

Delaware Wetlands



# Wetlands

*Delaware Envirothon  
Aquatics Training*

What is a wetland?

Types of Wetlands

Wetland Benefits

Delaware's Wetlands

Wetland Regulation

# What is a wetland?

*The 3 Main Characteristics for a Wetland are:*

Wetland  
Hydrology:

Hydric  
Soils

Hydrophytic  
Vegetation

# Wetland Hydrology

- ◆ Water at or above the surface for >2 weeks
- ◆ Wetlands are usually wetter in the winter/spring, and dryer in the summer/ fall



# Wetland Hydrology

Evidence of water

*Water Lines on Plants*



*Wreck Lines*

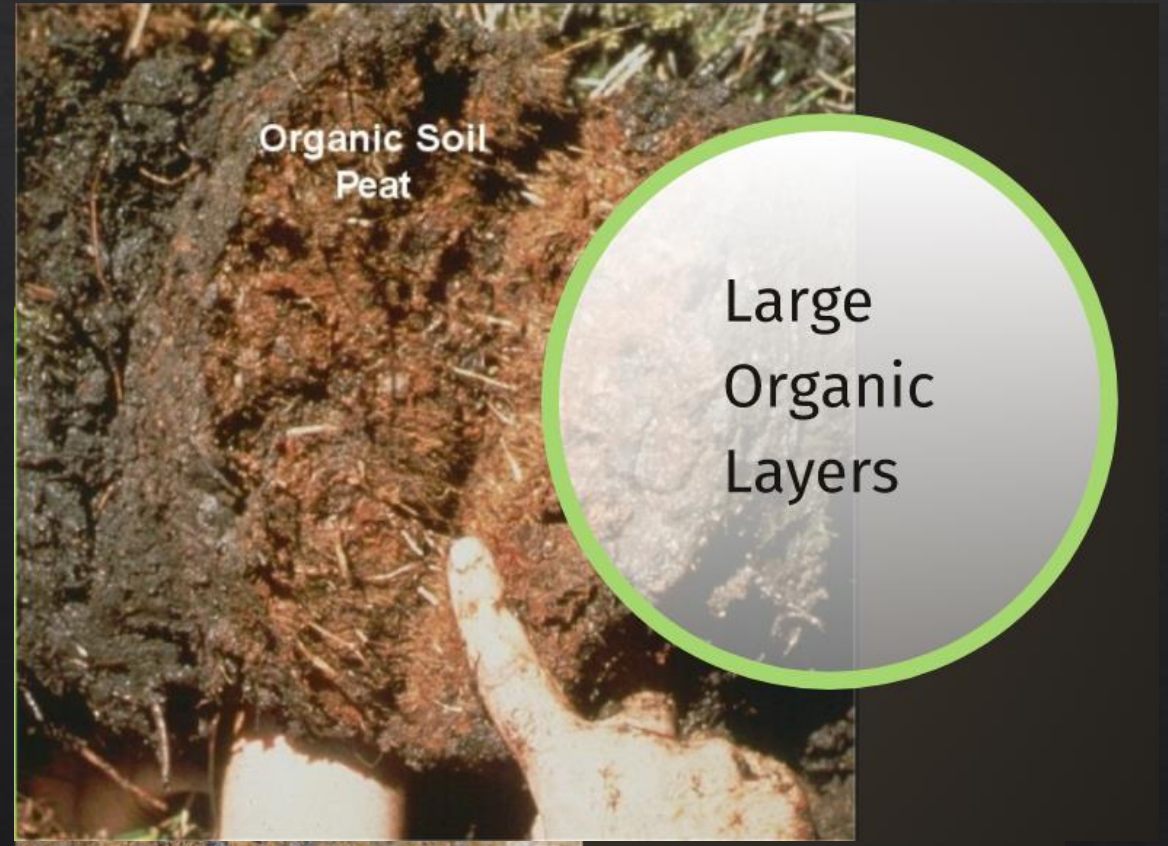


*Water Stained Leaves*



# Hydric Soils

"formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part" (Federal Register: July 13, 1994)



# Hydrophytic Vegetation

Hydrophytic vegetation are plants that thrive in wet conditions and can handle water around its roots during the growing season.



Aerenchyma (Photo Credit: San Elijo Conservancy)



Bald cypress knees (Photo Credit: USFWS)

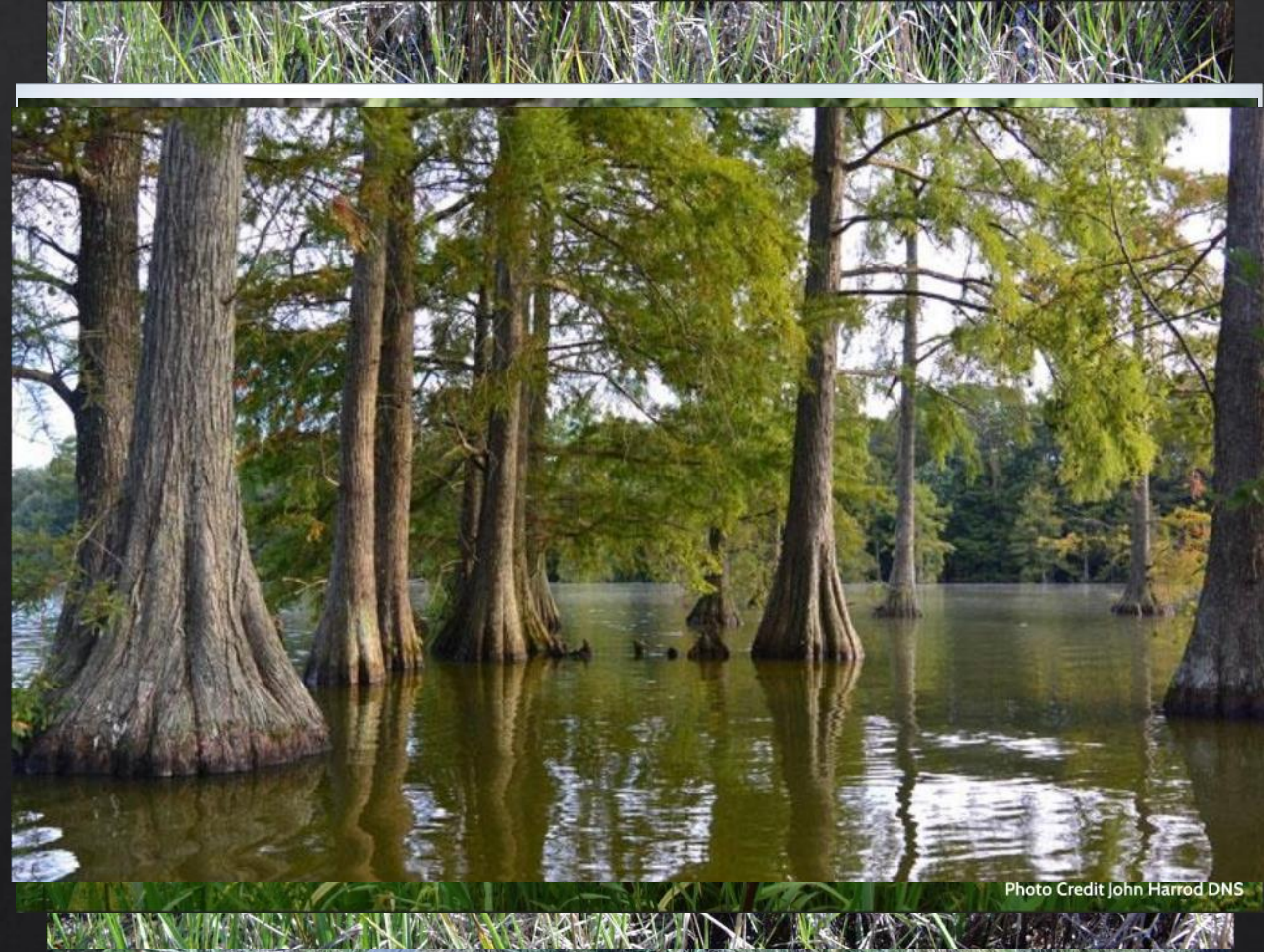


Salt tolerance (Photo Credit: DNREC - WMAP)

# Native Plants

A plant that is a part of the balance of nature that has developed over hundreds or thousands of years in a particular region or ecosystem. Only plants found in this country before European settlement are considered to be native to the United States.

Note: The word native should always be used with a geographic qualifier (that is, native to Delaware[for example]). (NRCS Website)



*Spotted lanternfly (Lycorma delicatula)*  
*Spotted lanternfly (Lycorma delicatula)*

# Invasive Plants

An invasive species is defined as a species that is

- 1) non-native (or alien) to the ecosystem under consideration and
- 2) whose introduction causes or is likely to cause economic or environmental harm or harm to human health.

(Presidential Executive Order 13112 (February 1999))



*Multiflora rose (Rosa multiflora) (Rosa multiflora)*



## PURIFY

DELAWARE WETLANDS PURIFY YOUR DRINKING WATER SUPPLIES BY FILTERING AND REDUCING TOXIC WATERS POLLUTANTS. IF YOU CARE ABOUT WATER QUALITY, IT'S TIME TO TAKE ACTION! VISIT US TODAY TO LEARN MORE AND GET INVOLVED IN WETLANDS PROTECTION. VISIT US AT [WWW.DNRREC.DELAWARE.GOV/ADMIN/DELAWAREWETLANDS](http://WWW.DNRREC.DELAWARE.GOV/ADMIN/DELAWAREWETLANDS)



## PROVIDE

DELAWARE WETLANDS PROVIDE HABITAT AND SHELTER FOR MANY ANIMALS AND COMMERCIALLY IMPORTANT FISH AND WILDLIFE. LET'S PROVIDE THEM! TO LEARN MORE ABOUT HOW WETLANDS WORK FOR US VISIT [WWW.DNRREC.DELAWARE.GOV/ADMIN/DELAWAREWETLANDS](http://WWW.DNRREC.DELAWARE.GOV/ADMIN/DELAWAREWETLANDS)



## PROTECT

DELAWARE WETLANDS ACT LIKE STONES TO PROTECT YOUR HOME FROM FLOODING. ON LANDS NEAR WETLANDS, CALL US AT 1-800-762-7626 TO LEARN HOW YOU CAN HELP PROTECT YOUR HOME FROM FLOODING. VISIT US AT [WWW.DNRREC.DELAWARE.GOV/ADMIN/DELAWAREWETLANDS](http://WWW.DNRREC.DELAWARE.GOV/ADMIN/DELAWAREWETLANDS)

# Wetland Benefits

# Wetlands 101 Video: 3 Ps

## PURIFY

Delaware Wetlands PURIFY your drinking water by filtering and removing heavy metals, herbicides, and pesticides. It's time to take control of your water quality. For more information, visit [www.dnrrec.delaware.gov/Admin/DelawareWetlands](http://www.dnrrec.delaware.gov/Admin/DelawareWetlands).



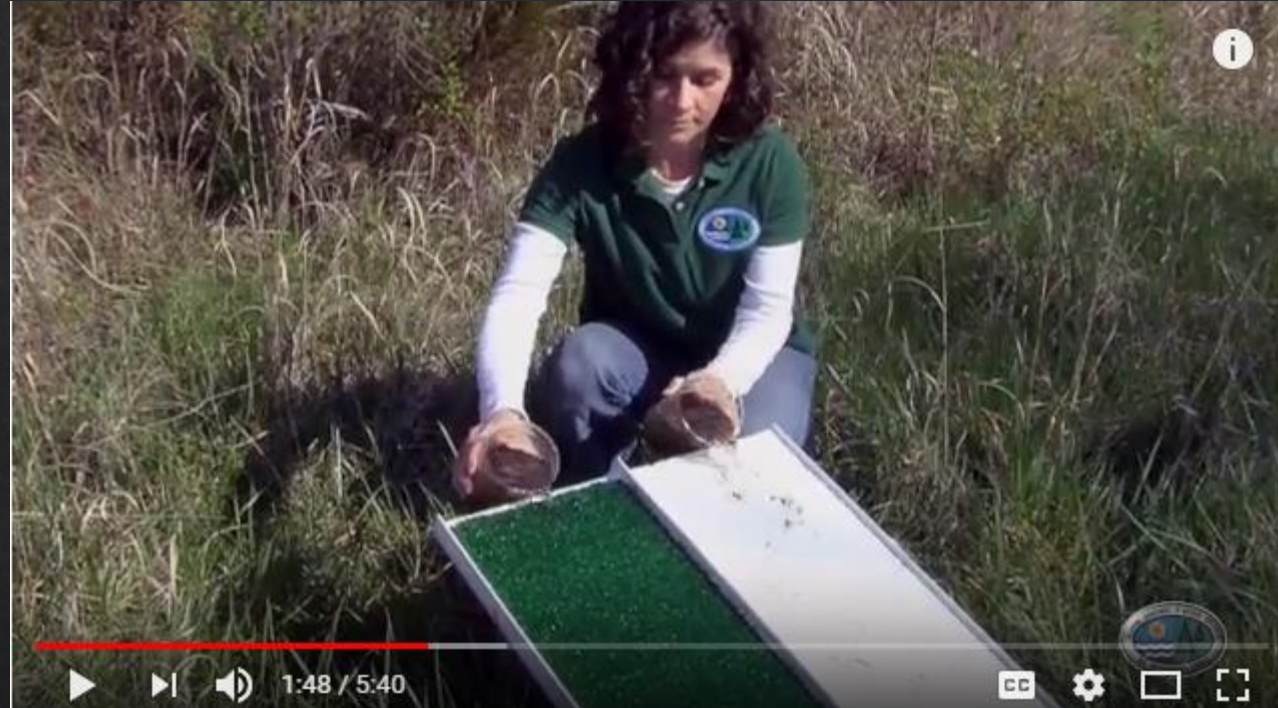
## PROVIDE

Delaware Wetlands PROVIDE habitat and shelter for many commercially important fish and wildlife. It's a priority to take action now to protect our wetlands. For more information, visit [www.dnrrec.delaware.gov/Admin/DelawareWetlands](http://www.dnrrec.delaware.gov/Admin/DelawareWetlands).



## PROTECT

Delaware Wetlands act like sponges to protect your home from flooding. One acre of wetlands can absorb up to 100,000 gallons of stormwater. Let's protect them. To learn more about how wetlands work, visit [www.dnrrec.delaware.gov/Admin/DelawareWetlands](http://www.dnrrec.delaware.gov/Admin/DelawareWetlands).





# **Wetland Types & Ways to Classify**

Plants

# Dominant Vegetation Type



**Marsh:** grasses



**Bog:** shrubs,  
mosses & lichens



**Swamp:** trees  
& shrubs



**Fen:** grasses &  
mosses

Cowardin

# Cowardin Classification (USFWS)

Classifies by:

- ◆ Where the wetland lies within a landscape
- ◆ Dominant vegetation type
- ◆ Whether the water present is seasonal, permanent, etc.

## 5 Cowardin Wetland Types

1. Marine (M)
2. Estuarine (E)
3. Riverine (R)
4. Lacustrine (L)
5. Palustrine (P)



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Hit the "**Explore**" button in the lower right corner to begin, then enter your address.

If you have wetlands on your property, you will see blue color blocks. **Don't see them?** Try moving around the map to see if your neighbors have any wetlands. **Do you see blue on your property?** What do you do now? Keep scrolling down to find out. P.S. Just because you see a mapped wetland does not necessarily mean it's regulated.

When you're done hit the "**Stop Explore**" button to continue on.



Wetlands: PFO1S

Attribute	PFO1S
LLWW_Code	TEFLOled
UWPC	
BSS	
CAR	Moderate
CSS	Moderate
FAIH	
NT	Moderate
OWH	Moderate
SM	
SR	
SWD	
WBIRD	
Zoom to	

Find Wetlands on Your Property

818 KITTS HUMMOCK RD

Stop Exploring



Tidal & Non-Tidal

# Tidal Wetlands

- commonly referred to as **marshes**
- occur along the **shoreline** where oceans, bays, rivers, and streams meet the land
- **range from freshwater to saltwater**
- water is pushed in and out daily by **tidal cycles**



Saltmarsh



Coastal Plain Pond Depression

## Non-Tidal Wetlands

- mostly freshwater,
- found around inland areas
- fed by rain, snow, or groundwater
- usually covered with water during the winter and spring and dry during the summer or fall months



Coastal Plain Pond Depression



## Delmarva Bays

- Isolated, small, shallow, open, circular/oval
- Lower NC and Kent counties
- fed by rain, snow, or groundwater
- 16,000- 21,000 years old
- Very important for amphibian reproduction



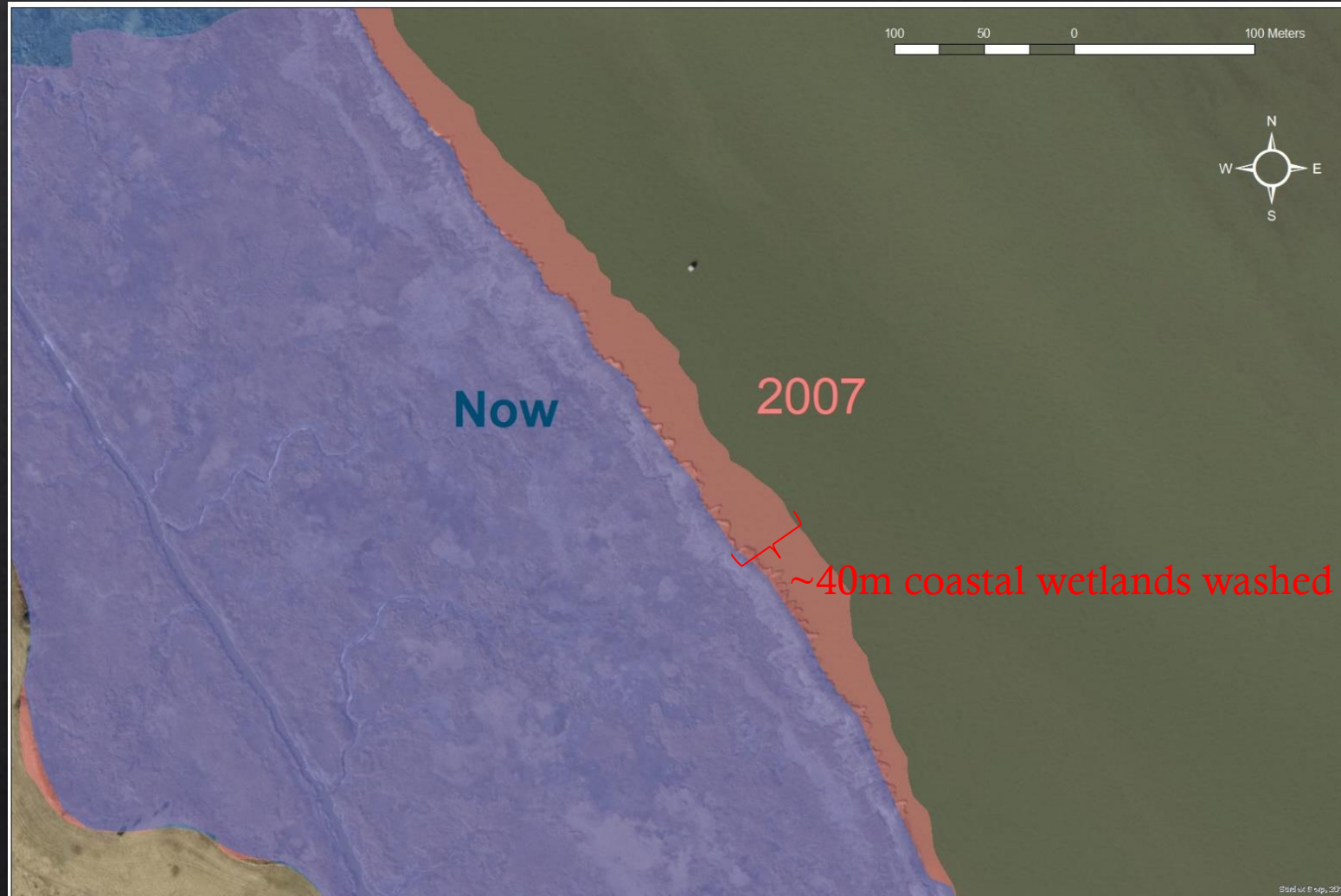
Delaware  
Wetland  
Status

# Where Delaware Wetlands Stand

- ◆ Based on the new 2017 Wetlands maps, nearly 20% of the state is covered in wetlands.
- ◆ Tidal wetlands (fresh and saltwater) represent the smallest wetland type in total acreage.
  - ◆ These wetlands ring the Delaware Estuary\* and the Nanticoke River which drains into the Chesapeake Estuary
- ◆ Non-tidal wetlands (freshwater) make-up the majority of Delaware's wetland acreage.

\*Estuary: where rivers meet the sea

# Wetland Loss Example: Erosion

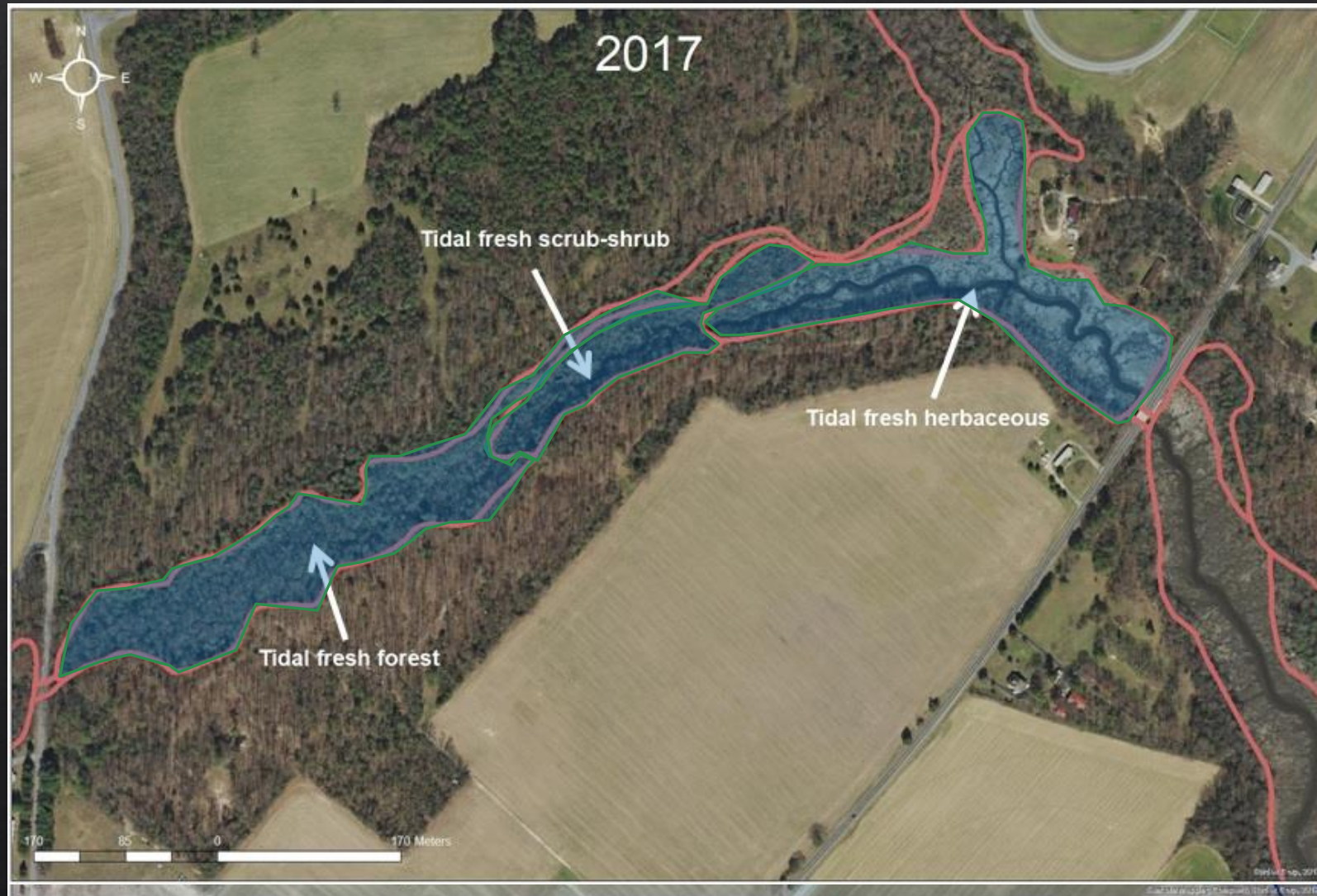


# Wetland Loss Example: Development





# Wetland Change: Sea Level Rise



# Is Building on Wetlands a Good Idea?





# Wetland Regulations

## State of Delaware Wetland Regulations

- ◆ Delaware only regulates tidal wetlands and large expanses (400 acres or more) of non-tidal wetlands.
- ◆ There is NO state regulation over non-tidal freshwater wetlands less than 400 acres in size.

# Federal Wetland Regulations

- ◆ Managed through the U.S. Army Corps of Engineers
- ◆ Jurisdiction determined by
  - ◆ Section 401 & 404 of the Clean Water Act
  - ◆ Section 10 of the Rivers and Harbors Act of 1899