations and resources that will relay the importance of preserving black ash for ecological and cultural reasons as well as aid in the formulation of a succinct and effective plan to do so. We've included an embedded link to the packet within the subheading of this section.

III. [Presentation](#)

In order to share our findings and start a dialogue about these important issues, we invited a plethora of community members to a final presentation. The list of invitees included town foresters, conservation committee members, Abenaki basketmakers, and others with an interest in this work. Our presentation walked through who we are, the purpose of NR206, what the problem at hand is, how we approached addressing this, and final results and insights. It was a great experience to have others within the forestry community express interest in our research and engage in dialogue after the presentation ended. We received many insightful questions that prompted us to think deeper into the topic and reflect on what we had learned. Furthermore, our presentation sparked conversation between attendees who were eager to express their own ideas and questions, hear advice from each other, and look forward to what steps may come next.

Conclusions & Recommendations

In this project, we achieved all of the objectives that we set out to obtain. We successfully visited multiple locations to ascertain an idea of the presence and locality of black ash in Vermont municipal forests, created a map to describe where black ash resides in the state, and delivered a resource packet to relevant persons.

The map took our group longer than anticipated due to countless discussions of its contents and how we wanted to represent our data at length. After meeting with Kerry Wood, we also had a significant change in what and how we were recommending forest managers to adjust their plans for EAB management. Initially we wanted to work to increase access for basket makers to black ash logs. Resulting from our meeting with Kerry, she explained to us how there is a severe lack of infrastructure for processing and storing black ash logs and splints - as such, basketmakers can only handle so many logs at once. She explained that increasing access would only put more pressure on the few basketmakers in the state. This made us shift our gears towards suggesting the preservation of select genetically favorable black ash through EAB treatment and seed collection. It would've been valuable to have met with Abenaki basketmakers earlier in the semester, but completing the forest inventories occupied most of our time since we

wanted to complete this objective before the leaves fell for accurate canopy assessments.

Some of our objectives were not met exactly on time, but all of them were being worked on in a realistic time frame. This did not hinder the overall progress of our project significantly as we completed all of the necessary components before our final deadlines without needing to spend excessive time outside of our dedicated work hours.

As with many projects, once we started working on this we quickly discovered countless routes that we could've taken to address components of this issue, as well as opportunities for future work:

- Complete a more comprehensive inventory of select town forests
- Begin highlighting patches of viable black ash that can/should be preserved through inoculation
- Aid Kerry Wood and Nancy Patch in creating proposals to secure funding for infrastructure for harvesting and processing black ash
- Create a network between town managers for easier exchange of ideas and information
- Work with Kerry Wood and Nancy Patch to create events and networks for removal of black ash and pounding it into splints
- Continue the dialogue with Abeneki representatives to gain a better understanding of if infected or inoculated trees can still be used for basketry

It was a great pleasure to work on this project and we hope that our effort and deliverables will make a difference in this fight to preserve black ash and its legacy for generations to come.

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