



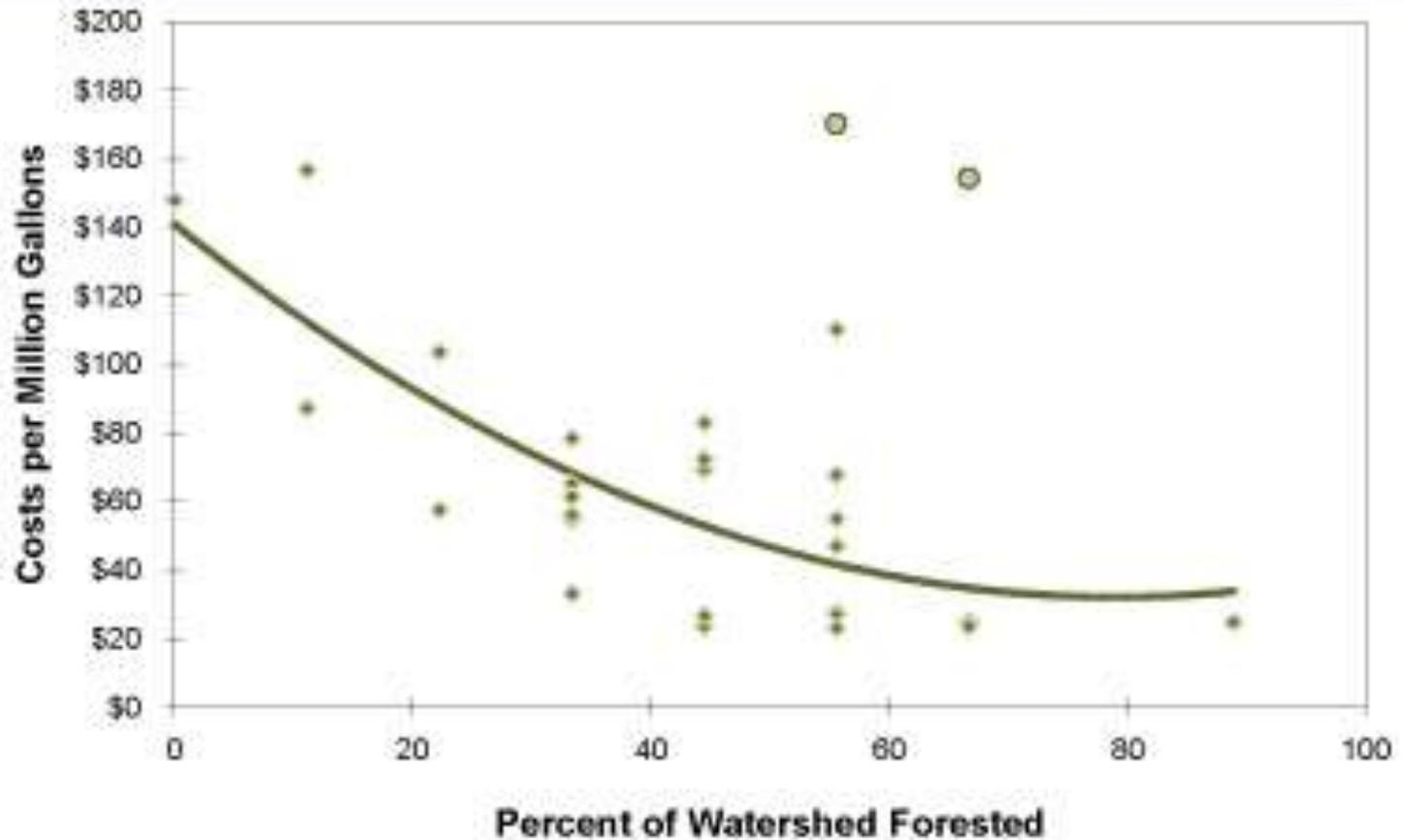
Forests and Water Quality in the Potomac

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Chesapeake Bay Liaison

TPL and AWWA Study on Water Treatment Costs

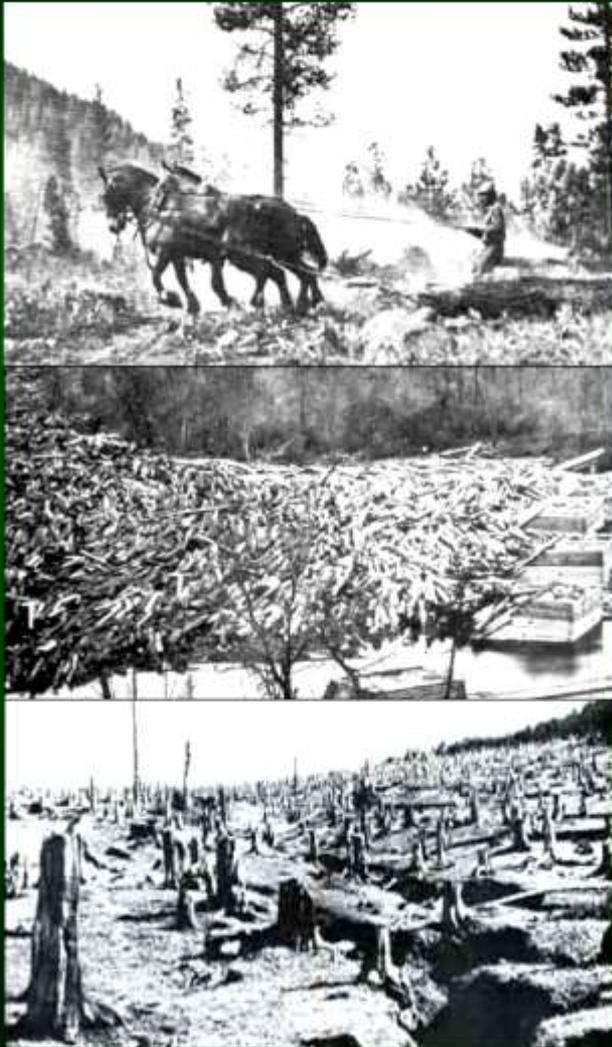


• data used in regression analysis

○ outlying data points not used

$$y = 0.0174x^2 - 2.7531x + 140.77$$
$$R^2 = 0.5518$$

Forest loss by 1900- Dramatic effects



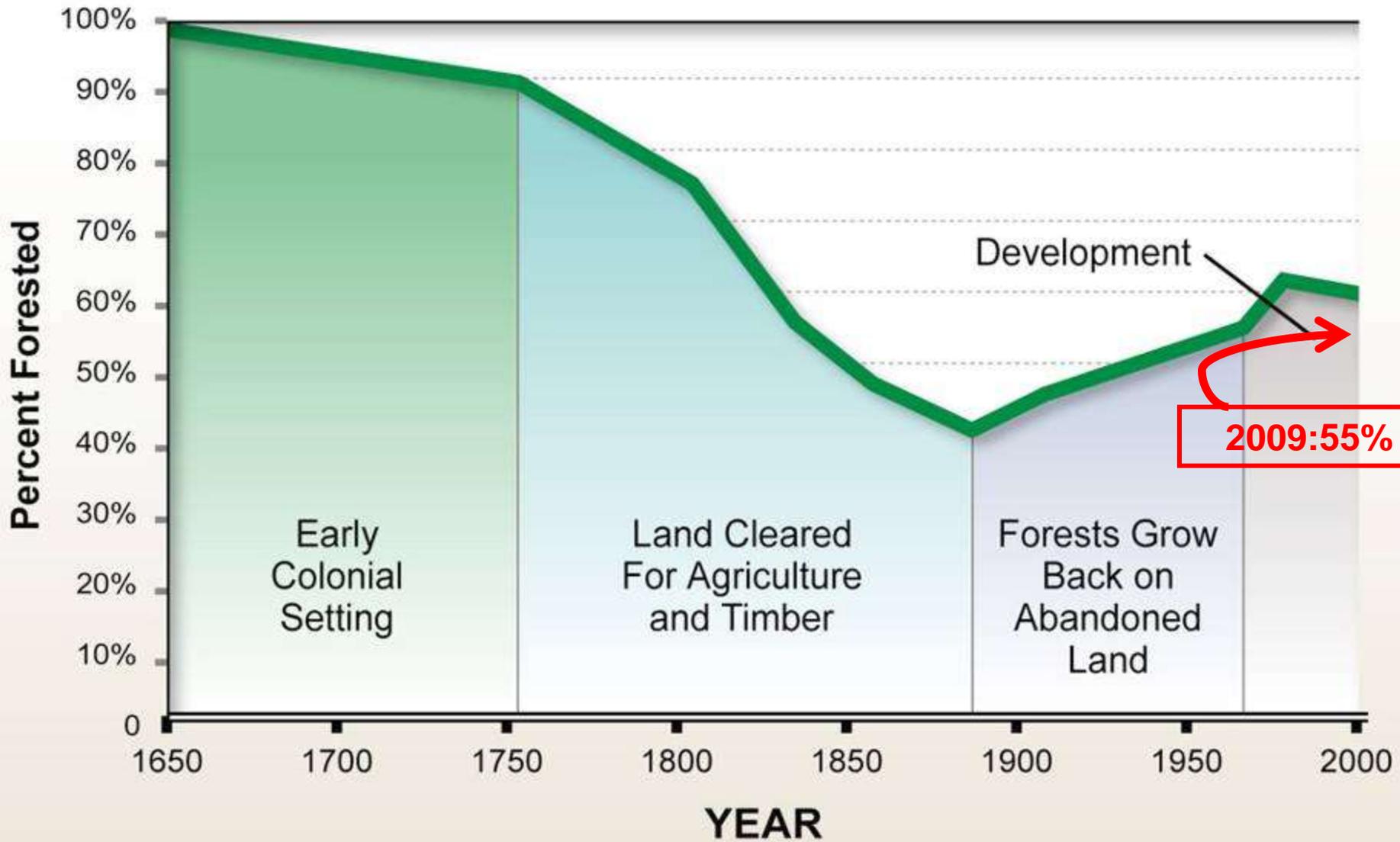
Massive clearing of forest land in the East for agriculture and fuel.

Settlers cleared forests at the rate of 13.3 sq. miles per day.

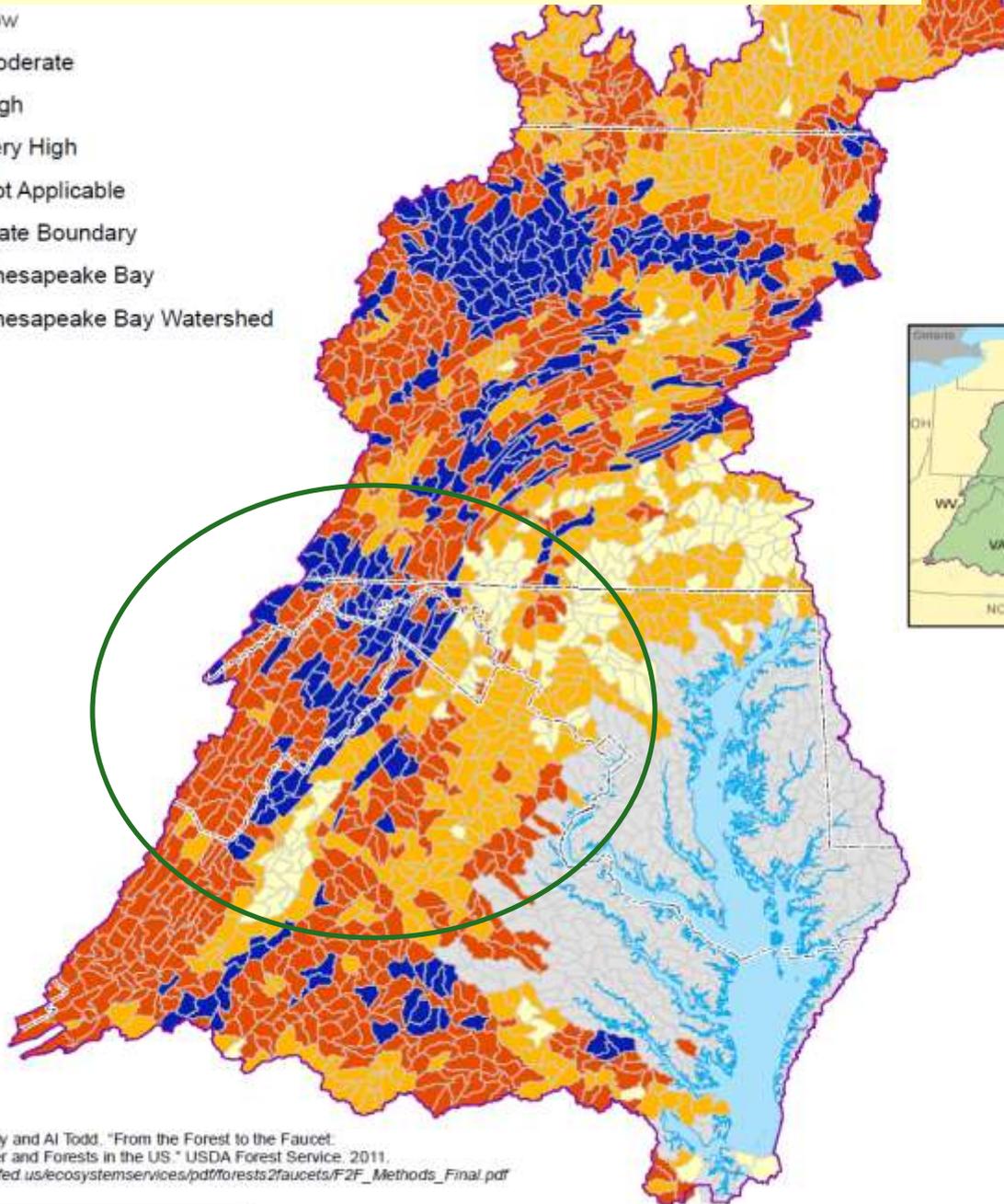
Our rivers were the highways to get timber to the mills ... and rivers were damaged.

Wildfire commonly consumed 20 million acres annually.

Forest Cover in the Chesapeake Bay Watershed: 1650 - 2000



Importance of Forests to Drinking Water



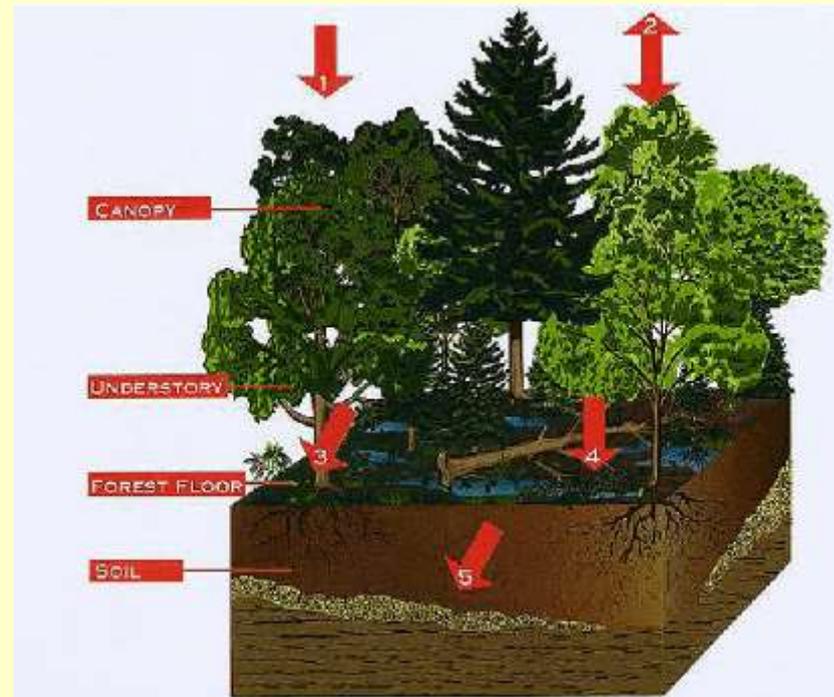
Forests that are...

- * Vigorous and diverse
- * Multi-aged and irregular in structure
- * Accumulating biomass
- * Continuous with minimum opening sizes for desired species
- * Regulating temperature and decomposition
- * Resistant and resilient



Watershed health and water quality depends on:

- Percent of forest land in a watershed
- Extent of forests remaining on critical landscapes – riparian areas, wetlands, steep slopes and erodible soils, & recharge areas
- Distribution and location of forests – degree of fragmentation
- Forest age, health and condition
- Stewardship and management knowledge

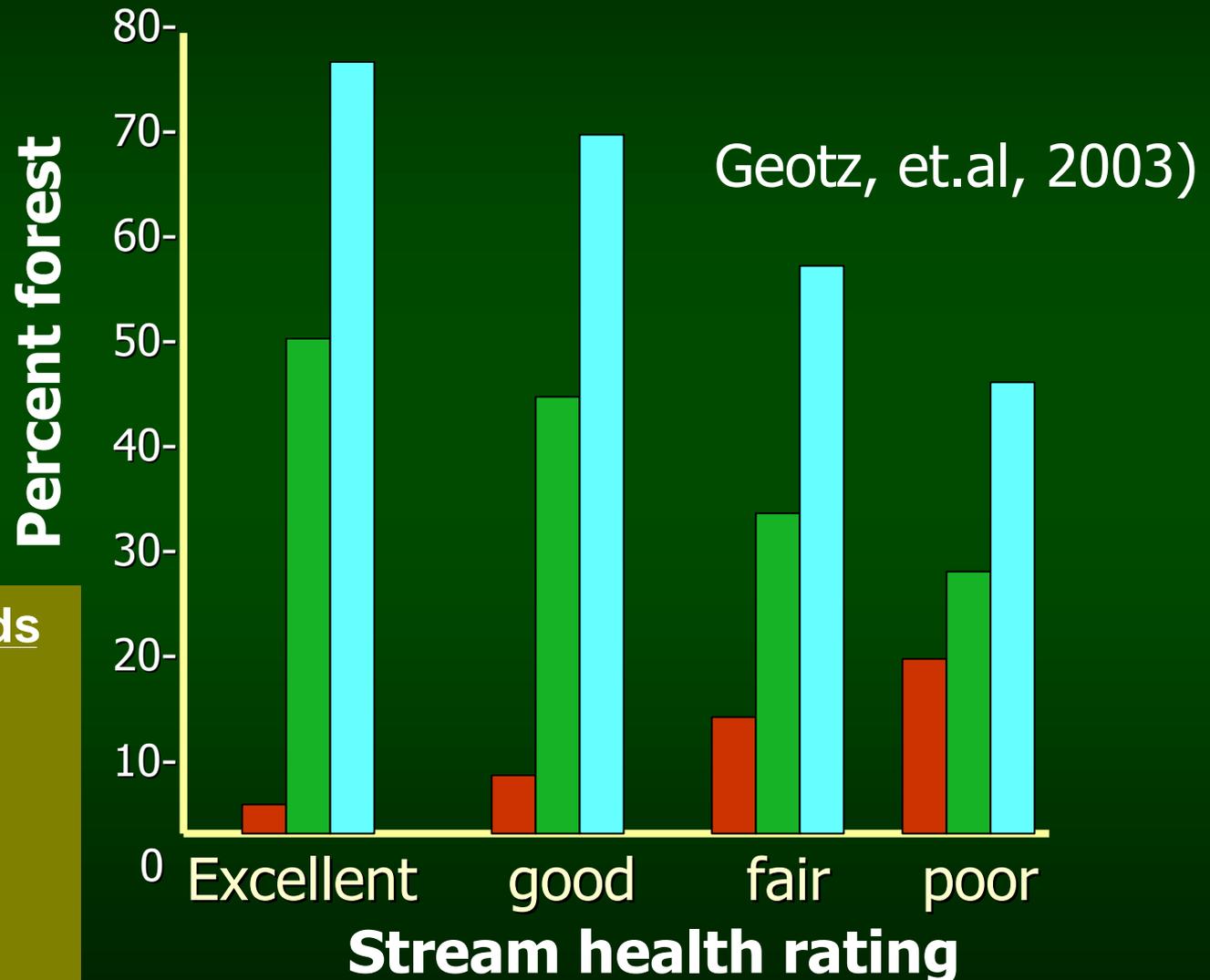


Influence of forests and imperviousness on Stream health (IBI)

- Impervious cover
- Watershed tree cover
- Riparian buffer tree cover

For 245 watersheds

Good
<15% impervious
>60% Buffered
>50% Forested



Issues

- **Land use**
 - *Afforestation*
 - *Conservation*
 - *Development threats*
 - *Forest ownership*
- **Forest Management**
 - *Deer*
 - *Invasive Plants*
 - *Insects and Disease*
 - *Silvicultural management*
- **Air pollution**
- **Climate Change**
- **Fire**



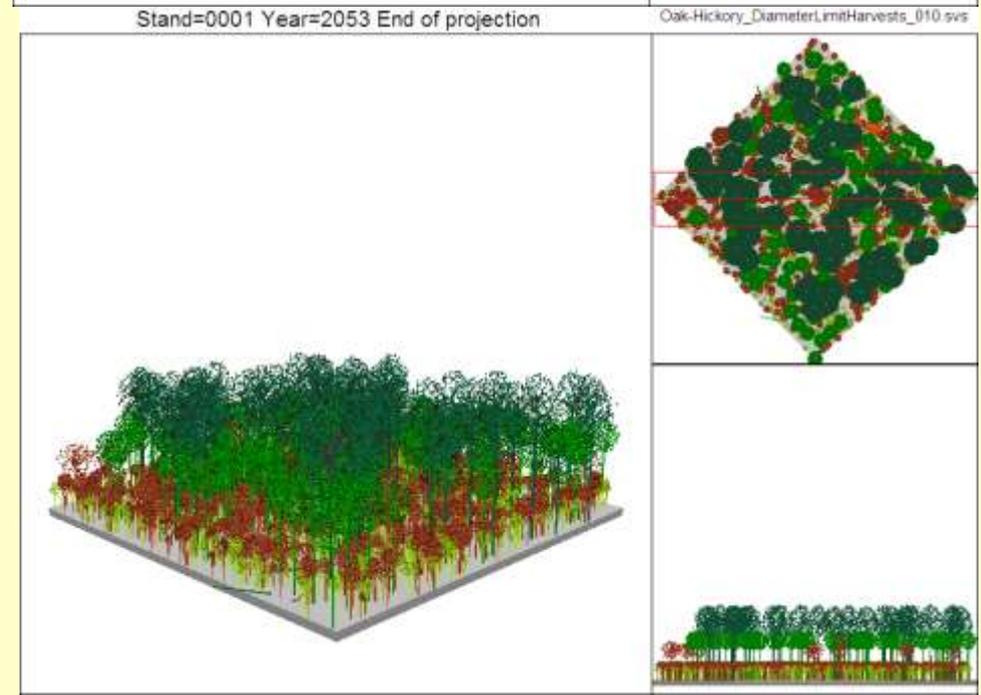
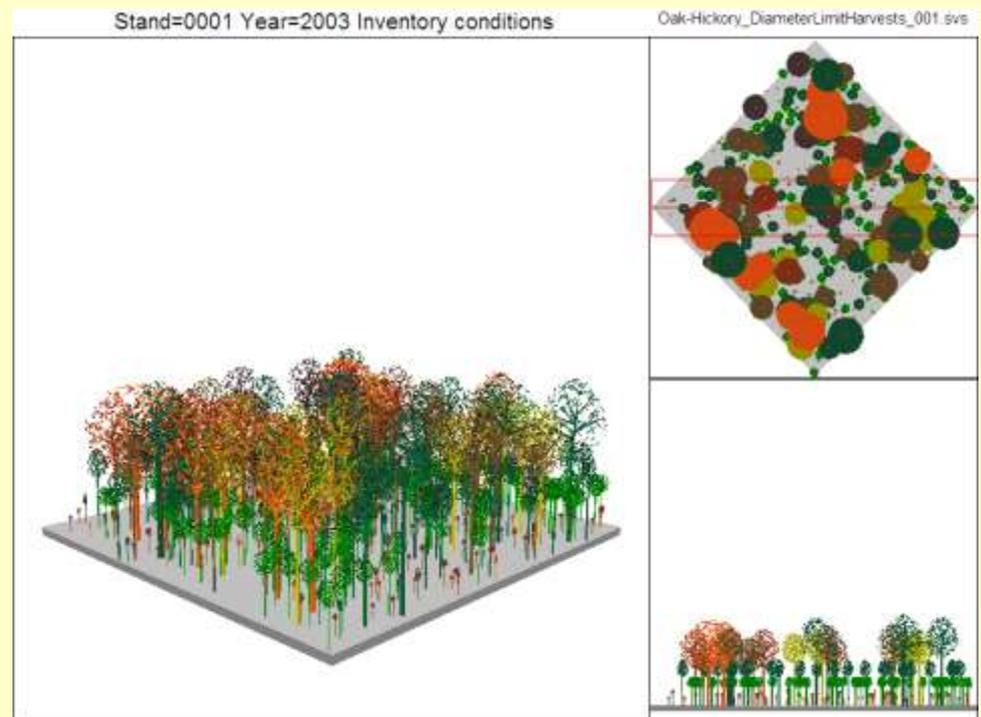
Forest Management

Current

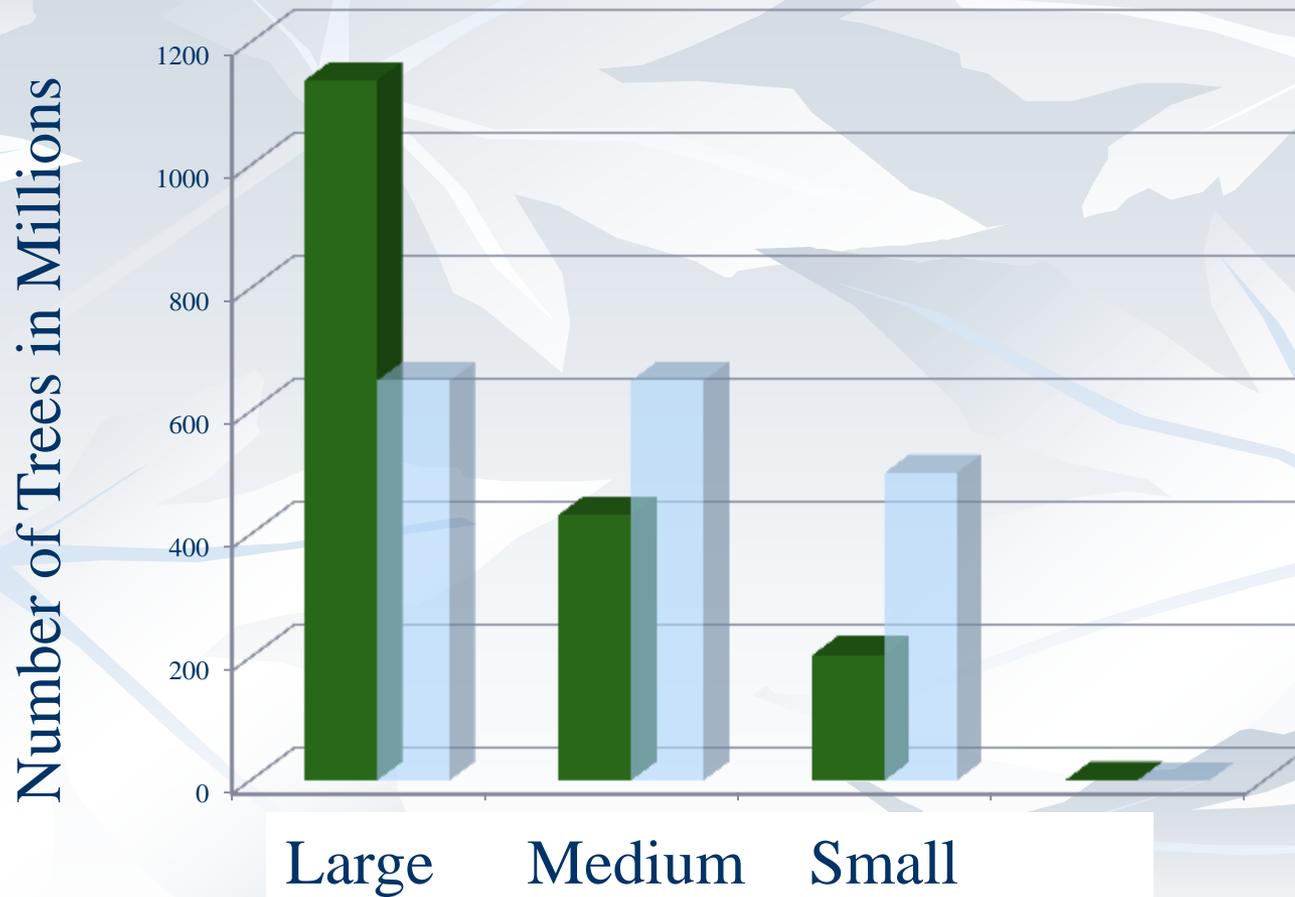
- Only 8% of forests in Potomac have written management plans
- Active harvesting practices take place on about 1% of all forests at any given time
- High grading is common

Future

- More owners, less knowledge
- Decrease in long-term timber value when high-graded
- Shifts in forest composition, more uncertainty



Tree Size Class in Potomac: Current vs Ideal



Climate Change: Eastern Forests are feeling effects now



Fire - Fire season is coming earlier and lasting longer. Fires are hotter and bigger and more damaging.

Insects - Both the natives and the invaders—are spreading more rapidly than ever, killing more trees.

Water - Warmer winters are affecting our water supplies. Snowpacks are thinner and melt earlier; water runs off from the forest earlier in summer. Droughty forest soils makes trees more vulnerable to fire and insects.

Big Losers:

Red maple

American beech

Black cherry

Sugar maple

White ash

Sweet birch

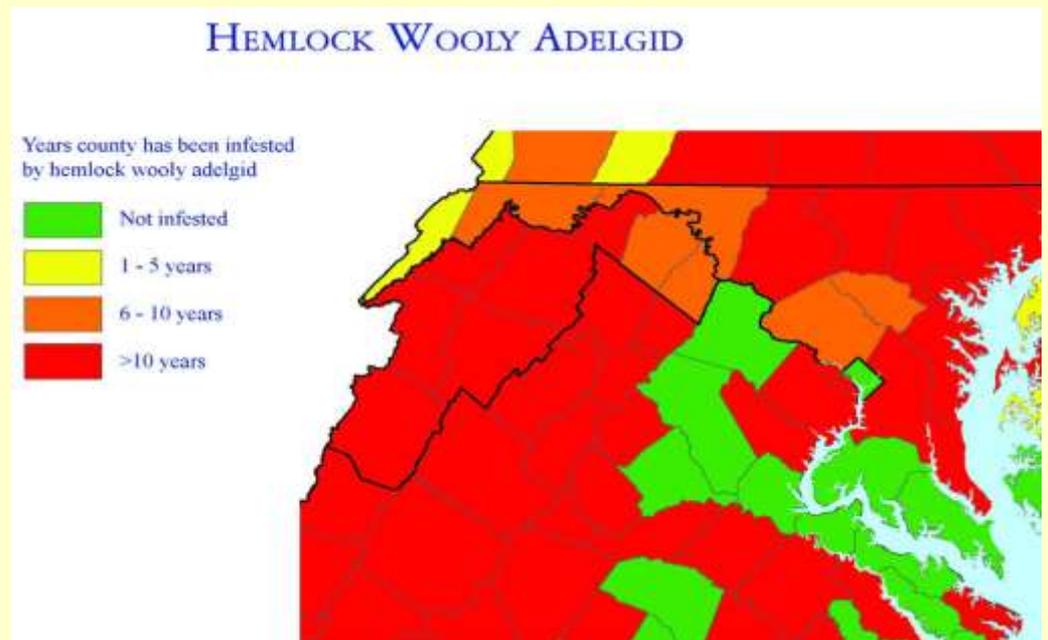
Eastern hemlock

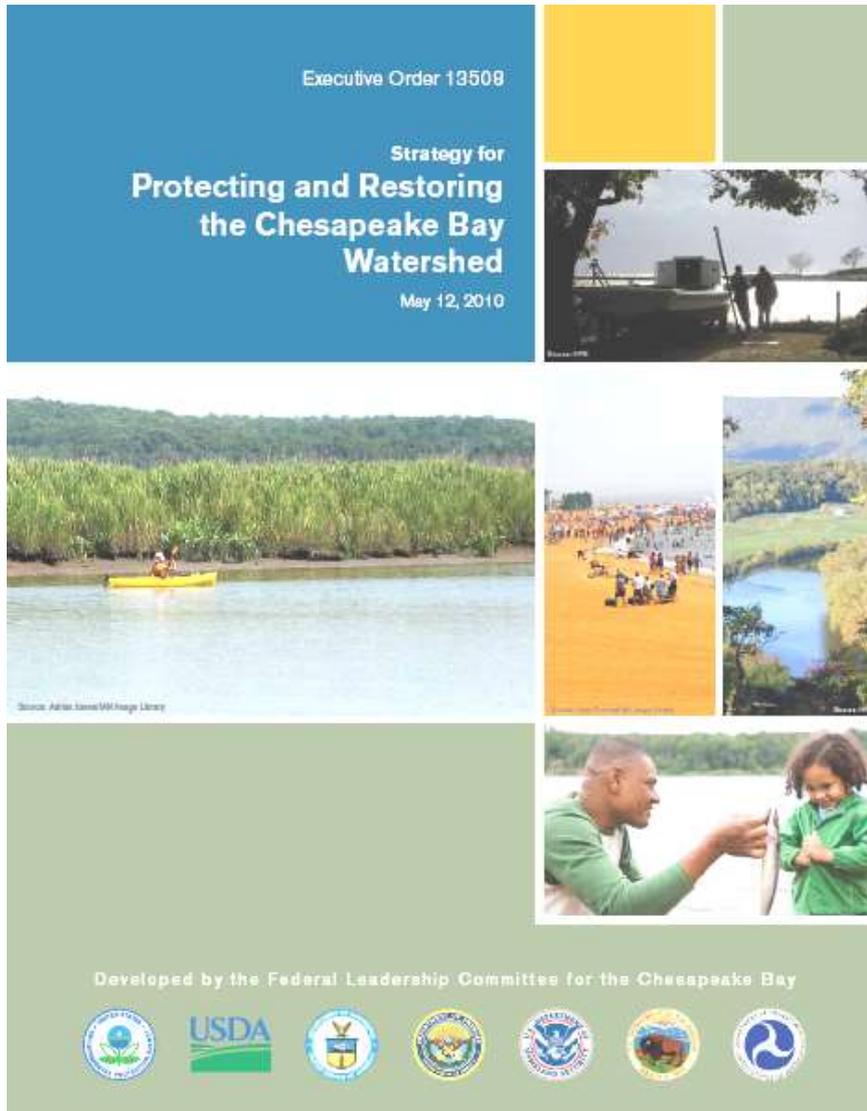
Striped maple

Aspen

Insects

- >100K acres impacted by gypsy moth just between 2000-2003
- Most of Potomac impacted by hemlock wooly adelgid for >10 years – no infected tree known to survive
- Emerging threats – emerald ash borer, sudden oak death, Asian longhorned beetle, others?





Goal: Recover Habitat

“By 2012, USDA will work with Dept. of Interior and other entities to develop a Chesapeake Bay watershed strategy to maximize forest restoration in priority areas...”

Priority areas =

Urban, green infrastructure, wildlife habitat, mine lands, brownfields, agroforestry

Why a Forest Restoration Strategy for the Chesapeake Bay watershed?

- ✓ Building on successes
- ✓ Responding to new opportunities
- ✓ Focusing on priority areas



General Outline of Strategy Sections

Aim for ~5 page concise summary that covers:

- **Why** is this a priority for forest restoration?
- **Where** are these areas on the landscape?
- **How** – what programs and tools are available to help?
- **What actions** are needed to promote forest restoration in these areas? (will help guide Forestry Workgroup and partner priorities)

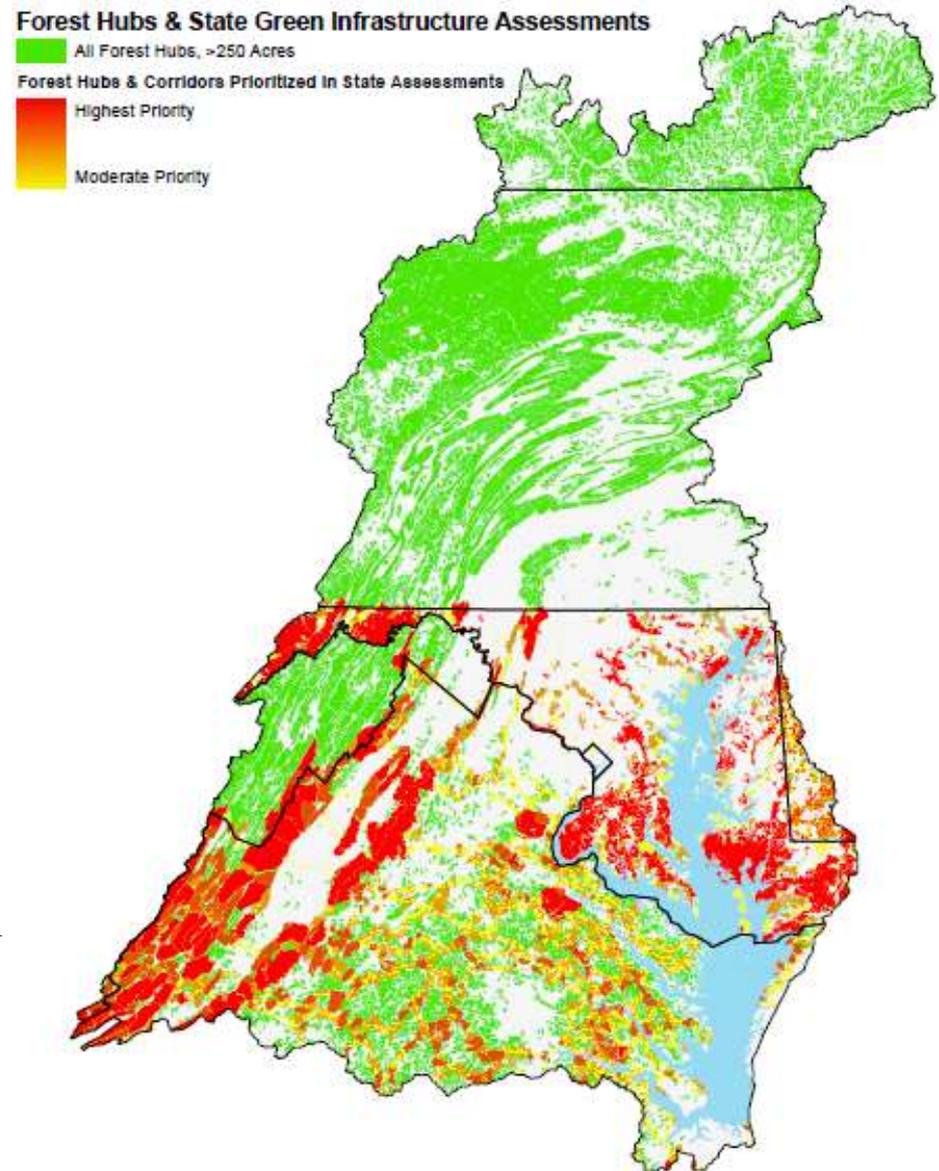
****Wildlife Habitat; Mine Lands; Agroforestry; Urban & Community Trees; Contaminated Sites****

WILDLIFE HABITAT

Green Infrastructure

- Target restoration to expand network of forest hubs and corridors

VA, MD and DE have complete, prioritized Green Infrastructure assessments; other states are developing these



MINE LANDS

- Coal mine lands exist in high value Appalachian forest habitat, headwaters of Chesapeake Bay
- Post SMCRA reclamation has been predominantly grass, with high soil compaction and limited regeneration of trees
- Opportunities on different types of sites: Abandoned Mine Lands, historic permitted/post SMCRA, active mining sites

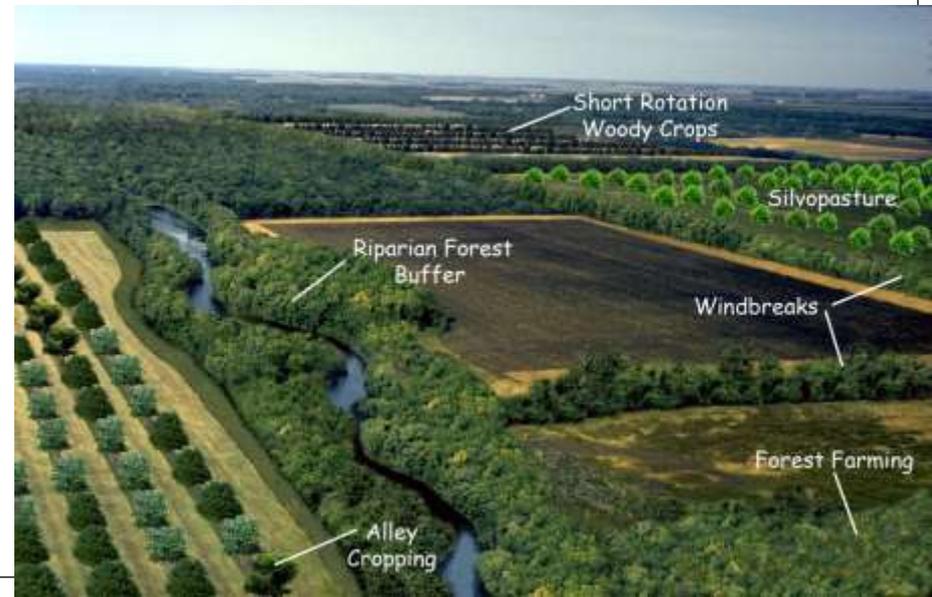
Note: Not recommending reforestation of ALL mine lands – some provide important grassland habitat, or ag production



AGROFORESTRY - WHY

Agroforestry is the intentional mixing of trees and shrubs into crop and animal production systems to create environmental, economic and social benefits:

- Provide protection for valuable topsoil, livestock, crops, wildlife
- Increase productivity of agricultural and horticultural crops
- Reduce inputs of energy and chemicals
- Improve water quality
- Diversify local economies



AGROFORESTRY PRACTICES

- Riparian Forest Buffers
- Windbreaks/Shelterbelts
- Alley Cropping
- Silvopasture
- Forest Farming



URBAN/COMMUNITY

- Maximize tree benefits for people
 - Reduce stormwater
 - Mitigate air quality problems and related public health concerns
 - Reduces urban heat island effect and energy costs
 - Improve aesthetics, recreation, property values, etc. etc.
- Trees are most cost-effective means to meet multiple community goals and regulations (MS4, TMDL, etc)



Integrating Across Priorities

- Forest Mapping tool (USGS) will be revised with Strategy GIS layers

