



## Shellfish Lease and Aquaculture Program

Marine Fisheries Commission

November 15-16, Kitty Hawk, NC

*Department of Environmental Quality  
Division of Marine Fisheries*



# *N.C. Shellfish Lease History*

- Since 1858, private use of public trust waters for the production of shellfish by leasing to residents of North Carolina.
- Traditionally used for bottom only, clams and oysters.
- In 1989 legislation was enacted to allow the use of the water column above existing shellfish leases.
- The first water column lease was issued in 1991.
- MFC had authority to issue leases until circa 1995 when that authority transferred to the Department.



*Department of Environmental Quality*



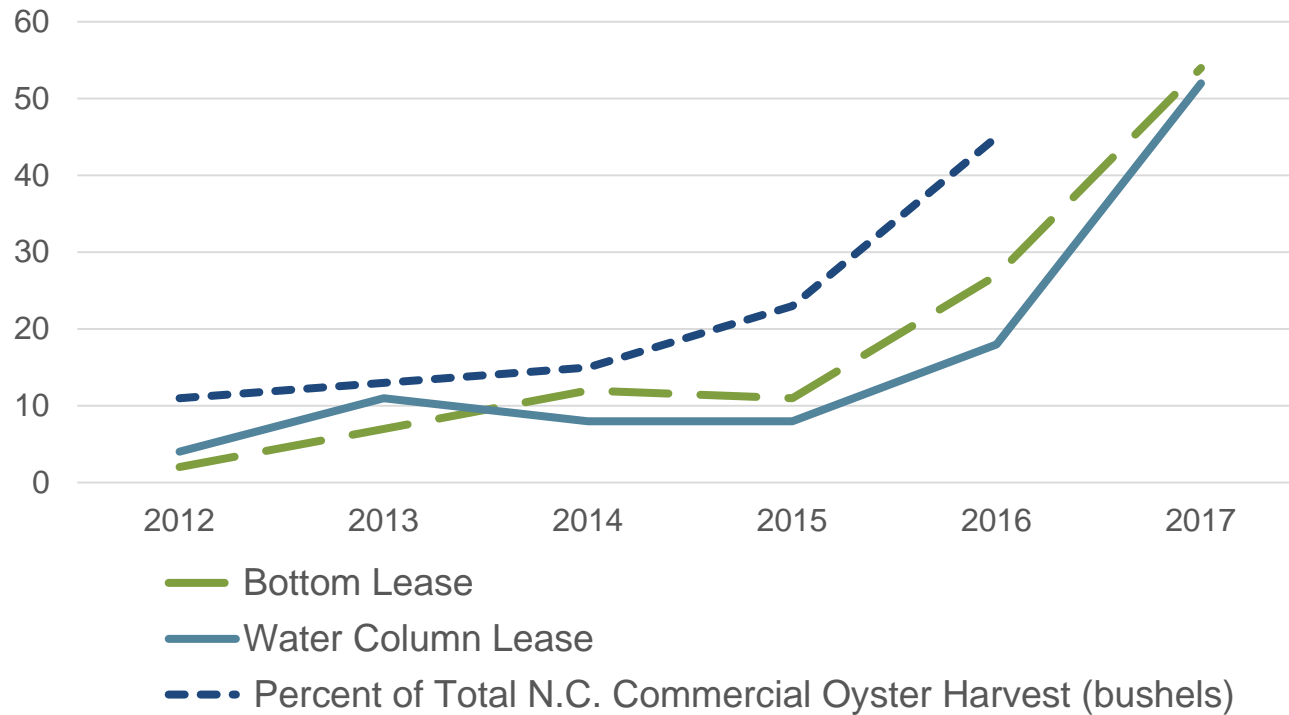
# Players in NC Shellfish Aquaculture



# Increasing Interest and Production



## Bottom & Water Column Lease Applications



# Shellfish Lease Standards

- Authority: G.S. 113-201 through 113-202.2

*“The General Assembly declares that it is the policy of the State to encourage the development of private, commercial shellfish cultivation in ways that are compatible with other public uses...”*

- Six pages of statutes
- General Standards:
  - N.C. Residents Only
  - Not over natural shellfish bed or division shellfish managed area
  - Suitable for purpose of aquaculture
  - Compatible with other uses
  - Cannot block riparian access
  - Not in permanently closed polluted area
- Treated like real property; (can be bought and sold)
- Ten year terms
- One-half to 10 acres/lease; interest in no more than 50 acres
- Not required to be surveyed





- Authority to make rules and take all steps necessary to develop and improve the cultivation, harvesting, and marketing of shellfish in North Carolina from public grounds and private beds.
- May limit the number of acres in any area that may be granted as shellfish cultivation leases
- Rules under 15A NCAC 03O .0201 address:
  - Refining the standards
  - Definitions
  - Production requirements
  - Riparian property consent for leases within 100 feet of developed shoreline
  - Marking
  - Renewal
  - Reporting
  - Cancellation/termination
  - Transfer
  - Protection of private shellfish interest

# *U.S. Army Corps of Engineers Nationwide Permit 48 - Regional Conditions*



- Prior Notice of Construction
- No more than one-third of waterbody except extensive bottom methods
- Submerged aquatic vegetation:
  - 15 percent or less of samples contain submerged aquatic vegetation
  - SAV density is very sparse
  - Sample only during growing season (April – October)
  - Use NOAA consistent sampling methodology
- 250 foot setback from any Coast Guard navigational aid
- Setbacks from Corps maintained channels, spoil islands
- Applicable permits if needed by:
  - Division of Coastal Management
  - Division of Water Resources
- 20 foot buffer from marsh for water column/cage use
- No siting in marked or unmarked navigation channels



## *Nationwide Permit 48: Gear and Activities*

- NWP authorizes the installation of buoys, floats, racks, trays, nets, lines, tubes, containers, and other structures into navigable waters of the United States
- NWP also authorizes discharges of dredged or fill material into waters of the United States necessary for shellfish seeding, rearing, cultivating, transplanting, and harvesting activities
- Rafts and other floating structures must be securely anchored and clearly marked
- Management Plan with applicable gear/methods is in DMF lease application
- Some markers or gear may require additional permitting



Floating upwelling system (FLUPSY)





# Leases and Franchises

- Shellfish Lease (Bottom and Water Column)
  - Over public trust waters
  - Cannot be on productive bottom
  - Rent charged
  - Can be terminated
- Franchise (Bottom and Water Column)
  - Over recognized submerged land claim
  - Can be on productive bottom
  - Concentrated in Onslow, Pamlico counties
  - No rent for bottom lease
  - Can be terminated

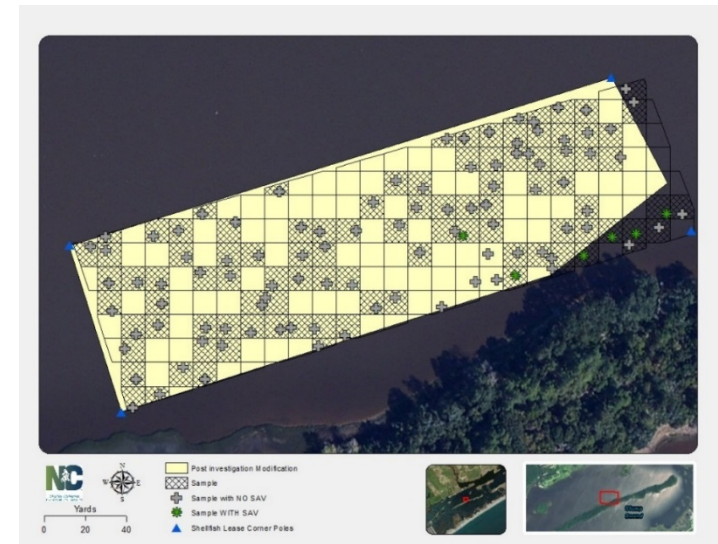


Type	Number	Acreage
Franchise	51	520
Bottom Lease	183	1,164
Bottom Lease with Water Column	41	129
Totals December 2016	275	1,813
Estimated Totals December 2017	320	1,910



# Site Inspections for Proposed Leases

- Random grid method
- Shellfish presence
- Submerged aquatic vegetation
- Measure buffers
- Verify markers, acreage
- Other factors
  - Nearby habitat
  - Navigation, docks
  - Unmarked channels
  - Fishing activity
  - Other potential problems
- Can take up to a week to complete
- Staff
  - Use both lease and mapping programs
  - Manager
  - Administrative Assistant
  - Biologist
  - Four technicians



# Types of Shellfish Leases: Bottom Lease



- **Bottom Lease:**

- Cultch or clam on bottom
- Gear up to 18 inches off bottom\*
  - *Does not address clearance*
- 10 bushel per acre production requirement
- Planting requirement
- \$200 application fee
- \$10 per acre rent



Shell cultch

Clam netting



18 inch bottom cage



# Types of Shellfish Leases: Water Column Lease



- **Water Column Lease:**

- Amends a Bottom Lease
- Gear greater than 18 inches off bottom; or
- Floating gear
- 40 bushel per acre production requirement
- Planting requirement in lieu of harvest
- \$100 application fee
- \$100 per acre rent

Gear taking up entire water column



Floating gear



# Culture Methods

- **Extensive**

- Clams, oysters
- Low yield/acre, lower cost
- Minimal equipment
- Moderate labor
- Volume market/bushel
- Clam seed, spat and spat on planted shell
- Highly navigable



- **Intensive**

- Mostly oysters
- High yield/acre, higher cost
- Significant equipment needs
- Intensive labor
- Half-shell market/count
  - Diploid
  - Triploid (sterile, faster growth potential)
- Limits navigation



# *Intensive Shellfish Aquaculture Gear Bottom Lease*



Bottom Cages  
(Triple stack configuration is 18 inches)



Rack and Bag



Methods typically use oyster seed



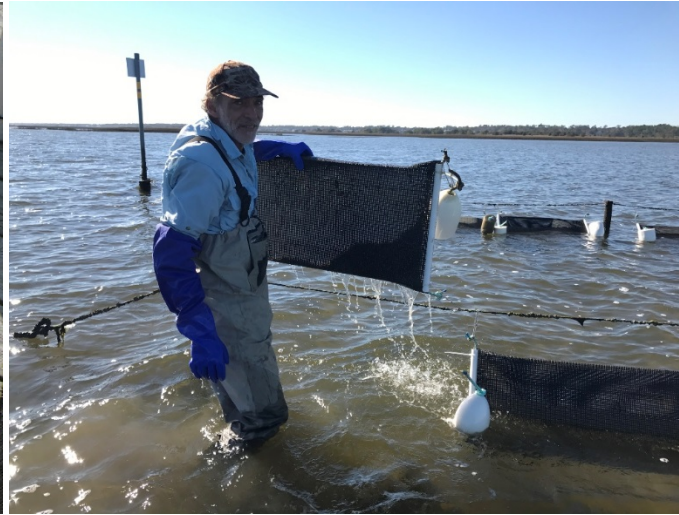
# Intensive Shellfish Aquaculture Gear Water Column



Taylor Float



Lentz™ system



OysterGro™



Flip Bags

Adjustable  
Long Line



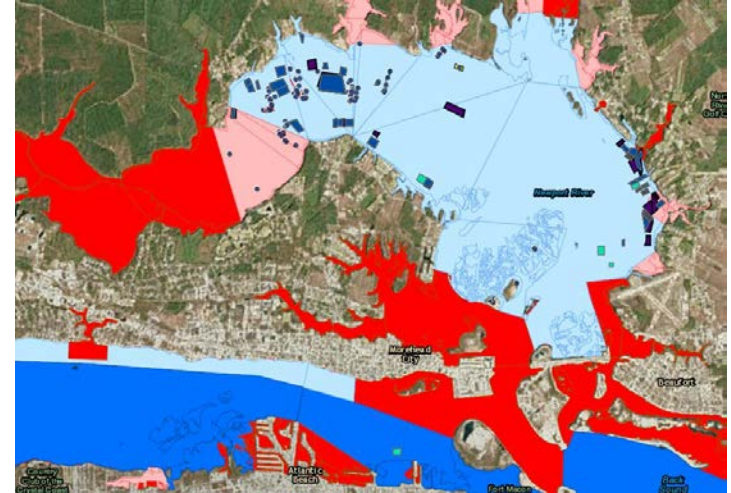
# Siting Criteria for Applicants

## Criteria

- No pre-approved areas
- Siting is the applicants responsibility
- Considerations include:
  - Wave energy, depth, current
  - Boating, fishing, recreation conflicts
  - Adjacent land use
  - Water quality
  - (salinity, oxygen, etc.)
  - Restrictions, closures, moratoriums
  - Access – working/protection from theft

## Resources

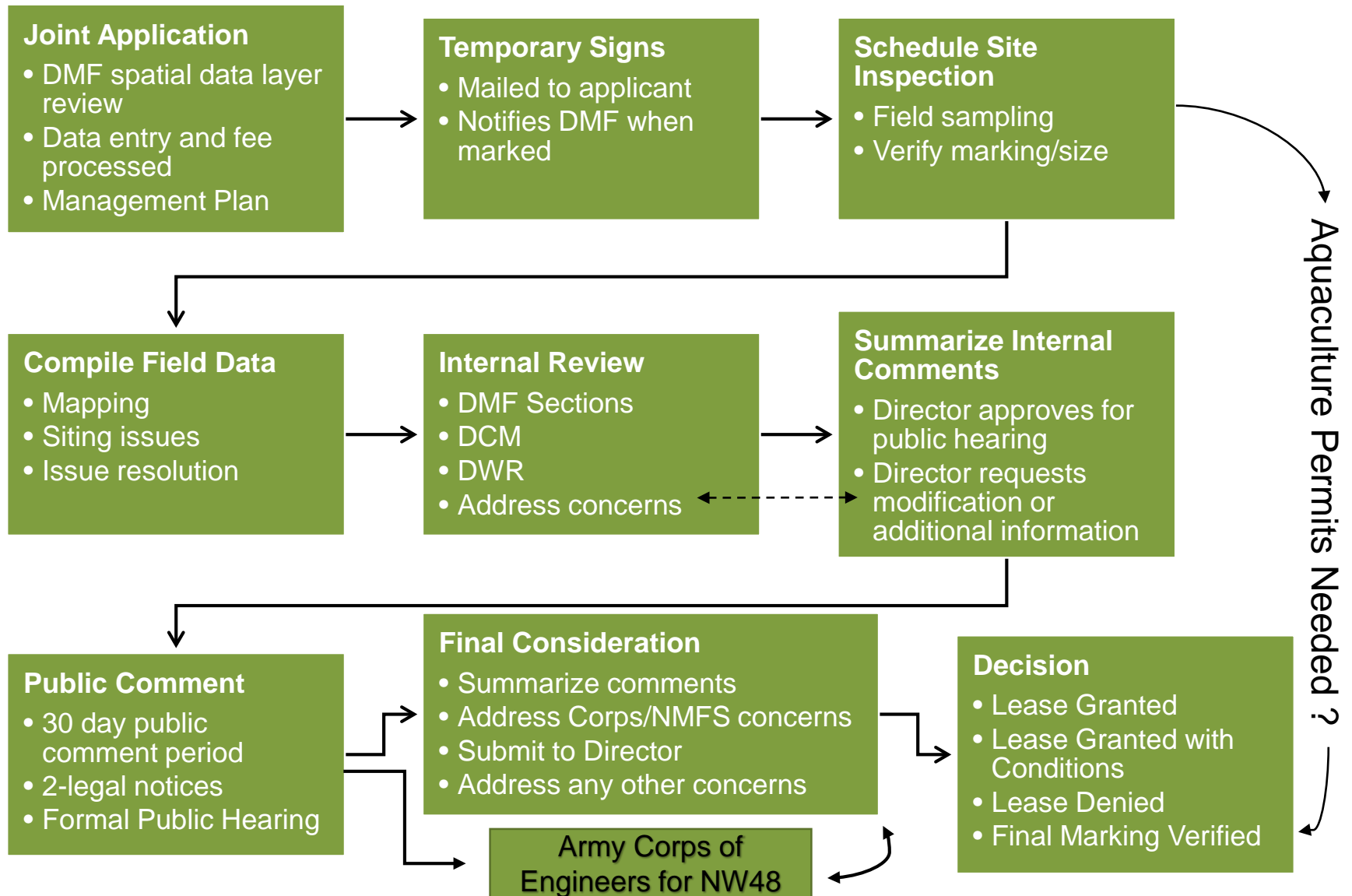
- Consultation with DMF, Sea Grant
- NC Shellfish Growers Association, other growers
- The North Carolina Shellfish Siting Tool -UNC Wilmington  
<http://uncw.edu/benthic/sitingtool/>



Polluted area map



# Shellfish Lease Application Process





## Rule:

- All corners (we try to limit to 6)
- Boundary markers every 50-150 feet
- Corner markers with sign identifying lease number and name
- Water column leases marked with two yellow buoys, or as approved by division
- *It is unlawful to exclude or attempt to exclude the public from allowable public trust use of navigable waters on leases...(15A NCAC 030 .0205)*

## Nationwide Permit 48 conditions:

- Developed in coordination with DCM and DMF
- Markers greater than 4 inch diameter may require CAMA permit (DCM)
- Integrated DCM one-third width requirement into siting
- 20 foot buffer from vegetated marsh



# *Benefits*

- Increase commercial production of shellfish (particularly oysters)
  - 2016 – Aquaculture Oysters accounted for 45% commercial production
  - 2016 NC oyster aquaculture farm gate value \$1.6 million; (Virginia: \$15+ million)
- Coastal county jobs
- Water quality enhancement
  - Filter 25-40 gallons/day
- Habitat function
- Ecosystem services, nutrient removal
- Tourism; “Oyster Trail”
- Spawning potential (diploids)
- Supports working waterfront communities

## *Challenges*

- Opposition to lease siting/lack of zoning
- Navigation hazard over bottom gear/cages
- Theft
- Pathology lab/expertise needed
- Economic information on scale lacking
- Potential for litigation expense to overwhelm program
- Terminating non-productive leases
- Public Health Issues/summer harvest; *Vibrio sp.*
- Fees and rent do not cover cost to administer the program
- Limited staff and funding
- Experience level of applicants varies
- Seed/Nursery availability
- Gear cleanup/abandonment

# *Potential Solutions*

- Spatial Planning (NOAA proposal)
- UNC-Collaboratory developing State Shellfish Mariculture Plan
- Address vague legal standards:
  - Existing use, heavy recreational use
  - Compatibility with other uses
- Address navigational issues with bottom leases:
  - Minimum clearance requirements for submerged gear
  - Extensive bottom method only areas
  - *Or:* restrict navigation across leases
- Explore Aquaculture Enterprise Zones
- MFC explore acreage limits
- May need to revisit existing moratoriums (Core Sound, Brunswick County)





*Questions?*