



Chesapeake Bay Program
Science. Restoration. Partnership.

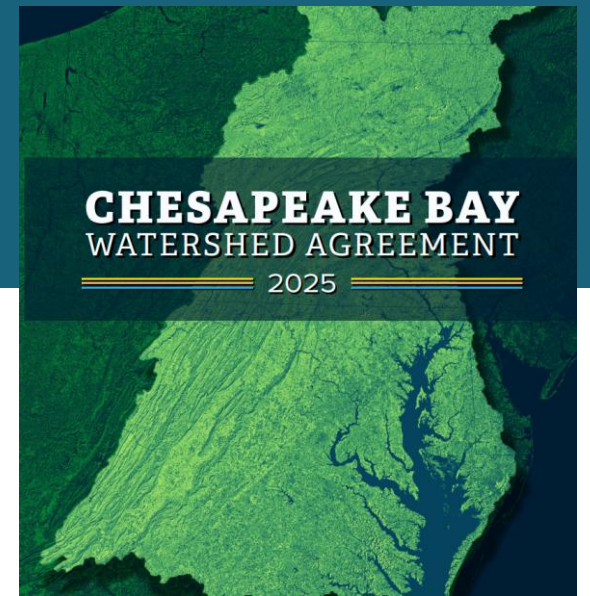
Healthy Forests: Proactive Strategies for Managing Threats and Promoting Conservation

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New Healthy Forests and Trees Outcome

Conserve, manage and restore forests and tree cover to maximize benefits for water quality, habitat and people throughout the watershed, with a particular focus on riparian areas and communities.



TARGETS

Tree Canopy: Conserve tree canopy within communities by reducing the rate of loss of existing canopy and planting and maintaining 45,000 acres of community trees by 2040 to achieve a net gain in canopy over the long term.

Forest Buffers: Conserve riparian forest by reducing the rate of loss of existing buffers and planting and maintaining 7,500 acres of forest buffers annually to achieve no less than 71.5% riparian forest cover by 2040 and 75% riparian forest cover over the long term.

Forest Conservation: Achieve a net gain in forests over the long-term by reducing the rate of forest conversion to other land uses by 33%, permanently protecting a total of 9 million acres of forested land, and planting, maintaining and managing 202,000 acres of new forests by 2040.

Conserving Chesapeake forests will require a holistic approach

- Strategic land protection – acquisitions and easements
- Land use decision support – empowering local decision-makers to conserve trees and forests
- Active forest management, stewardship and restoration to support functional and resilient forest ecosystems



Healthy Forests: Proactive Strategies for Managing Threats and Promoting Conservation – Feb 2026 STAC workshop

Highlights

- 2-day workshop in Frederick, MD
- 57 in-person attendees, 25 virtual
- 16 guest speakers (spanning urban to rural gradient and multiple physiographic regions)
- Lunch Keynote: How to Love a Forest - Ethan Tapper
- Breakout groups
- Conceptual model development



Organizations Represented

USFS

Alliance for the Chesapeake Bay

Maryland Forest Service

PA DCNR Bureau of Forestry

Virginia Department of Forestry

WV Department of Forestry

NOAA

USGS

NRCS

EPA

NFWF

NPS

The Nature Conservancy

American Bird Conservancy

City of Frederick

PA DEP

PA Department of Agriculture

DC Government Urban Forestry

University of Maryland Extension

Allegheny Hardwoods Utilization Group

Chesapeake Research Consortium

Upper Susquehanna Coalition

Stroud Water Research

Delaware Center for the Inland Bays

George Washington University

Pennsylvania Forest Stewards

UMBC

Moonlight Forestry Consulting

Delaware Forest Service

PA Game Commission

Neighborhood Space

Chesapeake Bay Commission

Potomac Conservancy

Pennsylvania Hardwood Development Council

Finley Center for Private Forests, PSU

Smithsonian Environmental Research Center

Foundation for Sustainable Forests

City of Baltimore, Forestry Division



What is a healthy forest?

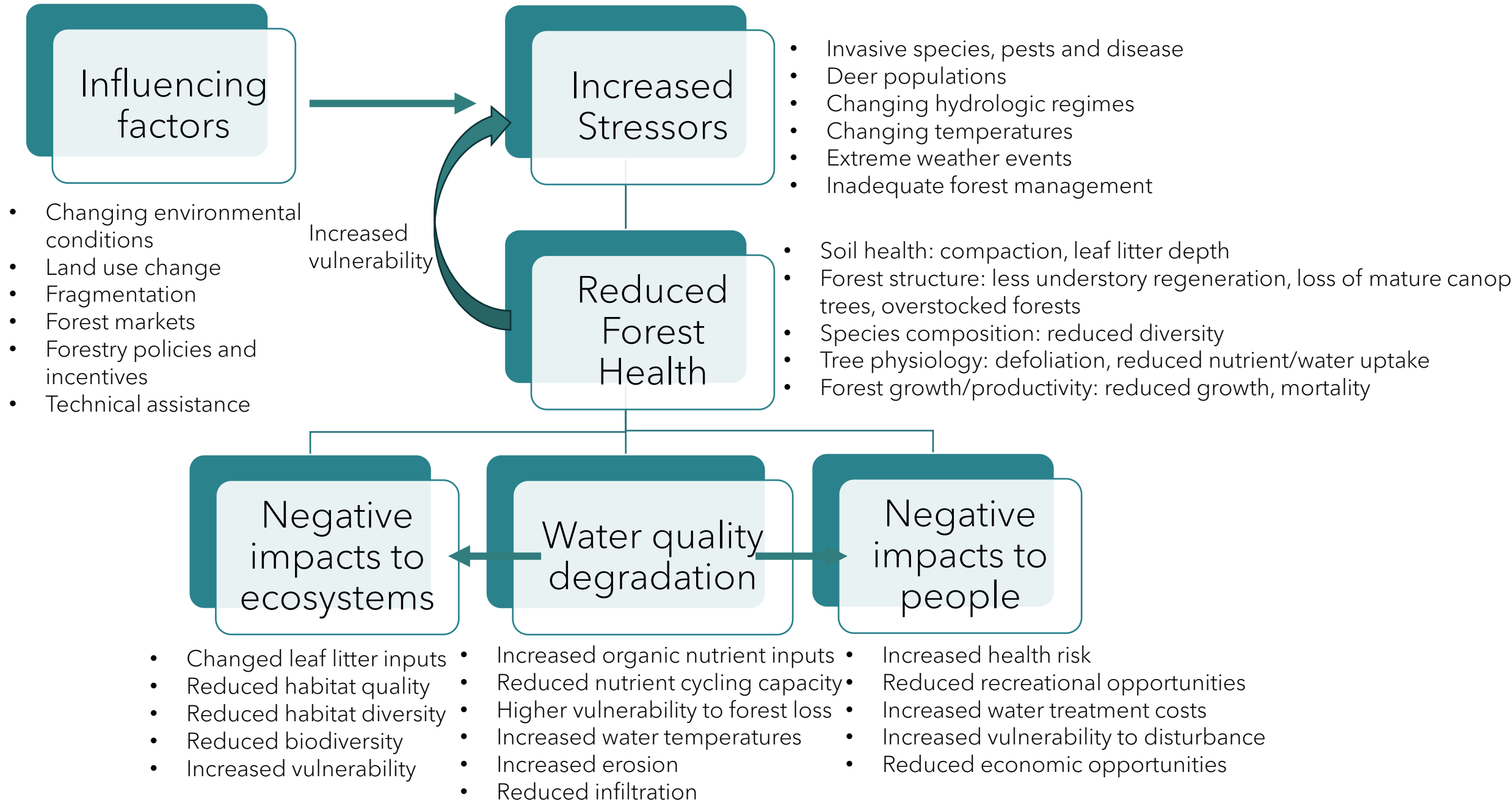
A healthy forest is a resilient forest!



Workshop Objectives:

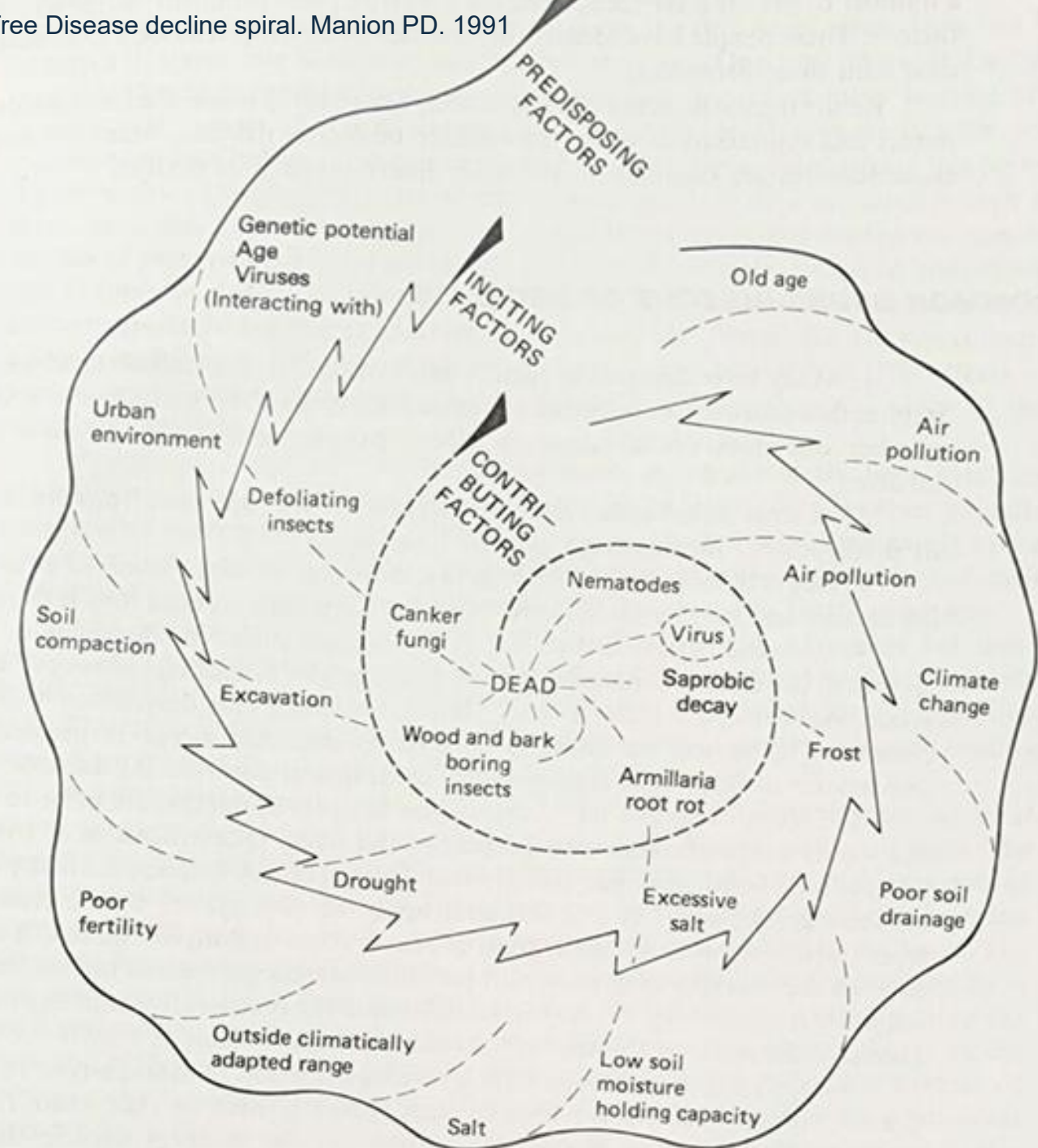
- Identify major stressors to forest health in the Chesapeake Bay watershed and evaluate how they affect forest resilience, water quality and Chesapeake Bay goals
- Explore proactive management and stewardship strategies (e.g., silviculture, invasive species control, policy tools, and community engagement) to strengthen forest conservation beyond traditional easements and develop actionable recommendations for the Partnership.

Initial Conceptual Model



Forest health stressors

- Current forest conditions and a myriad of stressors impact forest health
- Forests are most resilient to the stressors we can't control when we manage for the stressors we can control
- People can exacerbate stressors through unmanaged recreation, dumping, and invasive species spread
- Social/economic factors also influence forest condition and management



Percent Mortality

0 - 2

2 - 3.5

No Data (not included in output)

Oak Species Mortality by HUC8 Watershed in the Chesapeake Bay

2014

2019

2024

Sources: ERI HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, MTS, NRCAN, GeBCO, IGN, Kartchner, NL, DeLorme, Swire, Eri Japan, Esri, Swi China (Hong Kong), Swi OpenStreetMap contributors, and the GIS User Community.

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Percent Mortality

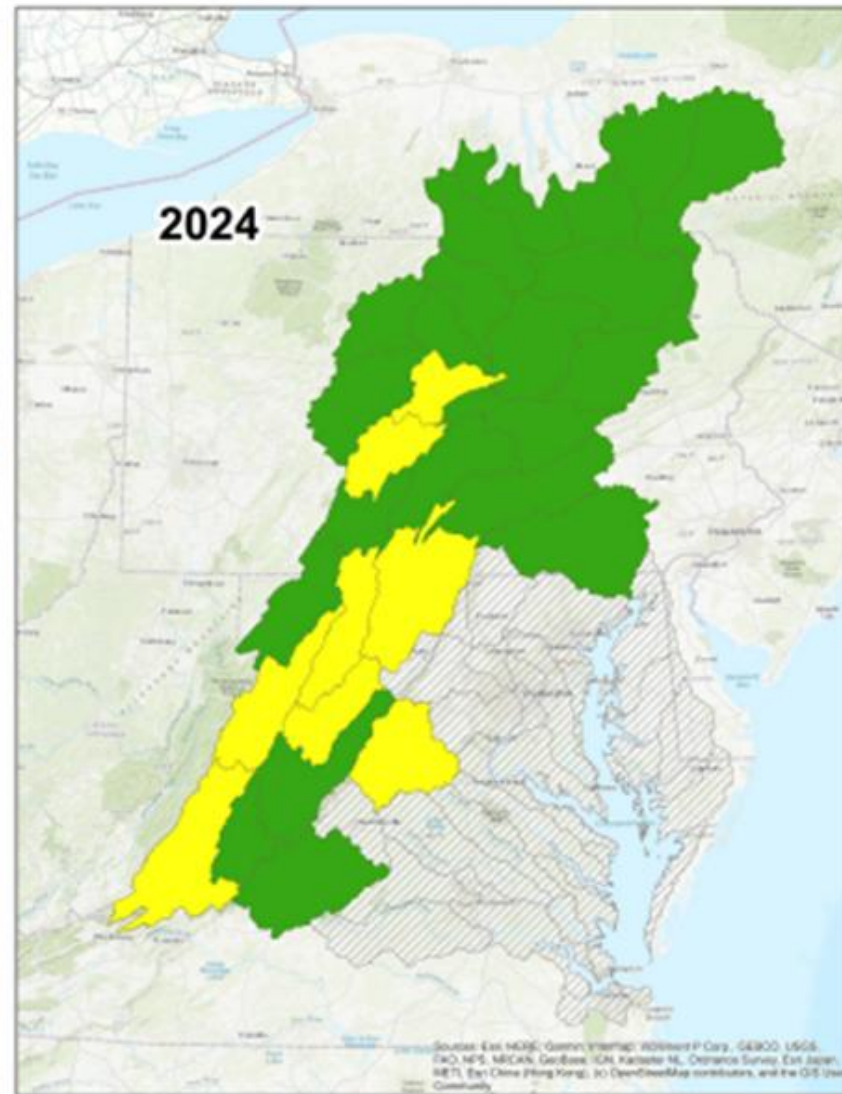
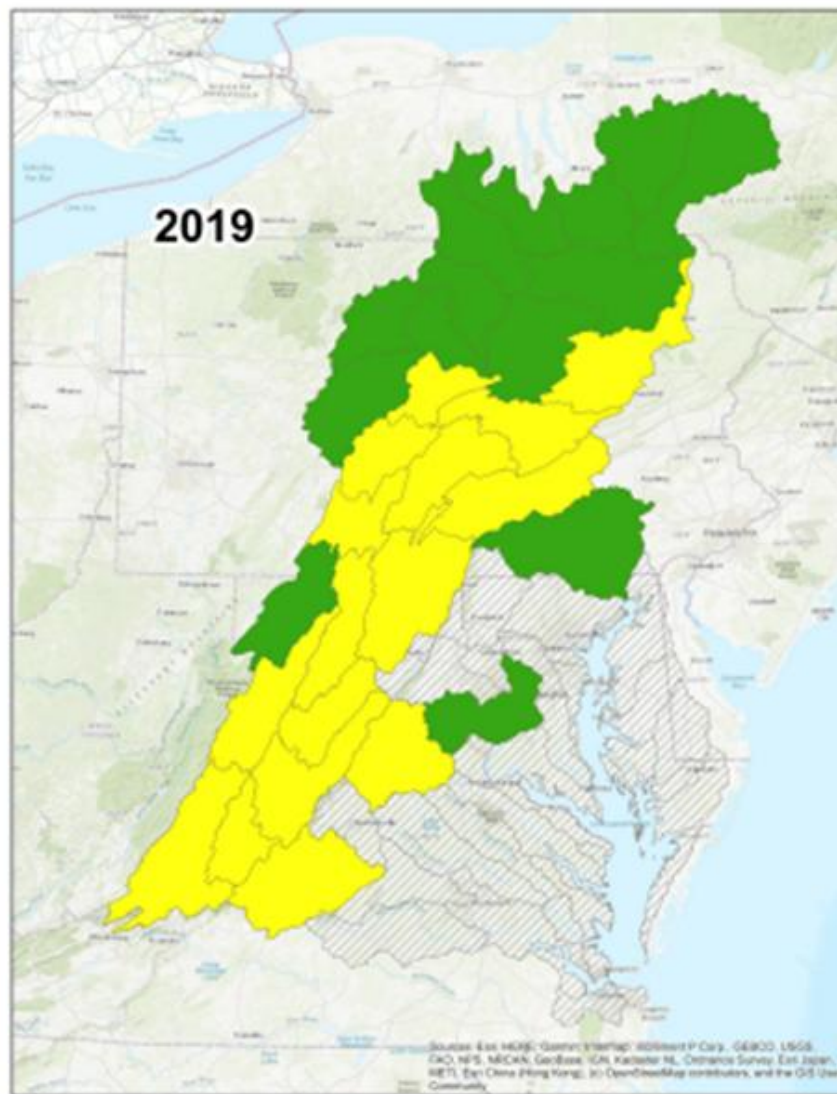
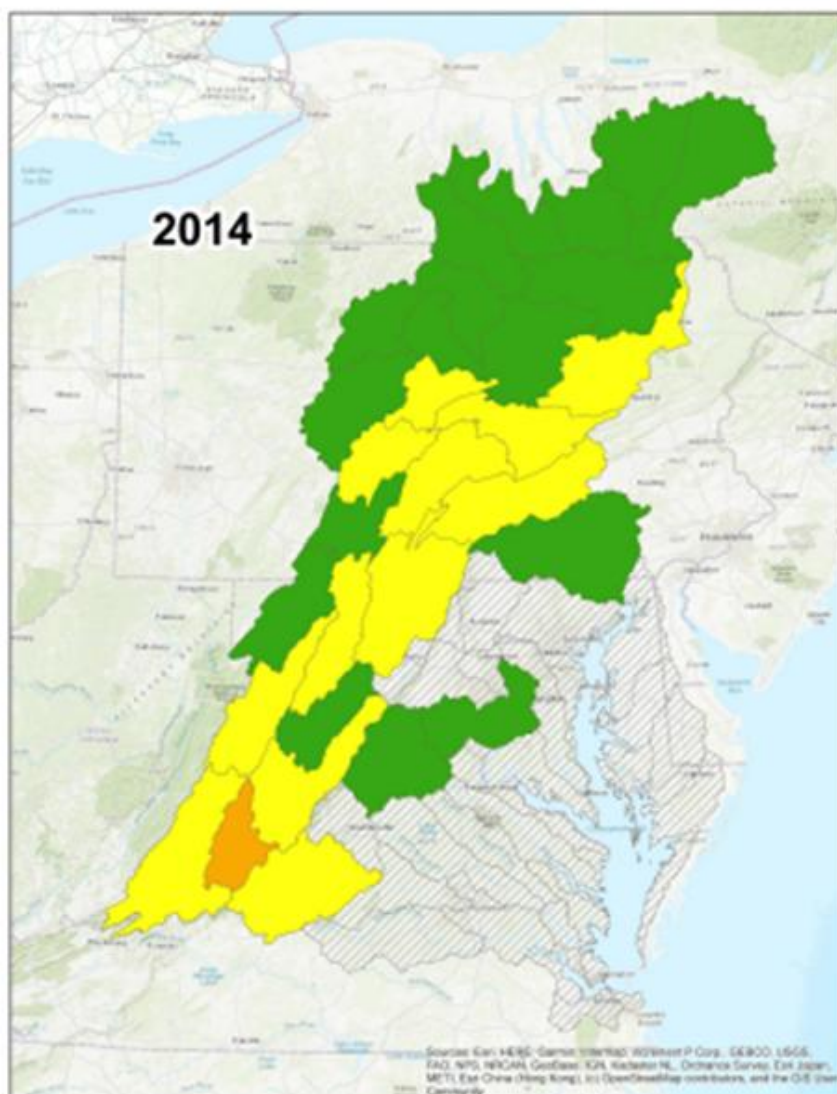
0 - 2

2 - 10

10 - 15.4

No Data (low or no Hemlock, or not included in output)

Eastern Hemlock Mortality by HUC8 Watershed in the Chesapeake Bay



Percent Mortality



NoData (no Ash, or not included in output)

Ash Species Mortality by HUC8 Watershed in the Chesapeake Bay

2014

2019

2024

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeBCO, IGN, Kartchner NL, Ordnance Survey, Esri Japan, METI, Swi China (Hong Kong), Swi (OpenStreetMap contributors), and the US User Community

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2023 Chesapeake Bay Drainage Insect and Disease Damage Map

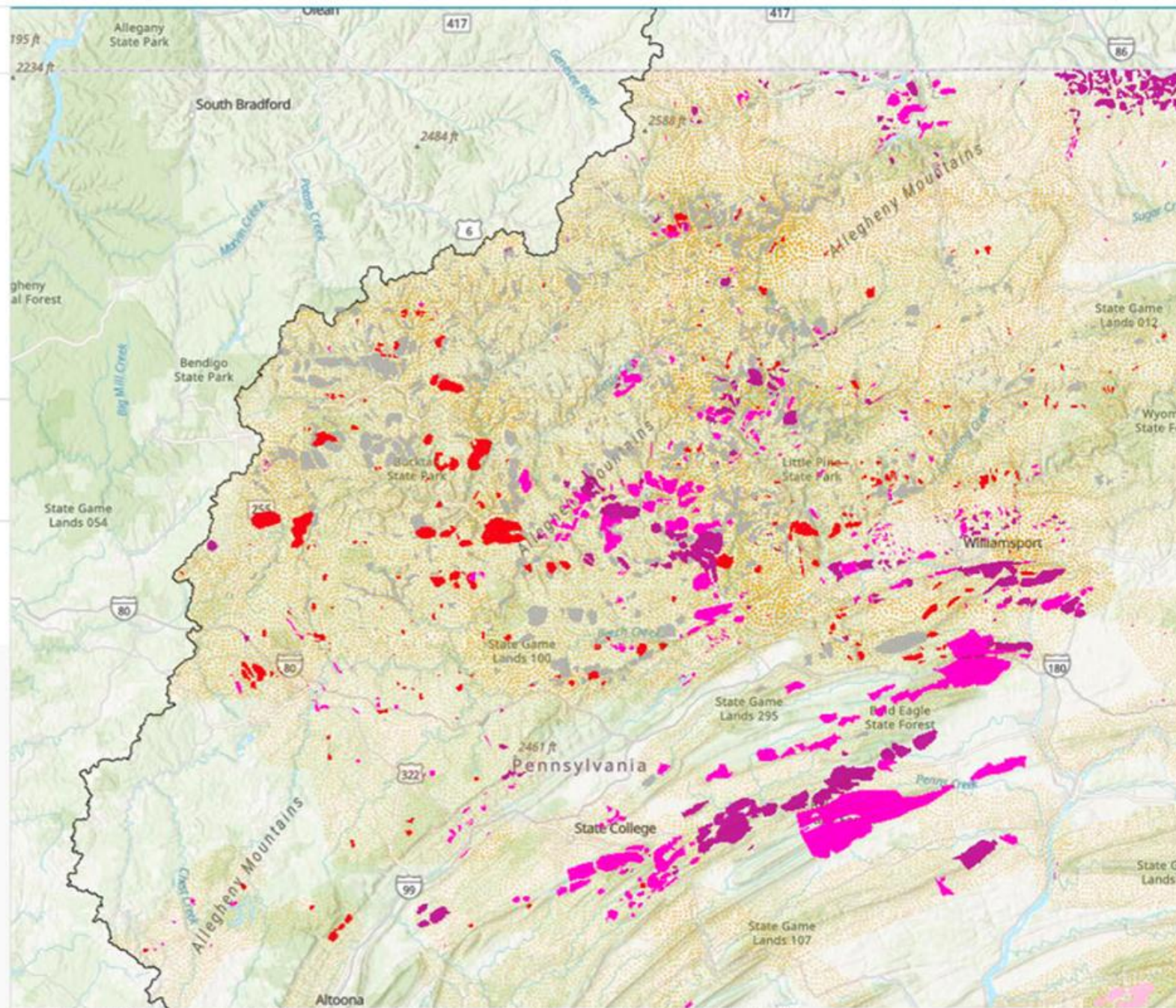
Legend

Damaged Areas

- Defoliation <50% of leaves defoliated
- Defoliation 50-75% of leaves defoliated
- Defoliation >75% of leaves defoliated
- Mortality
- Mortality - Previously Undocumented
- Other

Flown Area

CB_basin_WBD



2023 Chesapeake Bay Drainage Insect and Disease Damage Map

Legend



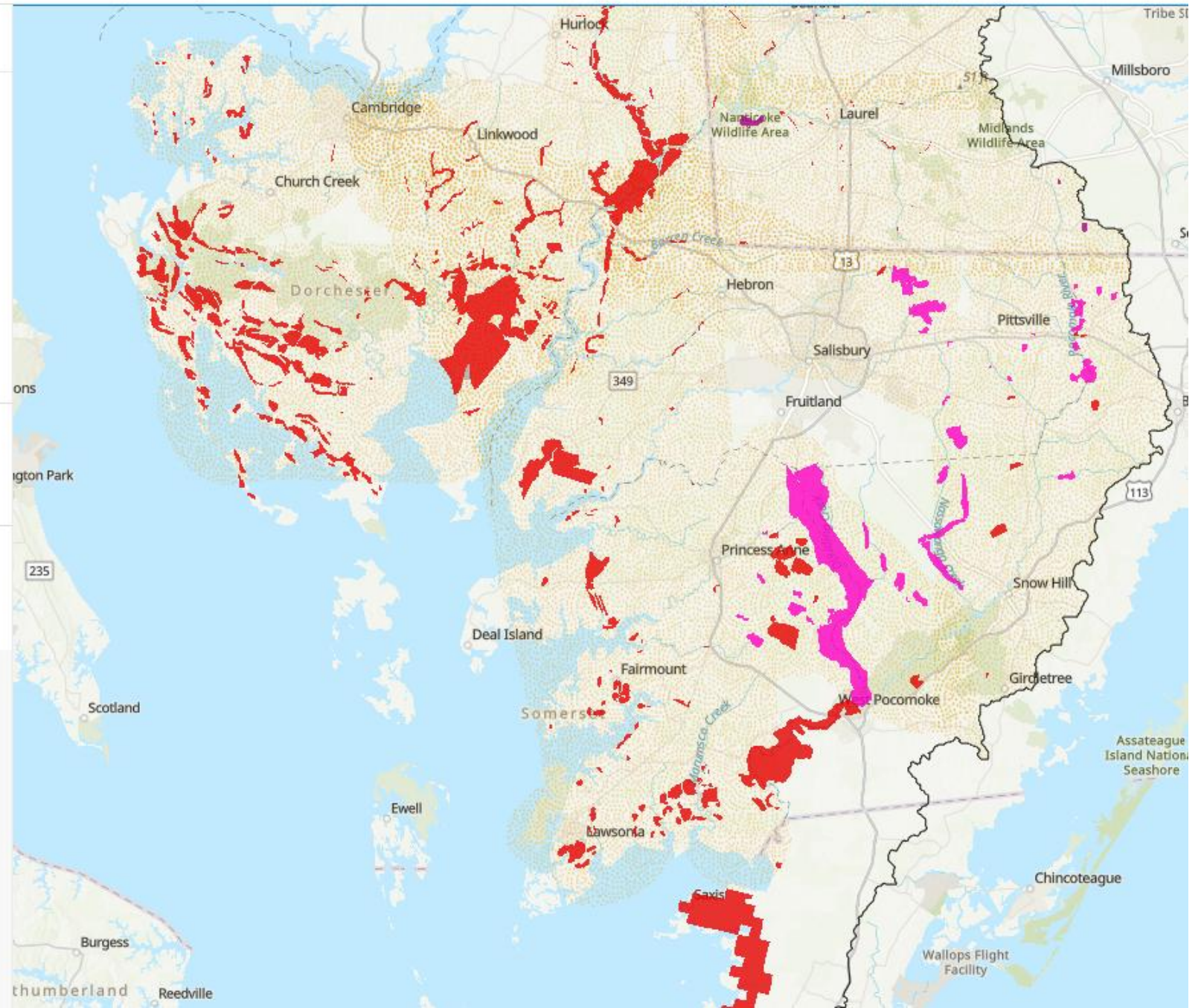
Damaged Areas

-  Defoliation <50% of leaves defoliated
-  Defoliation 50-75% of leaves defoliated
-  Defoliation >75% of leaves defoliated
-  Mortality
-  Mortality - Previously Undocumented
-  Other

Flown Area



CB_basin_WBD

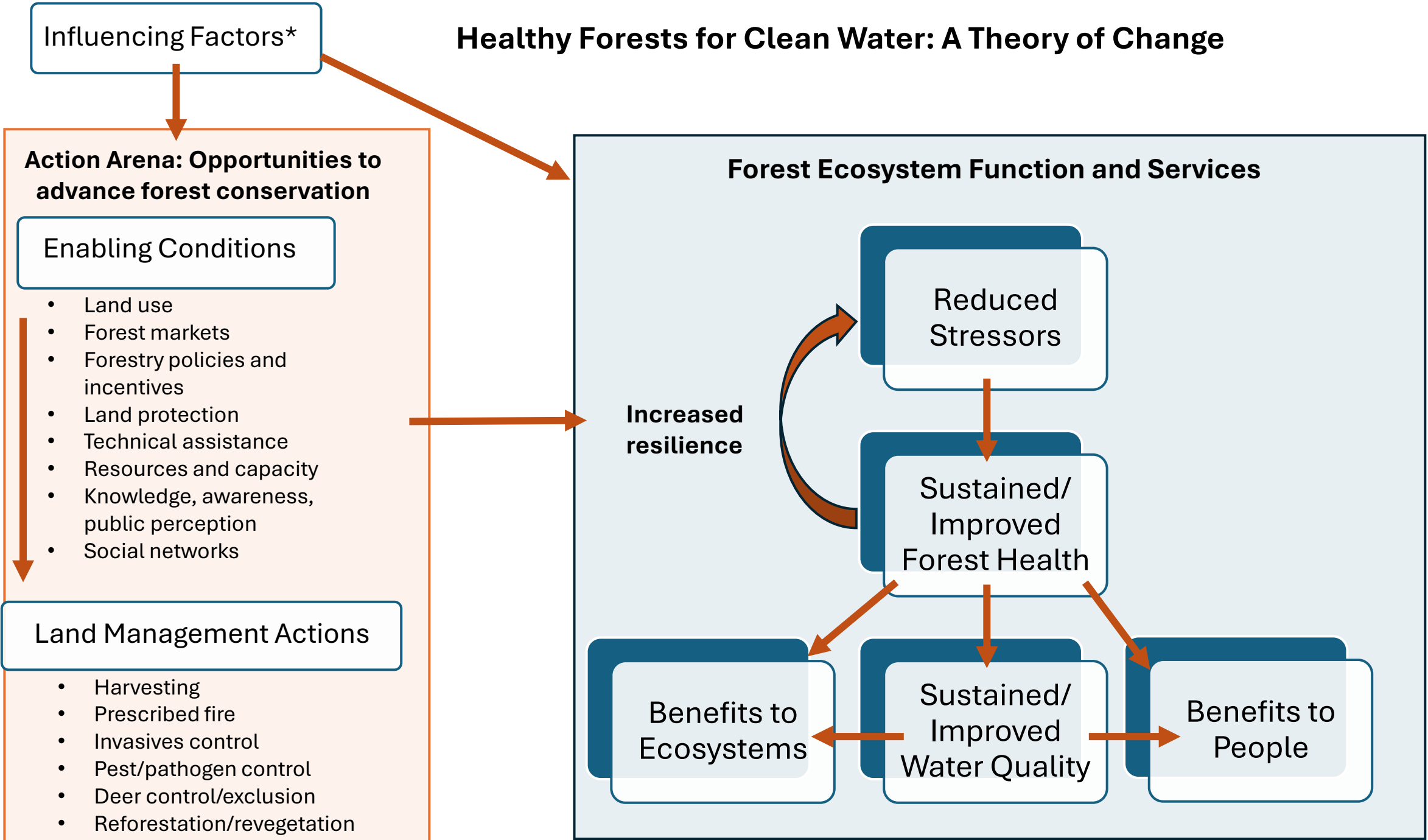


Rank the urgency and influence of each stressor (1=low, 5=high)



- 1 Invasive plant species
- 2 Forest pests & Pathogens
- 3 Deer Populations
- 4 Changing hydrologic regimes
- 5 Changing temperatures
- 6 Extreme weather events
- 7 Inadequate forest management

Healthy Forests for Clean Water: A Theory of Change



*Not within our sphere of control

Strategies for improving forest stewardship (or How to Love a Forest)



- Frame stewardship as a continuing process of care
- Improve public/landowner awareness through shared values and sound science
- Focus messaging on the role of stewardship in creating abundance – hope is more powerful than fear

Recommendation

- **Communications:** Develop and deploy a unified, positive, and compelling forest conservation communication strategy that positions healthy, resilient forests as essential to Bay restoration and rural economies, using consistent messaging amplified through partners and credible messengers.

Forests in the Chesapeake Bay States (NWOS 2023)

	Maryland	New York	Pennsylvania	Virginia	West Virginia
Forested Acres	2.45M Ac (31% of the state)	19M Ac (63%)	16.9M Ac (59%)	13M Ac (51%)	12M Ac (77%)
Privately Owned	2.2M Ac (89%)	14.4M Ac (76%)	11.5M Ac (68%)	9.8M Ac (75%)	6.5M Ac (54%)
Number of Ownerships	165,000	508,000	489,000	402,000	260,000
Cost Share	3.3% 10+ acres	0.5% 10+	2% 10+	6.2% 10+	3.9% 10+
Management Plan	11.6% (39.6% 10+)	2.6% (7.2% 10+)	2.1% (5.9% 10+)	4% (13.5% 10+)	4% (8.3% 10+)
Harvesting (includes firewood)	42%	78%	69%	79%	72%
Land Protection	4.1%	4.2%	2.3%	4.2%	0.7%
Top Reasons for Owning	Nature protection, Beauty, Privacy	Nature protection, Privacy, Wildlife habitat	Beauty, Wildlife habitat, Nature protection	Nature protection, Privacy, Raise a family	Nature protection, Beauty, Privacy

Landowner hurdles for getting support with forest management



Photo credit: Allyson Muth

- Locating and navigating help
- Personal investment
- Uncertain about appropriate management practices
- Interpersonal dynamics
- Boundedness of their ownership and purview
- Skepticism and distrust

Finley and Muth, 2021

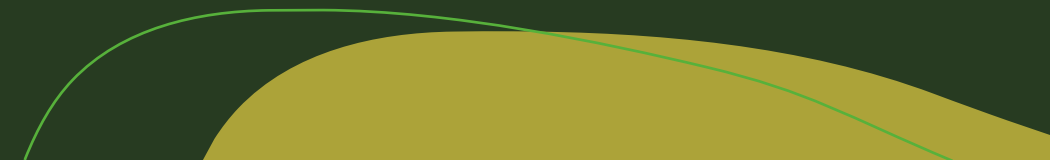
Recommendations

- **Networks:** Strengthen and connect local and regional forestry networks across the watershed, leveraging existing collaborative structures to support shared learning, rapid response, and more coordinated stewardship.
- **Capacity:** Build long-term, cross-sector capacity for forest management by expanding the regional forestry workforce, increasing the availability of technical assistance, and sharing expertise to effectively scale forest management and restoration in the watershed.



Recommendations

Funding: Develop diversified, accessible, and scalable funding models that enable forest conservation and management—especially for small acreage landowners—and support long-term stewardship, maintenance, and innovation.



Strong wood markets= healthy forests

- Strong wood markets (both large diameter/high grade markets and small diameter/low grade markets) drive sustainable forest management
- Decreased exports and the closure of regional processing facilities have reduced regional market opportunities (and the economic incentive for management)
- Need for innovation, esp. with new low-grade market opportunities

Recommendation

- **Markets:** Support development of diverse and sustainable forest product markets as a foundational driver of forest health, rural economies, and Bay restoration, including new market pathways for low-value woody material.

Recommendation

- **Policy:** Advance an aligned and enabling policy environment that removes barriers to forest management, reduces perverse incentives, and supports active, sustainable forest management across jurisdictions.

Land management actions



- **Diversity is key** at multiple scales to ensure resilience- integrate diverse species and ecotypes into plantings and maintain a diversity of age classes across the landscape (e.g. dynamic forest restoration blocks)
- Multiple active management tools and long-term planning can be used to manage stressors, including prescribed fire, harvesting, invasives removal

Recommendations

- **Land Management:** Adopt an adaptive, landscape-scale forest management approach that focuses on resilience, long-term planning, species diversity, and connectivity, paired with consistent maintenance and invasive species control.

Research Needs: *Invest in targeted research that improves understanding of forest condition, ecological processes, and management impacts to better guide Chesapeake Bay Program decisions.*

- Do a more comprehensive assessment of current forest condition using FIA data
- Improve understanding of how changing environmental conditions and forest degradation influence water quality in forested ecosystems (accounting for changes in phenology, productivity, invasive species, hydrology and nutrient cycling)
- Conduct a meta-analysis to determine whether there is sufficient evidence to distinguish between healthy and unhealthy forests and separate land uses with distinct loading rates in the watershed model



Thank you!

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