

Use of Forest Inventory & Analysis plot data to document the decline in the number of dogwood trees from 1984 to 2004

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Introduction:

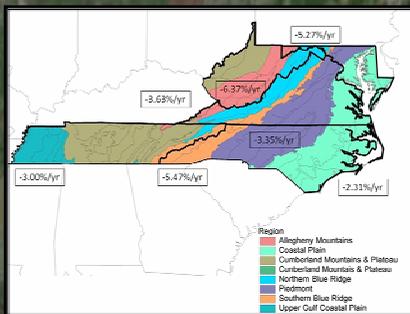
During the past 20-to-30 years, dogwood has been suffering from the impacts of *Discula destructiva* (Redlin), causal agent of dogwood anthracnose. Although any losses or excessive dogwood mortality evidenced cannot simply be linked directly to dogwood anthracnose, any analyses investigating an apparent decline for this species within its native range would need to consider the disease as a probable critical factor.

Methods:

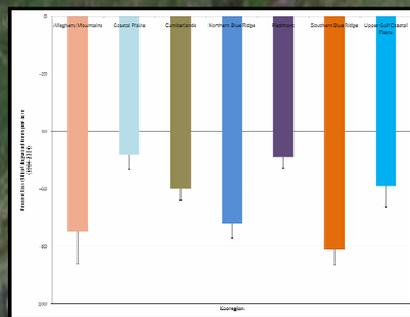
The three most recent measurement cycles of FIA data (1980's, 1990's and 2000's) were obtained covering the years from just prior to discovery of mortality due to the disease where possible and continuing to the present date 1983-2004 for five eastern states.

Data was analyzed using the Mixed Model within SAS to predict any changes with high precision:

1. Calculated net change (% loss)
2. Cumulative (gross) loss was estimated with high precision
3. Calculated the # of dogwood at every FIA point for all years (not just a linear regression between two points)

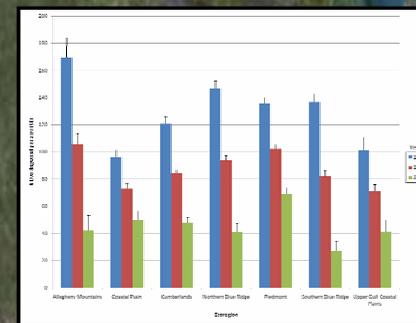


An average cumulative loss of 63.7% of the dogwood trees per acre on FIA plots that had dogwood between 1984 and 2004



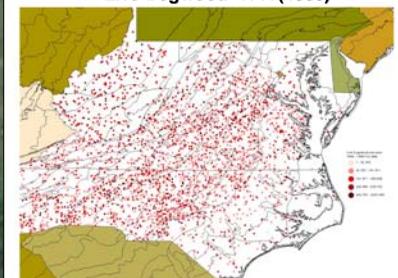
Total number of *Cornus florida* per state (Source: FIA MapMaker):

State	1984	1994	2004
MD	67,600,000	33,200,000	25,200,000
NC	938,000,000	872,000,000	434,000,000
TN	764,000,000	584,000,000	361,000,000
VA	923,000,000	878,000,000	447,000,000
WV	522,000,000	181,500,000	182,000,000
Total	3,214,600,000	2,548,700,000	1,449,200,000

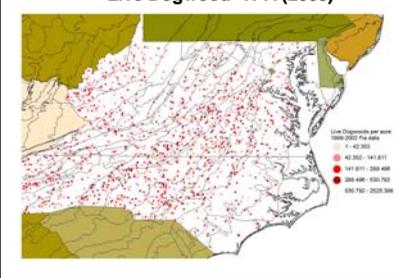


Change in dogwood trees per acre (TPA)

Live Dogwood TPA (1985)



Live Dogwood TPA (2005)



What is the future fate for dogwood in the Eastern United States?

- > Further reductions
- > Increased mortality during favorable climates for the disease

> Mortality was greatest in the mountains but mortality was a function of dogwood TPA more than elevation (data not shown)

> Dramatic reductions in dogwood across the entire area of study

- > Reductions in dogwood occurred at increasing rates:
 - > 1984 to 1994 -31.7% avg.
 - > 1994 to 2004 -47.6% avg.



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