Bowie State University Campus Tree Recommendation Plan

Objectives:

The intention of this plan is to give a detailed overview of the tree species planted over the years at Bowie State University, point out areas of high interest (i.e, invasive species, dying trees), and give an informed recommendation plan on how said areas of interest should be handled in the years following. Considering the time, money and resources required to fix all of the issues found, only very pressing issues and select groups of trees will be discussed to encourage more thoughtful planning in the future.

What qualifies as an "Invasive Species"?

According to the U.S Department of Agriculture, an invasive species is defined as a non-native introduced species that directly harms the environment and those inhabiting it— including humans.

Healthy vs Unhealthy Trees:

The traits used to properly identify a healthy versus an unhealthy tree throughout the survey were as follows: healthy leaf color and even distribution (for the season), healthy, non-rotting or overly chipped wood and a full canopy at the top of the tree. If a tree is exhibiting signs of wilting or loss of canopy, it's not immediately necessary to remove it as there could be issues with the soil, lack of water or species placement in relation to the area. However, if a tree has all three problems or has severe bark rot, it is highly recommended that it be removed.

Methodology:

For time and practical purposes, areas on Bowie State Campus *most* frequented by people were surveyed. Areas including but not limited to the Student Center, Residential Halls and Library were focused on. Save for a few exceptions, trees in parking lots were not surveyed for time purposes.

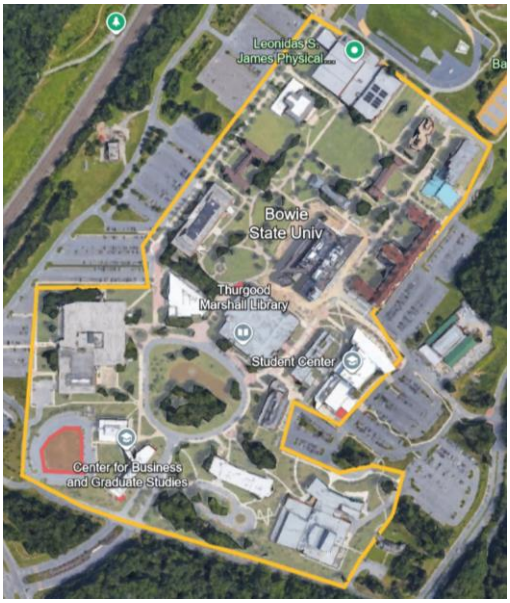


Figure 1. Highlighted map showing all areas surveyed for recommendation plan

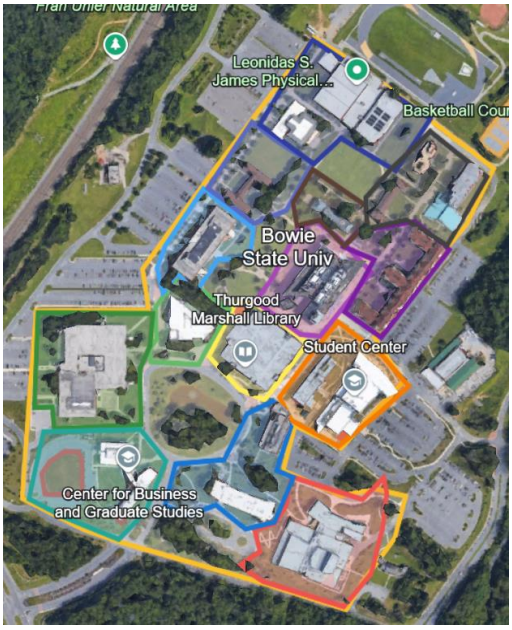


Figure 2. Highlighted map showing all 14 sites highlighted

From the highlighted area shown above, the entire site was broken down into 14 individual sites. For each tree surveyed, species, type (native, non-native or invasive) and condition data were collected.

Listed Sites For Tree Survey

#1	Art Building

#2	Student Center
#3	Library
#4	Henry Administration Building
#5	MLK Building
#6	Graduate Building
#7	James Proctor Building
#8	Computer Science Building
#9	Tubman Residence Hall
#10	Gymnasiums
#11	CNSMN Building
#12	CMRC Residence Hall
#13	Holmes Residence Hall
#14	Alex Haley, Towers & Kennard Residence Halls

Figure 3. List of all building sites taken for survey at Bowie State University

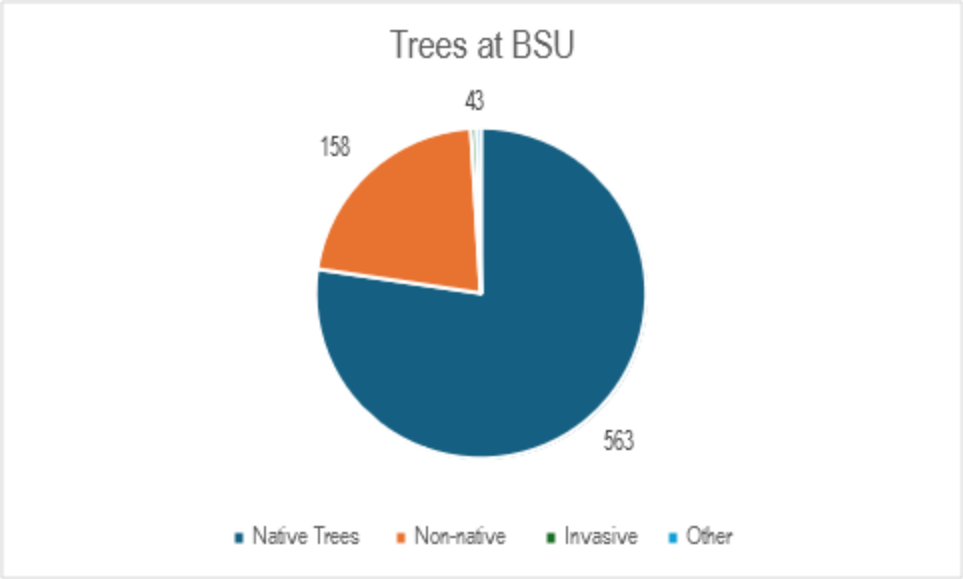


Figure 4. A pie chart showing native vs non-native vs invasive trees on campus

All Tree Species At BSU

Native Trees	Non-native	Invasive
American Beech	American Smoketree	Bradford Pear
American Elm	Amur Maple	Golden Rain Tree
American Fringe	Atlas Seeder	Norway Maple
American Holly	Black Hawthorn	
American Hornbeam	Black Walnut	
American Sycamore	Bur Oak	
Black Willow Oak	Chinese Holly	
Blackgum	Crepe Myrtle	
Dogwood	Deodar Cedar	

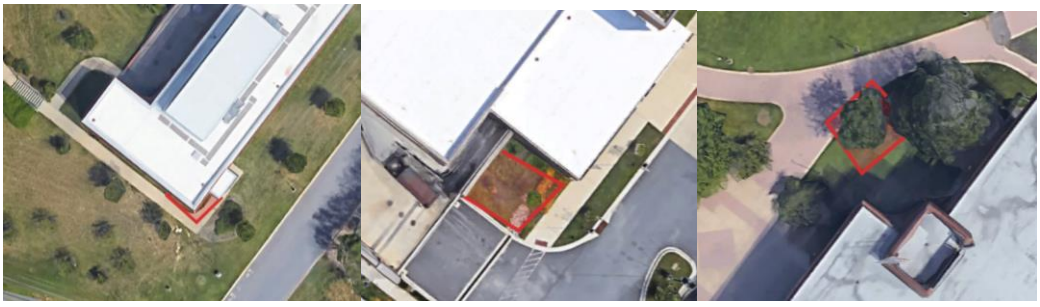
Eastern Hemlock	Eastern Hemlock
Redbud	Jane Magnolia
Eastern White Pine	Japanese Cherry
Honey Locust	Japanese Magnolia
Northern Red Oak	Japanese Maple
Overcup Oak	Japanese Zelkova
Pin Oak	Kwanzan Cherry
Post Oak	Lily Magnolia
Red Cedar	Littleleaf Linden
Red Maple	Loblolly Pine
Red Seeder	Unspecified Magnolia
River Birch	Musashino Cherry
Serviceberry	Red Mulberry
Northern Red Oak	Southern Catalpa
Sugar Maple	Sweet Cherry
Swamp Red Oak	Trident Maple
Sweetbay Magnolia	Weeping Cherry
Sweetgum	White Cedar

Tulip Poplar	Yellowwood
Virginia Pine	
White Oak	
White Fringe	
White Oak	
White Pine	
Willow Oak	
Juniper	

Figure 5. Table showing all tree species found on campus

Invasive Species on Campus:

In total, three species of invasive tree were found on campus: Bradford Pear (BP), Golden Rain Tree (GR), and Norway Maple (NM). Only four trees in total were counted, two BP, one GR and one NM. The Norway Maple was not properly noted on the maps created, however, it was noted to be in Site #9 or Tubman Hall. The other three were marked on the map as seen below:



Figures 6, 7 and 8. Showing the location of a BP behind the Graduate Studies Building (**Fig. 6**), a GR in front of the Student Center (**Fig. 7**), and a BP in front of the library (**Fig. 8**.)

Tree Recommendations For Invasives

Common Name	Scientific Name	Tree Stock Size
Black Cherry	*Platanus occidentalis*	10-15 gal
Dogwood	*Cornus florida*	10-15 gal
Eastern Redbud	*Cercis canadensis*	10-15 gal
Tulip Poplar	*Liriodendron tulipifera*	10-15 gal

Figure 9. Tree recommendations for invasive trees on campus

All trees recommended are native ornamental trees, most of which are already planted around campus. Some of the trees listed like the Eastern Redbud can tolerate the partial shade shown in Figure 4 and are generally quite adaptable. Tulip poplars especially could do well in the areas highlighted in Figure 5 and 6, as they're fast growing and good at providing shade. Regardless of whether these trees are replaced, it is incredibly important that they are at least removed for the continued health and growth of the local ecosystem at Bowie State University.

Dying Trees on Campus:

While there were a handful of trees that fall under this category across all 12 sites, in the parking lot of the Graduate Building, a whooping 14 sugar maple trees were all recorded to have rotting bark.

Figure 10. Map outlining location of rotting sugar maple trees

Figure 11. Examples of bark rotting at Graduate Building Site

There could have been many reasons why these trees died, such as soil issues, overwatering, disease or the conditions they were planted and maintained under. However, given that sugar maples do not do well with air pollution and they're located right in the middle of a parking lot, it's possible that the placement of these trees limited their ability to flourish. There are many other reasons why these trees could have failed, including but not limited to: disease, soil problems, planting the same species en masse or warmer temperatures not as suited for the species. Given that other trees around the area fared much better than this group, further investigation should be conducted to ensure that the land is properly cared for and healthy enough for any future plantings.

Tree Recommendations For Dying Trees

Common Name	Scientific Name	Tree Stock Size
Hackberry	*Celtis occidentalis*	10-15 gal
American Linden	*Tilia americana*	10-15 gal

Figure 12. Tree Recommendations for dying sugar maple site

Both trees listed are good for full sun areas like the site highlighted are good for more urban areas. Hackberry trees are more resilient however American Linden trees are more suited to a parking lot space.

Non-native Trees on Campus:

The ratio of non-native to native trees is fairly normal, however there are some areas like the patch of Trident Maples outside between the Science Building and the Library that could be replaced with native trees to better benefit the environment by attracting native pollinators,

providing food and shelter to animals and overall using less resources (time, water, money, supplies) to care for it.

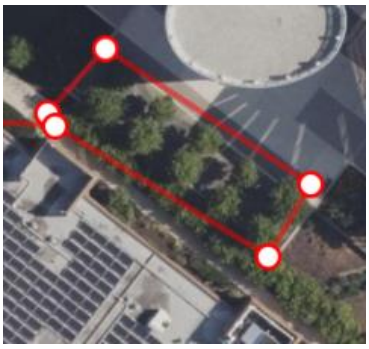


Figure 13. Map highlighting the area of Trident Maples between the Science and Library buildings

Tree Recommendations	**Scientific Name**
Honey Locust	*Gleditsia triacanthos*
Blackgum	*Nyssa sylvatica*

Figure 14. Tree recommendations for non-native tree space

Given that most if not all of the non-native trees planted on campus (like the various cherry species planted in front of the student center) are placed for ornamental purposes, Honey Locust trees or Blackgum trees would do well here. Besides looking pretty, they also do well in more residential spaces like this one that acts as a transitional space behind buildings.

Summary:

Among all else, it is crucial that dead trees and invasive trees on campus be removed as soon as possible to prevent the spread of diseases, pests, flammable material and more trees that can cause harm to the surrounding ecosystem. Three out of four of the invasive trees on campus have been pinpointed on the map, with the only knowledge on the remaining invasive tree to be around Tubman Residential Hall. The locations of the three dead trees found throughout this survey similarly were not properly pinpointed, however they were identified in Sites #4, #6 and #8 (one per site). To ensure proper removal, an arboriter should be hired to remove 80% of the root when taking out the tree. This prevents any potential damage to nearby pipes or other structures as well as allowing the old roots to naturally decompose and enrich the soil.

In regards to dying trees on campus, the vast majority were concentrated at the graduate building site in the parking lot discussed above. Other sites with similar concentrations of dying or healthy trees were located at Sites #7 and #8 (James Proctor and Computer Science Building respectively). Site #5 also had a high amount of unhealthy trees, however with construction

currently being underway around it, the data collected is likely to become outdated very soon and as a result, has to be temporarily excluded until construction is complete.

Overall, the campus has a healthy amount of native trees in tandem with non-native trees— but this can always be improved. This also doesn't take into account that around 30% of the campus was unaccounted for due to time restraints, notably leaving out the Entrepreneurship Living Learning Community Building that was recently built some ways away from the main property. It's highly possible that there are more invasive, dying or dead trees that need to be removed, so it is with hope that this recommendation leads to more thoughtful planning, care and planting of trees on campus not only for the students and staff that walk it, but for the ecosystem within it.

For more resources on how to properly plant and care for trees, please refer to this guide here. For other inquiries regarding this recommendation plan, please contact chighfield@allianceforthebay.org and/or esinnes@allianceforthebay.org.