



North Carolina's Coastal Freshwater Wetlands: Caught in the Middle

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NC DEQ Environmental Specialist II

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What Threatens Our Wetlands?



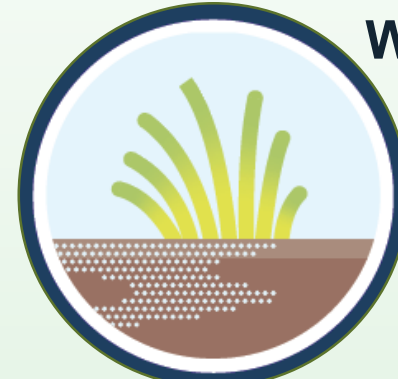
Logging & Farming



Water Level Changes



Development



Saltwater Intrusion



Storm Runoff



Invasive Species

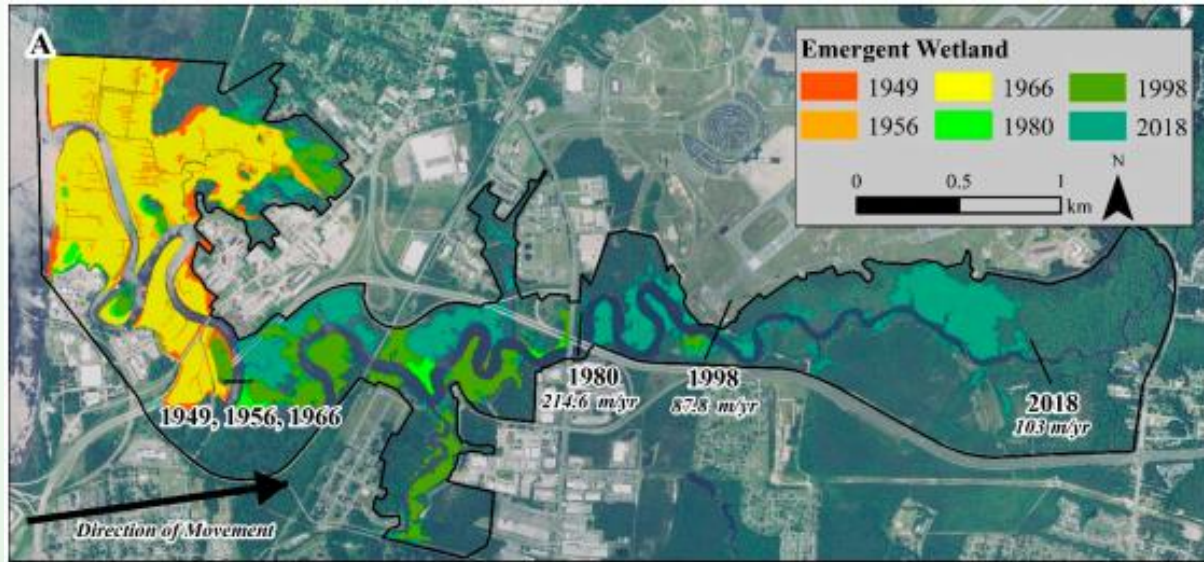


Litter & Dumping

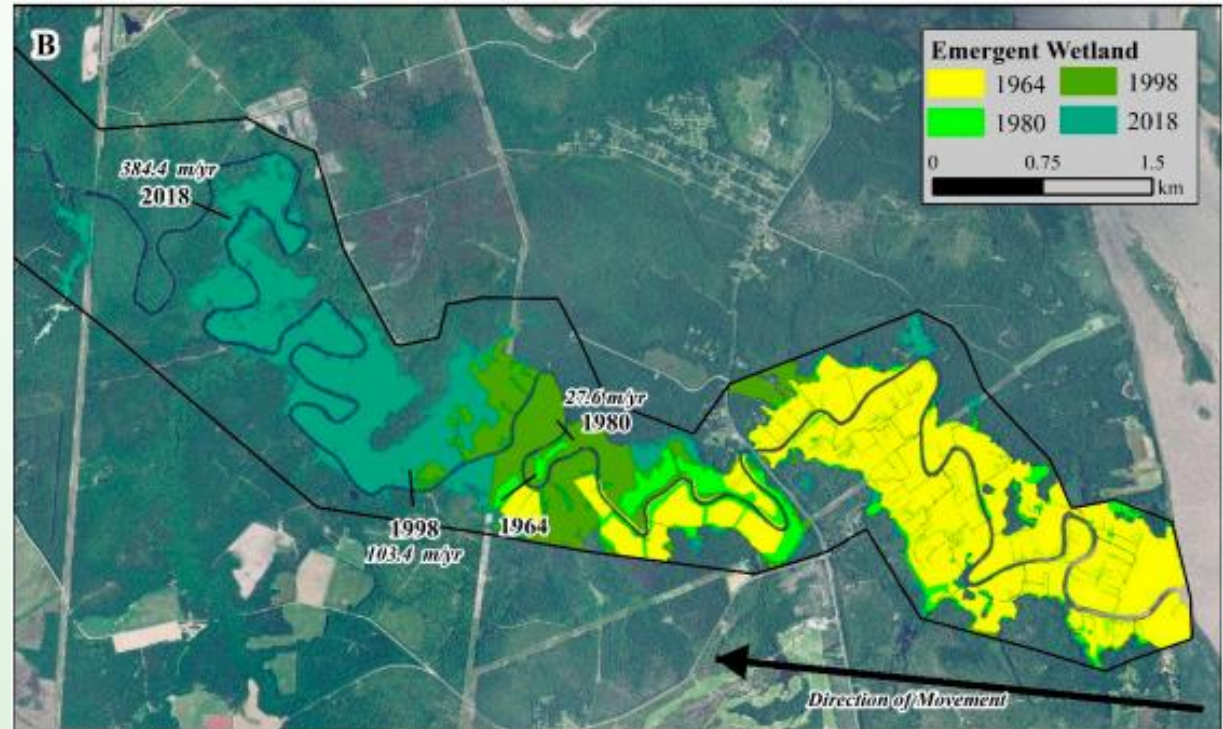


Sedimentation

Emergent Wetlands Are Migrating

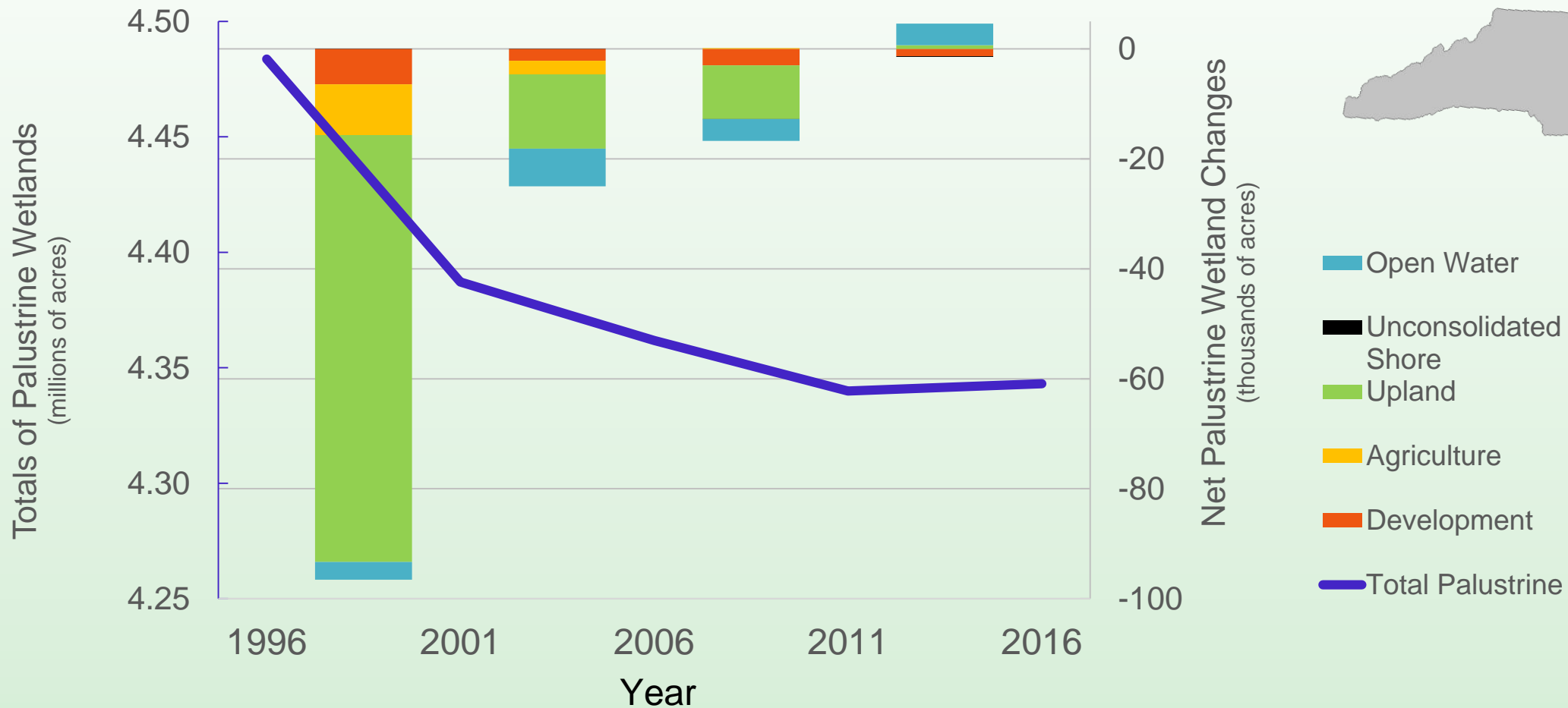


Emergent wetlands through time, where the upstream extent is shown by year and annotated with the rate of movement (m/yr) from the preceding time period for (A) Smith Creek and (B) Town Creek.



Images from: [Magolan, J.L.; Halls, J.N. A Multi-Decadal Investigation of Tidal Creek Wetland Changes, Water Level Rise, and Ghost Forests. Remote Sens. 2020, 12, 1141.](#)

NOAA C-CAPS Data Shows Changes to NC Coastal Plain Palustrine Wetlands



NOAA C-CAPS map and data provided by Nate Herold (NOAA) with summaries by Christopher Baillie (ECU).

Wetland Changes Depend on:

- Topography
- Drainage Features
- Hardened Structures
- Land Use/
Property Protection
- Plant Rejuvenation/
Seeding Rates



Agencies Regulating NC Wetlands



Agencies Regulating NC Wetlands



**US Army Corps
of Engineers®**

- Section 404 of the Clean Water Act (CWA)
- Section 10 of the Rivers and Harbors Act



Waters of the United States (WOTUS)

What is different?



Using the same USACE definition of wetlands!

- Jurisdictional wetlands:
 - Abut certain jurisdictional waters
 - Inundated or flooded by certain jurisdictional waters
 - Separated by one natural feature
 - Direct hydrologic connection to certain jurisdictional waters
- Removes ephemeral streams (Wetlands cannot be jurisdictional through ephemeral features)

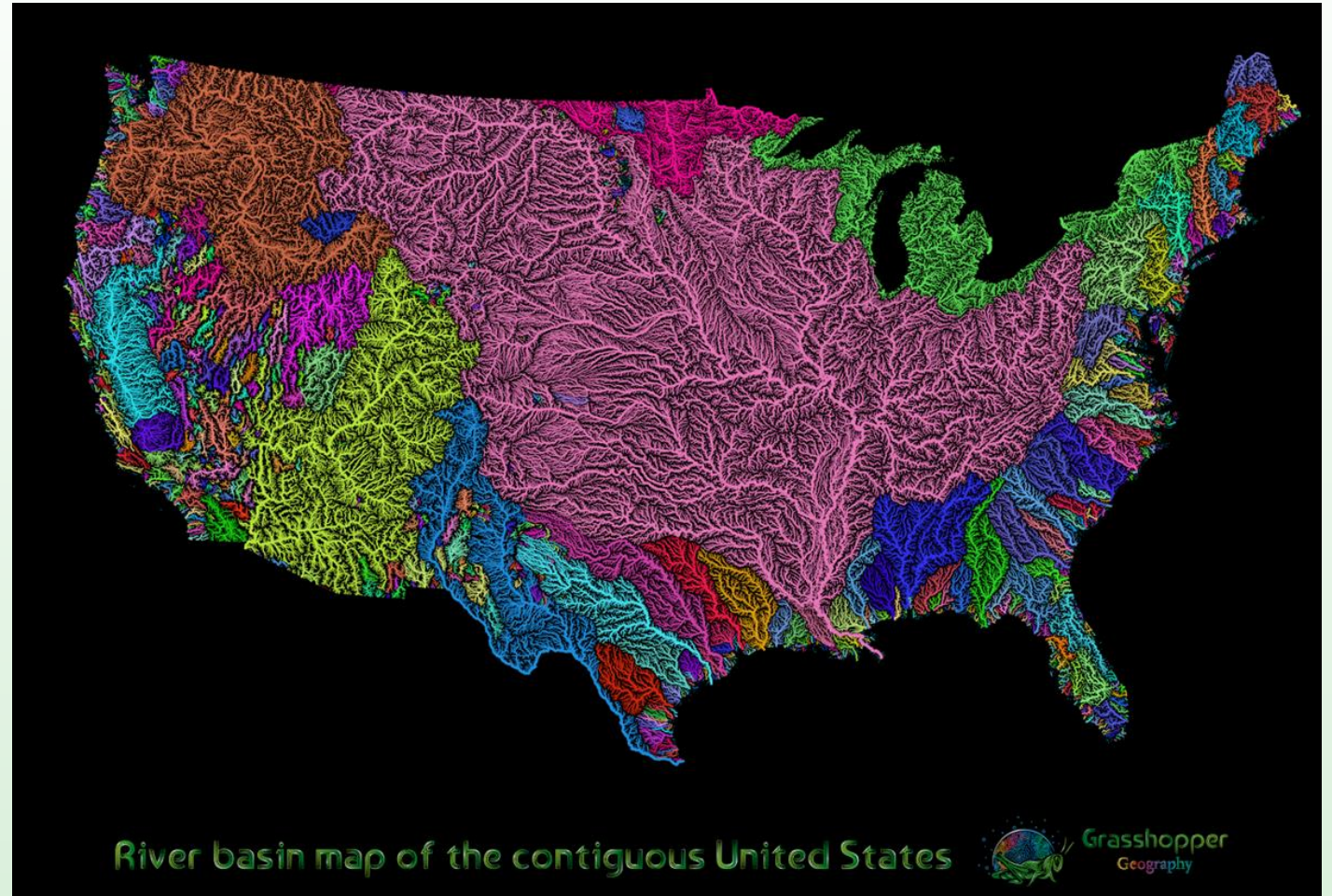


Image compliments of Robert Szucs
www.grasshoppergeography.com



Waters of the United States (WOTUS)

What does this mean for N.C.?

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Study: Of 163 NC WAM Reference Wetlands, jurisdiction would be lost for:

- 29.3% overall
- 17% in the Coastal Plain
- 62.9% in the Piedmont
- 25.0% in the mountains



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Wetland Types
Most Likely
Impacted by
WOTUS



Floodplain
Pools



Pine Flat
Pine Savanna



Non-Riverine
Swamp
Forest



Seep



Headwater Forest
Bottomland Hardwood
Forest



Bog



Agencies Regulating NC Wetlands



**US Army Corps
of Engineers®**

- Section 404 of the Clean Water Act (CWA)
- Section 10 of the Rivers and Harbors Act



- Coastal Area Management Act (CAMA)
- NC Dredge and Fill Law
- Coastal Development Rules



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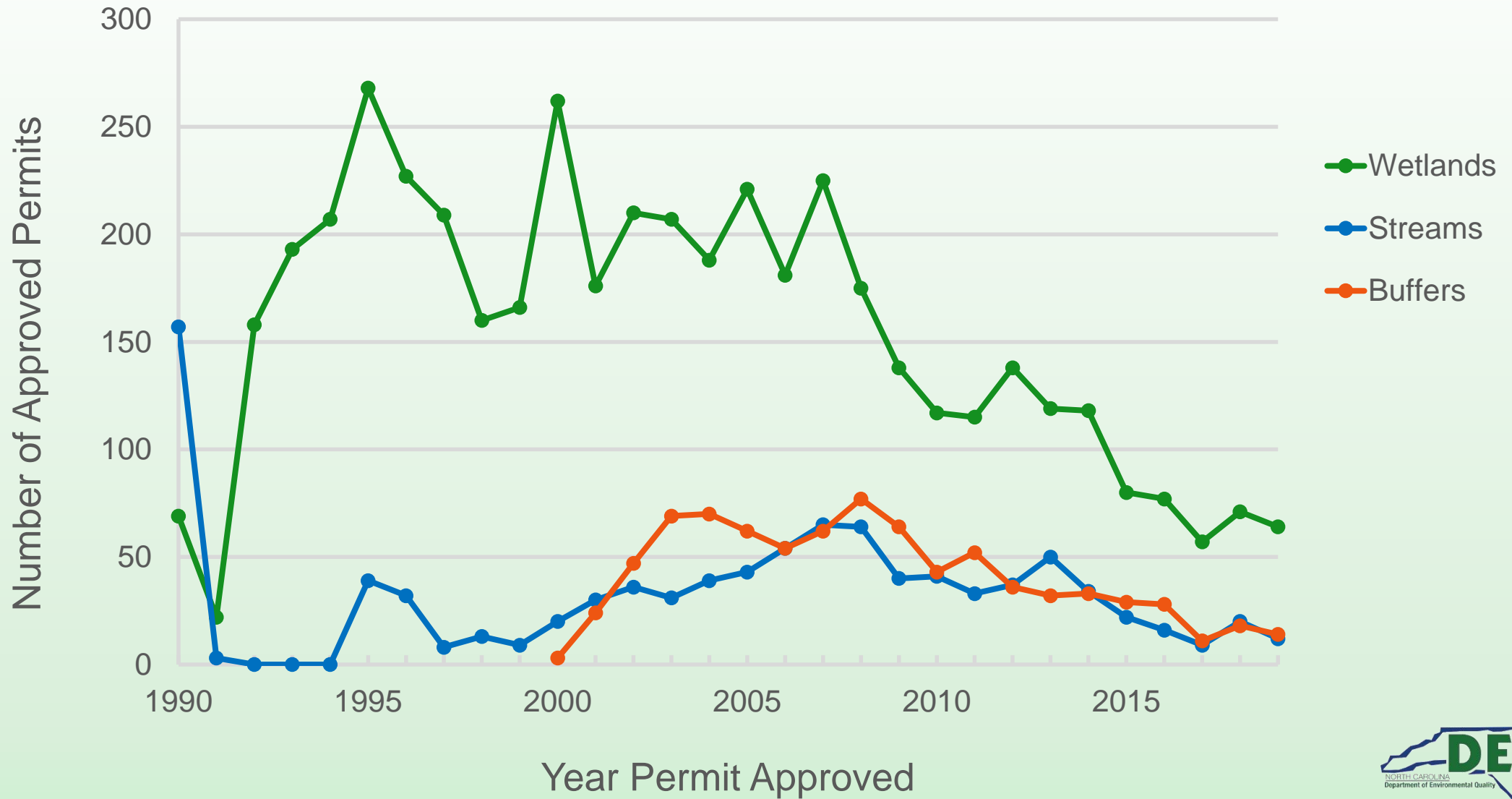
- Section 401 of the Clean Water Act (CWA)
- NC Administrative Code (15A NCAC 02B and 02H) and Session Laws
 - Isolated and Other non-404 Jurisdictional Wetlands and Water Permit
 - Buffer Rules (Catawba, Goose Creek, Jordan Lake, Neuse, Randleman Lake, Tar-Pamlico)



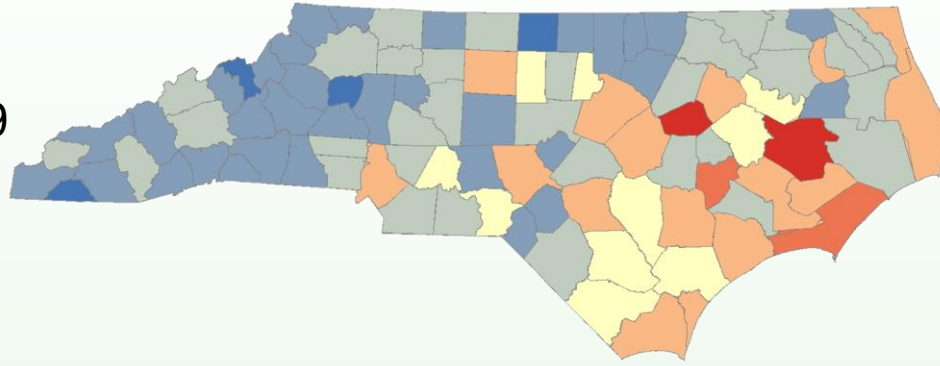
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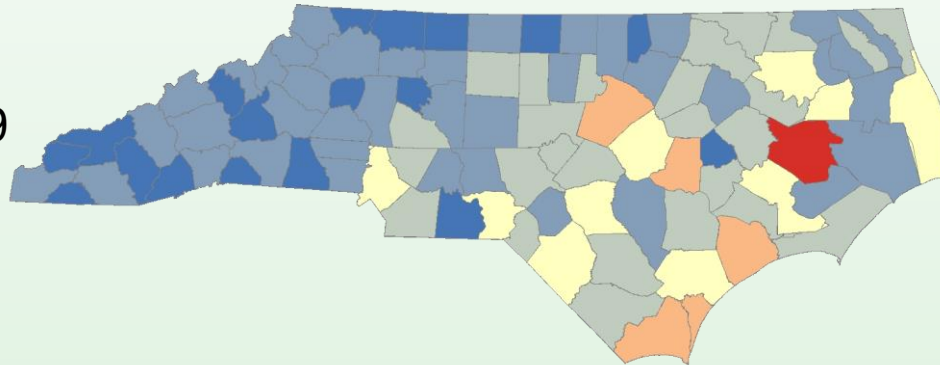
Number of Approved Permits



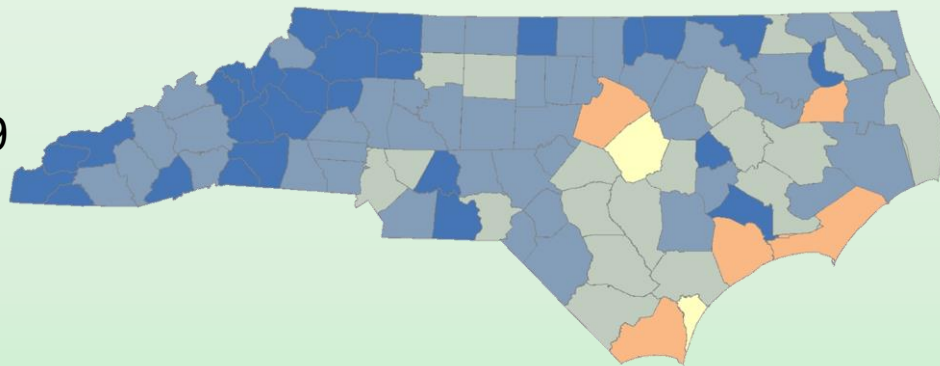
1990-1999



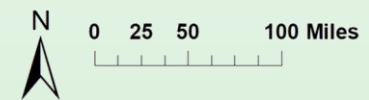
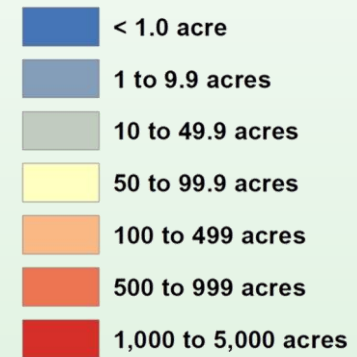
2000-2009



2010-2019



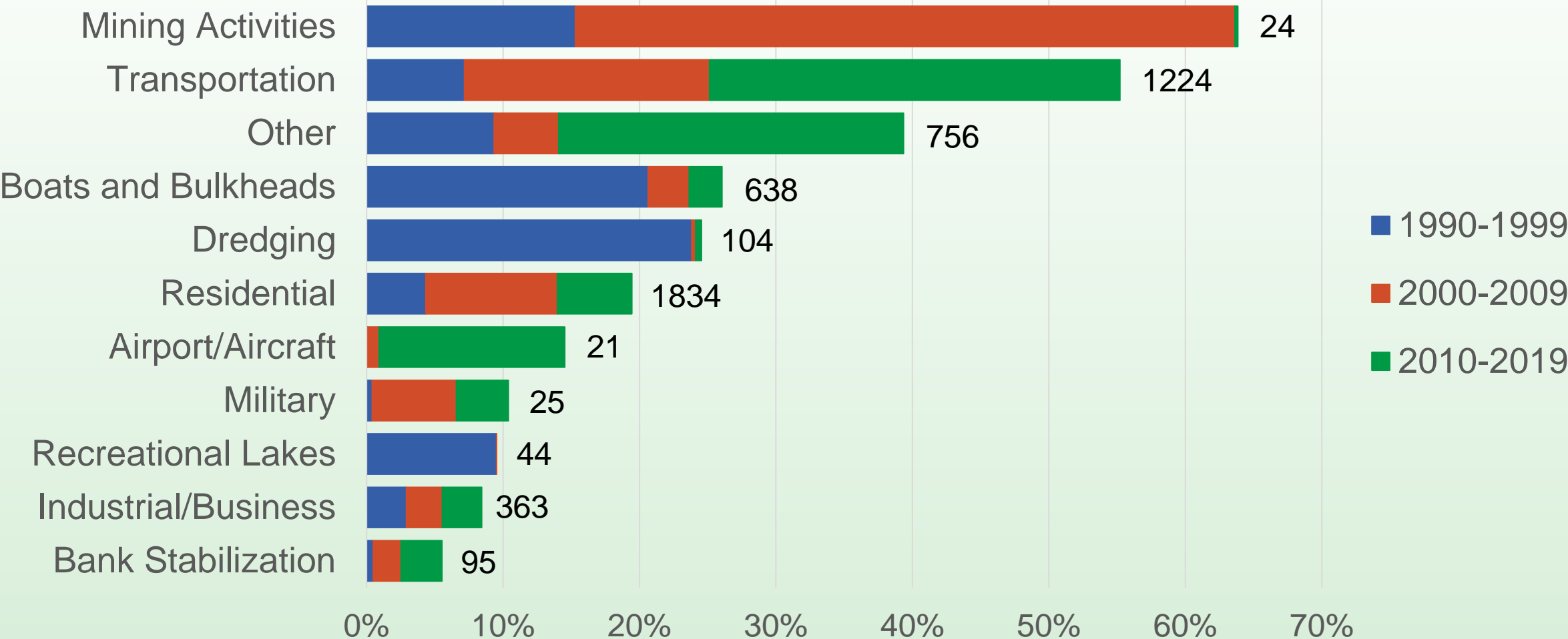
North Carolina Wetlands: Total Acres of Approved Impacts by county and by decade



Maps created by Kristie Gianopulos (NC DEQ)

Primary Impact Types

by decade

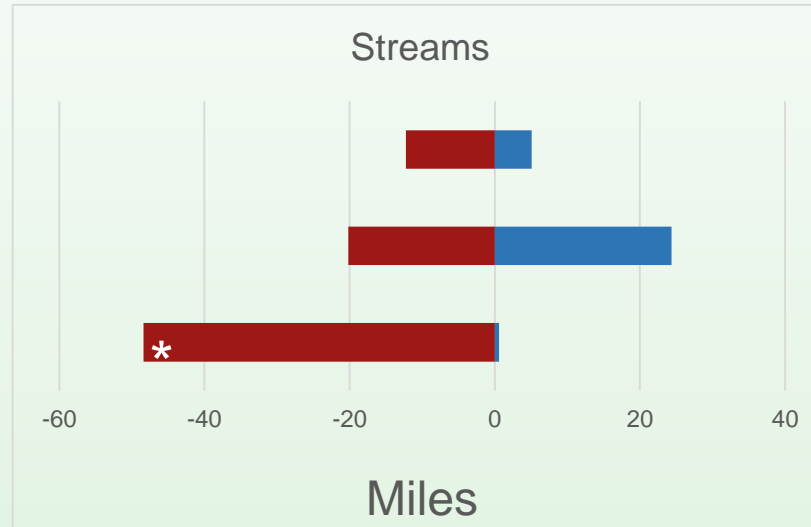
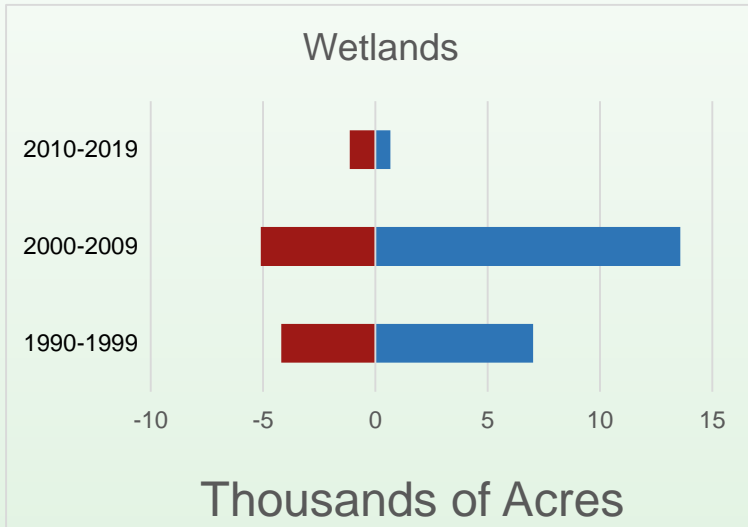


Percent of total size of impacts, number of approved permits



Impacts vs Mitigation

by decade



■ Impact
■ Mitigation



* Units for stream impacts in 1990-1999 included square feet and/or linear feet. All were converted to miles, so values on the map are higher than actual miles of impact.

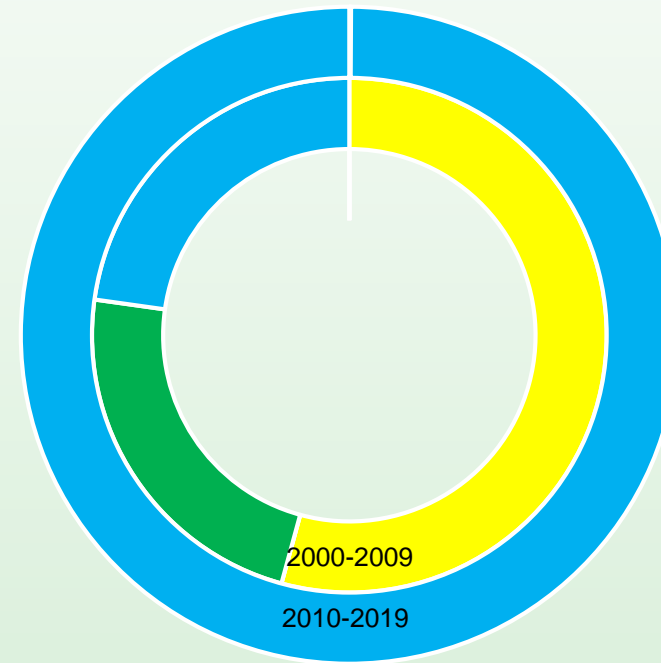
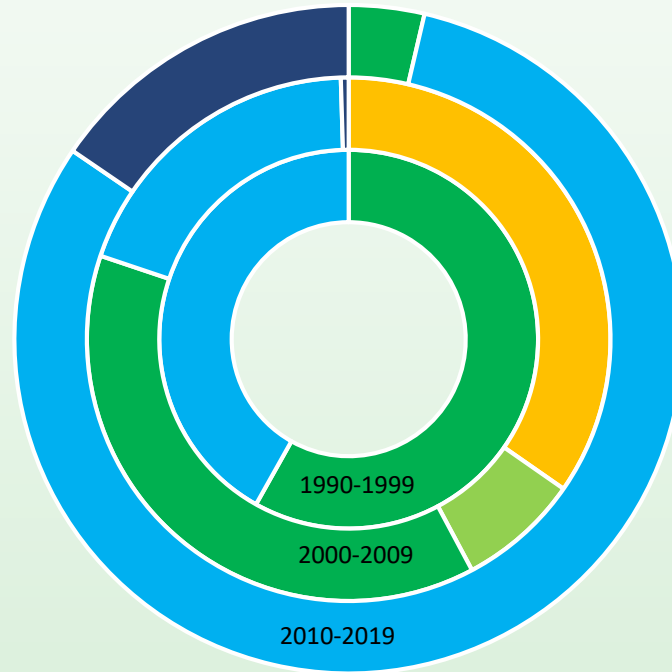
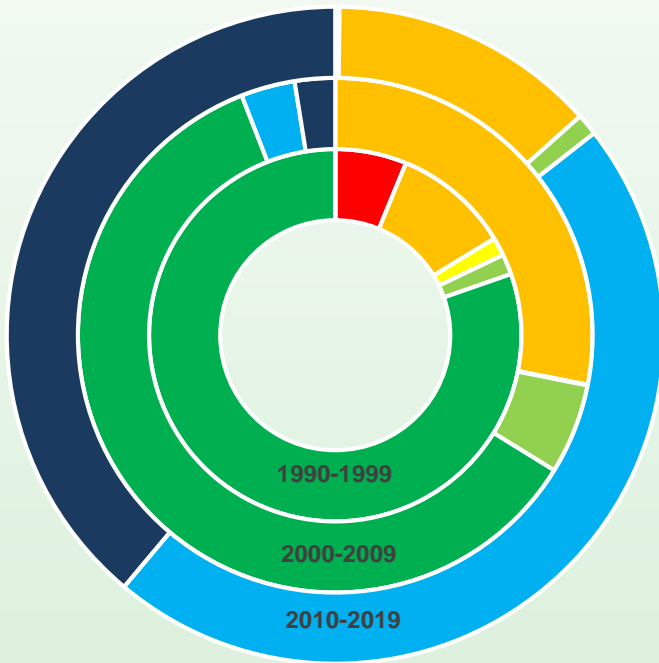
Types of Compensatory Mitigation

by decade

Wetlands

Streams

Buffers

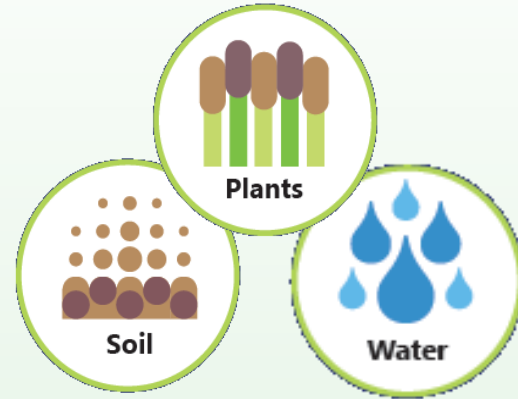


- Conservation Easement
- Preservation
- Creation
- Enhancement
- Restoration
- WRP/EEP/DMS
- Mitigation Bank

We Can Conserve NC Freshwater Wetlands



Avoidance & Minimization



Enhancement



Identify & Limit Threatening Activities



Preservation



Allow or make room for change



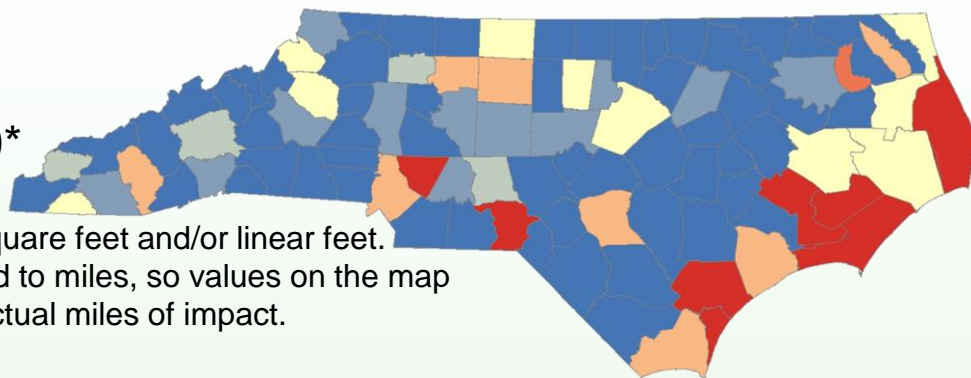


QUESTIONS

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919-743-8480

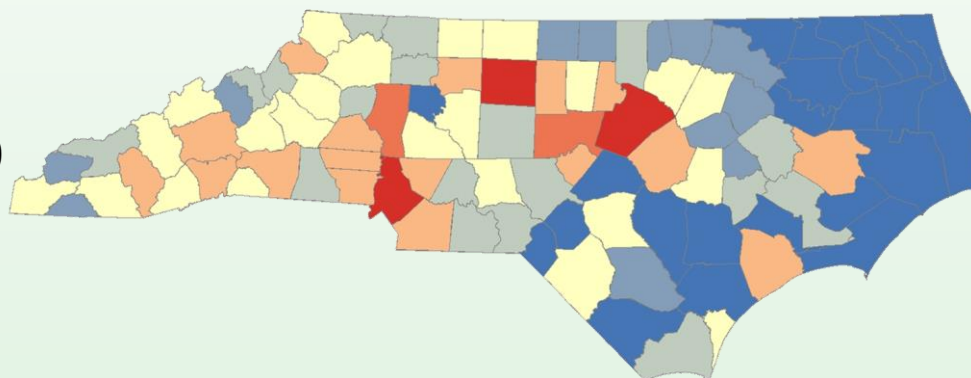


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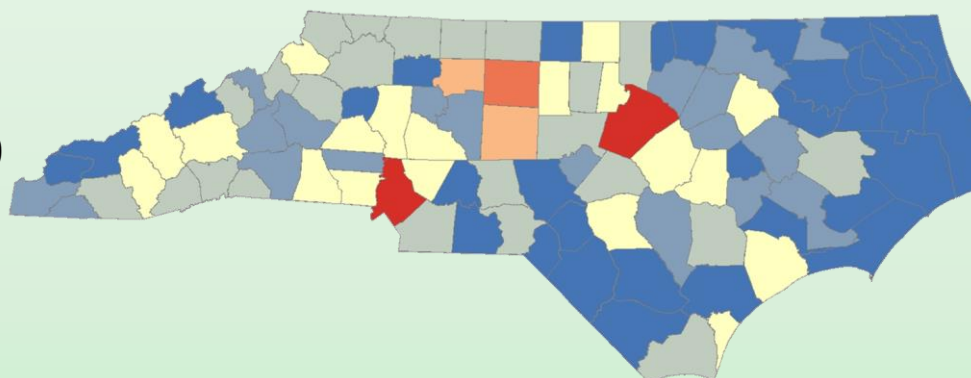


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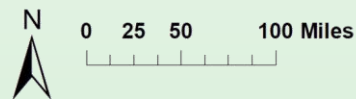
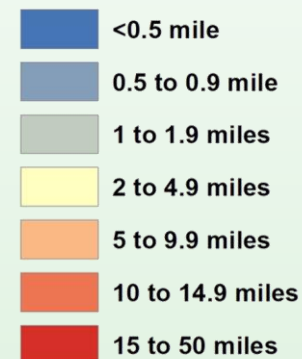
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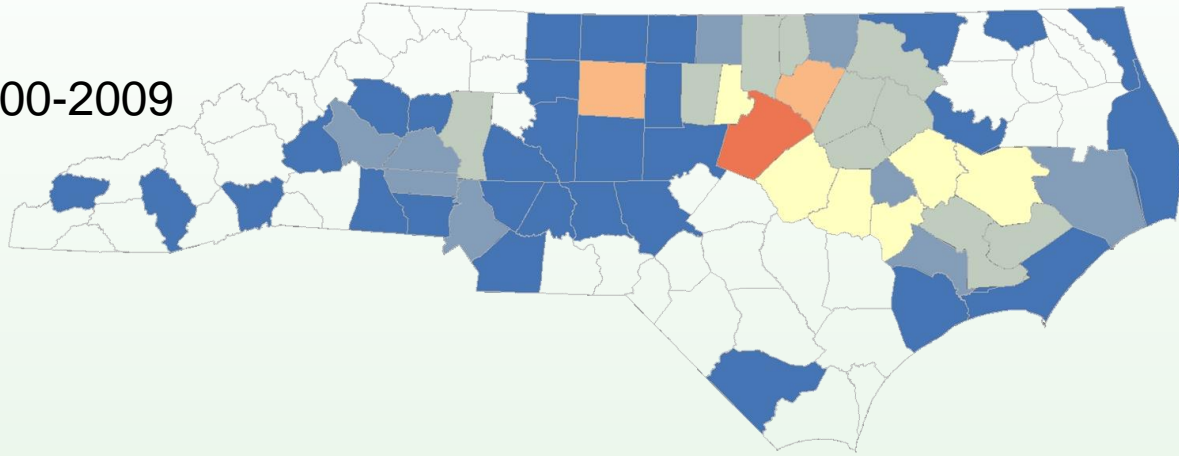


North Carolina Streams: Total Miles of Approved Impacts by county and by decade



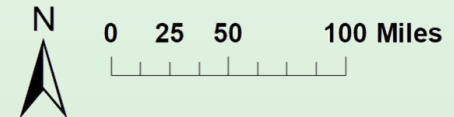
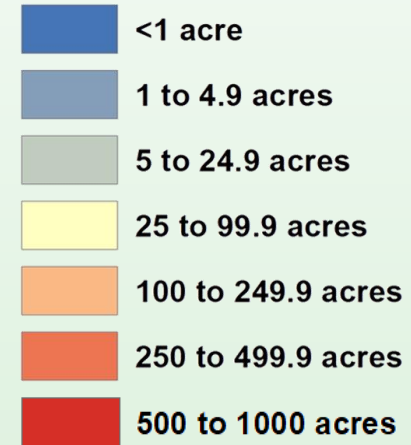
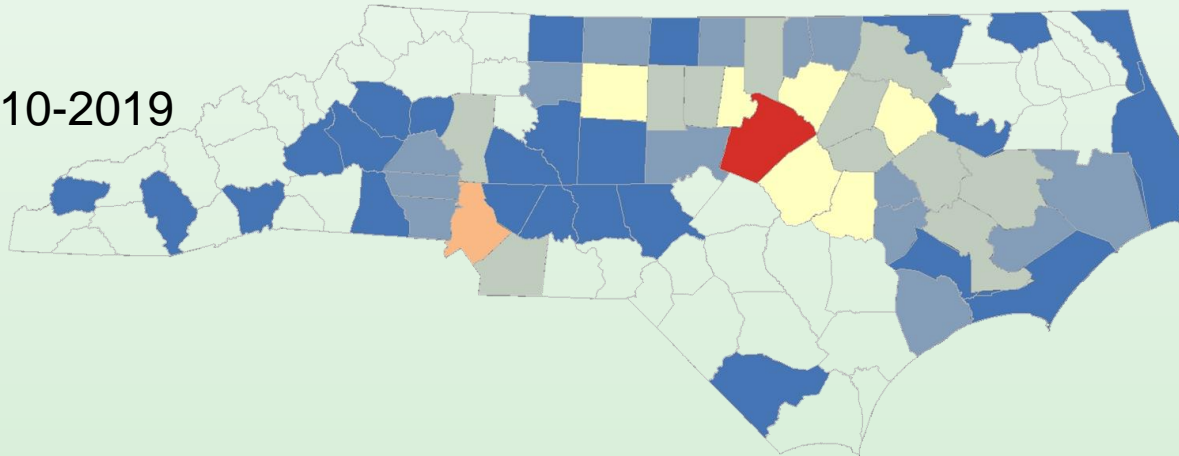
Maps created by Kristie Gianopulos (NC DEQ)

2000-2009



North Carolina Buffers: Total Acres of Approved Impacts by county and by decade

2010-2019



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