



A Planner's Role in Addressing Climate Change

Focusing on Maryland
and the Chesapeake Bay
Region



Outline

1. Climate Change and the Chesapeake Bay Watershed
2. A Planners Role in Addressing Climate Change
3. Addressing Sea level Rise, Bigger Storms/More Rainfall, Species Habitat and Wildlife Corridors
4. Strategies for Large Landscape Conservation
5. How to Avoid a New Wave of Residential Sprawl

1. Climate Change and the Chesapeake Bay Watershed



Climate Change

“The summer of 2021 appears to be on pace to be the hottest on record. Last month was the hottest June since at least the 1890s (when federal records begin). The temperature reached 116 degrees in Portland, Ore., at one point and 121 in British Columbia, Canada. Climate researchers concluded that those levels of heat would have been ‘virtually impossible without climate change.’”
NYT 7/20/21



Paradise, California in 2018

Josh Edelson / AFP - Getty Images file

WEALTH MATTERS

With Extreme Weather, Home Insurance Will Cost More. If You Can Get It. [🔗](#)



Homes in Queens were flooded by the remnants of Hurricane Ida last week. As extreme weather becomes more common, insurance companies are rethinking which homes to cover and at what price. Benjamin Norman for The New York Times

Wildfires in California and Oregon. Hurricanes that wreak havoc from the Gulf Coast up to the Northeast. Hail in the Midwest that is so big and falls with such intensity that it punctures roofs.

Weather events are getting worse

- 1) **Since 1980, the number of extreme weather events per year has increased fourfold, and the annual direct cost of the disasters has increased fivefold.** During this period, the United States has had a total of 258 such weather and climate “billion-dollar” disasters, at a total direct cost of more than \$1.75 trillion (NOAA 2020a).
- 2) **Since 1980, the direct costs of one US disaster category—hurricanes—have increased elevenfold.**

Source: Climate Change-Fueled Weather Events: Costs to State and Local Economies, Datu Research, 2020, prepared for the Environmental Defense Fund



Fair Bluffs – Existence Threatened by weather events

- https://www.nytimes.com/2021/09/02/climate/climate-towns-bankruptcy.html?campaign_id=9&emc=edit_nn_20210902&instance_id=39433&nl=the-morning®i_id=117622350&segment_id=67884&te=1&user_id=8ee6ce7260121c7b76f9c526c055fead

erred 25 feet in the town under four feet



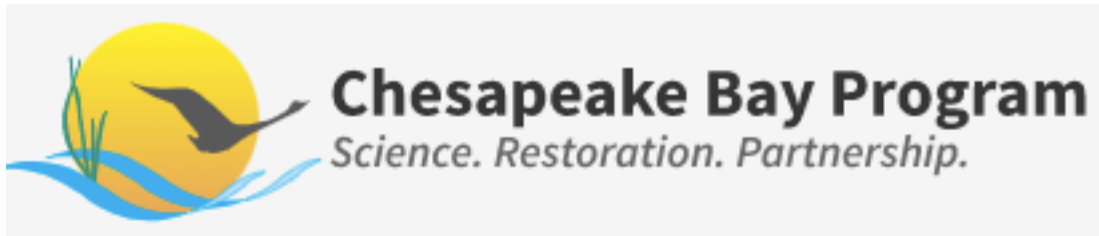
Chesapeake Bay Restoration



Annapolis, facing a growing crisis, is already one of cities most susceptible to flooding in the U.S. –*Am*



- Blackwater National Refuge



Rising seas

According to the U.S. Geological Survey (USGS), two factors have contributed to sea level rise around the world: thermal expansion caused by the warming of the oceans, and the melting of glaciers and ice sheets. Over the past century, Bay waters have risen about one foot, and are [predicted](#) to rise **another 1.3 to 5.2 feet** over the next 100 years. This is faster than the global average, because the land around the Bay is sinking through a process called subsidence





Chesapeake Bay Program
Science. Restoration. Partnership.

Warming temperatures

According to the U.S. Environmental Protection Agency (EPA), [average temperatures](#) across the northeastern United States rose almost 2 degrees Fahrenheit (F) between 1895 and 2011. **Projections indicate warming of [4.5 to 10 degrees](#) in the region by the 2080s.**

Warmer air means warmer water, and warmer water means a change in aquatic habitats. Eelgrass, for instance, becomes stressed when waters are warmer than 86 degrees. in [more than 92 percent](#) of the Bay's waters. And a [study by USGS](#) found an overall increase of **1.98 degrees F in air temperatures and 2.52 degrees in stream temperatures** in the Chesapeake Bay region from 1960 to 2010.



Source: <https://sercblog.si.edu/dead-zones-likely-to-expand-as-coastal-waters-warm/>



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Extreme weather

According to the EPA, between 1958 and 2012, the northeastern United States saw a more than 70 percent increase in the amount of rainfall measured during heavy precipitation events—more than any other region in the nation.



<https://www.mdsg.umd.edu/topics/coastal-flooding/storm-surges>



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Ocean acidification

As the amount of carbon dioxide in the air rises, so does the amount of carbon dioxide in our oceans. When oceans absorb carbon dioxide, the chemical compound reacts with seawater to produce carbonic acid.



Changes in wildlife

Climactic changes can alter the abundance and migration patterns of wildlife. The timing of leaf growth and flower blooms, for instance, has changed across the United States. North American birds—including the ducks, geese and other waterfowl that spend cold months in the Bay's marshes and wetlands—have shifted their wintering grounds northward and farther from the coast.

Eastern Black Rail





Harry R. Hughes
CENTER FOR AGRO-ECOLOGY



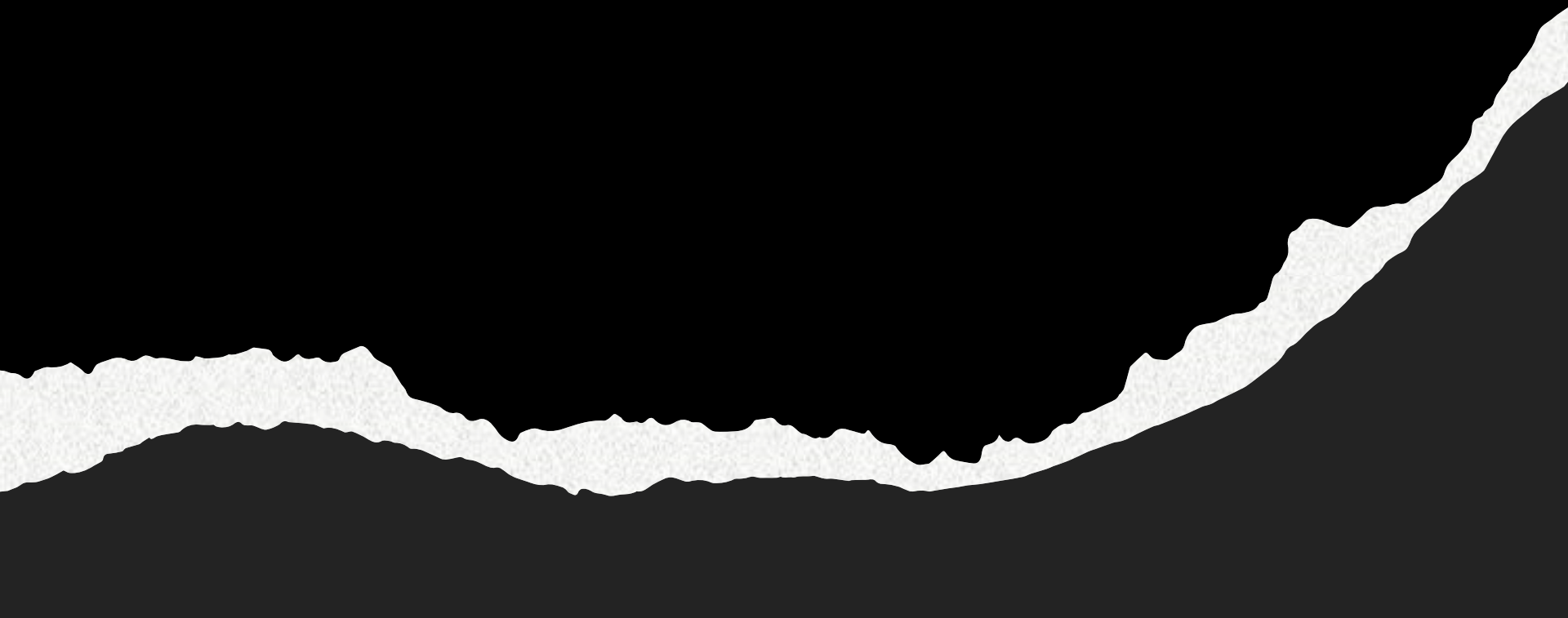
COLLEGE OF
AGRICULTURE &
NATURAL RESOURCES

Project partners seek farmer feedback on climate change vulnerability assessment

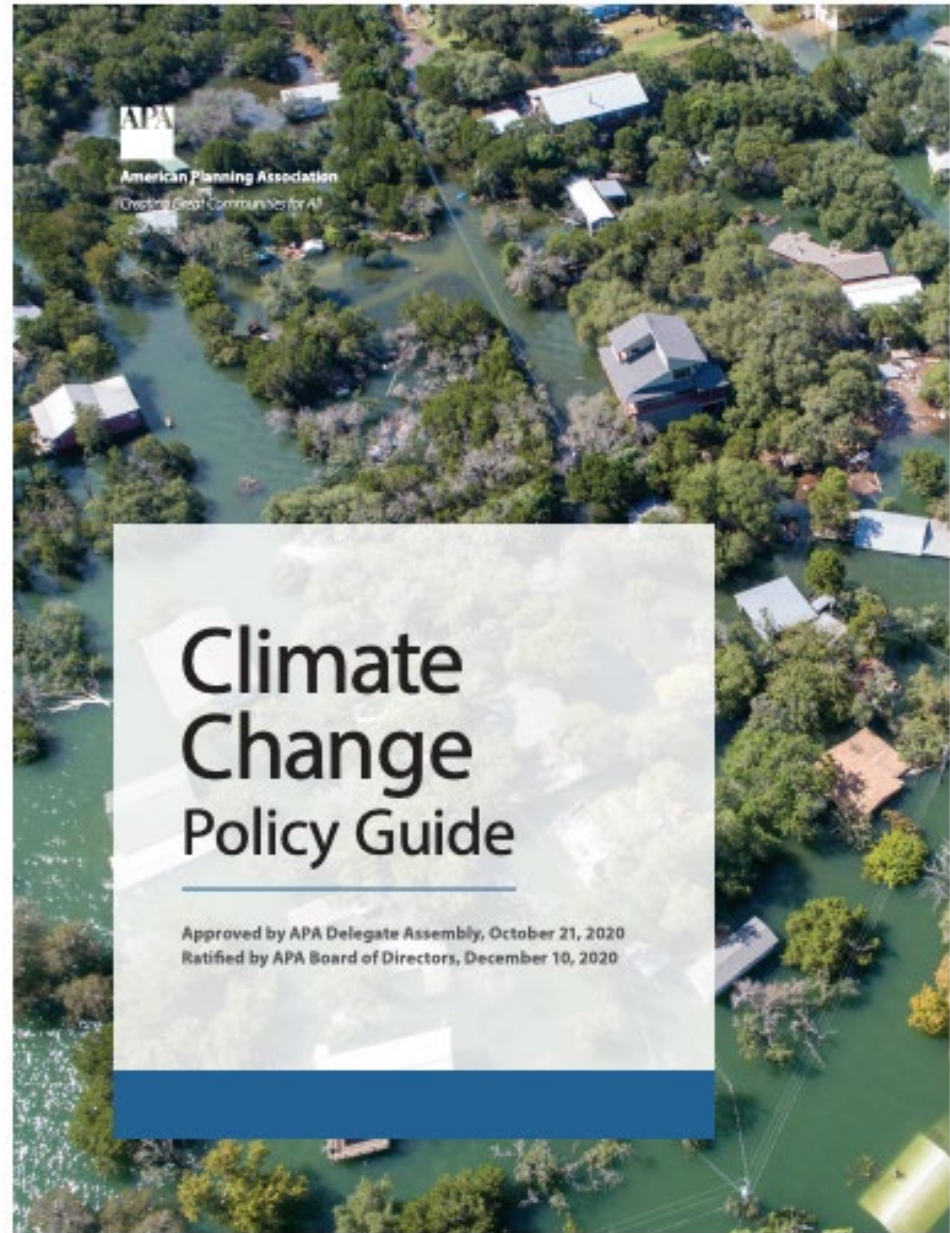


The Hughes Center and partners of a statewide project have been hearing from farmers across Maryland about their challenges, concerns, and thoughts on how extreme weather events and other climate change issues impact their operations.

2. Planner's Role in Addressing Climate Change



“Planners need to take the lead in helping to mitigate the impacts of climate change and ensure our communities adapt to a changing climate”



Federal Policy

A.1 Advocate for strong national climate leadership

A.2. Advocate for a national transition to a clean energy economy

A.3 Advocate for the development of a sustainable federal transportation agenda

A. 4. Advocate for state climate change plans, policies, programs and projects

• :

State Policy

A.4. Advocate for state climate change plans, policies, programs and projects

A.4.1 Advocate for close coordination between state and local governments

A.4.2 States should enact strong planning enabling legislation

A.4.3 Support and participate in state, regional, and local infrastructure planning

A.4.4 Advocate for mandatory building and energy codes.

▪ :



Maryland

Department of
the Environment

The Greenhouse Gas Emissions Reduction Act

2030 GGRA Plan

Prepared for:

Governor Larry J. Hogan
State of Maryland

and the Maryland General Assembly

February 19, 2021

Maryland Leads in GHG Emission Reductions and Economic Development

- “Forty-one out of fifty states have grown their economies while reducing emissions since 2005. Of these states, Maryland leads, having reduced its energy-related CO2 emissions 37.6 percent between 2005–2017 - more than any other state - while growing its economy by 17.7 percent, according to a study by the World Resources Institute.”
- The new goal is a 40% reduction in statewide Greenhouse gas emissions from 2006 levels by 2030

These general policy areas correspond to the six principles established by APA's Comprehensive Plan Standards for Sustaining Places, which organize the range of topics and issues planners address in their work into an integrated framework. **They are:**

- Livable Built Environment
- Harmony with Nature
- Resilient Economy
- Interwoven Equity
- Healthy Communities
- Responsible Regionalism

A.4.4 Advocate for mandatory building energy codes.

- 4.4 Advocate for mandatory building energy codes. Support, seek adoption, and ensure enforcement of mandatory building energy codes for commercial and residential buildings at the state level with the goal of achieving net-zero-carbon-based energy use for all new and redeveloped buildings by 2050.
- As an alternative, advocate for federal standards for net-zero energy usage in new and redeveloped buildings and support state adoption and enforcement of these mandatory building energy codes to achieve that goal.

Livable Built Environment

Policy B.4. Provide green and complete streets serving multiple functions

- “Require that new street projects include green and complete streets where appropriate within community transportation plans.
- Green and complete streets address climate change in numerous ways. Complete streets encourage the use of alternative modes of transportation, reducing the need for automobiles.
- Green streets incorporate nature-based solutions and green infrastructure elements such as trees and vegetation that help connect and integrate the natural and built environments while reducing urban heat island and other climate-related impacts.”

Policy B.6. Promote and plan for infill development

“Advocate for new development projects to be located on previously developed sites or on sites that are adjacent to existing development to help maximize the use of existing infrastructure and preserve greenfields. Development preferences should always include redeveloping previously developed sites rather than developing on greenfield sites to reduce the amount of land disturbance and preserve existing vegetation and natural habitat.”

B.12. Provide accessible public facilities and spaces

Provide equitable distribution of and access to public facilities and spaces as a feature of climate change adaptation strategies. For instance, the preservation, expansion, or improvements of open spaces in coastal and riparian zones can be used as flood storage during storm events and function as recreational spaces during dry times. Any connections and improvements to these public open spaces should be designed to accommodate all people so that all spaces can be shared, accessed, and enjoyed equally.

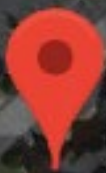
Maryland State Police -
Prince Frederick Barrack

Vianney Ln



American Chestnut
Land Trust Prince...

765



Saint John Vianney
Catholic Church

ly Family Ln



You can live in downtown and be able to walk to a Chesapeake Bay Overlook 6.5 miles away



A partnership between ACLT, Calvert County Government, MD Dept of Natural Resources And St. John Vianney Catholic Church



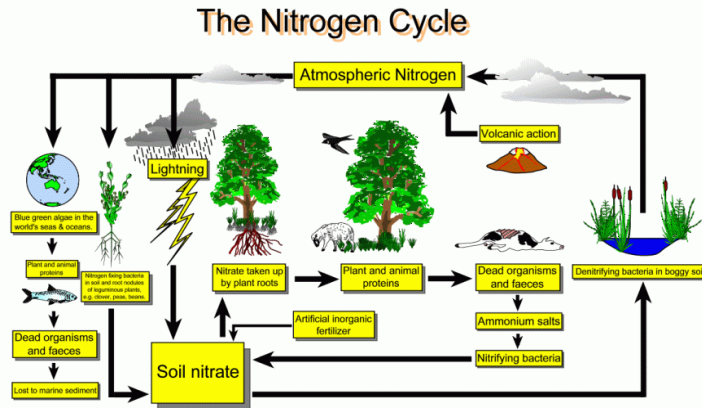
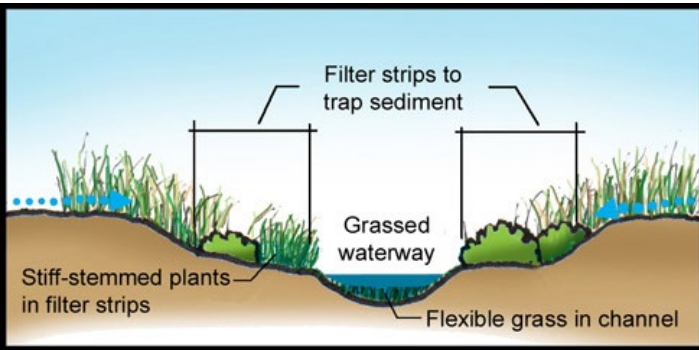
Harmony with Nature

“The natural environment encompasses all living and nonliving things occurring naturally on earth. Ecosystems are natural communities formed by the interaction of plants, animals, and microbes (living), with air, water, and soil (nonliving). These interactions create many benefits to the natural environment such as nutrient cycling, carbon sequestration and storage, erosion protection, and pollination, to name a few. These benefits are referred to as ecosystem services.”

Accounting for Maryland's Ecosystem Services (AMES)

- **Use established models from USGS, USFS, DNR, US EPA for quantity of the ecosystem service** (mt of carbon, kg of N, etc.)
- Assigns a dollar value to individual ecosystem services using the “eco-price” methodology (Campbell, in press)
- Ecosystem services currently considered across the landscape of Maryland include
 - **Air Quality improvement**
 - **Carbon sequestration**
 - **Groundwater recharge**
 - **Nutrient Uptake**
 - **Wildlife habitat and biodiversity**
 - **Stormwater mitigation**
- Not presented here- services specific to coastal wetlands and the Chesapeake Bay

Nutrient Uptake



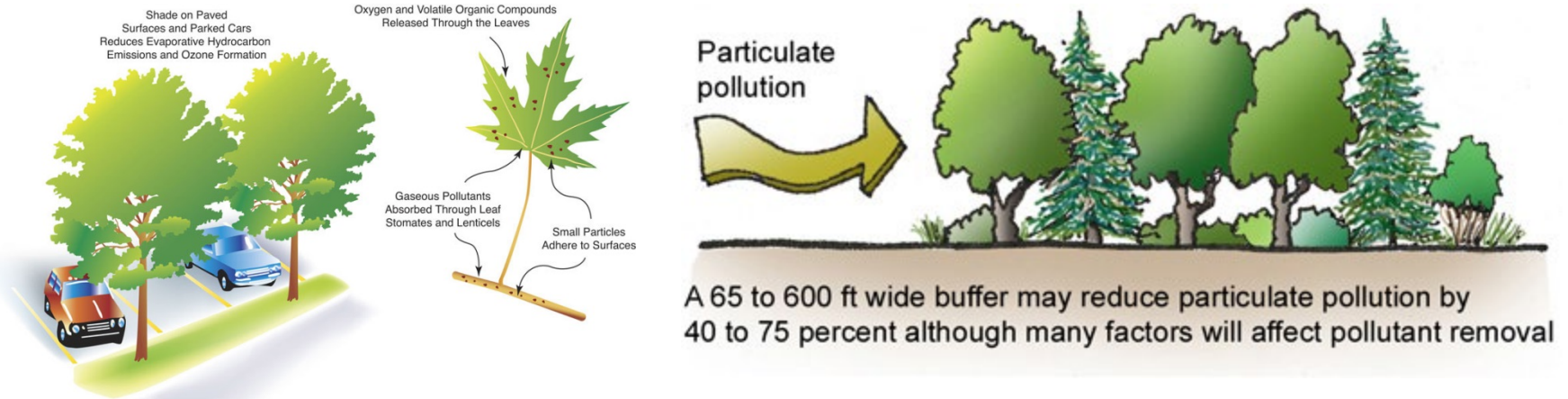
- *ES across the landscape*: Forests and wetlands in watersheds with high amounts of urban or agricultural land-uses receive and take-up higher quantities of nutrients
- *Eco-Price*: Avg. cost to remove nutrients using best management practices and price on nutrient trading markets. Averages \$8.36 per lbs nitrogen or phosphorus

Stormwater Abatement Ecosystem Service



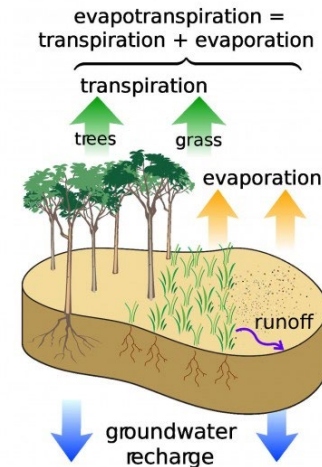
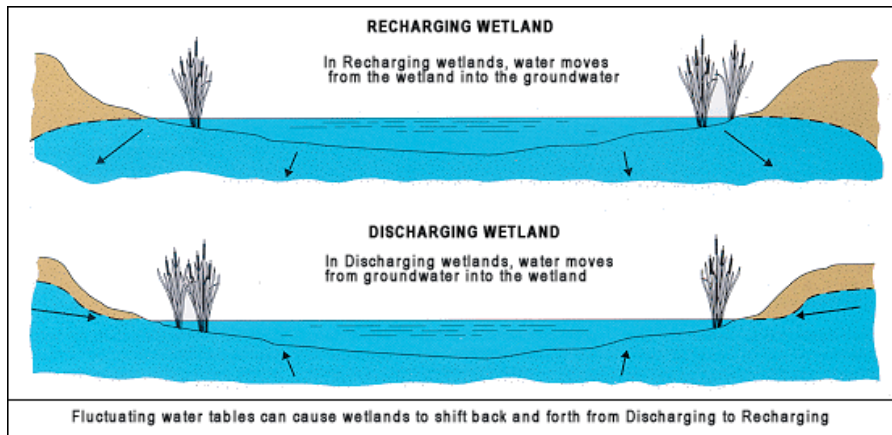
- *ES across the landscape:* Riparian areas and forests and wetlands in watersheds with high impervious area upstream are more important for reducing stormwater runoff
- *Eco-Prices:* the cost avoided of additional stormwater infrastructure, stormwater protection fee. Averages \$0.33 per m³ of water

Air Pollutant Removal



- *ES across the landscape:* Trees remove more air pollutants with a greater impact on human health in urban areas
- We use the economic impact that tree air pollution removal has on health costs (see Nowak et al. 2014)

Groundwater Recharge



- *ES across the landscape*: Geology is the primary driver of the rate that water enters unconfined and confined aquifers
- *Eco-prices*: Average municipal price of water, value of water for recreation, investment in watershed protection. **Averages \$0.35 per m³ water**

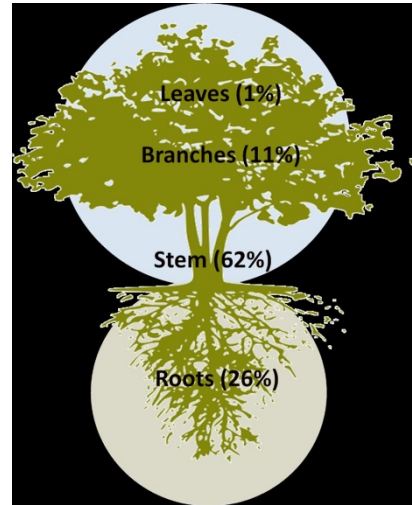
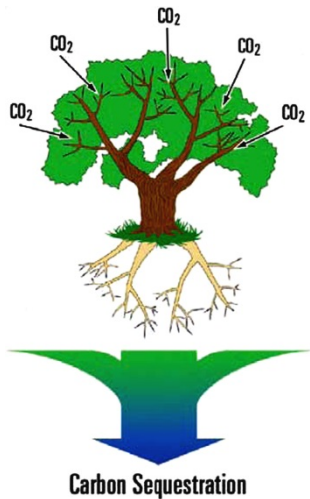


Biodiversity/Wildlife Habitat



- *ES across the landscape*: We looked at the size of habitat, degree of connection to other habitats, and presence of rare species or habitats
- *Eco-price*: Cost to preserve natural land (i.e. Ducks Unlimited, Conservation Fund, habitat banking) annualized over 15 years, period that tax benefit can be spread. **Averages \$1023 per acre of natural land.**

Carbon Sequestration



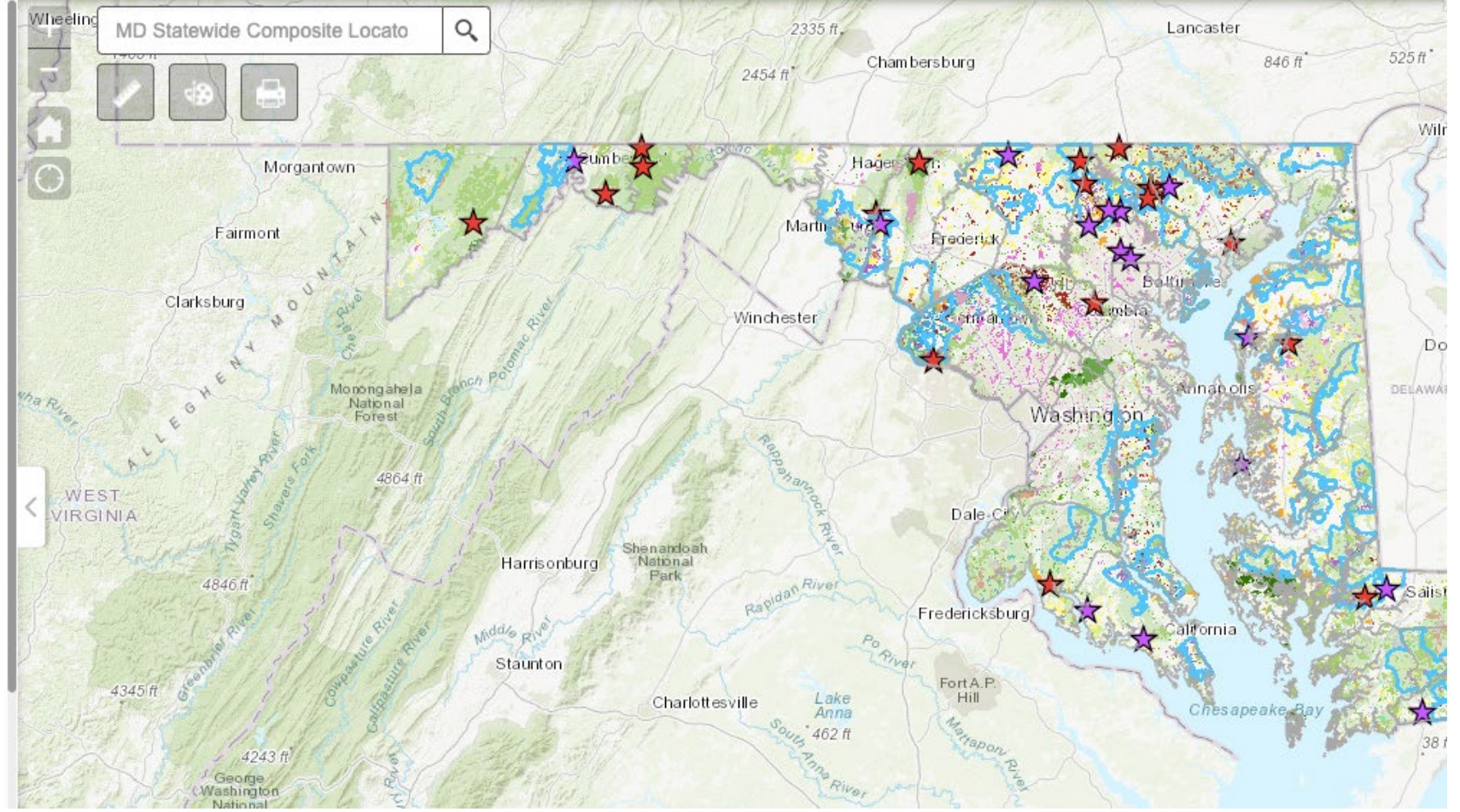
- *ES across the landscape:* Certain ecosystems (coastal wetlands, deciduous forests) sequester larger amounts of carbon than others (shrublands, coniferous forests)
- *Eco-Prices:* the Social Cost of Carbon (estimate of the costs of climate change), Regional Greenhouse Gas Initiative (RGGI) market price, cost to comply with Clean Power Plan. **Averages \$77 per mt of carbon**

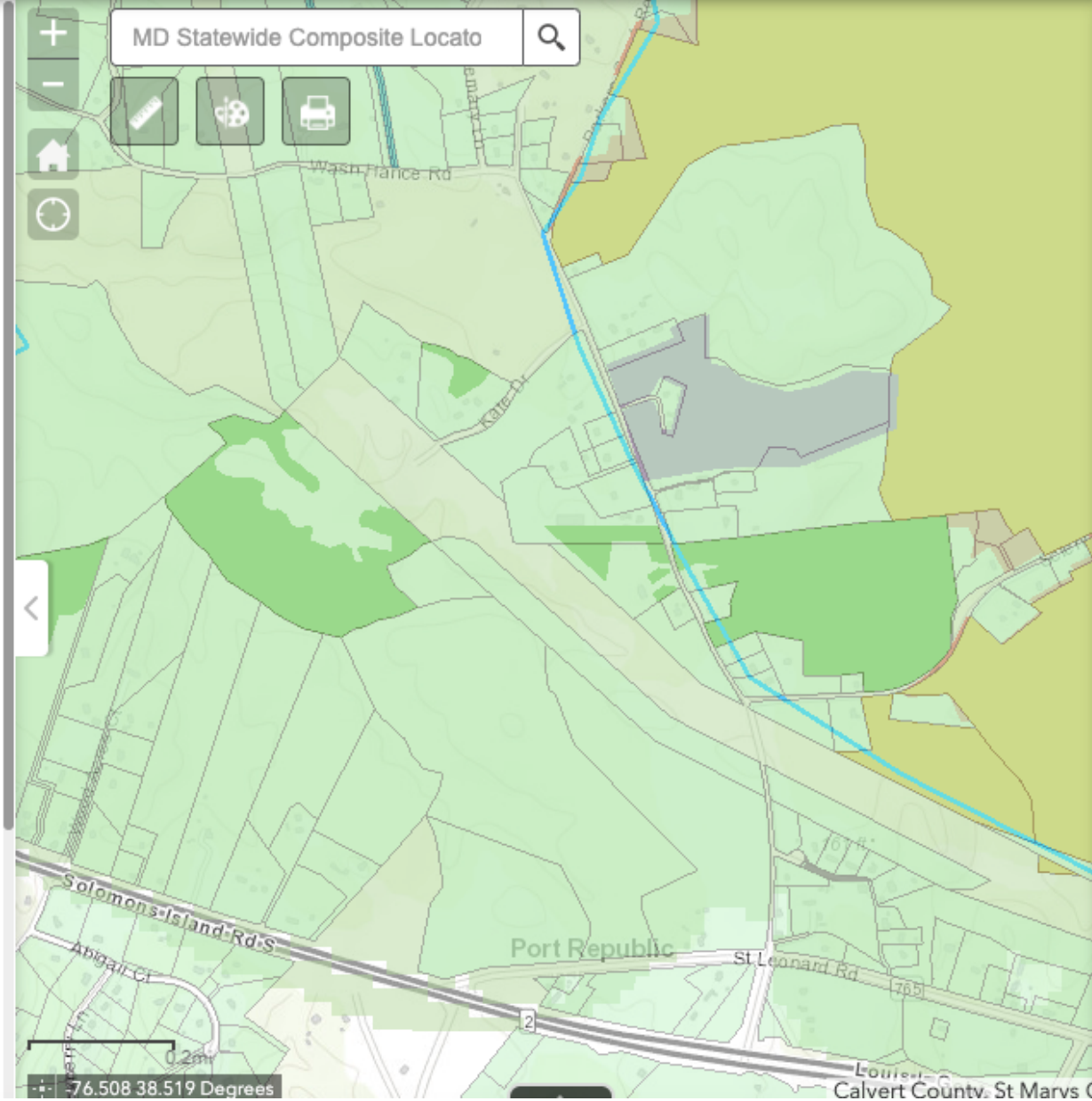
<https://geodata.md.gov/greenprint/>

User Guide Parcel Eval 101



MD Statewide Composite Locato





Parcel Evaluation

Search Map

Ratings are partially based on field surveys, but not all parcels have been surveyed. The data used to rate parcels are updated as new information is gathered and processed. Ratings may not reflect the most recently gathered data available or the parcel's actual ecological value if surveys have not been conducted.

Select Location on Map

Turn on Boundary Layer

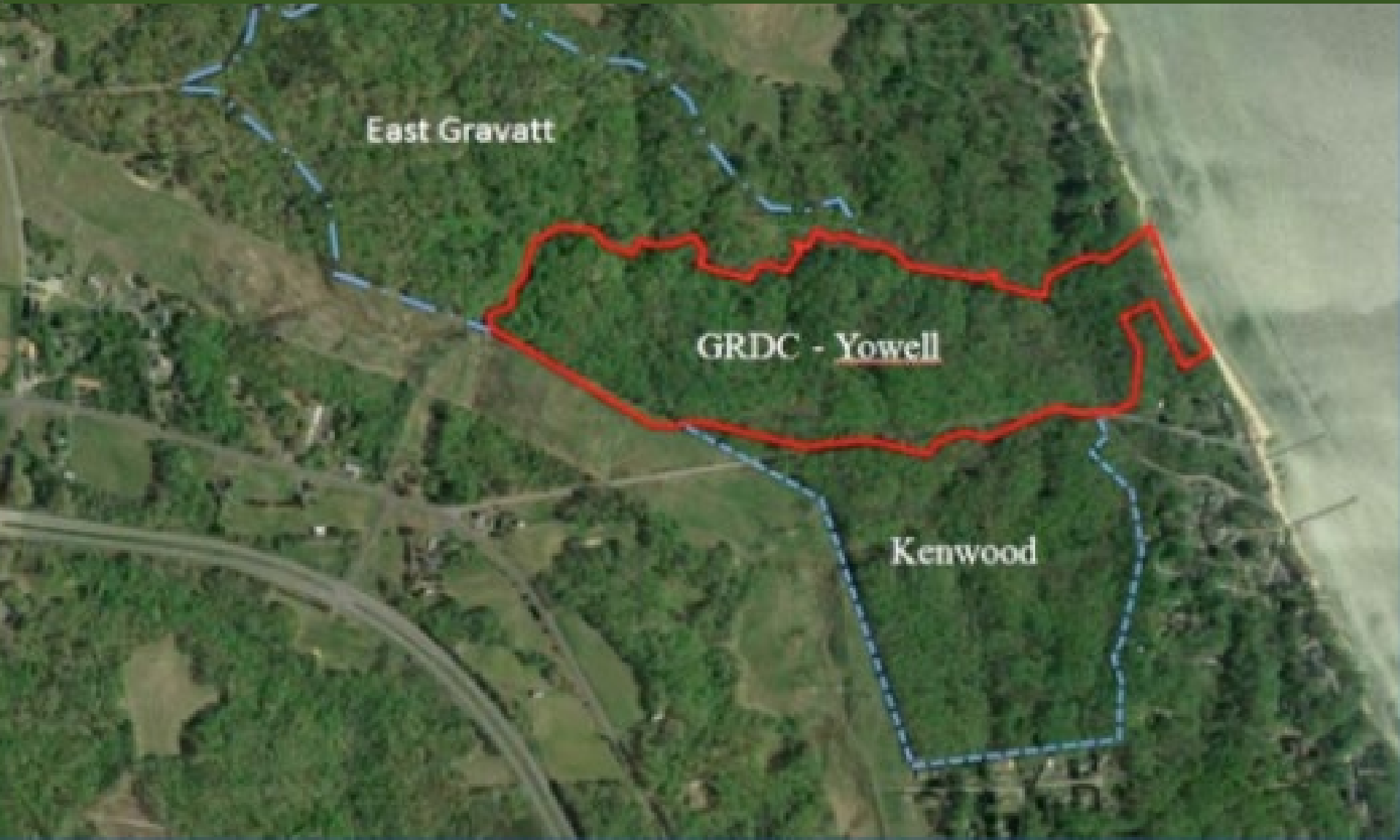
The Parcel Evaluation Tool was prepared by the Maryland Environmental Service using Federal funds under award number NA15NOS4190165 from NOAA, U.S. Department of Commerce. The statements, findings, conclusions, and recommendations are those of the author(s) and do not necessarily reflect the views of NOAA or the U.S. Department of Commerce. The authors acknowledge the financial assistance provided by the Coastal Zone Management Act of 1972, as amended, administered by the Office for Coastal Management, National Oceanic and Atmospheric Administration.



-76.508 38.519 Degrees

Calvert County, St Marvs C

\$199,815 per year in Ecosystem Values
\$2,561 per acre/year



Ecosystem Service Name (and biophysical unit)(range)	Annual Parcel-Level Values*		Annual Per-Acre Values**	
	Biophysical	Economic	Biophysical	Economic
Air Pollution Removal: Carbon Monoxide (CO) (kg per year)(0-1.35 kg per acre per year)	113.51	\$3.04	1.31	\$0.04
Air Pollution Removal: Nitrogen Dioxide(NO₂) (kg per year)(0- 9.01 kg per acre per year)	485.91	\$20.92	5.60	\$0.24
Air Pollution Removal: Sulfur Dioxide(SO₂) (kg per year)(0- 6.67 kg per acre per year)	213.81	\$2.19	2.47	\$0.03
Air Pollution Removal: Ozone (O₃) (kg per year)(0-34.35 kg per acre per year)	2202.18	\$528.82	25.39	\$6.10
Air Pollution Removal: Particulate Matter(PM₁₀) (kg per year)(0-8.34 kg per acre per year)	590.27		6.81	
Air Pollution Removal: Particulate Matter(PM_{2.5}) (kg per year)(0-1.80 kg per acre per year)	83.70	\$691.84	0.96	\$7.98
Carbon Sequestration (mT per year)(0-4 mt per acre per year)	64.72	\$9,011.59	0.75	\$103.90
Groundwater Recharge (m3per year)(445 - 1236 m3 per acre per year)	5869.42	\$31,604.00	67.67	\$364.38
Nitrogen Uptake Potential Index (1 = low to 3 = high)*	0.00	\$3,020.00	No Data	\$34.82
Stormwater Mitigation Potential Index (1 = low to 5 = high)*	2.29	\$71,063.00	No Data	\$819.32
Wildlife Habitat and Biodiversity Potential Index (0 = low to 100 = high)*	97.74	\$106,169.00	No Data	\$1,224.08
Surface Water Protection	No Data	\$0.00	No Data	\$0.00
Total Annual Economic Value	No Data		No Data	\$2,561.73

Ecosystem Services

Total Economic Value

Value as a Natural Capital Asset

=

\$3.68-4.89 billion!

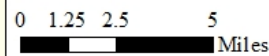


\$228 million Every Year!

Average \$/ acre

-  < \$500
-  \$500 - \$1,500
-  \$1,500 - \$2,500
-  \$2,500 - \$3,500
-  > \$3,500

Ecosystem Services	\$/ yr	Acres
Total \$/ yr	\$228,360,506.00	102,749
Min \$/ acre	\$4.00	2,087
Max \$/ acre	\$5,515.00	1
Avg \$/ acre	\$2,222.51	-



Harmony with Nature

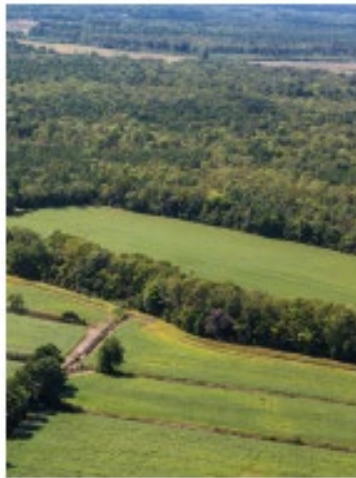
C.1.5 Support sustainable agricultural practices

Support the preservation of prime farmland soils and local food production to protect farmland and reduce food transportation and associated GHG emissions. Encourage agricultural practices that reduce potable water consumption, harmful air emissions, and polluted runoff while increasing the carbon sequestration capacity of soils. . .

Maryland helps fund cover crops and requires nutrient management plans.



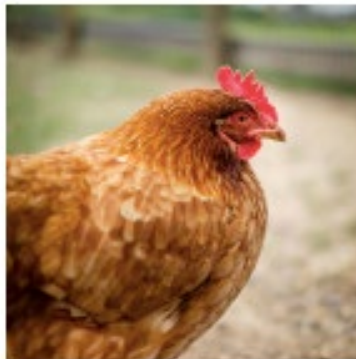
- At a national level, we need to do more



The Future of Sustainable Farming and Forestry in Maryland

A REPORT COMMISSIONED
BY THE HARRY R. HUGHES CENTER
FOR AGRO-ECOLOGY, INC

Prepared by American Farmland Trust,
the Maryland Department of Planning
and Land Stewardship Solutions, LLC



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Understand this. . .

Assist farmers in getting access to consumers

- It is harder for a farmer near your community to get their tomato in front of customers than a tomato from Mexico. **Don't believe it, ask a farmer!**
- Why? Corporate policy – trade deals with multinational corporations and lease agreements in shopping centers that prohibit farmers markets. And zoning regulations
- Planners can help farmers by establishing market sites in town centers near the commercial core.

For more information: The Future of Sustainable Agriculture and Forestry in Maryland, Harry Hughes Center for Agro-Ecology



Chesapeake's Bounty LLC

William Kreamer

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Phone: 410-586-3881

9124 Bay Avenue, North Beach, MD 20714

Phone: 443-646-5700 [Email Chesapeake's Bounty LLC](mailto:info@chesapeakebounty.com)

[Facebook](#)

One-stop market for local agriculture products including seafood, meats, dairy, baked goods, canned goods, plants and holiday decor.

- Allow on-farm sales, including value-added goods, and agri-tourism and eco-tourism uses that connect people to the land.
- Allow canoe/kayak launches for a fee from farms as another source of farm funding.





Real hope in these recommendations

About FACA


FACA is led by the following four co-chairs:

- Zippy Duvall**, American Farm Bureau Federation
- Elizabeth Gore**, Environmental Defense Fund
- Chuck Conner**, National Council of Farmer Cooperatives
- Rob Larew**, National Farmers Union

Policy recommendations were developed collaboratively with input from the following steering committee members and their respective teams:

- Zippy Duvall**, American Farm Bureau Federation
- Elizabeth Gore**, Environmental Defense Fund
- Leslie Sarasin**, FMI-The Food Industry Association
- Dave Tenny**, National Alliance of Forest Owners
- Barb Glenn**, National Association of State Departments of Agriculture
- Chuck Conner**, National Council of Farmer Cooperatives
- Rob Larew**, National Farmers Union
- Lynn Scarlett**, The Nature Conservancy

Inquiries about FACA membership, as well as comments and questions about FACA recommendations, should be directed to inquiries@agclimatealliance.com.

 <mailto:inquiries@agclimatealliance.com>



Food and Agriculture Climate Alliance Presents Joint Policy Recommendations

Harmony with Nature

C.2. Restore and protect environmentally sensitive areas

Encourage and incentivize the restoration and protection of environmentally sensitive areas such as wetlands, coastal estuaries, vernal pools, and associated forest habitat, which are critical components of the earth's ecosystem.

Restoring and protecting these areas not only helps maintain biodiversity; it also preserves habitat types that sequester carbon and serve as a natural buffer for development. Restoring and protecting vegetation and soils within environmentally sensitive areas reduces soil erosion and loss of vegetation, maximizing GHG sequestration

C Property April 25 2021





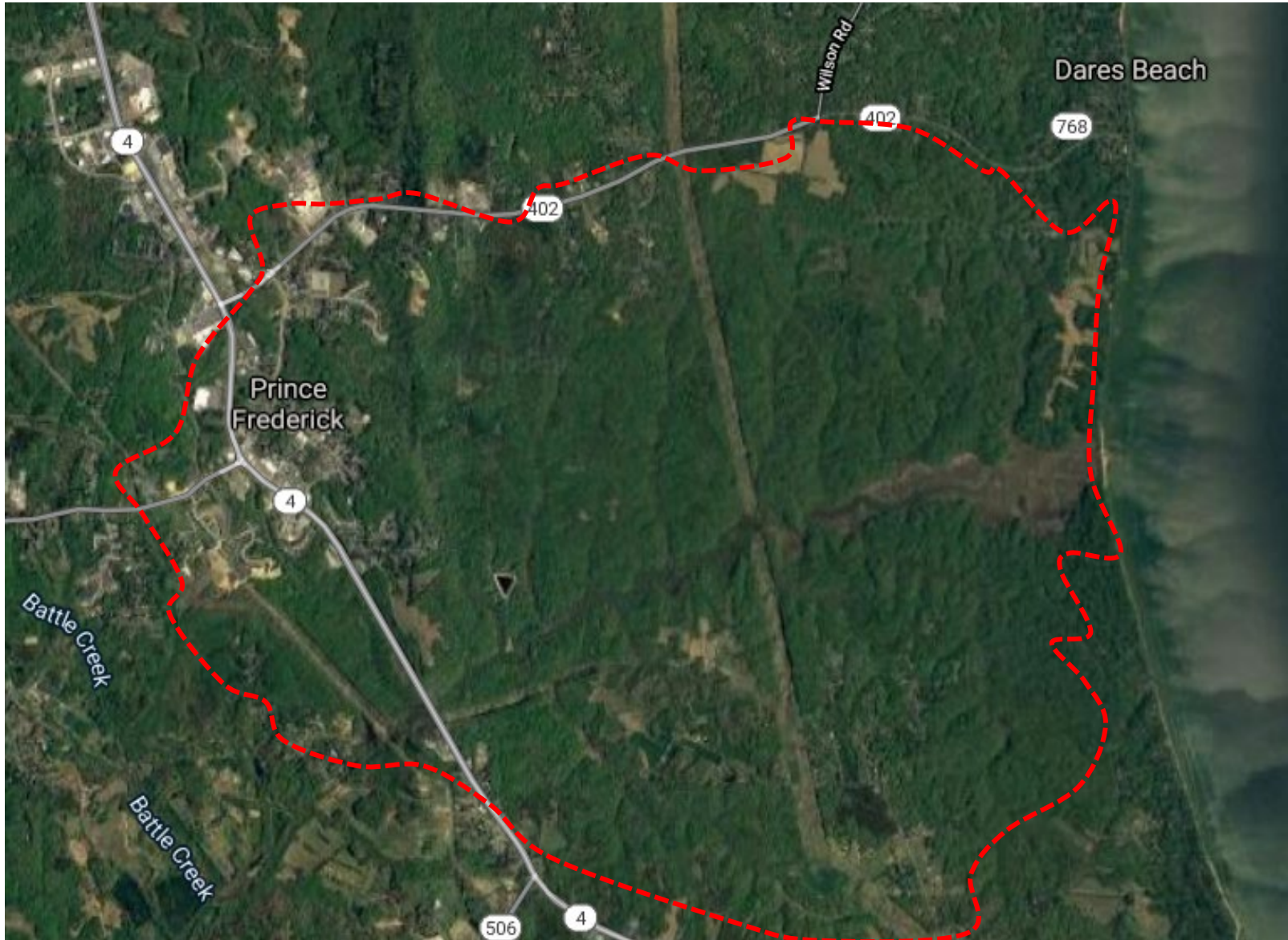
Harmony with Nature

Policy C.3. Provide and protect a green infrastructure network

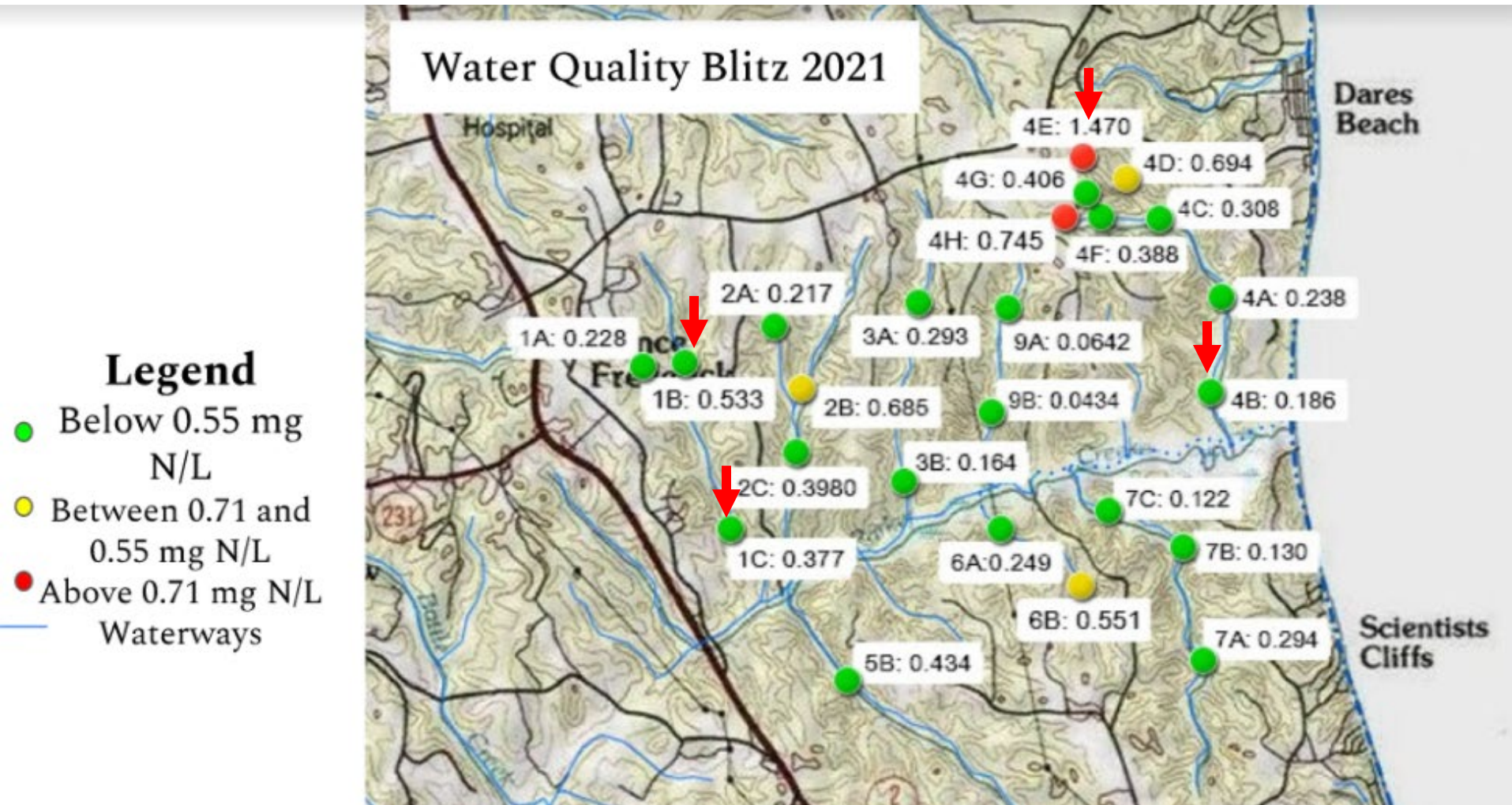
Planners should encourage the expansion of the green infrastructure network.. Green infrastructure features may be natural such as forests, trail systems, floodplains, wetlands and buffer areas, or built/ engineered features such as street trees, rain gardens, green roofs, bioretention stormwater management areas, and constructed wetlands that mimic or restore natural ecological processes. Green infrastructure helps to reduce wildlife habitat fragmentation and capture and filter and sequester carbon and other GHGs. This provides the ability for developments to better adapt to changing weather patterns through more direct and natural methods of stormwater management and infiltration that decrease flooding impacts and improve resiliency of natural ecosystems.



<https://www.njfuture.org/issues/environment-and-agriculture/water-sewer/green-infrastructure/>



Green Infrastructure at Work




Note how Nitrogen loads decrease as the streams approach Parkers Creek

Interwoven Equity

Policy E.1. Integrate equity considerations into all forms of climate action

Integrate social equity factors into all climate adaptation- and mitigation-related analysis, planning, decision making, and project implementation. The impacts of climate change will affect most urgently those with the fewest resources, the least financial security, the poorest access to information, and the least ability to influence large-scale decisions. Finding new avenues for disadvantaged communities and/or communities of color to influence and participate in climate preparation will increase their resilience and assure that communities participate in and benefit from climate actions. Community engagement alone will not fully address climate inequities, thus measures to assess current climate conditions, impacts, and burdens and to track progress and measure equity outcomes are vital to advancing climate equity.

3. Addressing Sea level Rise, Bigger Storms/More Rainfall, Species Habitat loss and disappearing Wildlife Corridors





**Hit by Increasing
Rainfall, Pennsylvania
and Maryland Retreat
in their Plans to Control
Stormwater Pollution**



Failed Stormwater
management devices



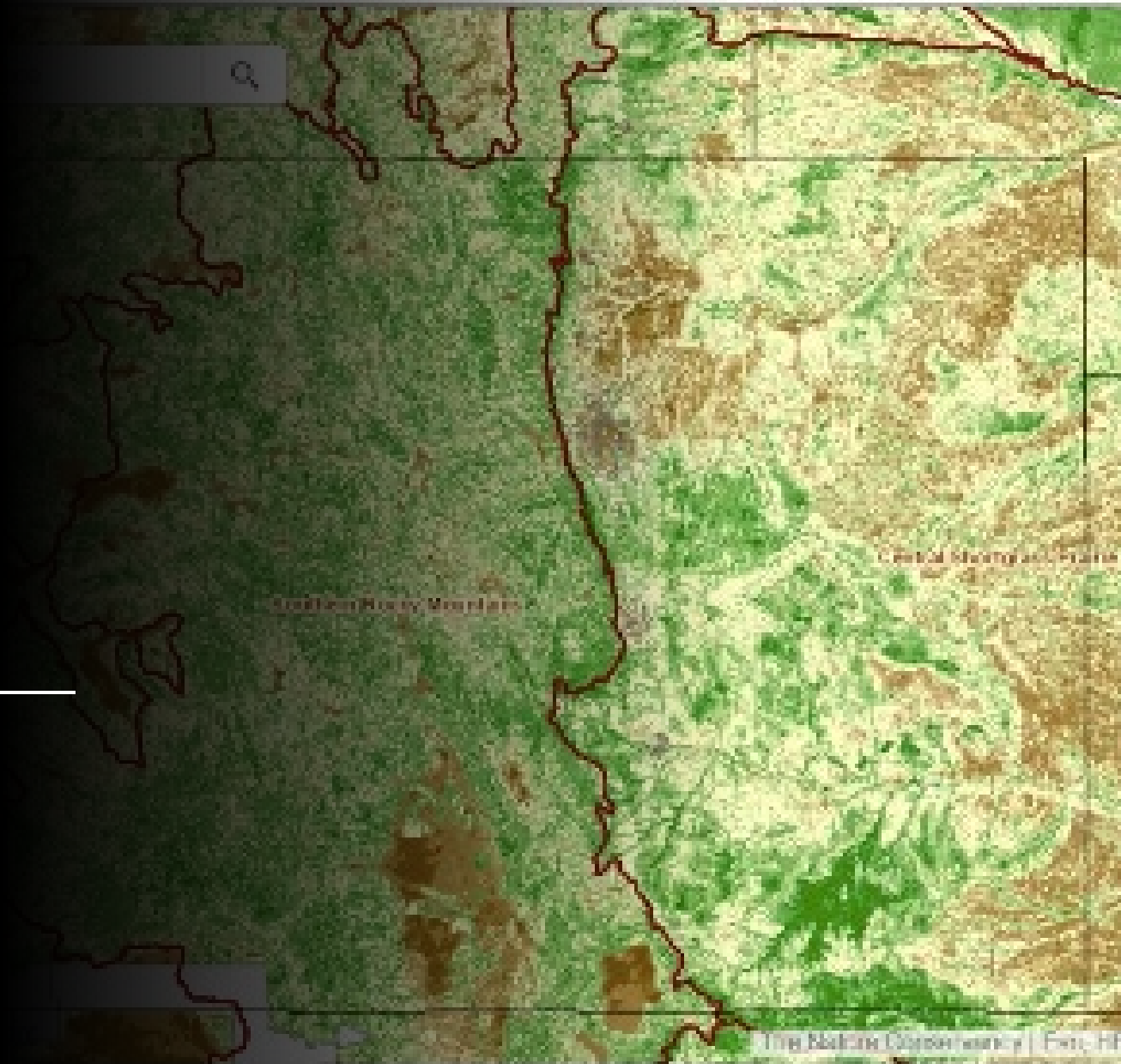
Major roads
under water



4. Strategies for Large Landscape Conservation



Resilience
Land
Mapping
Tool



Teamwork

150+ Scientists
9 Regions
10 years



Doris Duke CF
USFW
NOAA
Donnelly Foundation



to actually accomplish this work, to figure it out,

Abundance crisis



Native Species

Biomass down 20%/1900



Amphibians

IPBES (Intergovernmental Science-Policy Platform of Biodiversity and Ecosystem Services) 30% now T&E



Butterflies

Abundance down 35%/40yr

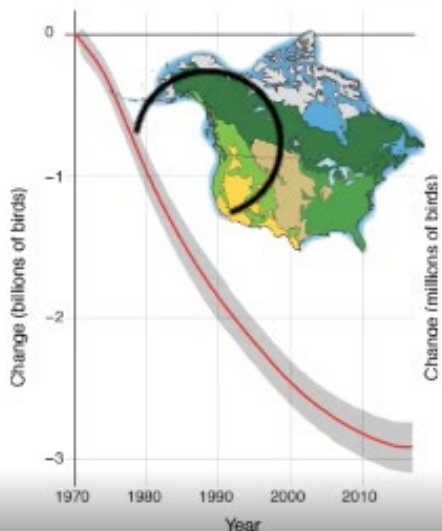


NA Birds

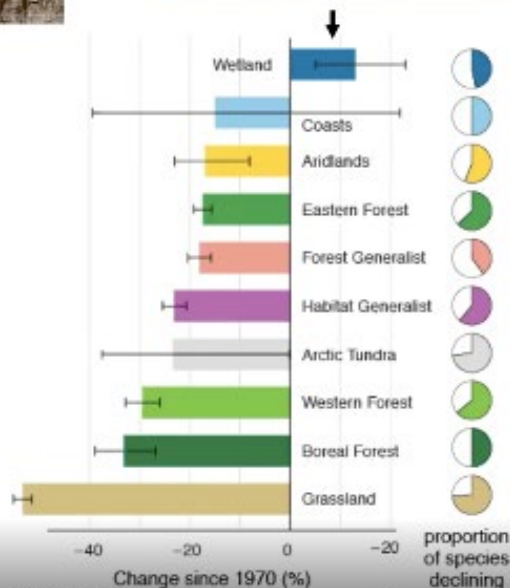
Abundance down 29% or 3 Billion birds since 1970



Wetland
Thanks to Adaptive Harvest Management and billions \$ on wetland protection and restoration

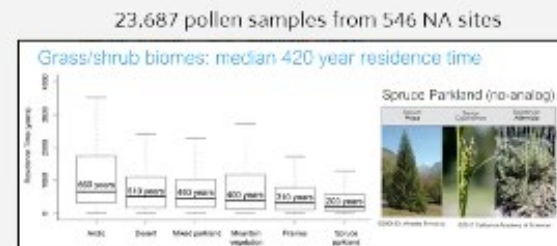
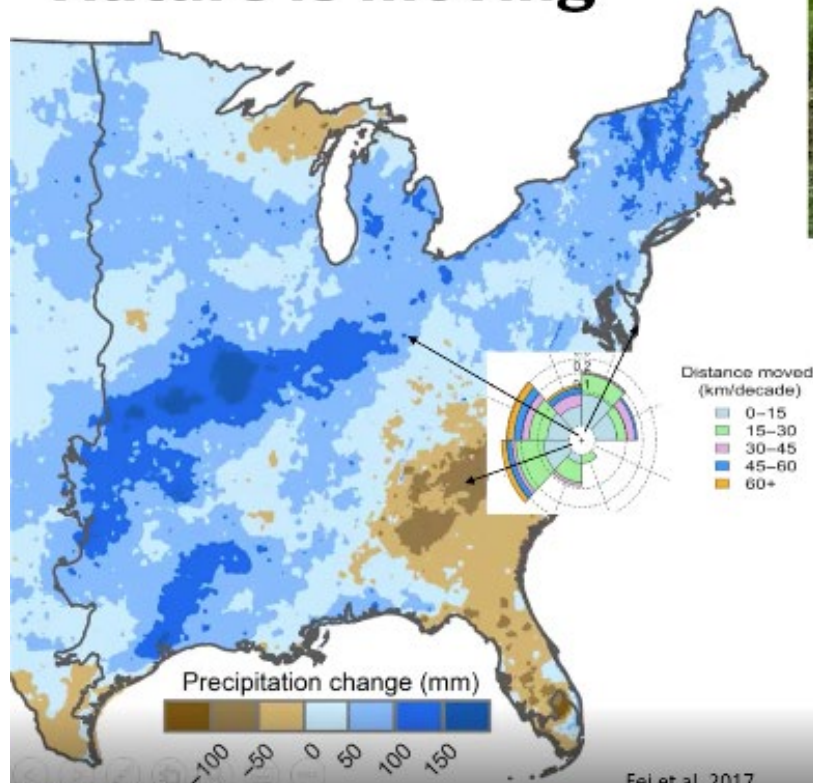


IPBES 2019 Rosenberg et al. 2019



Bar-On et al 2018

Nature is moving



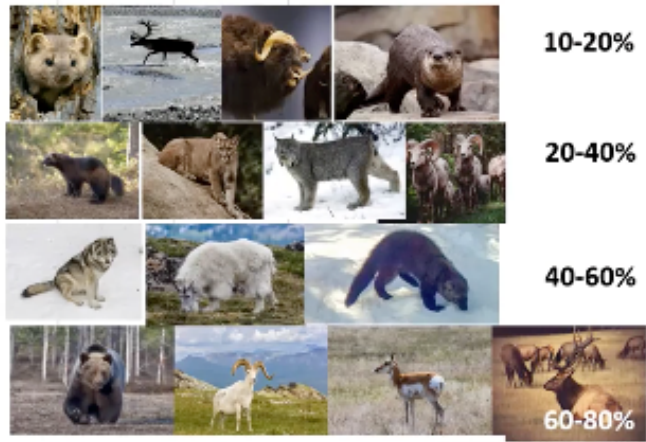
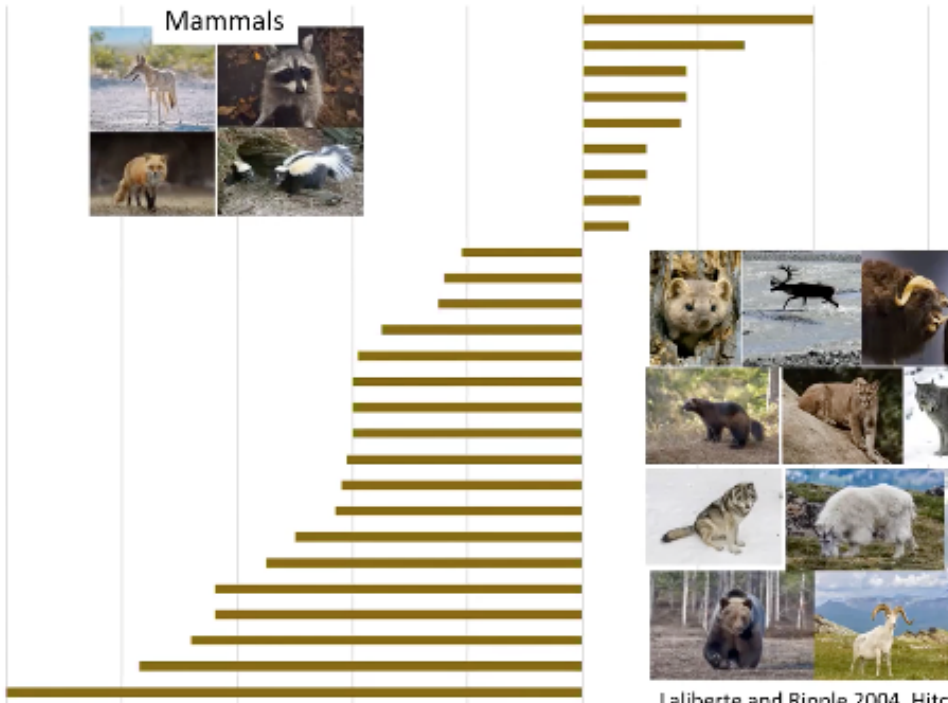
Median residence times range from **200-700** years (overall **500** years) and are shorter during times of warming.
--McGuire *et al.* in prep

Range Expansions and Contractions



% Contractions % Expansion
 -100% -80% -60% -40% -20% 0% 20% 40% 60%

- Coyote
- Kit fox
- Badger
- Raccoon
- Red fox
- Eastern spotted Skunk
- Hooded skunk
- Western spotted Skunk
- Gray fox
- Marten
- Caribou
- River otter
- Musk ox
- Wolverine
- Bighorn sheep
- Cougar
- Lynx
- Black bear
- Gray wolf
- Mountain goat
- Fisher
- Grizzly bear
- Dall's sheep
- Pronghorn
- Swift fox
- Elk
- Black-footed ferret



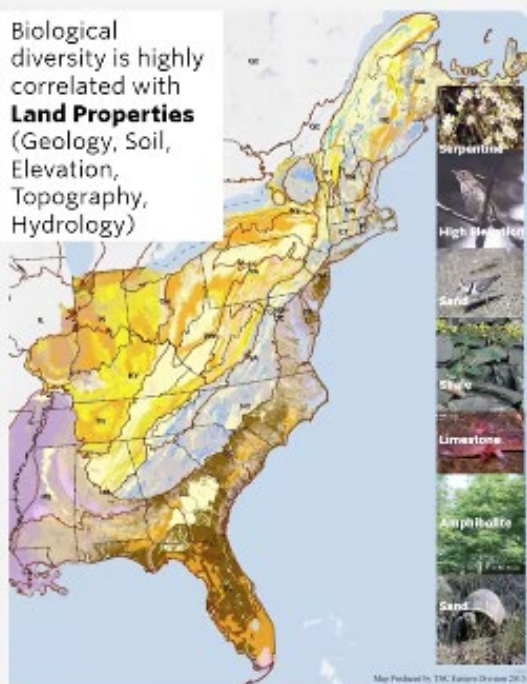
Laliberte and Ripple 2004, Hitch and Leberg 2007

Conserving Nature's Stage



REPRESENTATION

Biological diversity is highly correlated with **Land Properties** (Geology, Soil, Elevation, Topography, Hydrology)



RESILIENCE



Many Microclimates

Create climate options



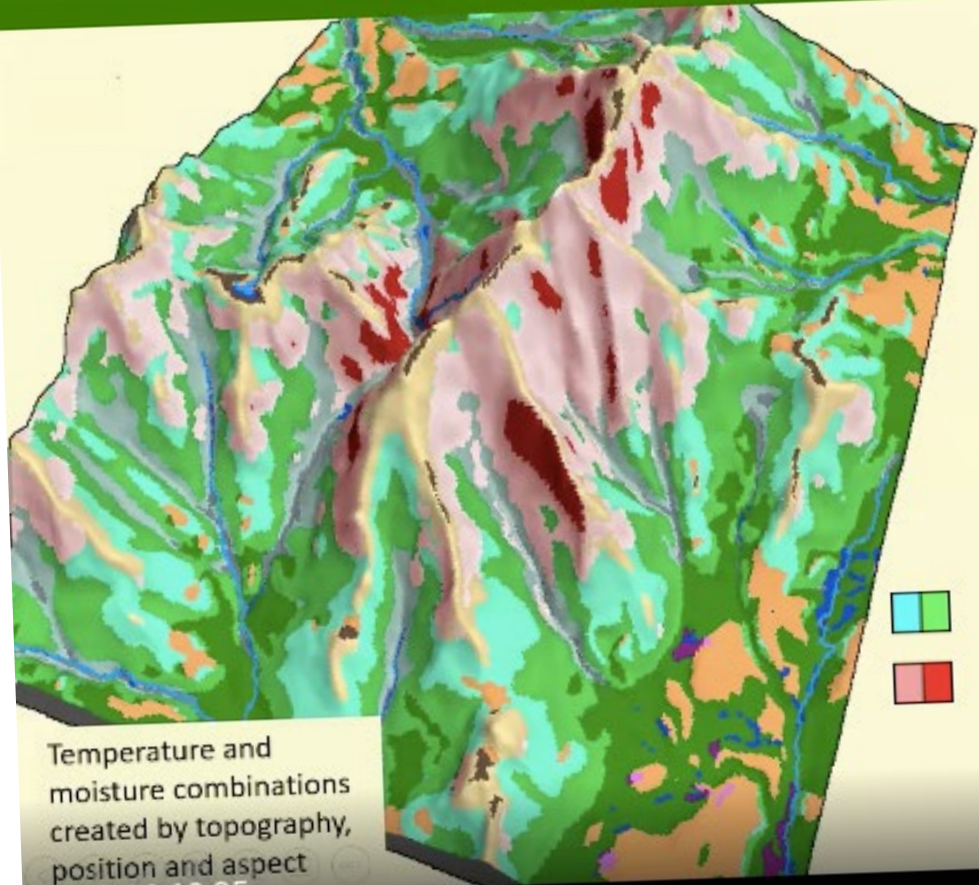
Category	Weight
Developed	
-Low Intensity	8
-Mid Intensity	9
-High Intensity	20
-Mine	9
Roads/Linear	
-Major	20
-Minor	10
-Unpaved	+3
-Transmission	9
-Pipeline	9
-Railroads	9
Agriculture	
-Corn/Soy	9
-Other Ag	7
-Hay Pasture	3
-Forestry (indust.)	4
Energy	
-Oil & Gas	7+
-Wind	+1
-Solar	

Locally Connected

Allows species to move



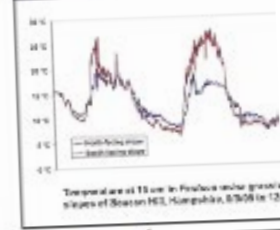
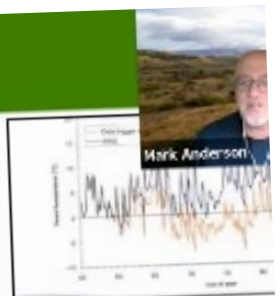
Microclimates



Temperature and moisture combinations created by topography, position and aspect
24:28 / 1:19:25



10-15° C Difference in Temperature
10-20 % Difference in Soil Moisture





Category **Weight**

Developed

- Low intensity 8
- Mid intensity 9
- High intensity 20
- Mine 9

Roads/Linear

- Major 20
- Minor 10
- Unpaved +1
- Transmission 9
- Pipelines 9
- Railroads 9

Agriculture

- Corn/Soy 9
- Other Ag 7
- Hay Pasture 3
- Forestry (indust.) 4

Energy

- Oil & Gas 7+
- Wind +1

Local Connectedness Resistance Grid



Natural

Weight

- All Vegetation Types 1
- Barrens 1
- Water (by size) 1-3*



Mark Anderson



How much can you move around and access your microclimates?

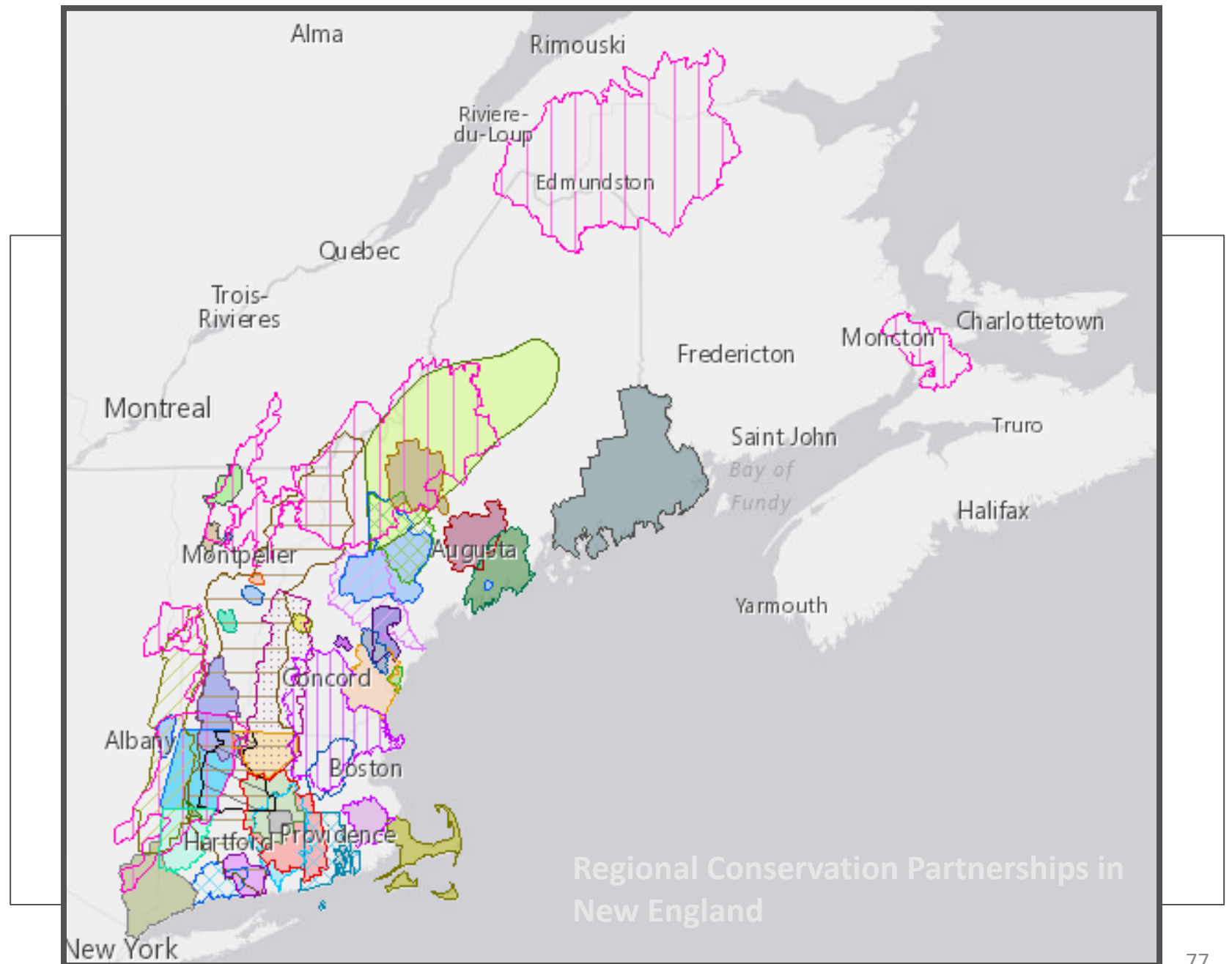
The Nature Conservancy



When he conceived of the first regional land trust, Charles Eliot was aiming for an **inter-generational** impact

- The world's first regional land trust, **The Trustees of Reservations (TTOR)** was created in Boston in 1891
- It was design to protect beautiful places for the long term, just as to the library preserves books, and the art gallery protects paintings and sculptures



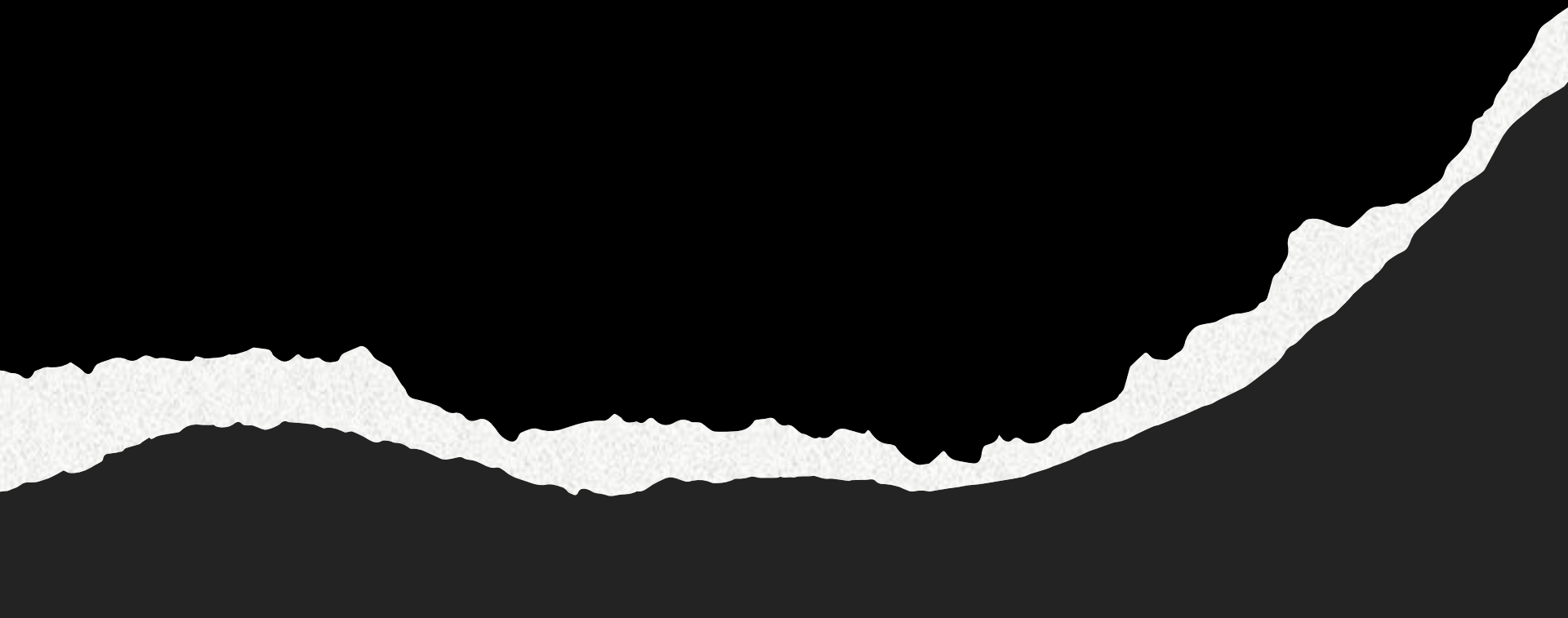


What can planners do for large landscape planning?

- Adopt measurable benchmarks for good water quality.
- Develop watershed management plans
- Create land use plans centered around a goal of achieving good water quality and wildlife conservation
- Encourage land uses that connect people to land and water.
- Work with land trusts to protect key properties

Pole Question #5: In the chat box please write where your favorite place would be to live, and why

5. How to Avoid a New Wave of Residential Sprawl





THE WALL STREET JOURNAL.

English Edition ▾ | [Print Edition](#) | [Video](#) | [Podcasts](#) | [Latest Headlines](#)

After Covid, ‘Normal’ Could Be Profoundly Different

- Even when lockdowns are a thing of the past, we’ll be spreading out in the suburbs and ordering in. The economy may never be the same.
- *By Justin Lahart*
- Nov. 20, 2020 5:30 am ET

CORONAVIRUS

Millions of Americans moved during the pandemic – and most aren't looking back

The faces of America's cities and neighborhoods have been forever altered by the pandemic.



— Buyers are fleeing the cities, seeking more affordable homes and yard space for their families, home offices for parents, and designated areas for remote learning for their children. Baptiste Viot / for NBC News





MILITARY PROGRAMS AIMING TO END PANDEMICS FOREVER

Bill Whitaker reports on the Pentagon projects that helped combat COVID-19 and may help end pandemics forever.

60 MINUTES

EPISODES

OVERTIME

TOPICS

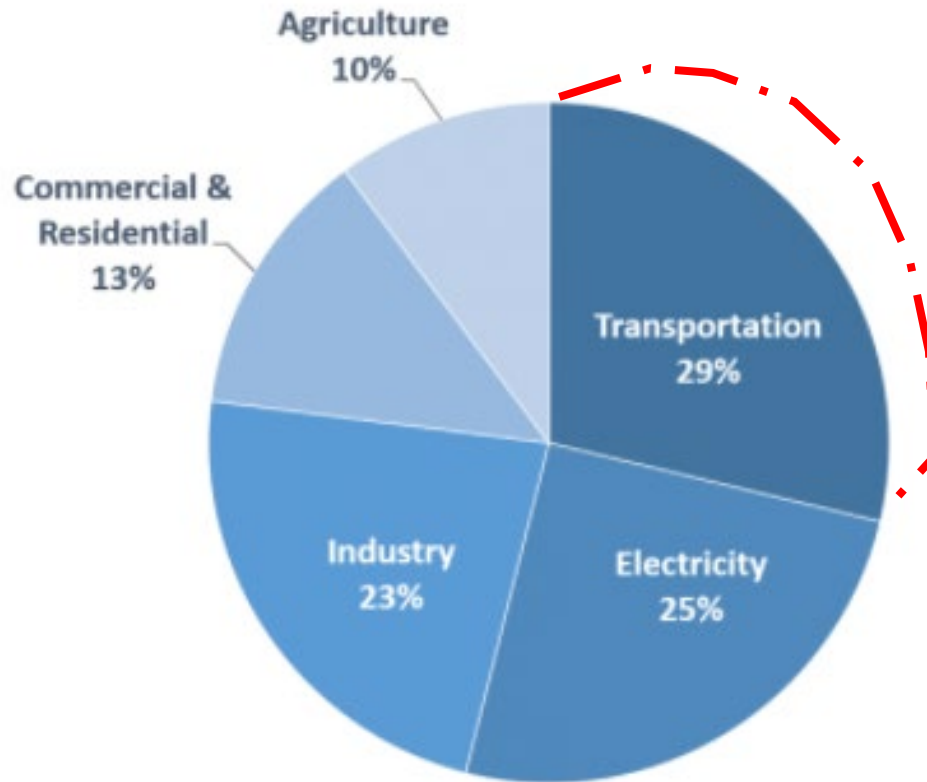
THE TEAM

SUBSCRIBE



Stopping pandemics forever

Total U.S. Greenhouse Gas Emissions by Economic Sector in 2019



Total Emissions in 2019 = 6,558 [Million Metric Tons of CO₂ equivalent](#). Percentages may not add up to 100% due to independent rounding.

Outbound Commutes from Calvert County

Public transportation is almost always impractical in rural areas

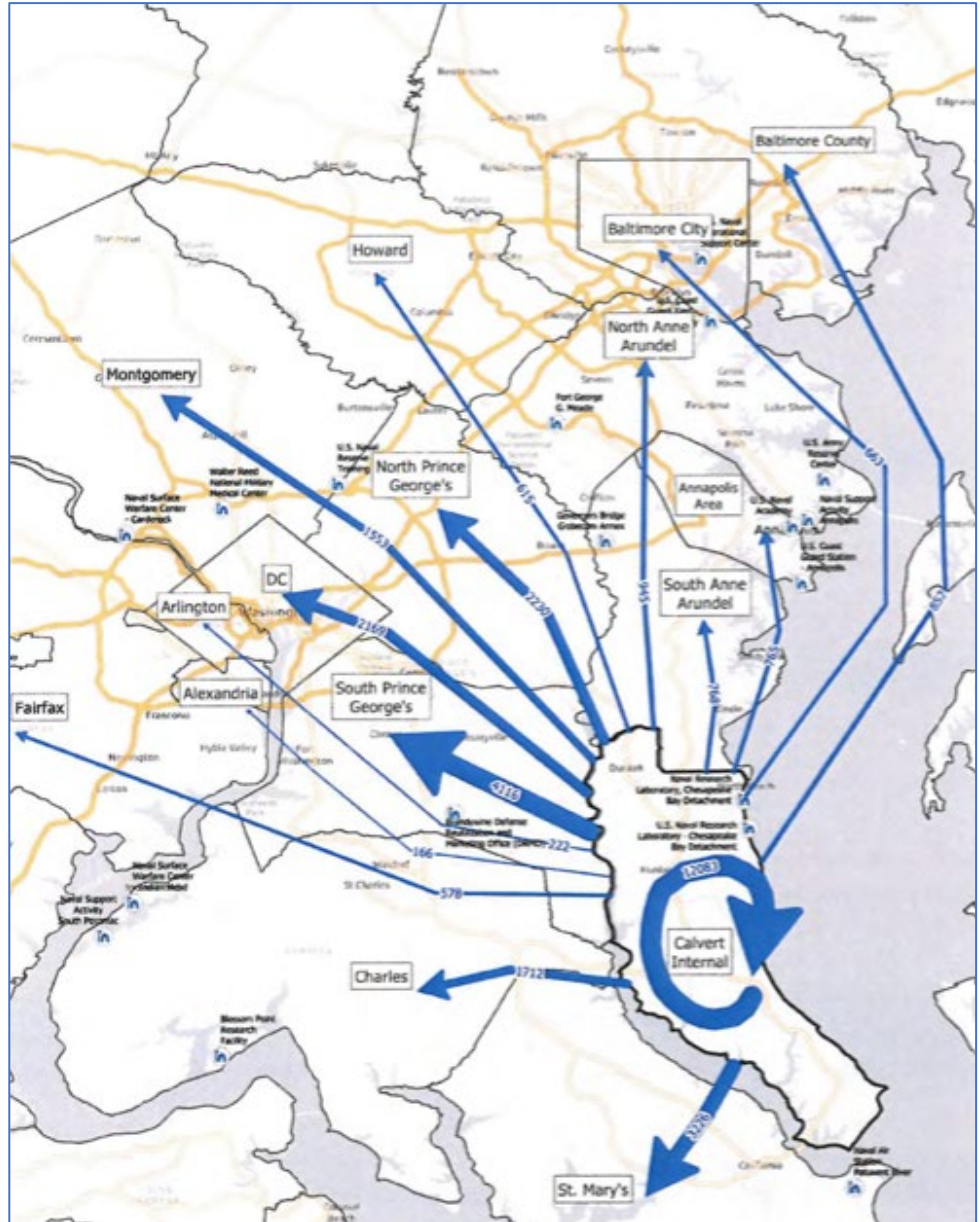
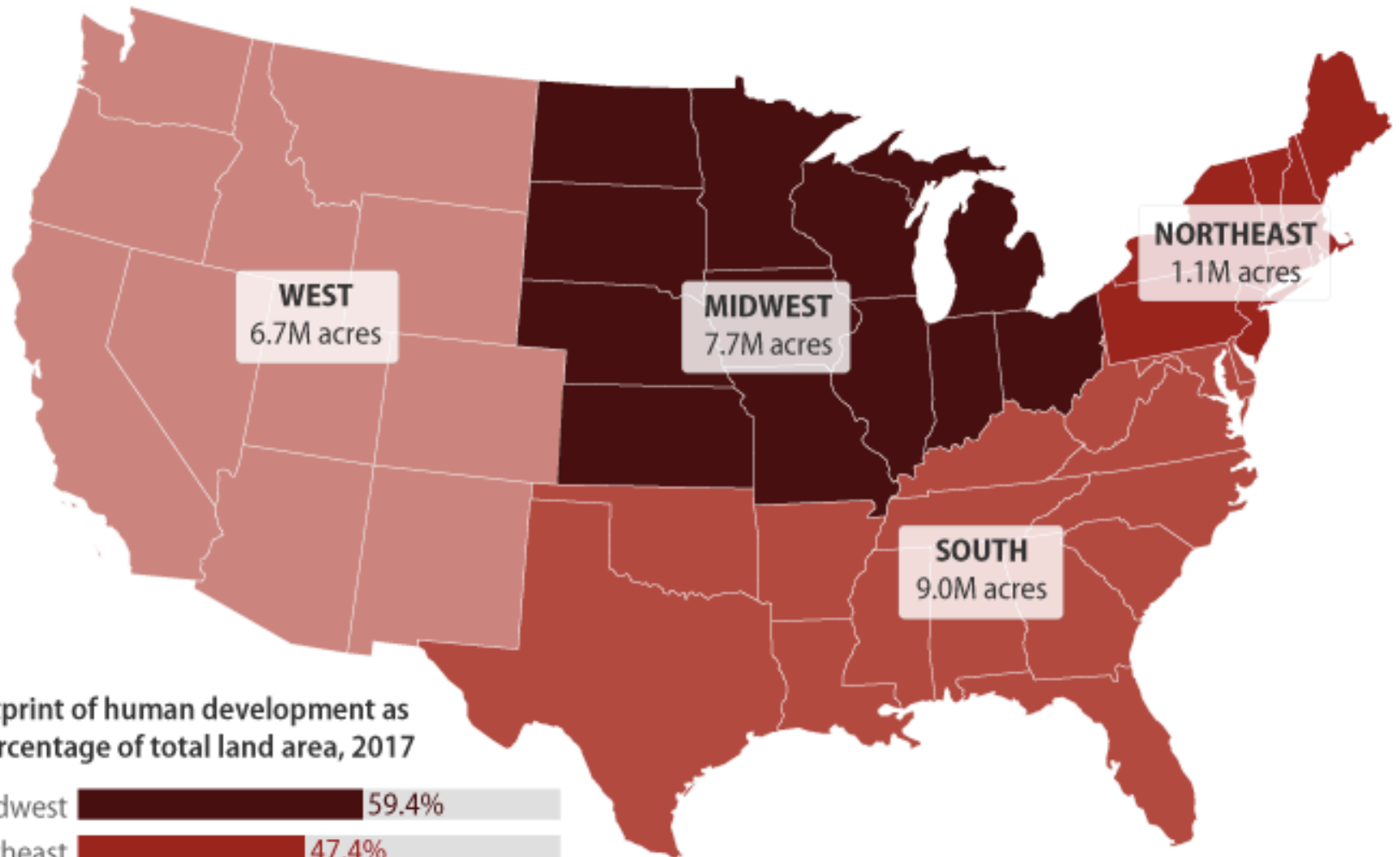
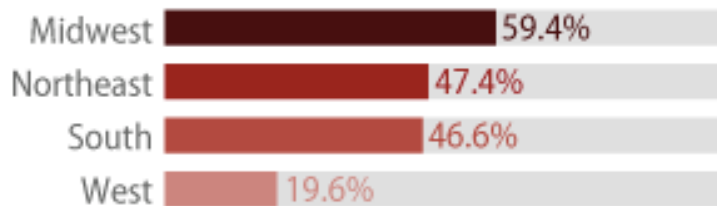


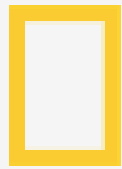
FIGURE 1

Natural area loss by region, contiguous 48 states, 2001–2017



Footprint of human development as a percentage of total land area, 2017





**NATIONAL
GEOGRAPHIC**

Through landscape modifications and natural resource use, humans have altered over 75 percent of the ice-free land on Earth.





Rural Subdivisions

Not a panacea for inclusion, community, or access to the environment



What happened when this 350+ parcel was cleared?

- This county lost over over \$700,000 per year in ecosystem services.
- Has gone from average resilience to least resilient land
- When developed it will have a high percentage of impervious surfaces



Calvert County: Landuse Change



1973

2010

Calvert was 64% forest
6% developed
26% agriculture

Currently 52% forested
30% developed
15% agriculture

~19% of its forests and ~40%
of agricultural lands were lost
from 1973 to 2010

Landcover Type

- Impervious
- Agriculture
- Forest
- Wetland
- Water
- Beaches
- Bare Rock

	Landcover Area (acres)			
	Impervious	Agriculture	Forest	Wetland
1973	8,774	35,357	88,278	4,155
2002	36,455	27,585	69,136	2,778
2010	40,533	21,099	71,488	2,687
Change 1973 - 2010	31,759	-14,258	-16,789	-1,468



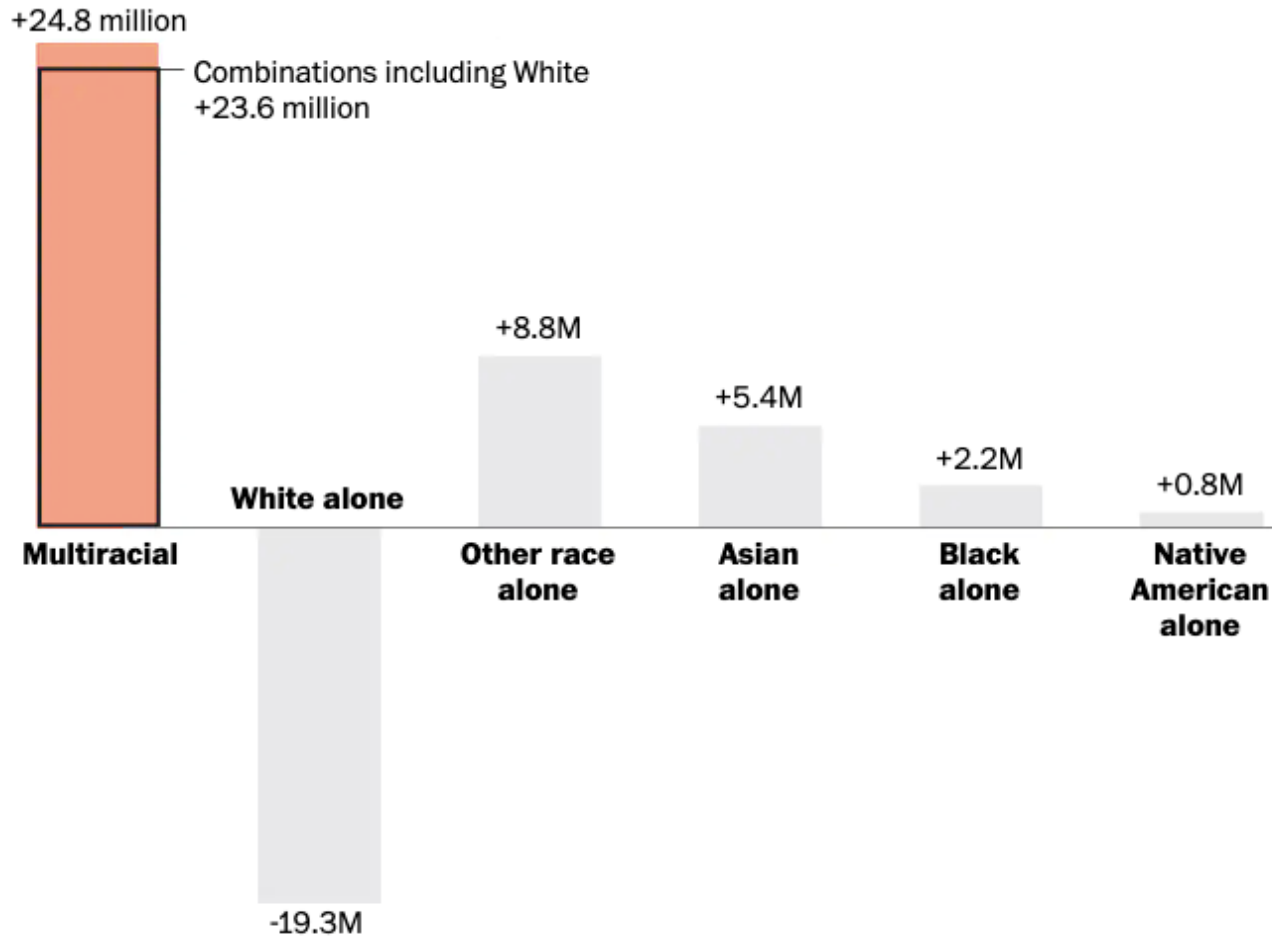


Ways to preserve land and retain/restore healthy ecosystems

- Help farmers stay viable
- Develop enhanced easement programs, more green infrastructure.
- Give the landowners the choice and show them the real prices that they get for land preservation
- Tack on the real costs of development to the developer/home buyer – Excise taxes for roads, schools, solid waste, and stormwater management repair funds to address storm damage
- Establish green infrastructure trading programs for farmers.

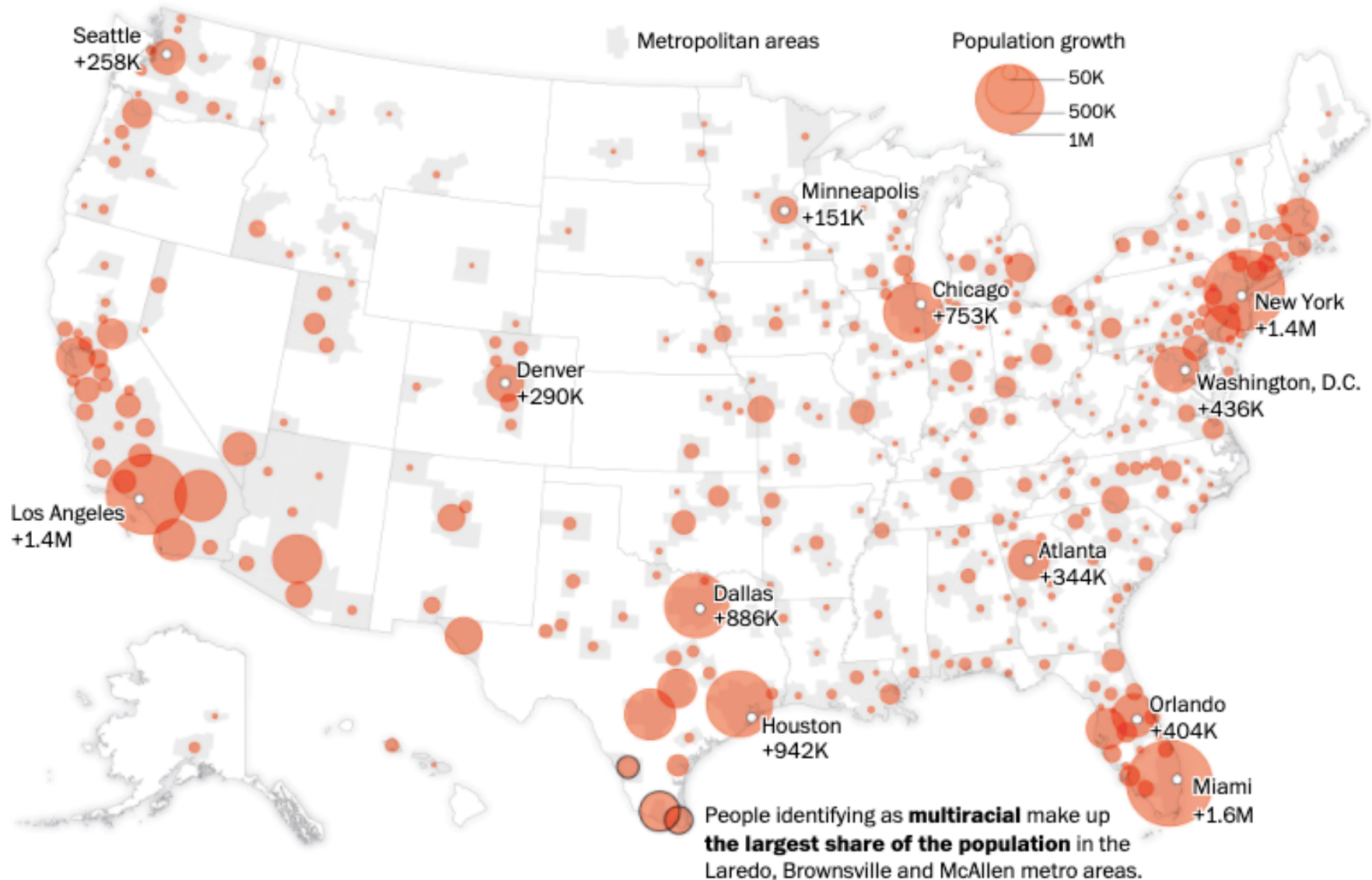
More people say they are multiracial

Here's how census numbers on race changed from 2010 to 2020



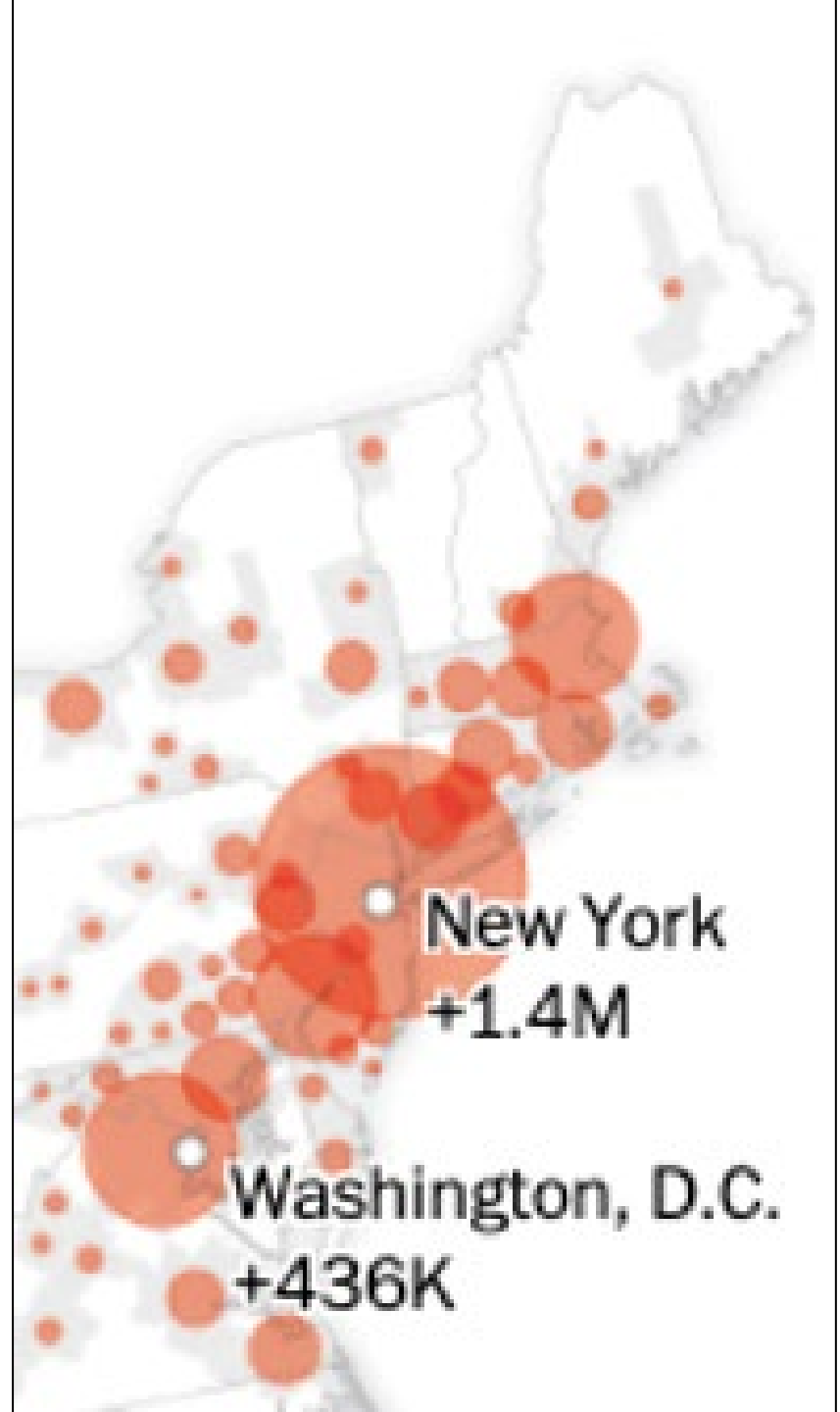
Multiracial population growth in metropolitan areas

Multiracial populations increased faster than any single race across the U.S. in the last census. Gains were highest in major metro areas, but the number of people identifying as multiracial also tripled in non-metro areas.



Multi-Racial Population.

The Mid-Atlantic and New England
Regions



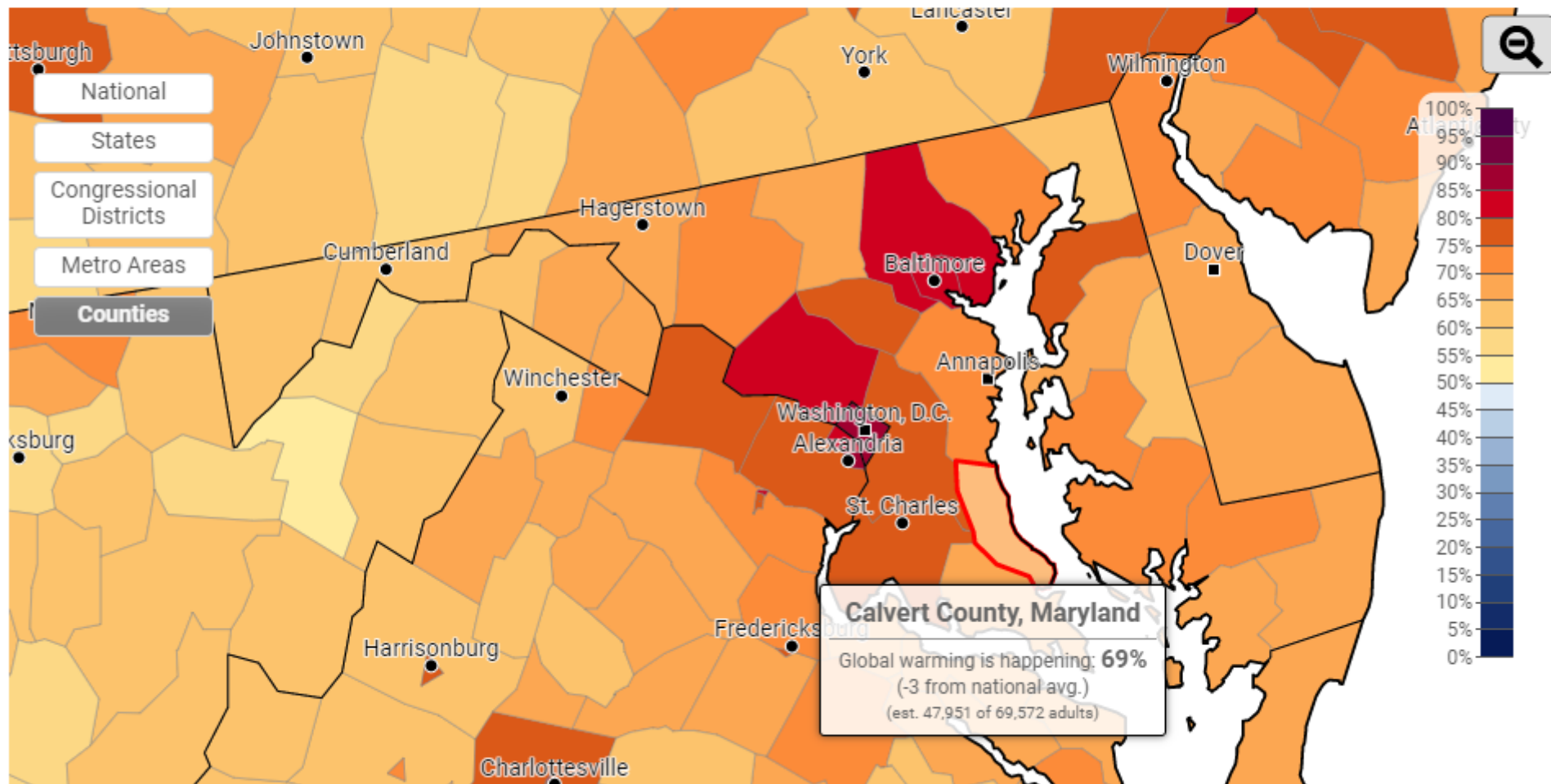


Eml.usc.edu

Estimated % of adults who think global warming is happening (72%), 2020

Select Question:

Click on map to select geography, or:



<https://climatecommunication.yale.edu/visualizations-data/ycom-us/>

Many towns
are leading
the way in
addressing
climate
change!

Municipal Maryland

SEPTEMBER / OCTOBER 2020

**Time is
Running
Out!**

**Building
Resilience
Against Climate
Effects (BRACE)**

**SPECIAL
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THE MARYLAND MUNICIPAL LEAGUE
REPRESENTING MARYLAND'S CITIES AND TOWNS

**RISE TO THE
CHALLENGE**
2020 MML Virtual Fall Conference

SEE DETAILS ON PAGE# 38

Community Spotlight: Hyattsville EV Police Fleet is Cost Effective and Improves Air Quality

By BRIGGS CUNNINGHAM, ENERGY PROGRAM MANAGER, MD ENERGY ADMIN. & CINDY ZORK, COMMUNICATIONS MANAGER, CITY OF HYATTSVILLE

In 2017, the City of Hyattsville received a Maryland Energy Administration (MEA) [Maryland Smart Energy Community \(MSEC\)](#) grant award toward the purchase of two all-electric vehicles: a Chevrolet Bolt and a Zero motorcycle. Both currently function as marked police vehicles.

Hyattsville City Police Sgt. Richard Hartnett says, “MEA’s MSEC grant helped our police department become cleaner and greener by replacing gas-powered vehicles with electric ones. These zero-emission vehicles benefit our community by ensuring a healthier environment and reducing overall operational costs. Our residents really like them, too.”

Hyattsville, partnering with MEA via the MSEC program, has become a leader by continuing to expand their green transportation efforts.

For more information about Hyattsville’s green transportation efforts, visit: <http://www.hyattsville.org/733/Electric-Police-Vehicles>

For more Information about MEA’s MSEC grant program, visit: <https://energy.maryland.gov/govt/Pages/smartenergycommunities.aspx>





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