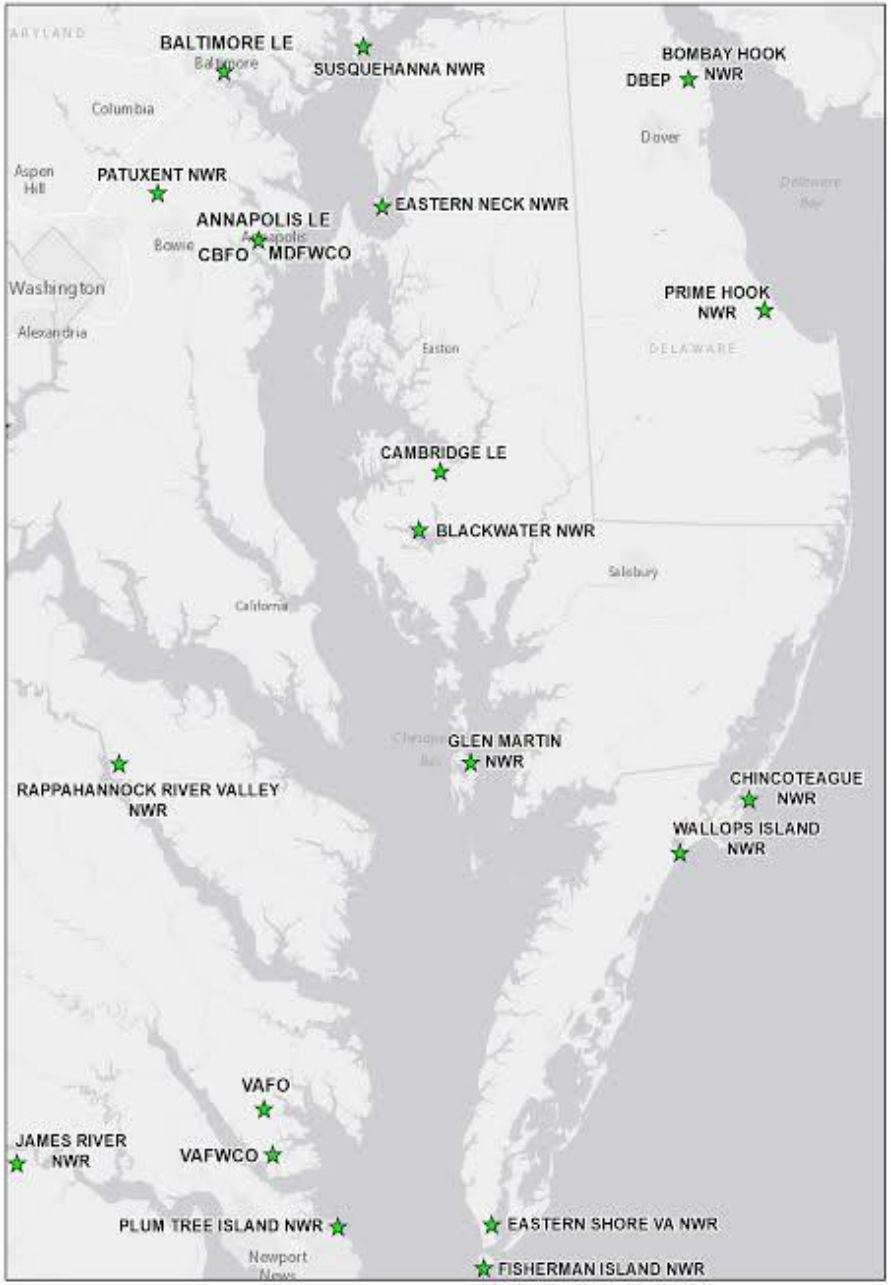
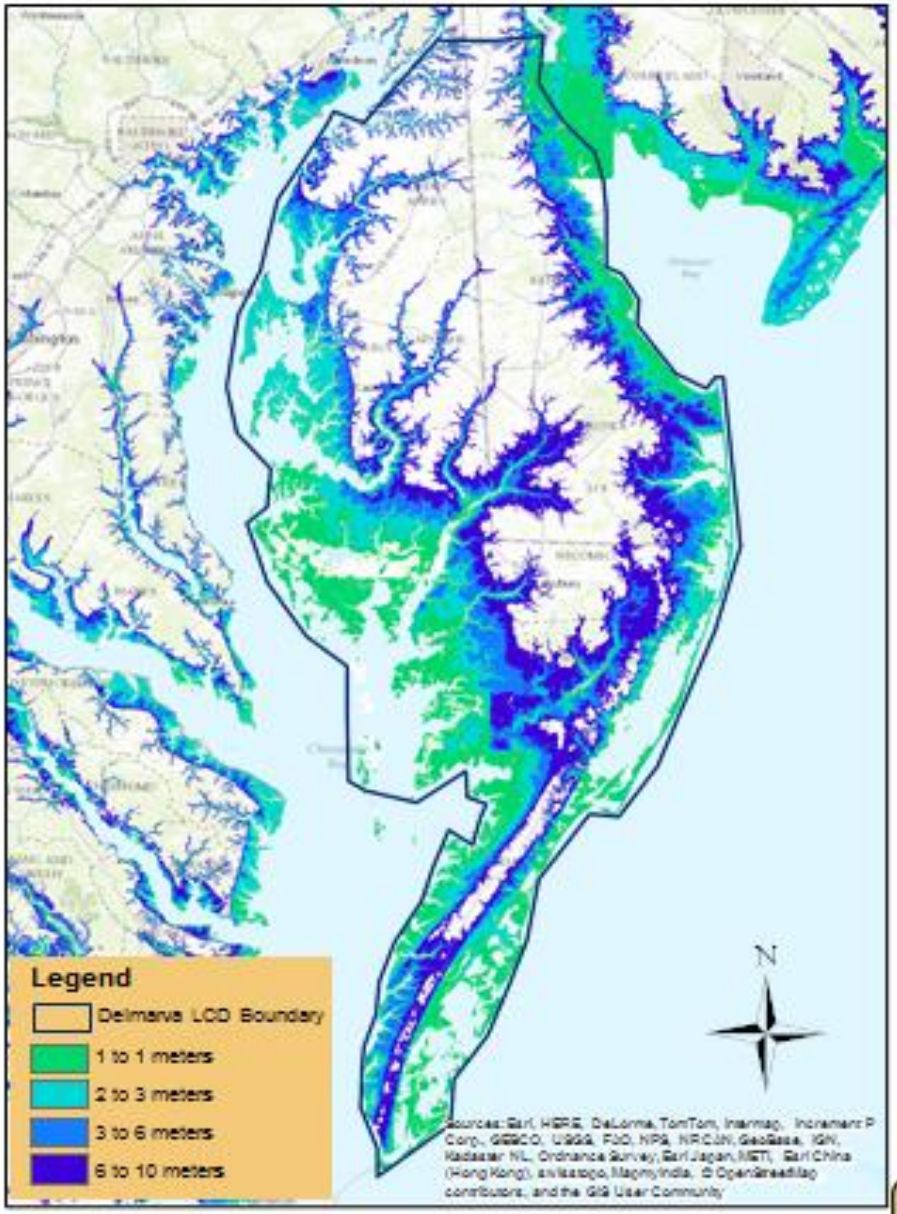
# Delmarva Peninsula Landscape Conservation Design and Business Plan


BALTIMORE LE
Baltimore
SUSQUEHANNA NWR
BOMBAY HOOK
DBEP NWR
Columbia
Dover
Aspen Hill
PATUXENT NWR
EASTERN NECK NWR
ANNAPOLIS LE
Annapolis
Bowie
CBFO
MDFWCO
Washington
PRIME HOOK NWR
Alexandria
Easton
DELAWARE
CAMBRIDGE LE
BLACKWATER NWR
Salisbury
California
GLEN MARTIN NWR
RAPPAHANNOCK RIVER VALLEY NWR
CHINCOTEAGUE NWR
WALLOPS ISLAND NWR
VAFO
JAMES RIVER NWR
VAFWCO
PLUM TREE ISLAND NWR
EASTERN SHORE VA NWR
Newport News
FISHERMAN ISLAND NWR

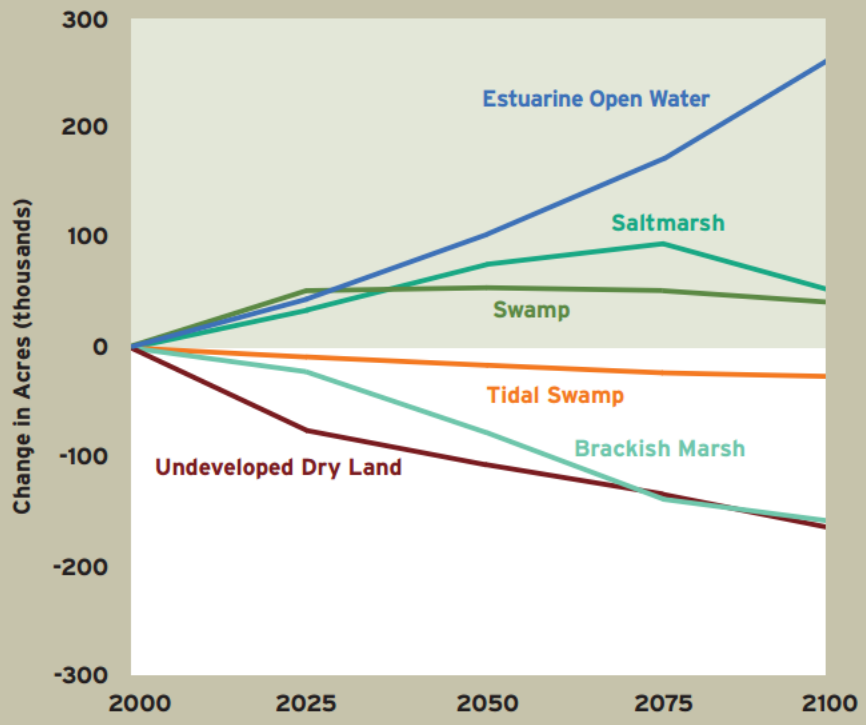
# Delmarva Landscape Conservation Design - Sea-Level Rise 2100



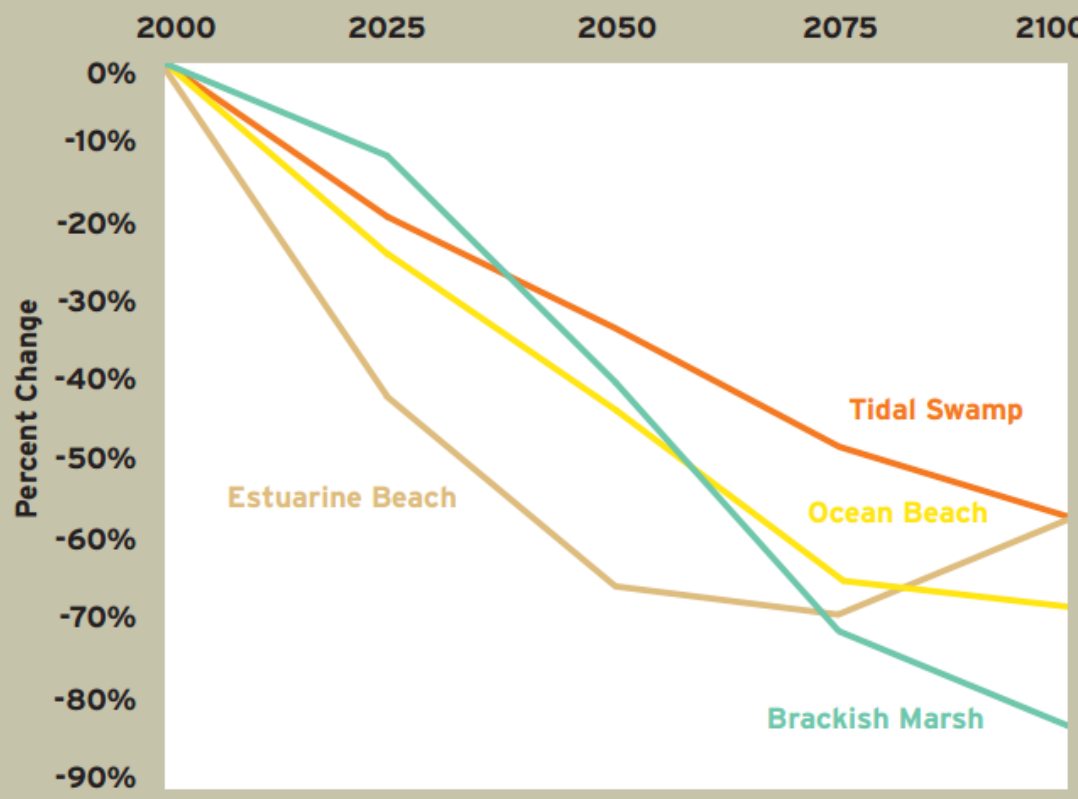

0 5 10 20 Miles

GIS Shapefile Provided by NALCC

Flooded Causeway Across Little Blackwater River - Blackwater NWR

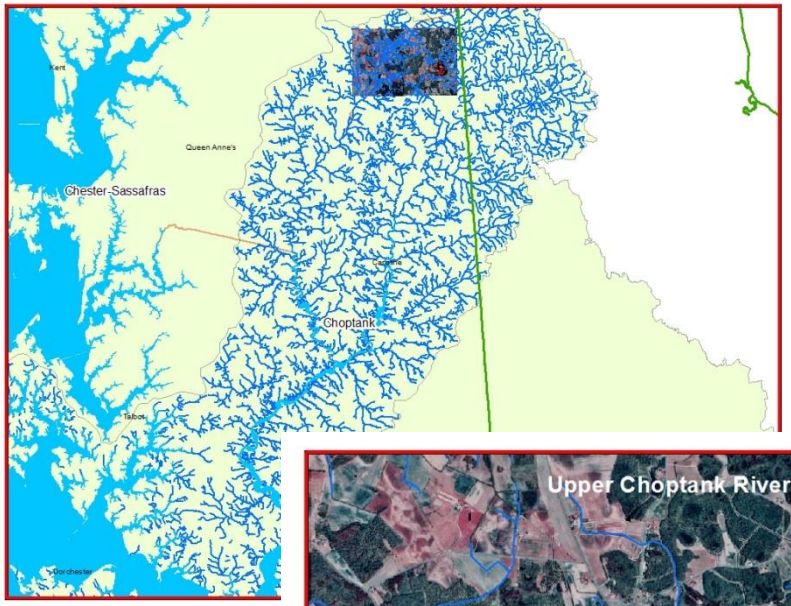


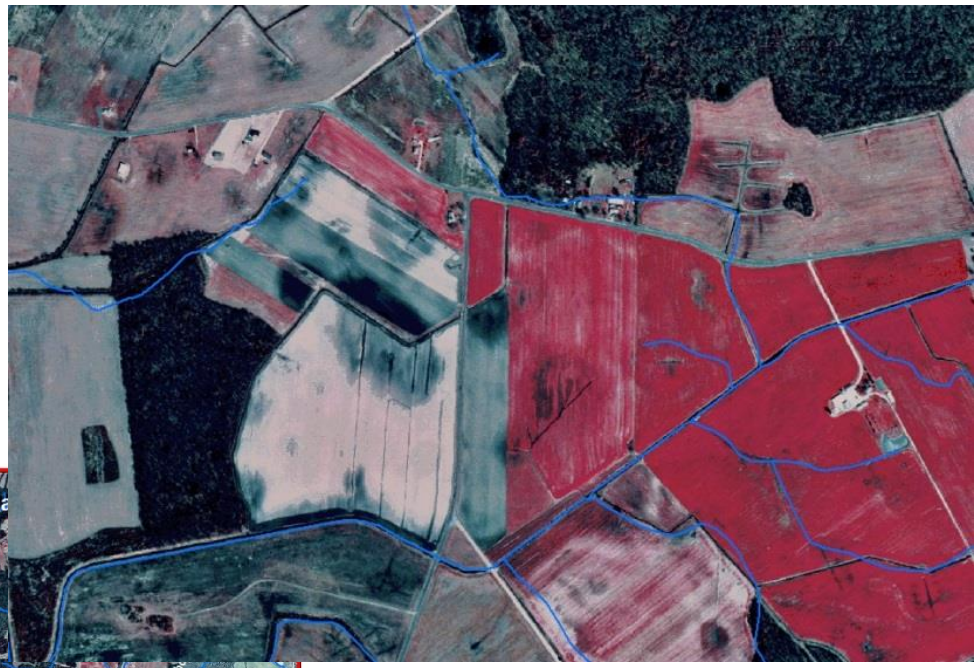

**Habitat types in the Chesapeake Bay region projected to experience the largest changes in overall area due to a 27.2-inch increase in global sea level. Results are shown for the entire study area.**

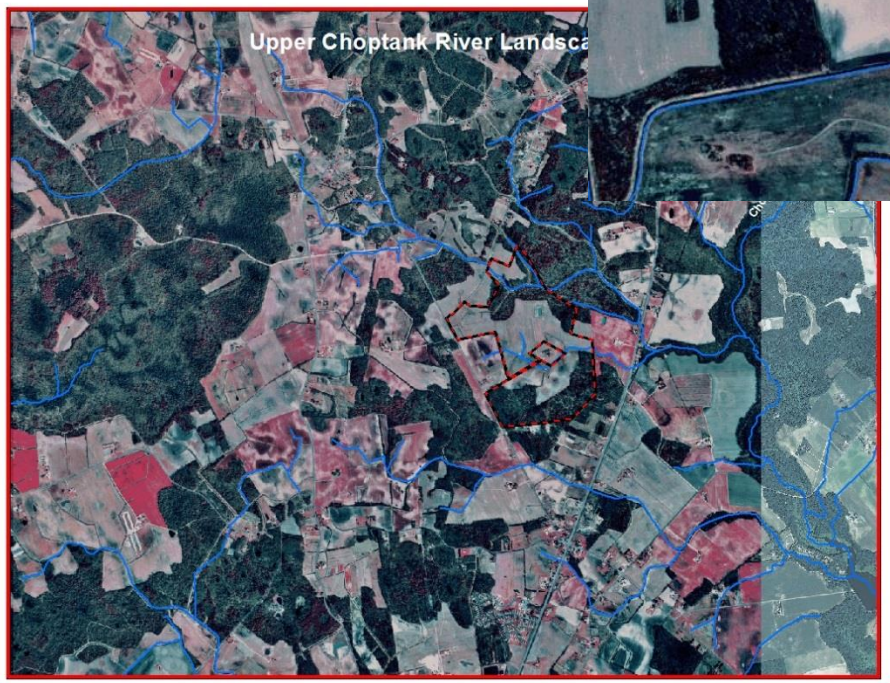



**Habitat types in the Chesapeake Bay region projected to lose over 50 percent of their area by 2100 with a 27.2-inch rise in global sea level. Results are shown for the entire study area.**

# Significant Hydrology Alteration to Many Eastern Shore Wetlands/Streams





First Order ditched streams
Caroline County, MD

# Too Much Water, Too Fast- Results in significant impacts to streams/wetlands and Chesapeake Bay

# North Atlantic LCC's Nature's Network Landscape Conservation Design (LCD)

## Vision

A **connected** network of **resilient** and **ecologically intact** habitats that will support **biodiversity** under changing conditions

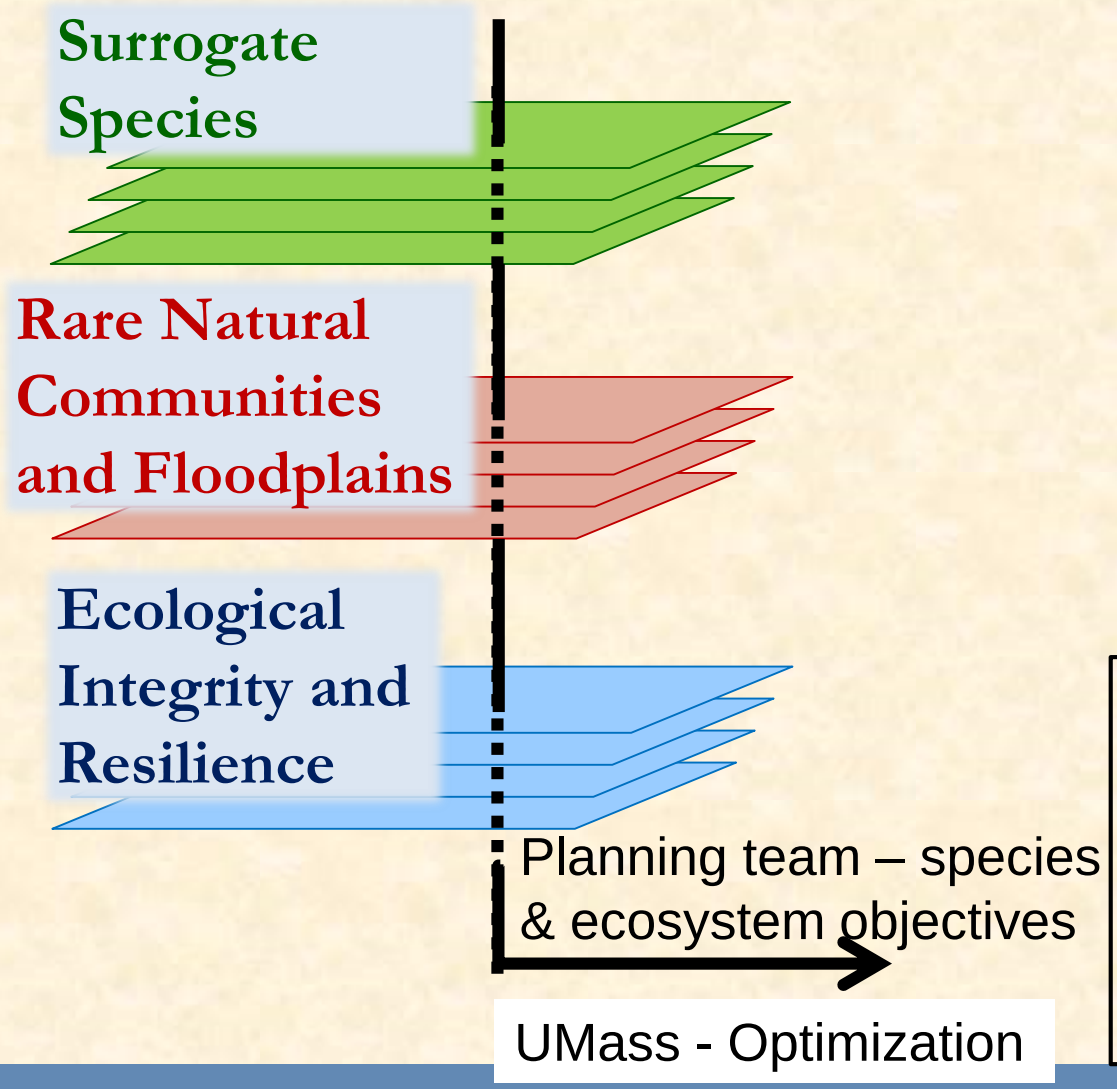
# Major Components

***Available now for voluntary use to complement local information***

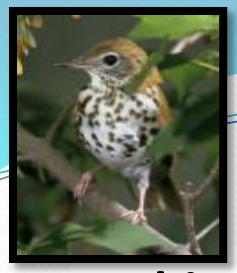
| Component | Connect the Conn. | Nature's network |
|---|---|---|
| **Terrestrial & wetland core areas and connectors** | ✓ | ✓ |
| **Aquatic core areas and buffers** | ✓ | ✓ |
| **Important habitat for imperiled spp. & SGCN** | (x) | ✓ |
| **Regional connectivity** | (x) | ✓ |
| **Marsh migration zones** | (x) | ✓ |
| **Restoration tools** | ✓ | ✓ |
| **Supporting data** | ✓ | ✓ |

SGCN = Species of Greatest Conservation Need

# Integrating the Elements




**Landscape Conservation Design**



# Surrogate Species Models

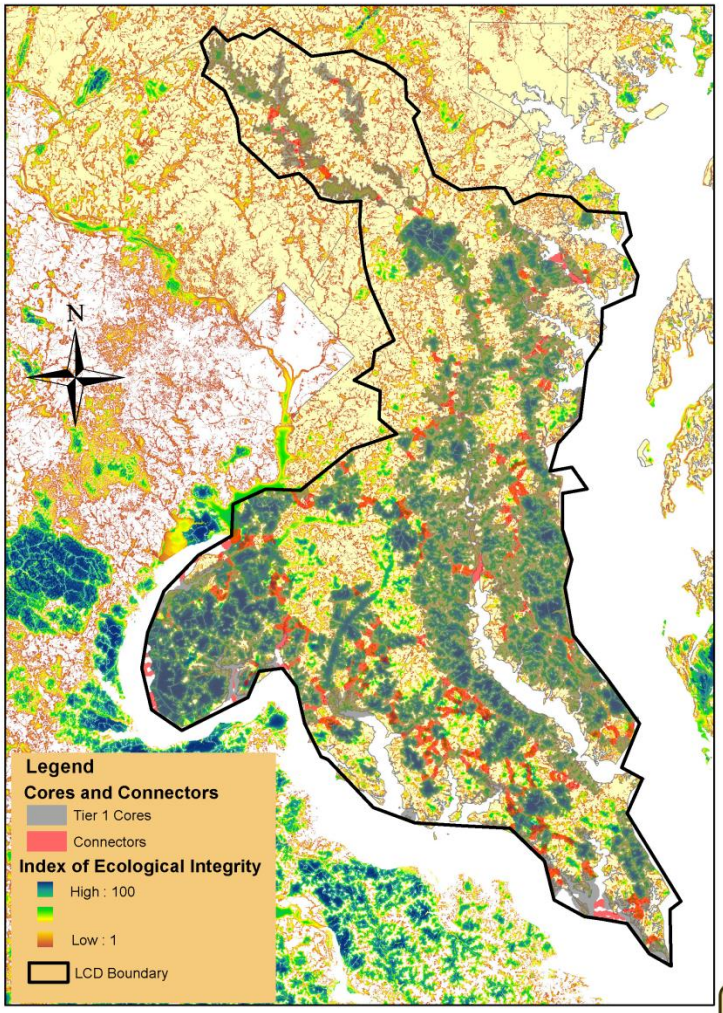
## for Patuxent Waters Conservation Area LCD

| Habitat Types | Initial Representative Species |
|---|---|
| Upland Mixed Deciduous Forest | Wood Thrush, Ovenbird, Eastern Box Turtle, FIDS layer |
| Early Succession Forests | American Woodcock, Prairie Warbler |
| Floodplain and Riparian Forests | Louisiana Waterthrush, Wood Duck, Spotted Turtle |
| Managed pasture/hayfield/grasslands | Eastern Meadowlark |
| Oldfield/meadow/shrubland | Prairie Warbler, American Woodcock, Northern Bobwhite |
| Freshwater/brackish marshes and | Diamond-backed Terrapin, American |

# Patuxent Waters Conservation Area Landscape Conservation Design Approach

- Additional Sources of Information
  - MD DNR Green Infrastructure
  - State Wildlife Action Plan
  - Targeted Ecological Areas
  - Natural Heritage Data (S1, S2, S3; Not used for CT River)
  - MD DNR BioNet Tiers
  - Audubon Important Bird Areas
  - TNC Matrix Forest Blocks
  - MD DNR Forest legacy Priorities
  - Indigenous Cultural Landscapes
  - Total of 95 State, Local, and NGO Datasets

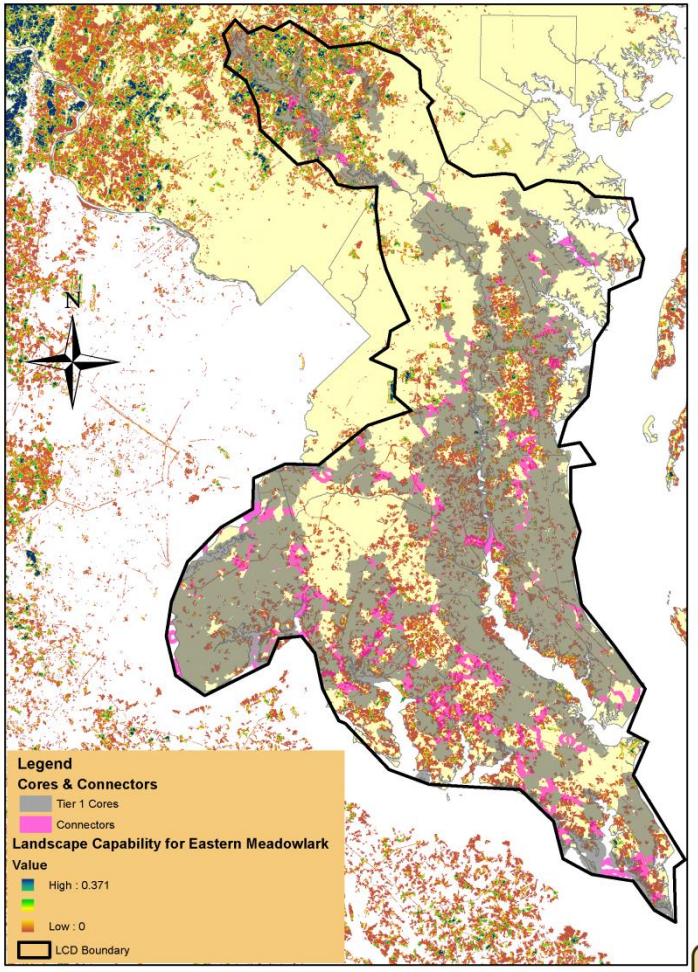
Patuxent Waters LCD - Tier 1 Terriestrial Cores and Connectors
Over Ecological Integrity




0 5 10 20 Miles

GIS Shapefiles Provided by NALCC

Patuxent Waters LCD - Tier 1 Terriestrial Cores and Connectors
Over Eastern Meadowlark Habitat Capability

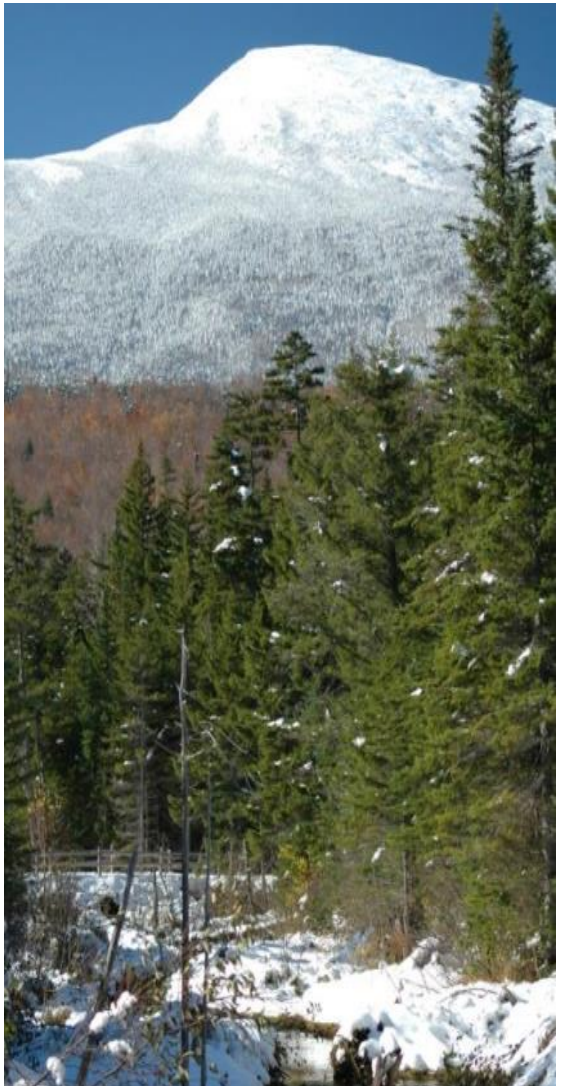



0 5 10 20 Miles

GIS Shapefiles Provided by NALCC

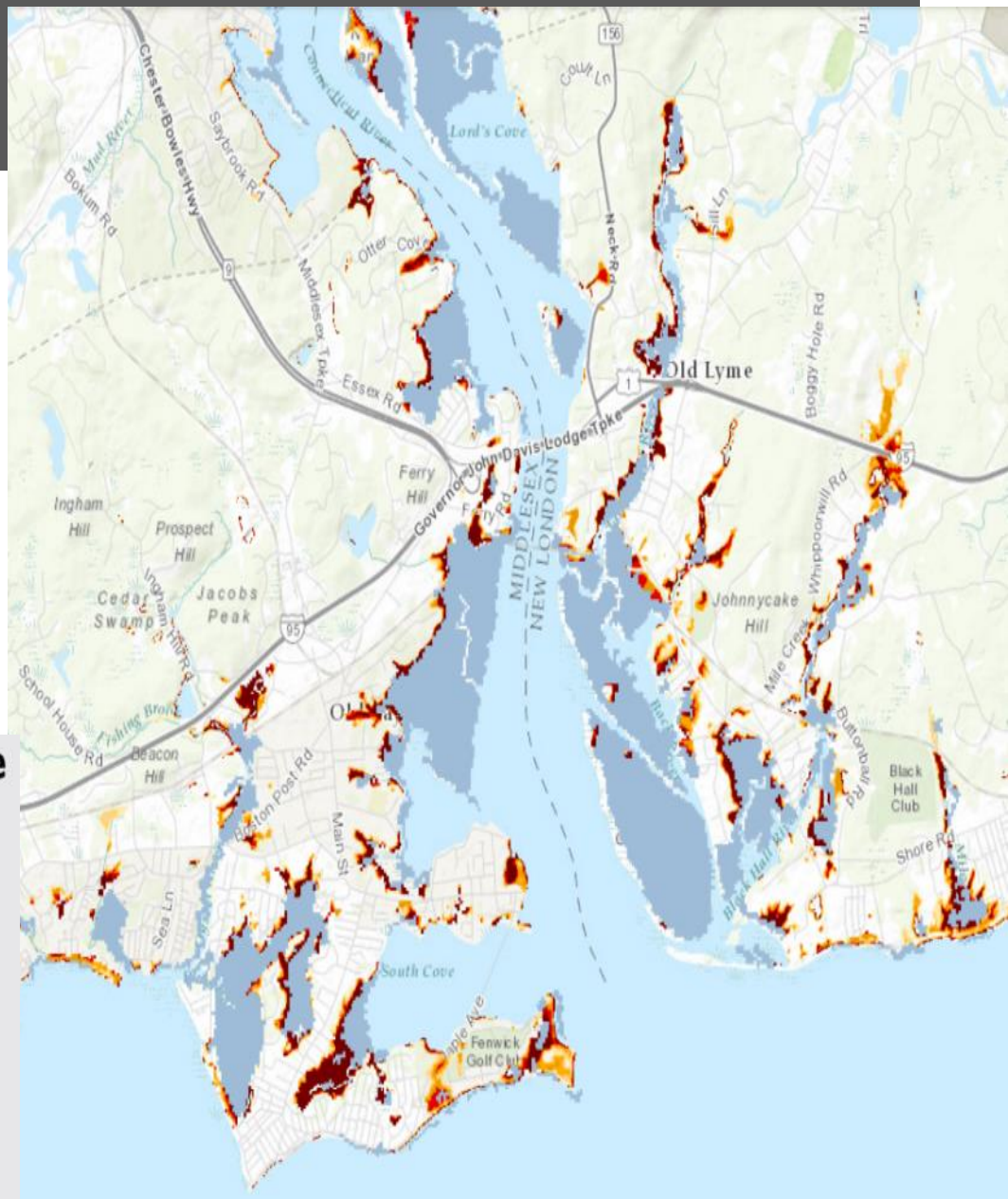
# Adapting to Climate Change

- Protect and enhance connectivity
- Ecologically connected network of conservation areas
- Protect climate refugia
- Conserve geophysical diversity
- Anticipate sea level rise

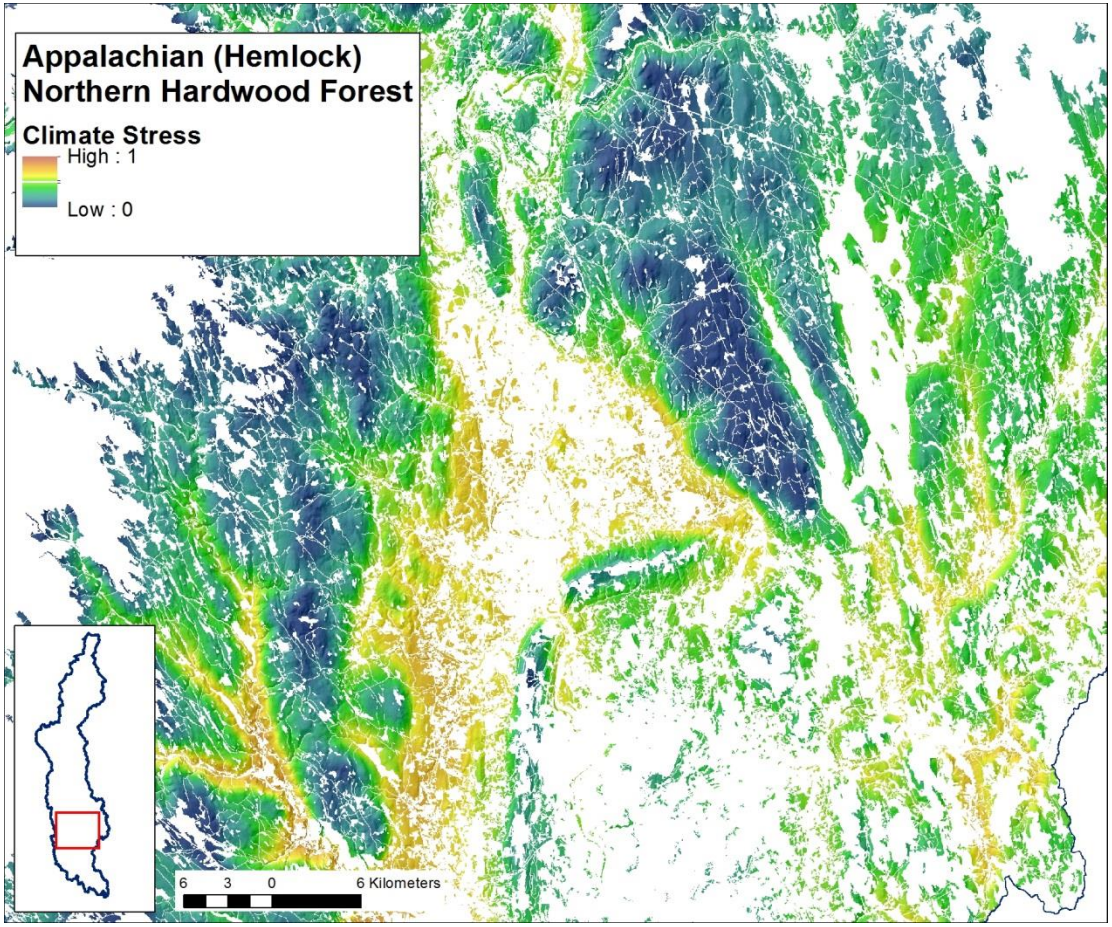


# Marsh migration zones

Undeveloped areas adjacent to existing tidal marshes within zones of potential sea level rise

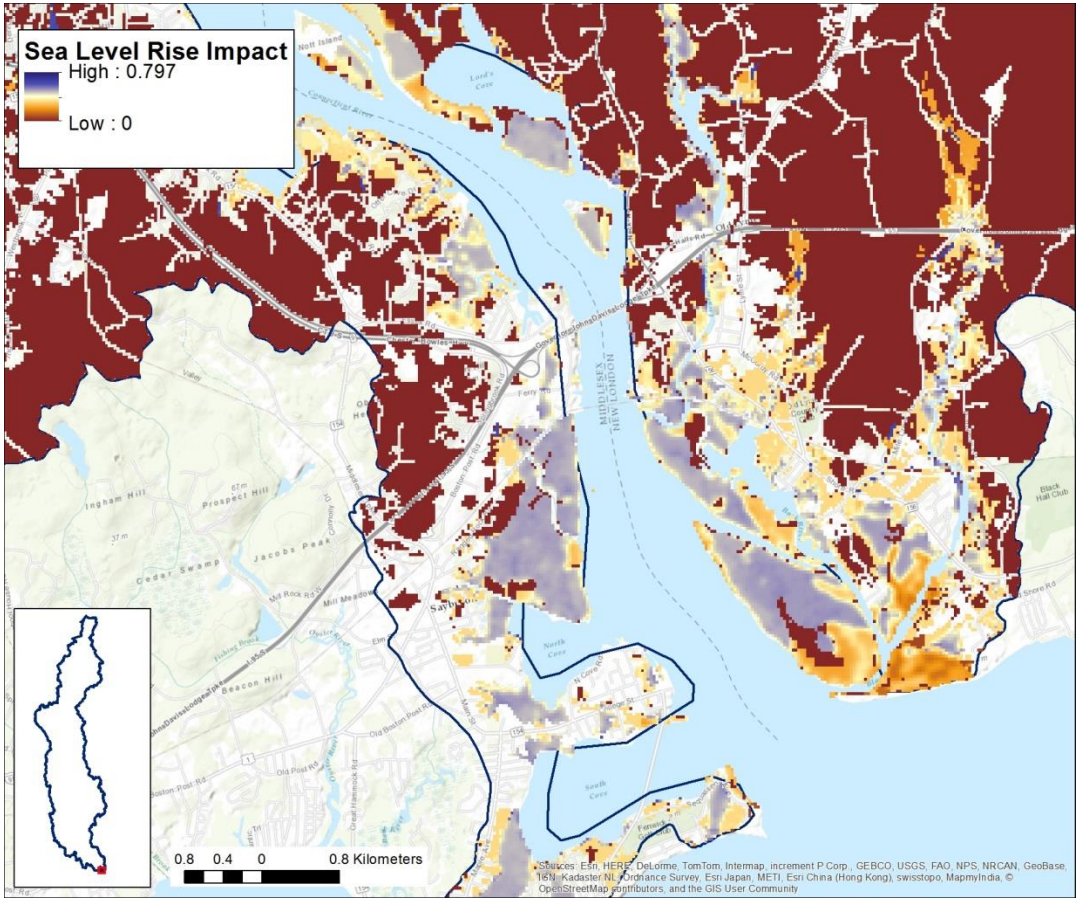



# Suggestions for Using the Products: Climate Stress



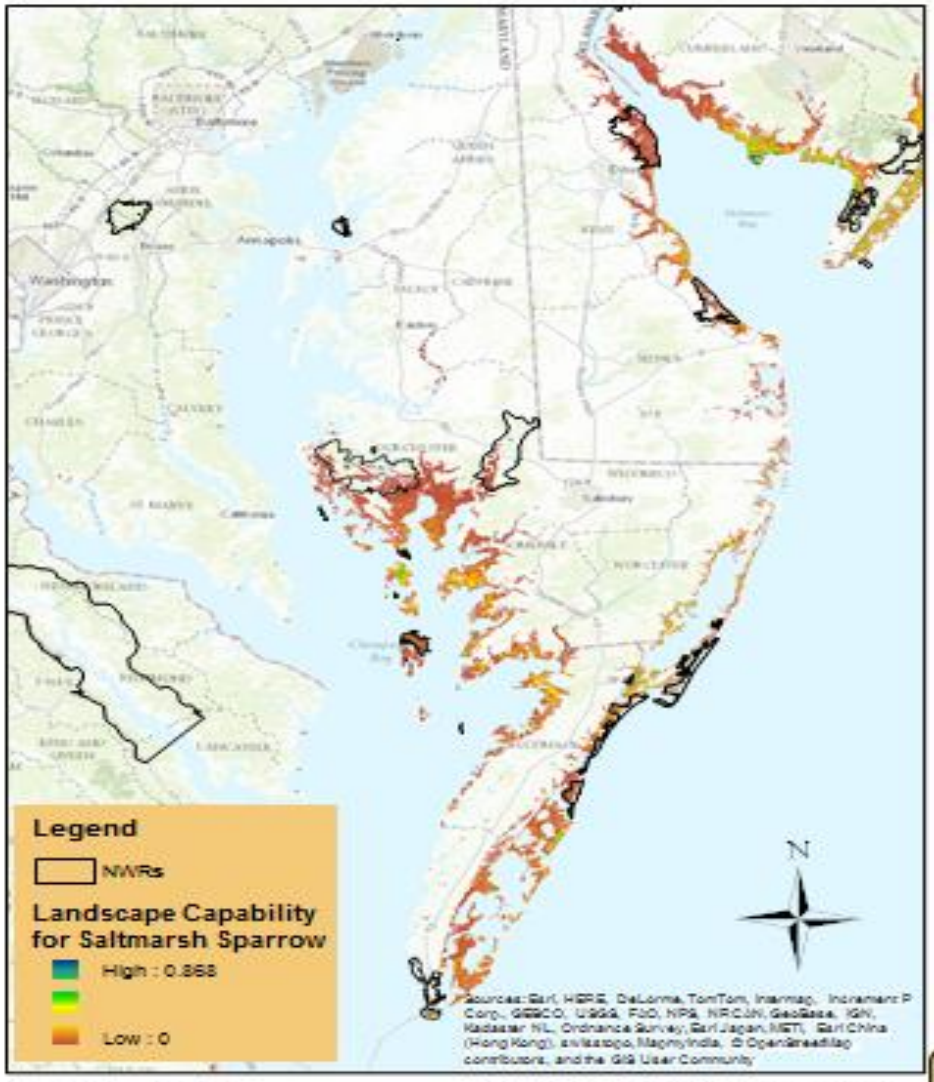

Focus conservation of species habitat and ecosystems on areas most resilient (least stressed by) climate change

# Sea Level Rise




Prioritization, restoration and protection of marshes and adjacent uplands for migration.

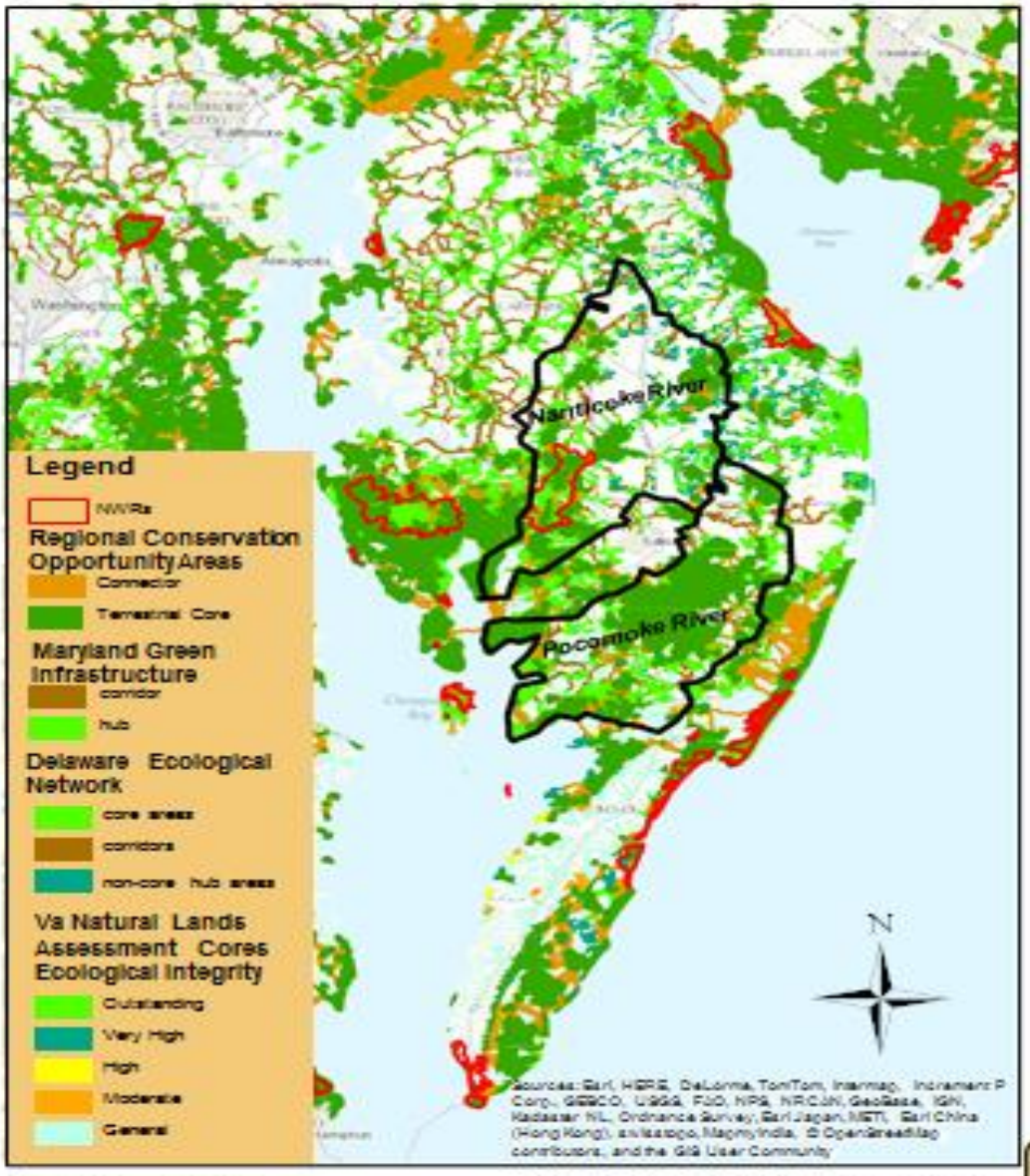
Delmarva LCD - Landscape Capability for Saltmarsh Sparrow




0 5 10 20 Miles

GIS Shapefiles Provided by NALCC & MD DNR

# Delmarva Landscape Conservation Design



# Restoration Tool

- Web tool for prioritizing watersheds (HUC12) and stream reach catchments using **prioritization scenarios**
- Scenarios comprised of various **metrics** (~400)
  - Series of "**expert**" scenarios
  - User interface for developing **custom** scenarios

# Tools: Marsh Migration Corridors

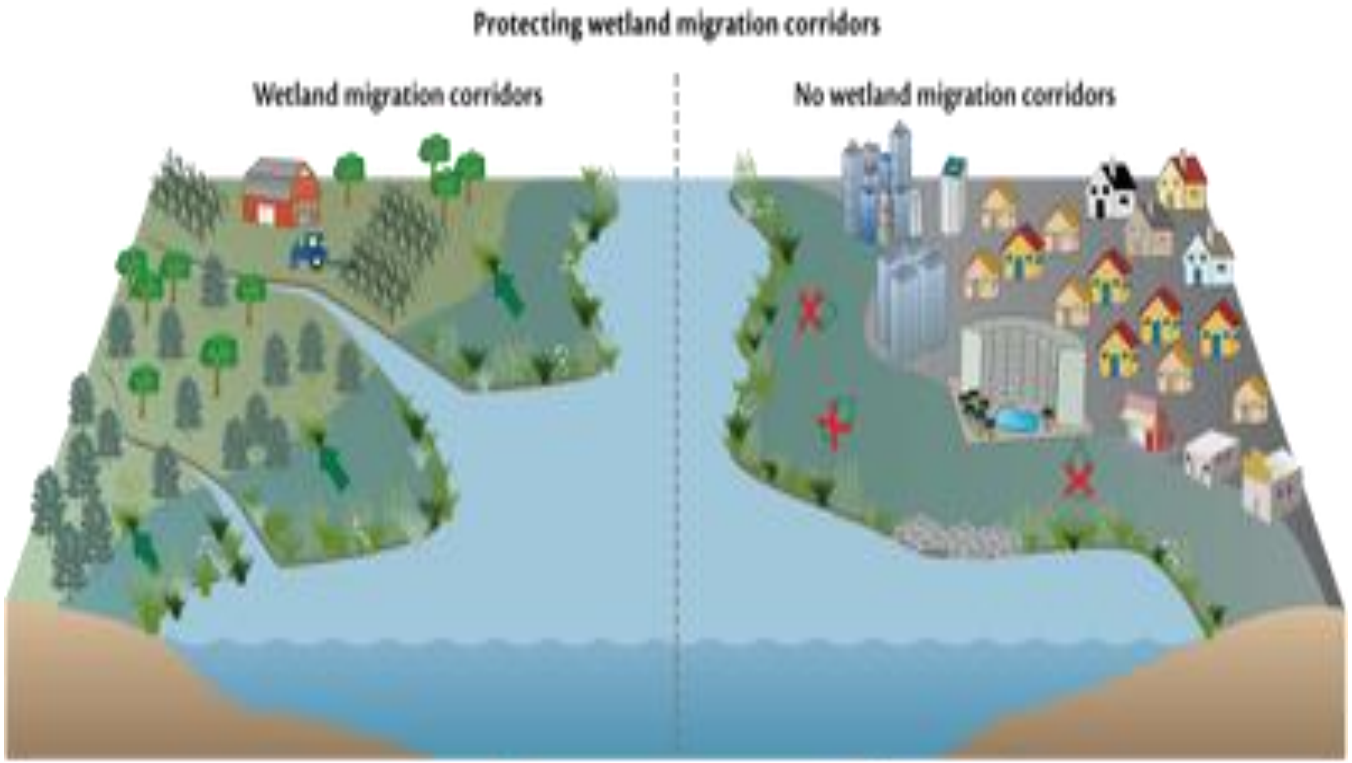
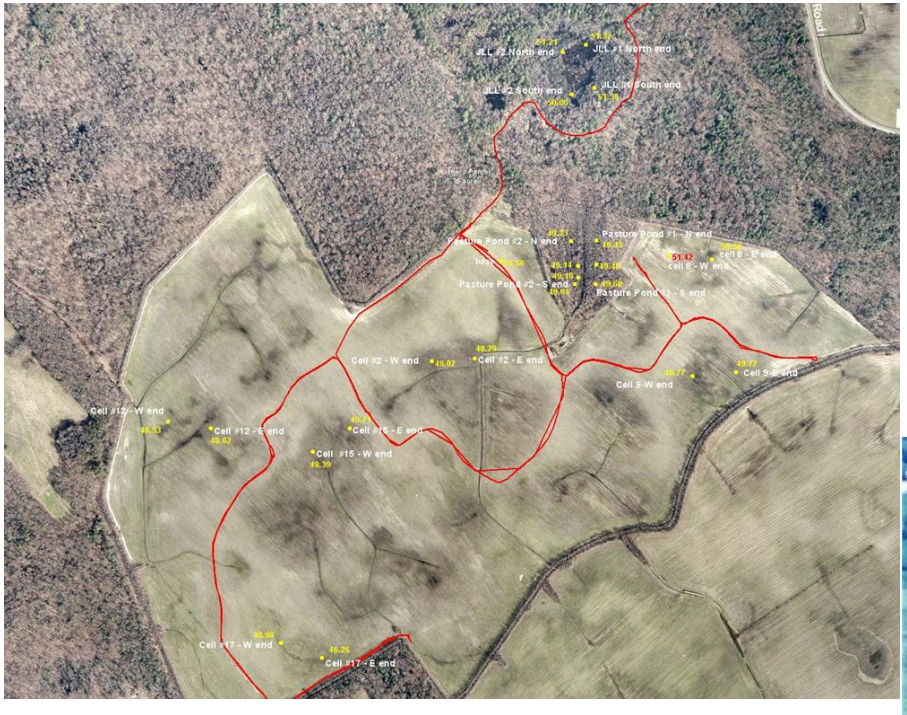
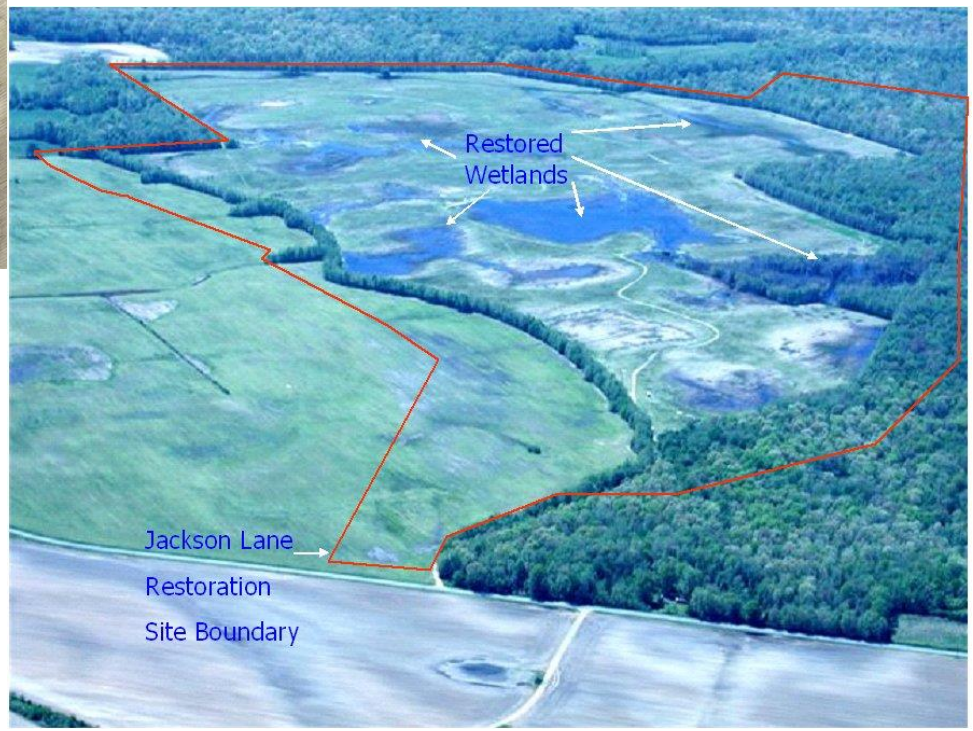



Figure 14. As sea level rises, wetlands may migrate into open spaces such as forests and fields. However, wetlands cannot migrate into areas with man-made barriers such as hardened shorelines and heavy development such as urban, commercial, and residential areas.

Diagram courtesy of the Integration and Application Network (ian.umces.edu), University of Maryland Center for Enviromental Science. Source: Boesch, D.F. (editor). 2008. Comprehensive Strategy for Reducing Maryland's Vulnerability to Climate Change Phase I: Sea-level rise and coastal storms. Report of the Scientific and Technical Working Group of the Maryland Commission on Climate Change. University of Maryland Center for Environmental Science, Cambridge, Maryland. This report is a component of the Plan of Action of the Maryland Commission on Climate Change, submitted to the Governor and General Assembly pursuant to Executive Order 01.10.2007.07.

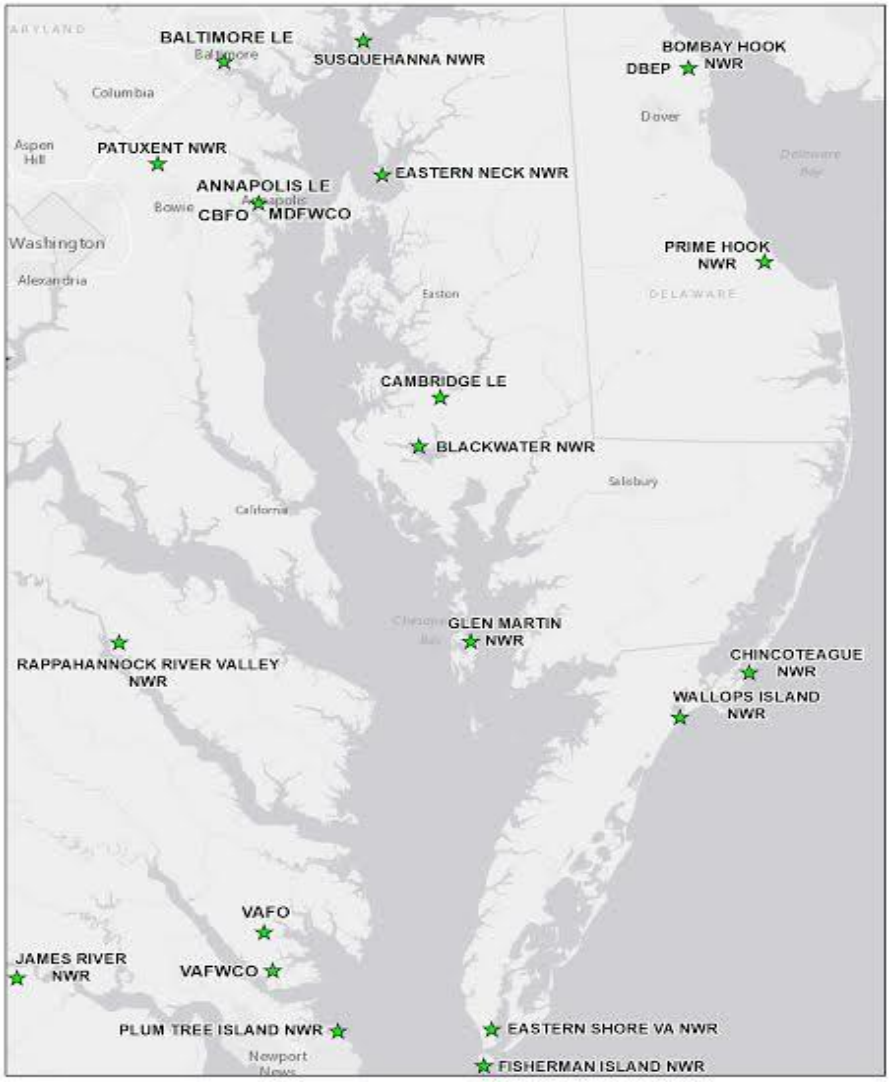
# Tools: Restoration Techniques




**Jackson Lane Preserve Restoration**

# Many Hands Make Light Work



# Leverage Other Delmarva Efforts

- USGS Climate Science Center
- EPA's Delmarva 3VS
- NOAA's Habitat Blueprint
- Delmarva Whole System Partnerships (TNC, NRCS)
- DOI REPI Program

# Make it Operational


- I.D. Who does what
- 2, 5 and 10 year outlook
- How much $?
- How much effort?


Thank You!
Questions?