

Twenty Years of Change in the Tree Community in Forest Park

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Background Information

- In 1993, 24 permanent sites were randomly located in Forest Park; an additional site was in the Ancient Forest Preserve
- The purpose of the original study was to examine the effects of urbanization on forest structure
- Trees were identified to species and dbh measured
- In 2003 and 2013, measurements were repeated
- In 2003, there were significantly fewer live trees and significantly fewer seedlings (trees <10cm dbh) than in 1993; this was true for all sizes except very large trees and for all species of trees
- The high tree mortality and lack of recruitment is similar to findings in other urban forests
- This poster examines the status of trees at those sites in 2013, 20 years after the study was initiated

Goals of Study

- Repeat the study in 2013 on trees in Forest Park begun in 1993 and repeated in 2003
- Examine what changes have occurred in the tree community in Forest Park between 2003 and 2013

Hypothesis

- Tree mortality at sites will have increased between 2003 and 2013
- Tree recruitment (seedlings in the forest) will not have improved

References

- Broshot, NE. 2011. Mortality and recruitment in an urban forest (Forest Park in Portland, Oregon) between 1993 and 2003. *Urban Ecosystems* 14(4): 553-567

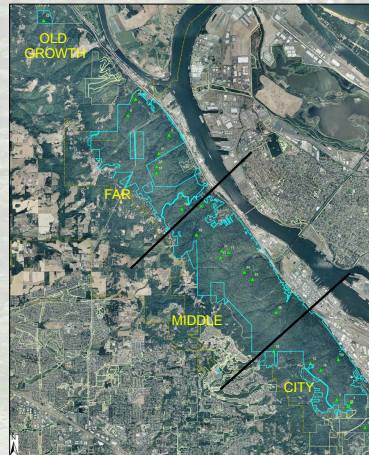


Figure 1. Forest Park and Ancient Forest Preserve (site locations noted in green)

Methods

- 24 random sites were selected in Forest Park in 1993 along the urban-rural gradient; 1 additional site was in the Ancient Forest Preserve
- Three, 250 meter square quadrats were randomly located at each site
- All trees within each quadrat were identified to species and the dbh (diameter at breast height) of each tree was measured.
- Sites were relocated in 2003 and 2013 and measurements repeated

Acknowledgements

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Results

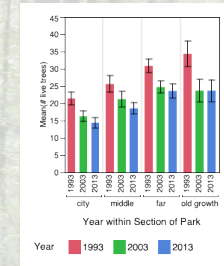


Figure 2. Number of live trees by section in different years

- The number of live trees declined significantly from 1993 to 2003 for all sections; decline continued into 2013
- Decline occurred in all sections of the park and for all tree species
- The number of seedlings (<10cm dbh) declined significantly from 1993 to 2003

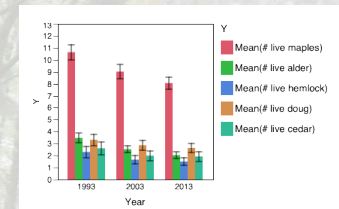


Figure 3. Number of live trees by species in different years

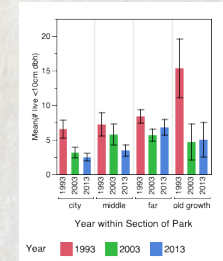


Figure 4. Number of young (<10cm dbh) trees by section in different years

Conclusions

- Forest Park, like many urban forests, is experiencing high tree mortality
- The mortality rate declined between 2003 and 2013 compared to 1993 to 2003
- Although the mortality rate has slowed, the number of live trees has continued to fall
- Tree mortality may occurring due to normal successional processes
- The high mortality of seedlings is most concerning as those trees should be maturing and replacing the lost trees
- Although the decline in the number of seedlings has stabilized, there has not been an increase in seedling production
- The loss of trees with the concomitant lack of recruitment may lead to a dramatic change in the forest structure in the future