North Carolina Coastal Federation

NCCF Oyster Restoration: Williston Creek

Funded by

Albemarle-Pamlico National Estuary Program

and

Fish America Foundation

Presented by Rachael Wagaman, Volunteer Coordinator

NCCF Oyster Restoration: Williston Creek

Problem: Polluted runoff is responsible for closing thousands of acres of once productive shell fishing grounds all along the N.C. coast.

The state's oyster population has declined by more than 90% in the last 100 years.

NCCF Oyster Restoration: Williston Creek

Project objectives:

- Create over two acres of oyster habitat
- Seed the reefs with 300,000 juvenile oysters yielding 150,000 adult oysters
- Enhance and document water quality.
- Train and engage 60 adult volunteers and 25 students.
- Reach at least 1,500,000 citizens.

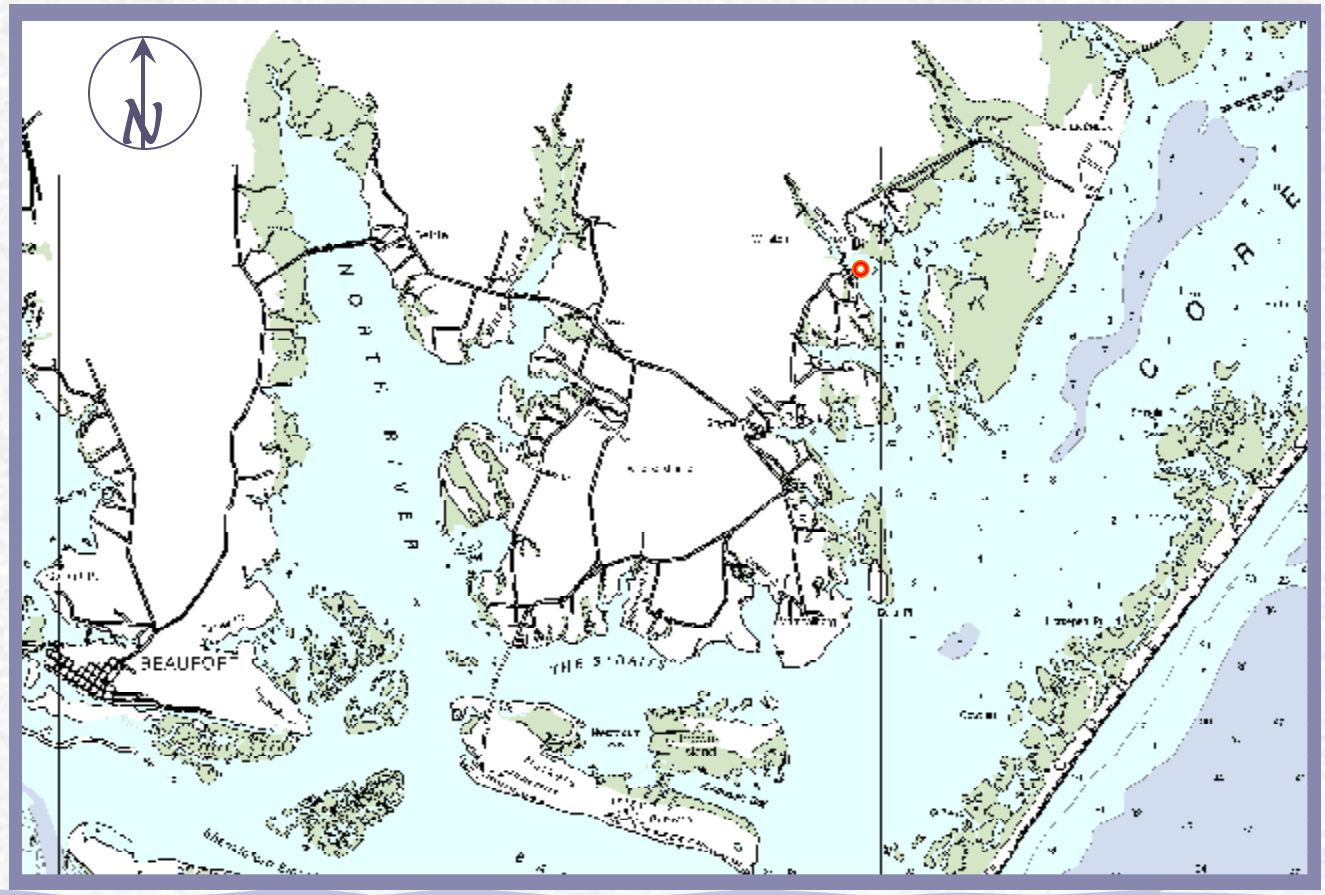
NCCF Oyster Restoration: Williston Creek

Project Benefits:

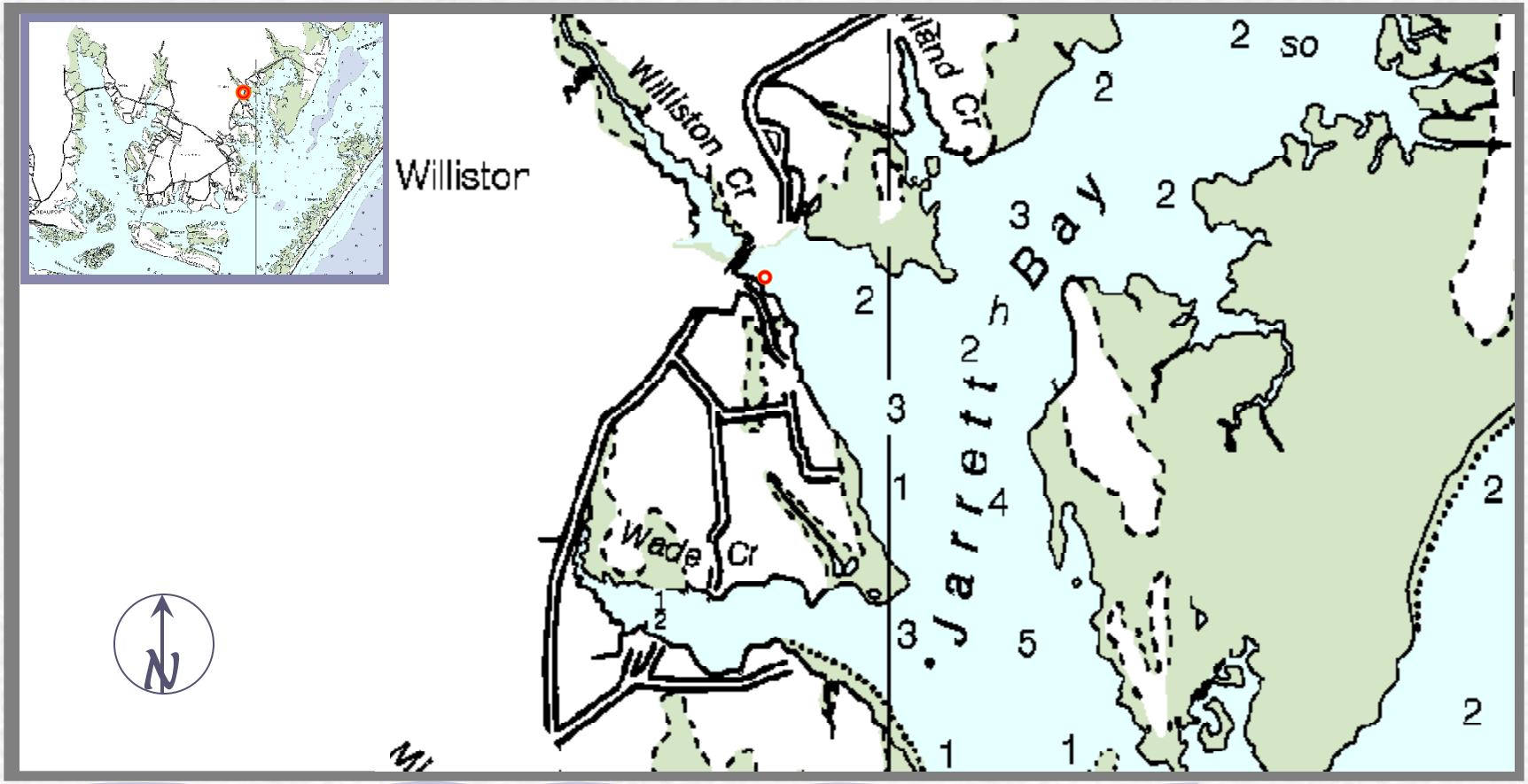
- Restored oyster reefs provide:
  - Biogenic habitat
  - Ecological function for oyster populations

- First oyster habitat project in conjunction with the restoration of North River Farms

Location of Oyster Restoration Area



Location of Oyster Restoration Area



Location of Oyster Restoration Area

Creation of the Reef

5000 bushels of recycled shell were spread on June 30th by NC Division of Marine Fisheries to create over 2 acres of reef habitat area

Oyster Relay

300 shell bags were filled with the help of volunteers…

…the bags were placed in tanks and oyster larvae were introduced…

…and the bags and the spat were placed in the sound to mature.

Seeding the Reef with Spat

The set shell was transported to the site by boat and dispersed on July 26th.

Monitoring- Oyster Cages

On September 10th, local volunteers and students from Carteret Community College installed 12 oyster cages at the site.

Monitoring- Reference Site

On September 23rd, students from Croatan High School monitored the reference site, located about 300meters northeast of the site.

Monitoring Program

- Includes pre- and post-restoration monitoring of site
- Reference site
- Biannual monitoring events
- Will continue for 2 years following restoration

Monitoring Program

7 structural & 5 functional parameters

- Structural
  - Rugosity
  - Footprint
  - Sedimentation
  - 4 water quality (turbidity, temperature, dissolved oxygen, salinity)
- Functional
  - Population size
  - Density
  - Size of oysters
  - Associated fauna
  - Settlement/ recruitment

Monitoring Program

- Structural
  - Rugosity- measure of vertical relief- chain method

Monitoring Program

- Structural
  - Footprint- area covered by the reef- probe pole method

Monitoring Program

- Structural
  - Sedimentation- deposition or erosion- buried sediment tile

Monitoring Program

- Structural
  - Water Quality
    - Turbidity- secchi disc
    - Temperature- thermometer
    - Dissolved oxygen- CHEMets kit, increments of 1ppm
    - Salinity- refractometer

Monitoring Program

- Functional - Cages
  - Population size
  - Density
  - Size of oysters
  - Associated fauna

Monitoring Program

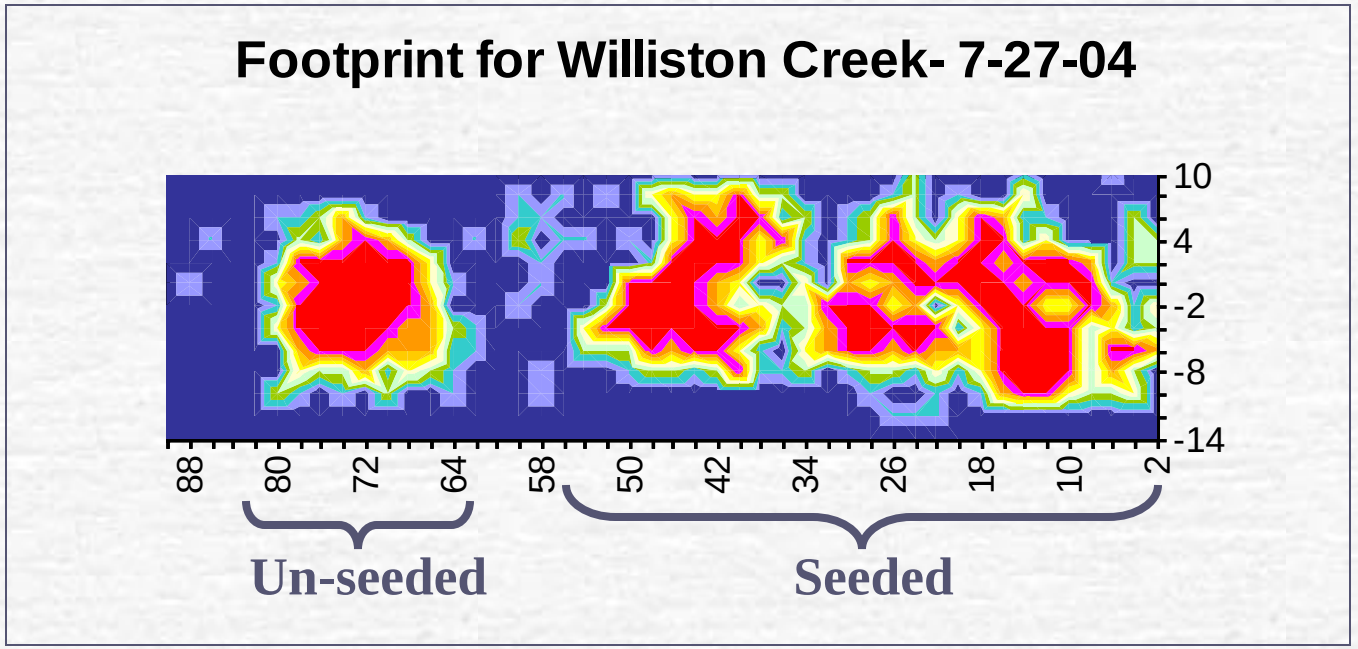
- Functional
  - Settlement/recruitment

Additional Experimentation

- Evaluation of quadrats versus cages

Additional Experimentation

- Evaluation of quadrats versus cages
- Evaluation of effectiveness of seeding the reef



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- Create over two acres of oyster habitat ✔
- Seed the reefs with 300,000 juvenile oysters yielding 150,000 adult oysters ✔
- Enhance and document water quality. *ongoing*
- Train and engage 60 adult volunteers and 25 students. ✔
- Reach at least 1,500,000 citizens. ✔