

# 2016 Shoreline Management & Dredging Project

Environmental Resource Committee



**We are here to talk about the science of this dredging project and the questions that the science raises.**

- **Andy Coburn and Katie Peek, Program for the Study of Developed Shoreline, Western Carolina University**
- **Roger Shew, Department of Geology, University of North Carolina-Wilmington**
- **Leonard Pietrafesa, Professor Emeritus and Associate Dean of the College of Physical and Mathematical Sciences at North Carolina State University**
- **Mike Giles, North Carolina Coastal Federation**

# **Reasons for Dredging as Defined in the Town's Scoping Application**



- 1. Improve access through referenced waterways and establish a long-term template for maintaining navigation depths.**
- 2. Future construction of future piers or docks by establishing deep water path through the canal.**
- 3. Sediment removal may also improve tidal flushing and help improve nursery habitats within the tributary systems.**

# Two Types of Dredging in This Project

1. Maintenance dredging to maintain channels that have previously been dredged
2. New dredging to create new channels for boats

**Important:**  
Once a new channel is created it will require constant maintenance dredging



# Six Proposed Dredging Sites

## Mary's Creek

1. Maintenance Dredging
2. 1,110 feet

## Turtle's Creek

1. Maintenance Dredging
2. 1,100 feet

## North Shore Drive Feeder Canal

1. Maintenance Dredging
2. 3,500 feet

## North Shore Drive Adjoining Finger Canals

1. Maintenance Dredging
2. 3,600 feet

## Canal Drive Bay Area

1. New dredging
2. 2,100 feet

## Jinks Creek

1. New dredging
2. 6,800 feet



**New Dredging: 1.7 miles or 49% of the project**

**Maintenance Dredging: 1.8 miles or 51% of the project**

# Jinks Creek Divided into Two Areas

1. North End
2. South End
3. These two areas have different dynamics and the substrates are different; they should be viewed as different dredging areas



# South Jinks Creek

1. Inlets move
2. Sand movement associated with flood tide delta movement
3. Kayaking at low tide
4. It is reasonable to consider the South End of Jinks Creek for dredging.



# Dredging of North Jinks Creek Will Create Concerns

1. Environmentally sensitive
2. Economically important
3. Primary Nursing Areas (PNA)
4. 75% of animals harvested in North Carolina for sea food spend at least part of their life cycle in these nurseries.

In 1970s Jinks Creek was determined not to be a PNA

However, the current NCDENR website shows that the banks of North Jinks Creek are classified as PNA

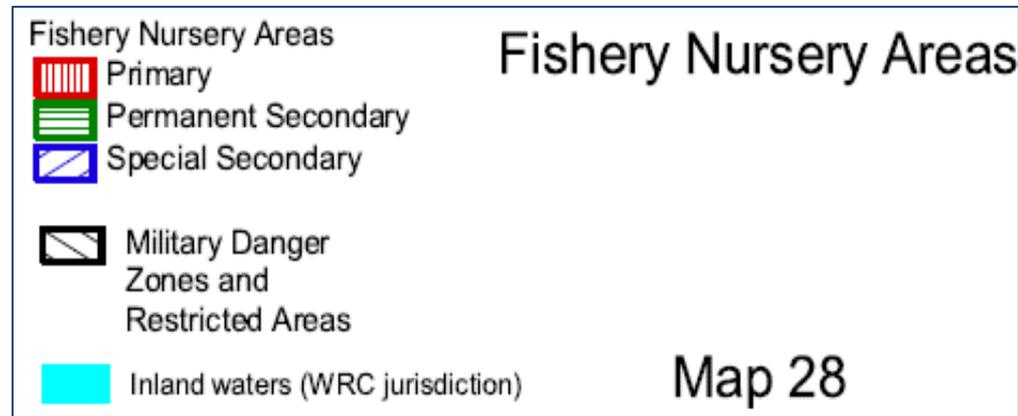
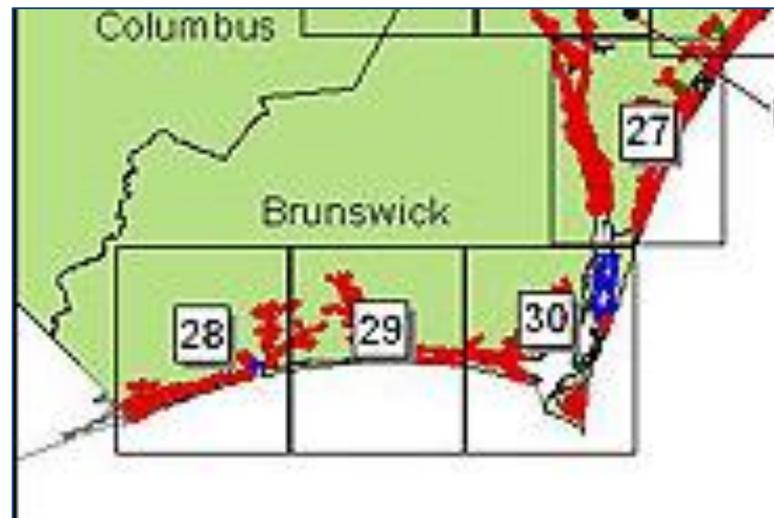




**North Jinks Channel Surroundings, Marys and Turtle Creeks, and the ICW are listed as Primary Nursery areas**

**Oysters beds are found from Riverside Drive to the Intracoastal Waterway**

<http://portal.ncdenr.org/web/mf/primary-nursery-areas>



# Oyster Beds In the North Jinks Creek

**CAMA rules specify: “Navigation channels, canals, and boat basins shall be aligned or located so as to avoid primary, nursery areas, shellfish beds, beds of submerged aquatic vegetation.”**



# Shellfish In North Jinks Creek

1. Mussels and clams are also present in the subtidal waters of North Jinks Creek
2. Shellfish are important to recreational and commercial fisheries
3. Should shellfish beds should be mapped in North Jinks Creek prior to any dredging operations and implications for the future health and maintenance of the shellfish beds be considered ?



# Submerged Aquatic Vegetation in North Jinks Creek

1. Submerged vegetation (grasses) requires light penetration; turbidity and water depth restrict plant growth
2. If the channel is deeper than 6 feet submerged aquatic vegetation (SAV) can't survive
3. SAV provides both shelter and food for fish. Essential habitat for red drum, shrimp and species in the snapper-grouper complex.
4. Helps reduce turbidity by slowing down the movement of water which allows the sediment to settle.
5. The Shoreline Management proposal states dredging of Jinks Creek will be 6 feet below mean low water. This will make the channel significantly deeper than 6 feet.

If dredging is ever considered, should SAVs should be mapped in the North Jinks Creek prior to dredging?



# **Crab Fishery in North Jinks Creek**

- 1. North Carolina the Number 1 producer of blue crabs in the United States.**
- 2. Most economically valuable fishery to the State.**
- 3. Commercial crab fishing occurs in North Jinks Creek and the adjoining tidal creeks.**

**Will dredging have a negative impact on our fishery industries?**



# Impact on Intertidal Ecosystems

1. **Shallow water habitats are complex intertidal ecosystems**
2. **Nutrients from ground water and marsh detritus generate food for shellfish**
3. **Small fish feed on insects, benthic invertebrates and benthic and mudflat algae**
4. **Small fish food for larger fish and shore and marsh birds**
5. **Disrupt food chain birds and animals will no longer live in North Jinks Creek**

**Will dredging of North Jinks Creek have a negative impact on the intertidal ecosystem that birds and fish depend upon?**



## North Jinks Creek: Juvenile Fish and Larvae

1. **Various juvenile species of commercially and recreationally important fish reside in Jinks Creek and its adjacent primary nursery areas**

**Should dredging not occur with juvenile species in residence?**



## Endangered Fish Species in Jinks Creek

1. **Short-nose and Atlantic Sturgeon are endangered anadromous species; No documentation of presence**
2. **Use Jinks Creek and Intracoastal Waterway to reach Cape Fear River for spawning**
3. **Should dredging not occur during spawning migration?**



# Pollution

1. Dredging will stir up any pollutants and fine sediments and redistribute them throughout the water column and onto the marsh.
2. Boat wake will also stir up pollutants. Larger the boat the greater the disruption.
3. Dredge spoil should be carefully handled and carefully placed where there is minimal impacts to nursery grounds and habitats



**Closed Shellfish Sign posted on both side of North Jinks Creek**

# Dredging of Jinks Creek is a New Dredging Project

- 1. New dredging in Jinks Creek will trigger maintenance dredging; repeated dredging creates some stress on species as well as the ecosystems.

What will be the impact on the PNAs by continued maintenance dredging of North Jinks Creek?



# Access to the Intracoastal Waterway from Jinks Creek at Low Tide

1. This picture was taken of a boat entering the Intracoastal Waterway (ICW) from Jinks Creek 30 minutes prior to low tide
2. Can shallow water boats enter the ICW from North Jinks Creek at low tide?



# Shoreline Management Proposal: Future construction of future piers or docks

1. North Jinks Creek is part of a public trust salt marsh and thus there will be no construction in this area.

How would dredging of North Jinks Creek create new pier/dock development?



# **Shoreline Management Proposal:**

## **2. Establish a Deep Water Path Through the Canal**

### **Results:**

- 1. Negative impact on shellfish beds and SAVs**
- 2. Decrease/Impact nursery grounds and the area where fish can take refuge and hide from predators.**
- 3. Impacts on shrimp, blue crab and flounder**
- 4. Increase boat wake erosion in the PNA.**
- 5. Boat wake will also uproot SAVs**
- 6. Is dredging of North Jinks Creek to allow deep water boats access to the ICW worth the potential risk to the ecosystem and fishery industries economy?**
- 7. Should North Jinks Creek only be accessible for shallow water boats, kayaks and canoes?**

# Shoreline Management Proposal:

**3. Sediment removal may also improve tidal flushing and help improve nursery habitats within the tributary systems.**

**Scientists at the Program for the Study of Developed Shoreline at Western Carolina University are not aware of any data that is consistent with this assumption.**

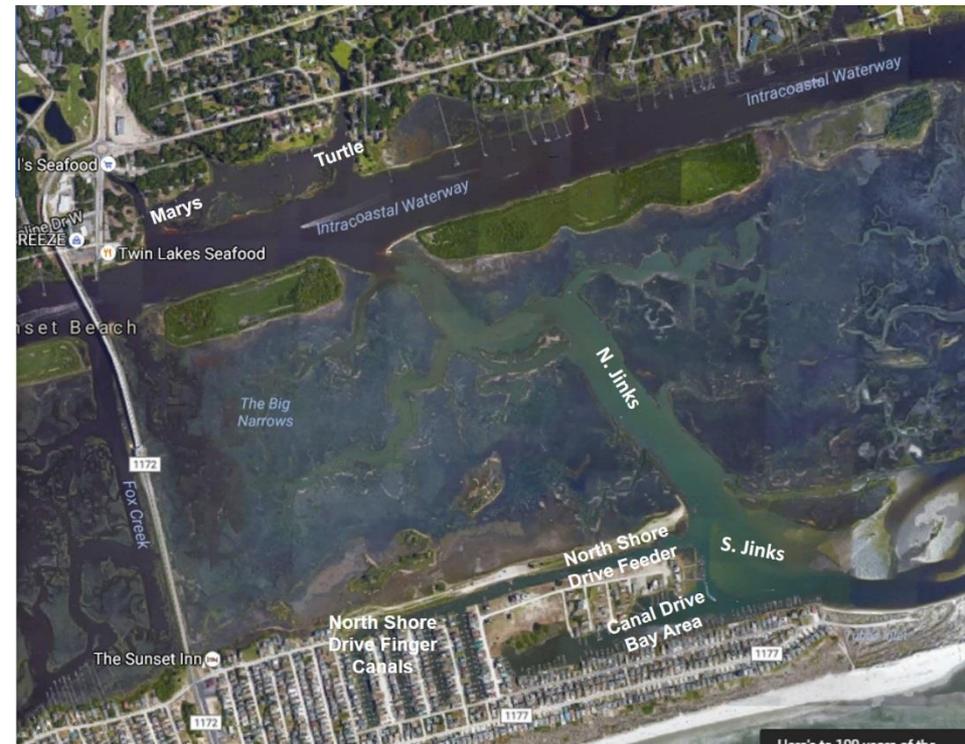
**2015 North Carolina Coastal Habitat Protection Plan: Final Draft by North Carolina Department of Environmental Quality**

- 1. Sedimentation in nursery area is a primary concern.**
- 2. Dredging contributes to an increase in sediment.**
- 3. Shell bottom habitats are damaged by navigational dredging.**
- 4. Major threat to SAV is channel dredging.**



# Shoreline Management Proposal CONCLUSIONS

1. Maintenance and new dredging of South Jinks Creek are reasonable
2. New dredging of North Jinks Creek is problematic: North Jinks is surrounded by PNAs and since North Jinks is the source of waters for these areas it is critical for the PNAs
3. Shallow water boats can now navigate North Jinks Creek at low tide



**QUESTIONS**

