Forest Plant Communities and Potential Conservation Efforts in Wildwood Park, Radford Virginia

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Background Info-

-Location: ~ 54 Acres in center of Radford, VA

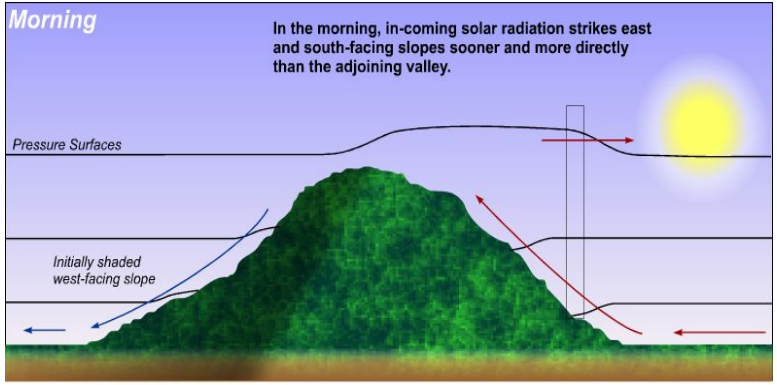
-Previously quarried and road propositioned

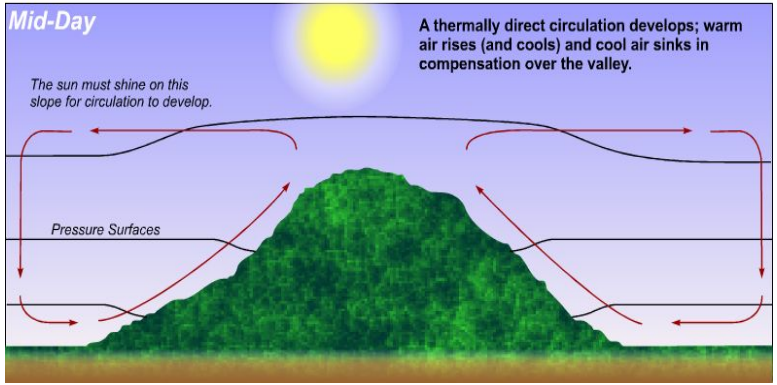
-Connelly's Run flows in to New River

- "oasis for wildlife"

Essential Terms -

- mesic= moderate and well-balanced in nutrients
- xeric= dry and arid, lacks many nutrients
- West facing slopes warmer and more dry
- East facing slopes are often cooler and hold more moisture



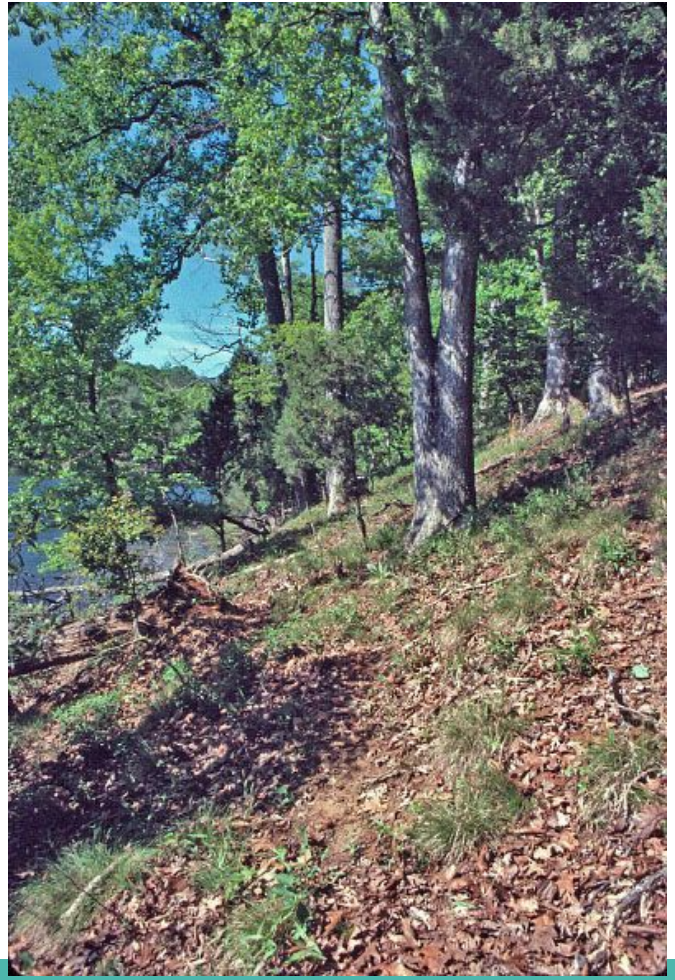


Forest Types

- Calcareous
- Riparian
- Mesophytic

Calcareous Forests

- Dry xeric environment with fertile soil
- Mostly deciduous
- Usually found on steep slopes with calcium and limestone deposits

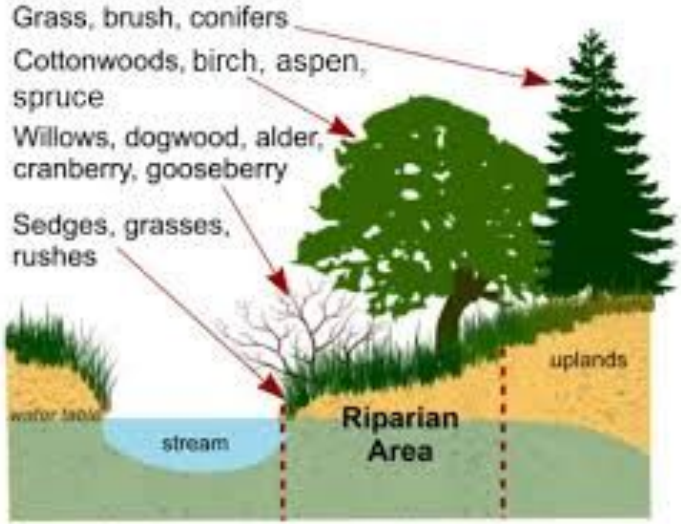


Riparian Forests

-Occurs along bodies of water from streams to ponds to lakes, etc.

- Typically transition areas and floodplains

- wet soil sometimes with strong odor



Mesophytic Forests

-moderate nutrients and moist soil

-mixed vegetation and trees

Big Topic - Are the forests of Wildwood Park changing?

- Why does this matter?
- What could this mean for the future of Wildwood's forest composition?
- If it is changing, should efforts be made to try and control this change?

Why does this matter?

- Wildwood park is an important resource for the community of Radford. It is used for recreation by the community and for research purposes by Radford University. Wildwood park also support very diverse flora and fauna. This is why it is so important for us to conserve Wildwood Park as best we can.
- We are going to be looking at whether Wildwood Park's forest composition is showing signs of changing in the future. We need to monitor this, and if the forests are on the path of changing composition we need to the think about whether we should make efforts to mitigate this process.

Study Site and Field Methods -

Wildwood Park, Radford Virginia

Two Study Sites:

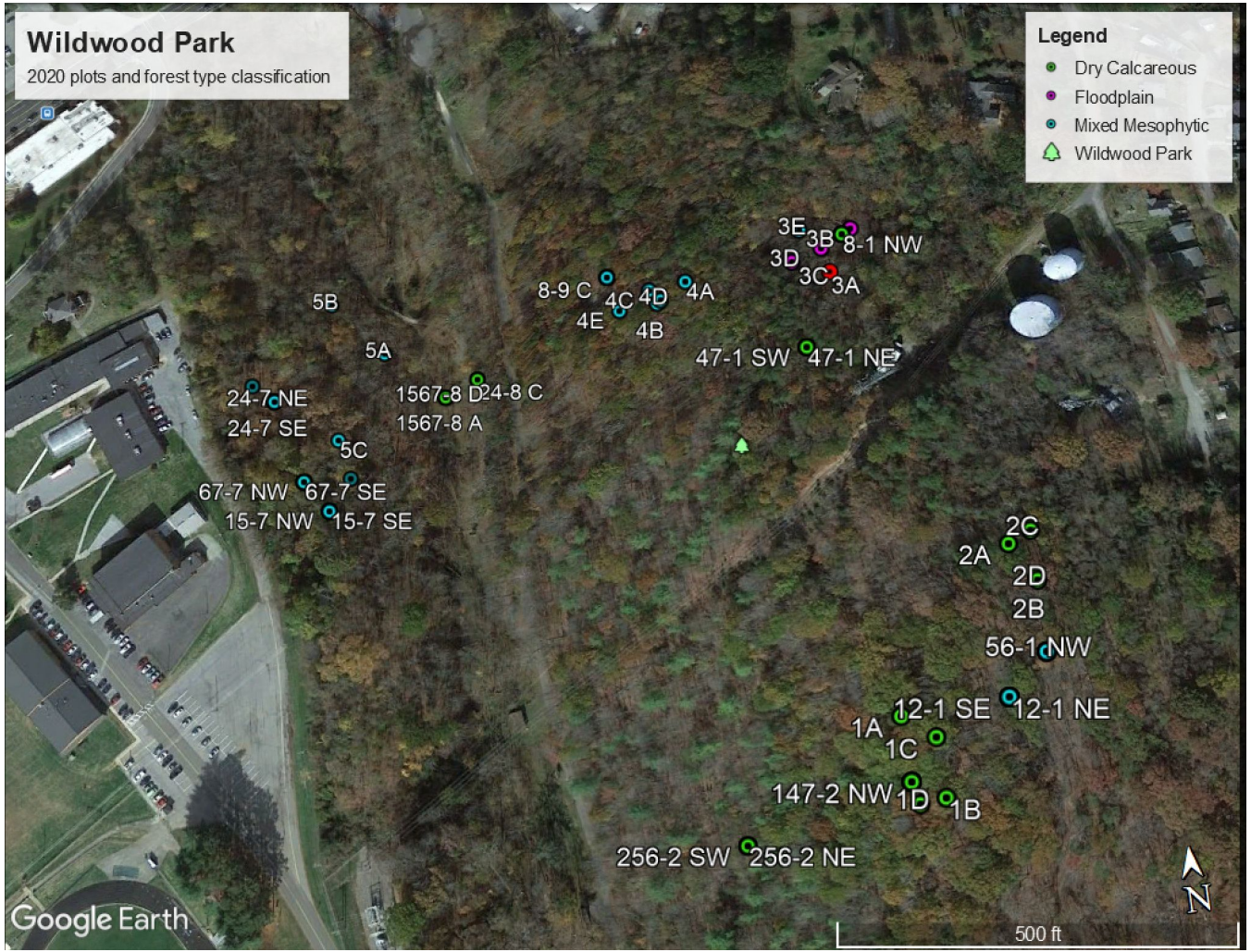
- Upper Site- Water Tower entrance
- Lower Site- Main Street entrance

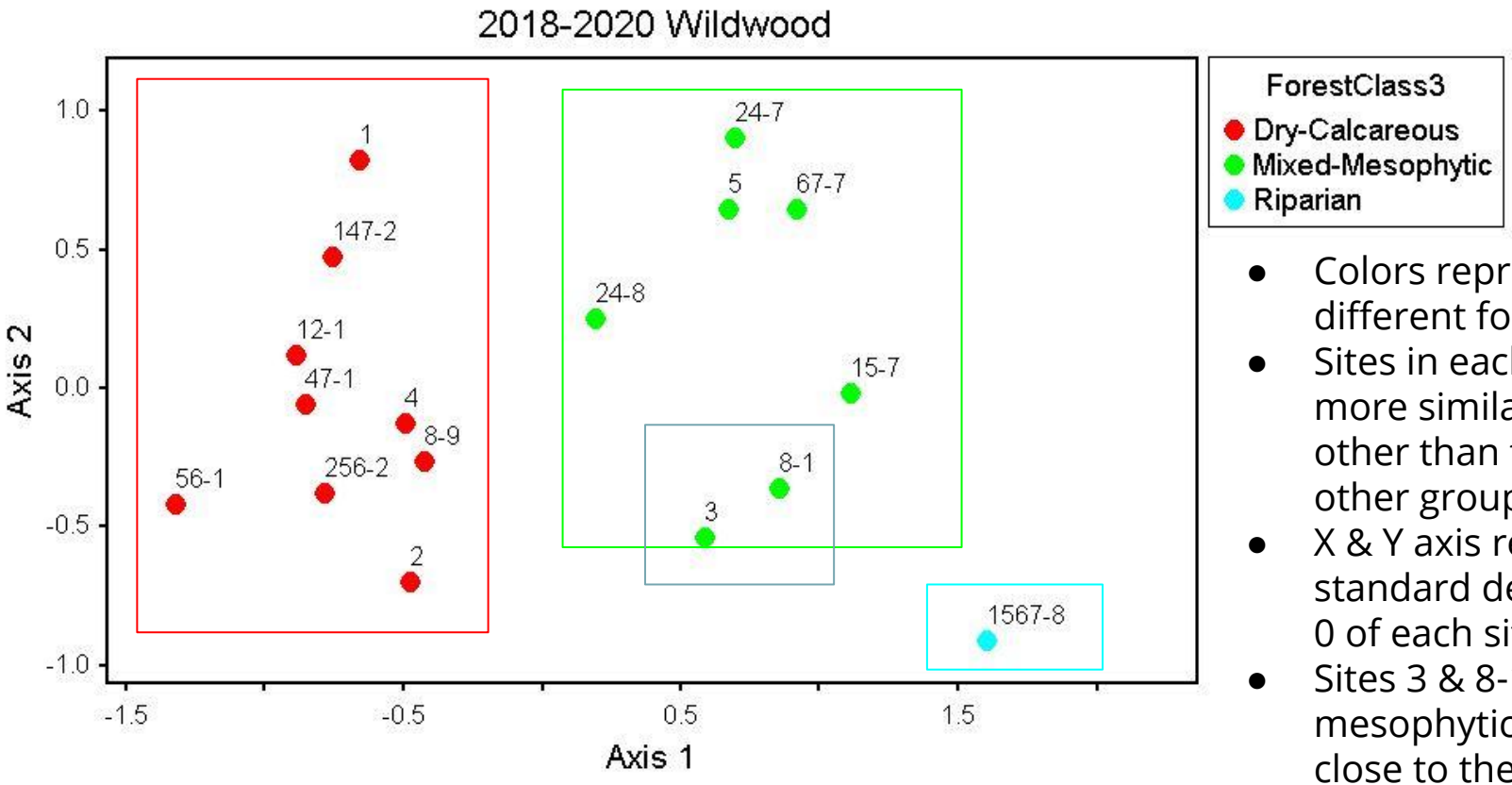
Measured 10x10 meter plots at each study site

Study Site and Field Methods -

Data collected in the study sites included:

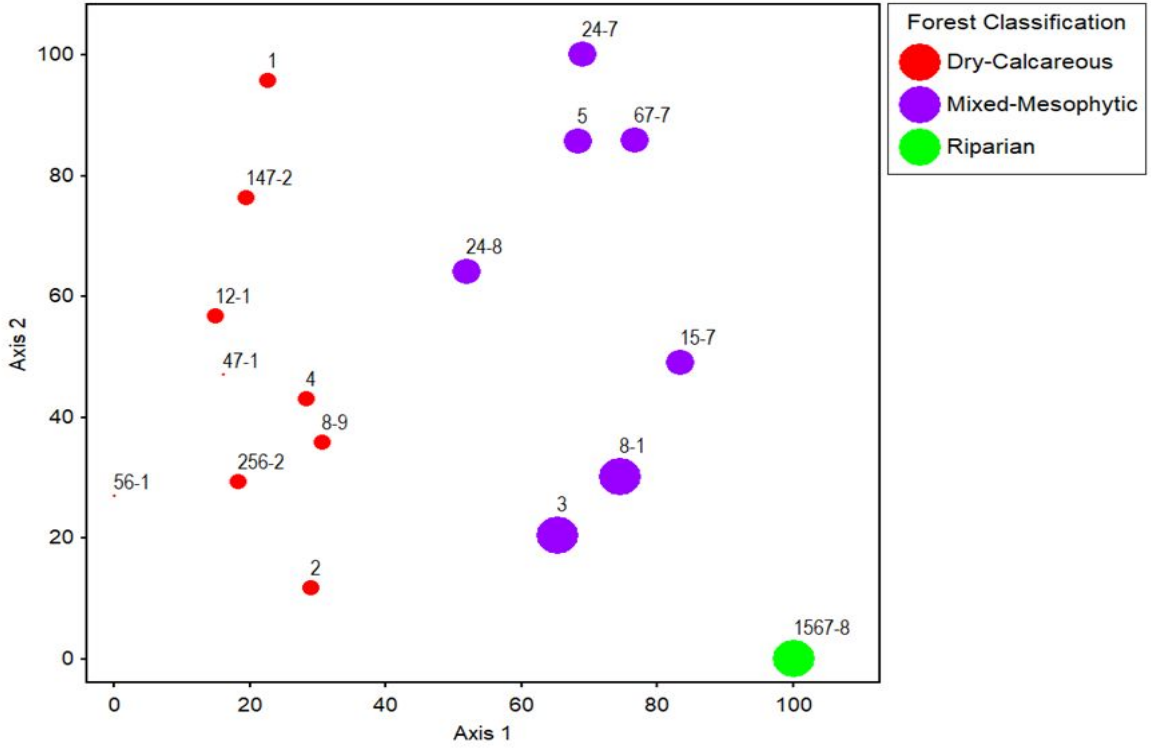
- Number and type of invasive species
- Tree Species and Diameter at Breast Height (DBH)
- Latitude and Longitude of site
- Slope using clinometer


Wildwood Park
2020 plots and forest type classification
Legend
Dry Calcareous
Floodplain
Mixed Mesophytic
Wildwood Park
3E
3B
8-1 NW
3D
3C
3A
8-9 C
4C
4D
4A
4E
4B
5B
5A
47-1 SW
47-1 NE
24-7 NE
1567-8 D
24-8 C
24-7 SE
1567-8 A
5C
67-7 NW
67-7 SE
15-7 NW
15-7 SE
2C
2A
2D
2B
56-1 NW
12-1 SE
12-1 NE
1A
1C
147-2 NW
1D
1B
256-2 SW
256-2 NE
Google Earth
N
500 ft



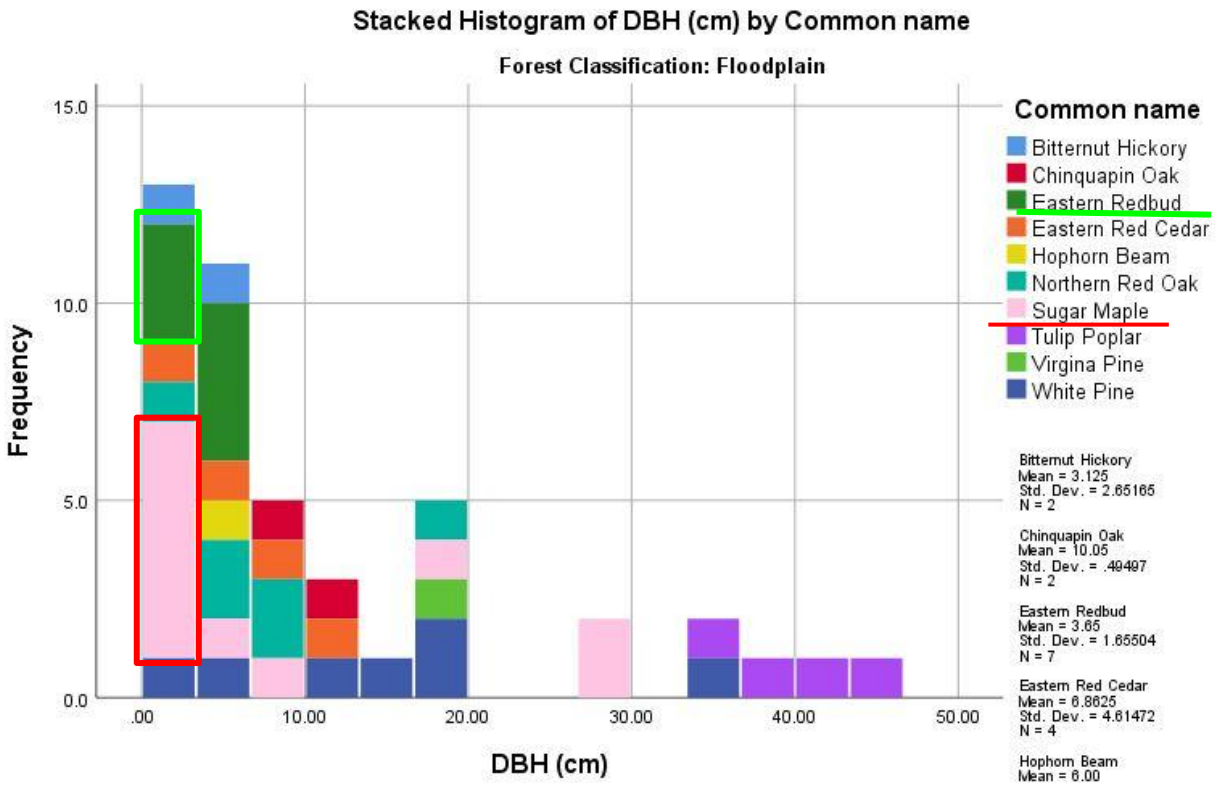
- Colors represent different forest types
- Sites in each box are more similar to each other than to sites in other groups
- X & Y axis represent the standard deviation from 0 of each site
- Sites 3 & 8-1 are mixed mesophytic, but are also close to the Riparian
    - Mixture of Riparian and Mesophytic species

Moisture



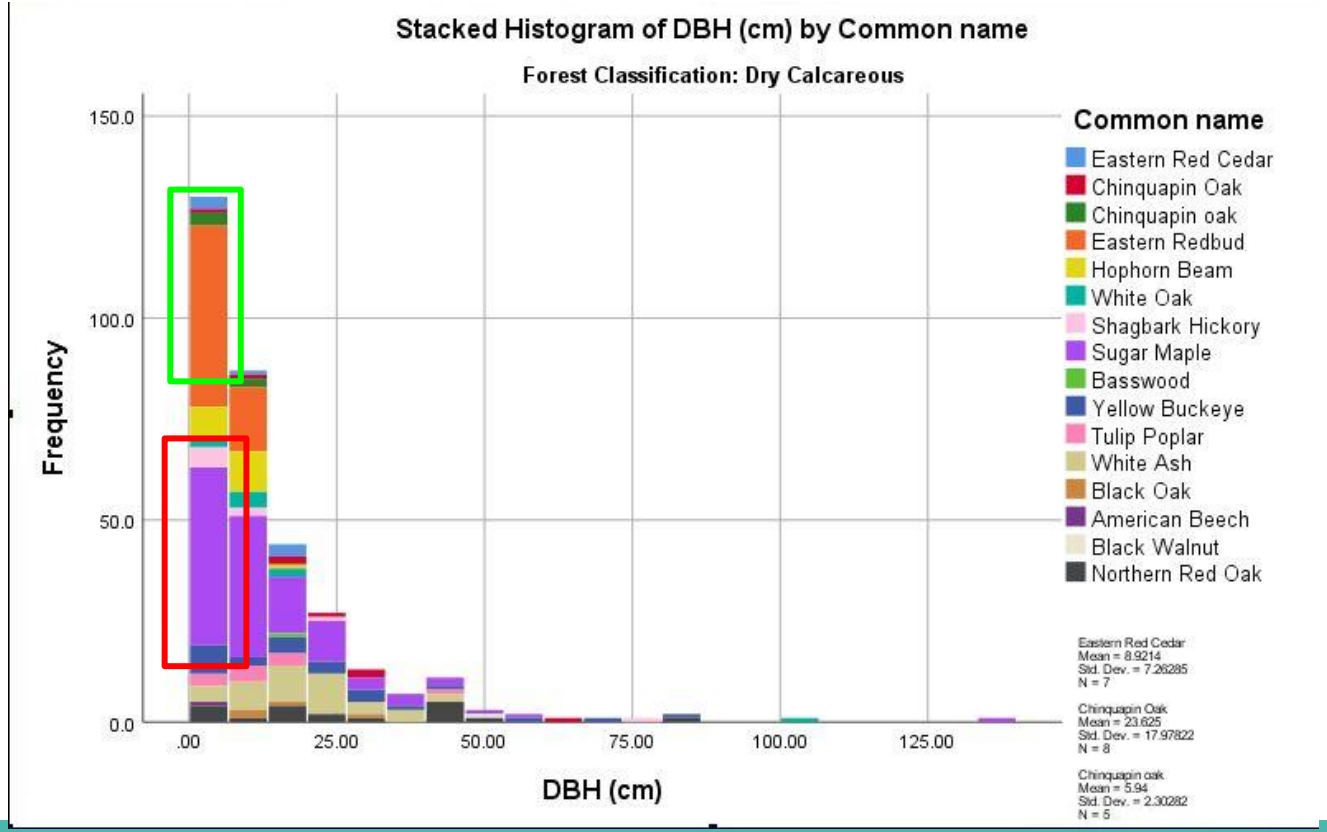
- Point size represents moisture at each site
- Riparian is had the most moisture
- Each sites moisture is most similar to those in the same forest class
- Site 3 & 8-1 again are very similar to the Riparian site

Changing Landscapes - Riparian



- Mesophytic species dominate the small trees
- Numerous Calcareous species abundant in the smaller trees as well
- Transitioning out of the riparian dominated species
    - Location may support riparian species, but other factors support Calcareous and Mesophytic species

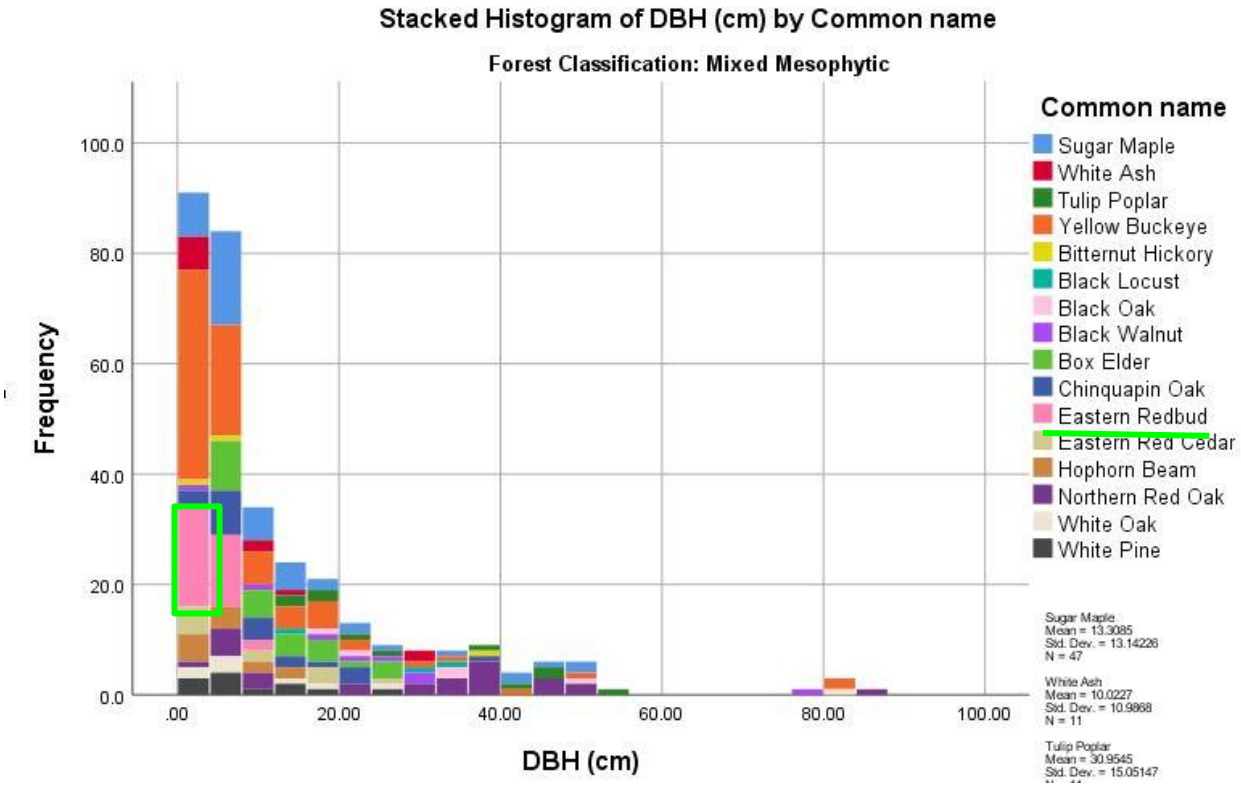
Changing Landscapes - Dry/Calcareous



- Sugar maple, a mesophytic species, has a lot of small trees
- BUT, Redbud, a Calcareous species, has lots of young trees as well
- Further monitoring will be required to see potential mesophication

Changing Landscapes - Mixed Mesophytic

- Dominated by Mesophytic species
- Some Calcareous species beginning to show up



Conservation Efforts

- What factors are causing this forest to change over time?
  - Invasive species causing the decline of native plants
    - Invasive pathogens: Chestnut blight fungus, Hemlock woolly adelgid, and Emerald Ash Borer
    - Invasive plants: Tree-of-heaven, Oriental Bittersweet, and Multiflora rose
  - Floodplain forest types have a higher susceptibility to invasive plant species

Conservation Efforts

- Possible re-introduction of fire onto the Wildwood Park landscape
  - To increase plant species diversity
  - Decrease mesophytic species
  - Encourage native fire tolerant plant species

Fire Benefits

- Controlled understory
- Increased nutrients
- New growth

Conservation Efforts

- Climate change may be impacting Wildwood plant species
  - Forest types have been documented to change due to the increased affected of climate change

Acknowledgments

We would like to thank Dr. Small and the rest of the Forest and Wetland Ecology class for helping collect this data and Wildwood Park for giving us a place to collect data in our community

Literature Cited

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Dr. Small powerpoint

Any Questions?