Baseline Measurements of Eastern Oyster Populations (*Crassostrea virginica)* in Delaware Inland Bays

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RENO
THE BIGGEST LITTLE CITY IN THE WORLD


SLUG
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Oyster Benefits

Ecological

- Biological engineer
- Decrease water turbidity
- Algae population control
- Nutrient sequestration
- Benthic nutrient deposits
- Carbon sink
- Increase diversity

Societal/Economical

- Storm surge protection
- Coastal sediment stabilization
- Water filtration
- Healthy protein source
- Creates jobs
- Increase fish abundance

Delaware Inland Bays

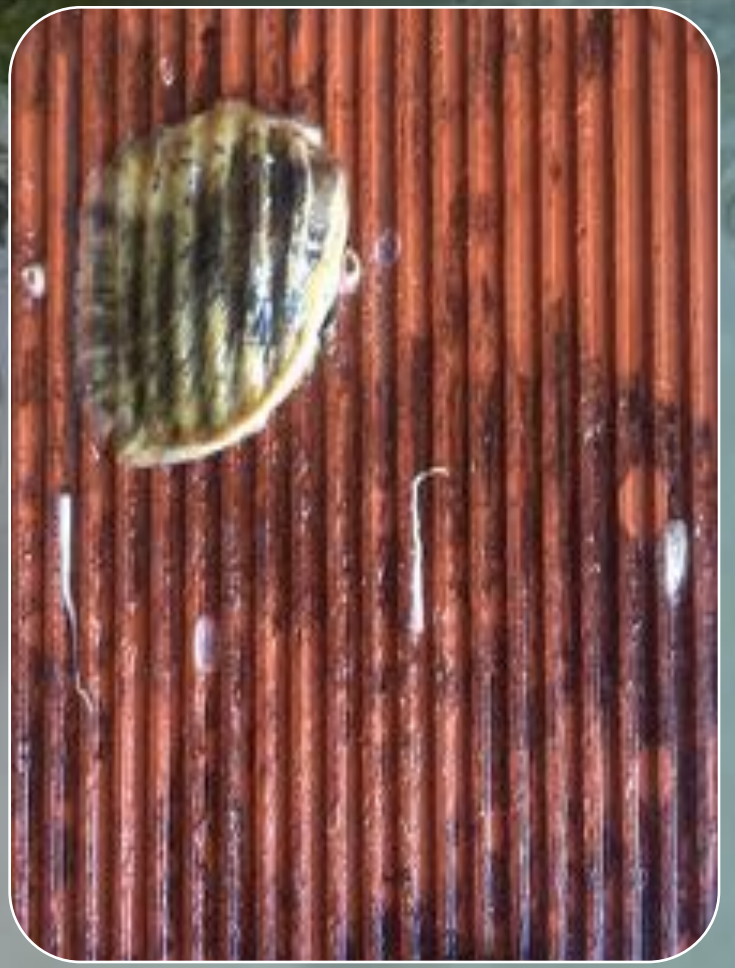
- 343 acres approved to be leased.
- Wild population of oysters is poorly studied.
- Goal is to collect baseline population data prior to commercial aquaculture.

Objectives

- Measure the genetic diversity of native populations in LAB and IR+RB, at specific markers, to search for signatures of hatchery lines.

- Measure current abundance and distribution of native oysters throughout the DIBs

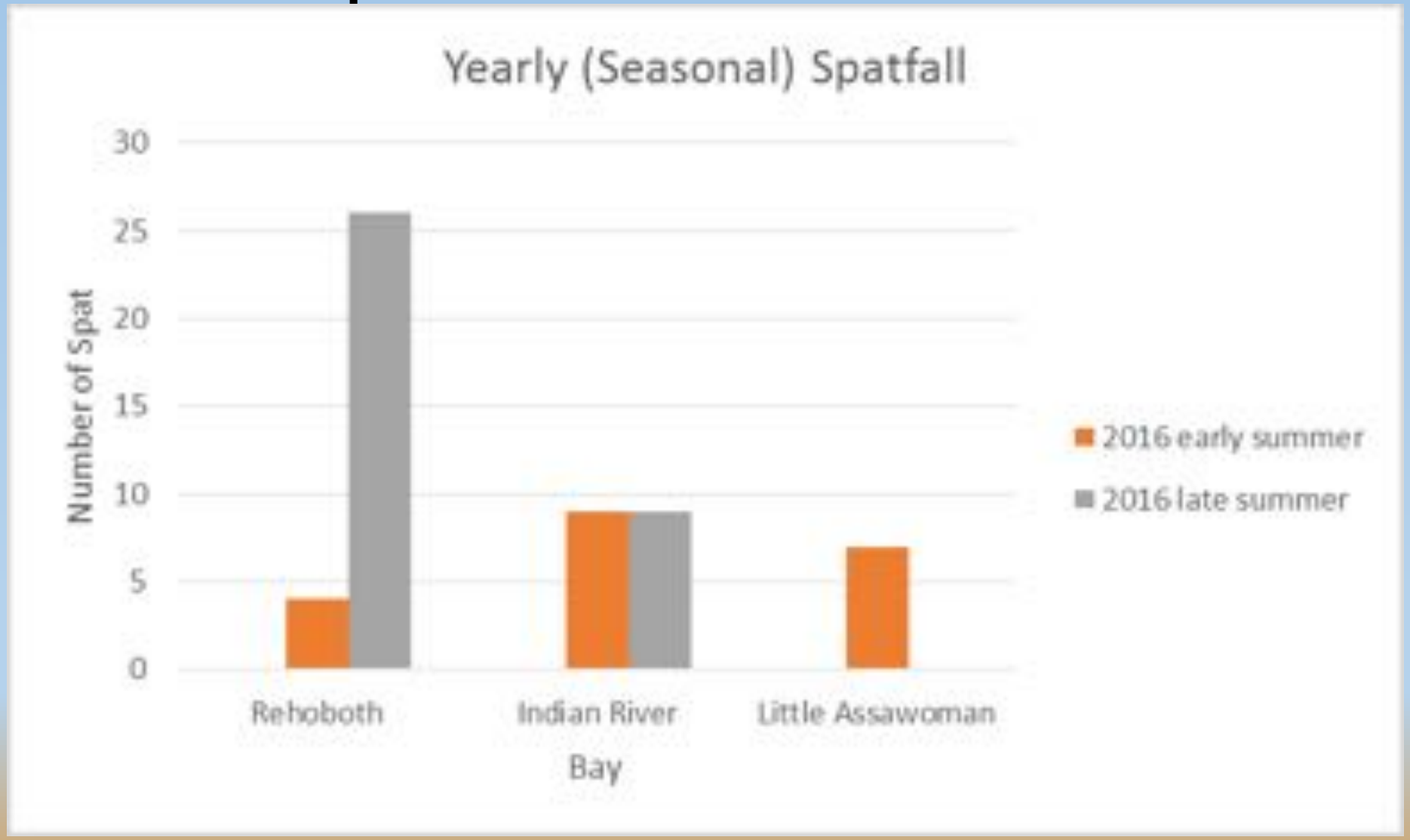
Spat Collectors Design



Spat Collectors

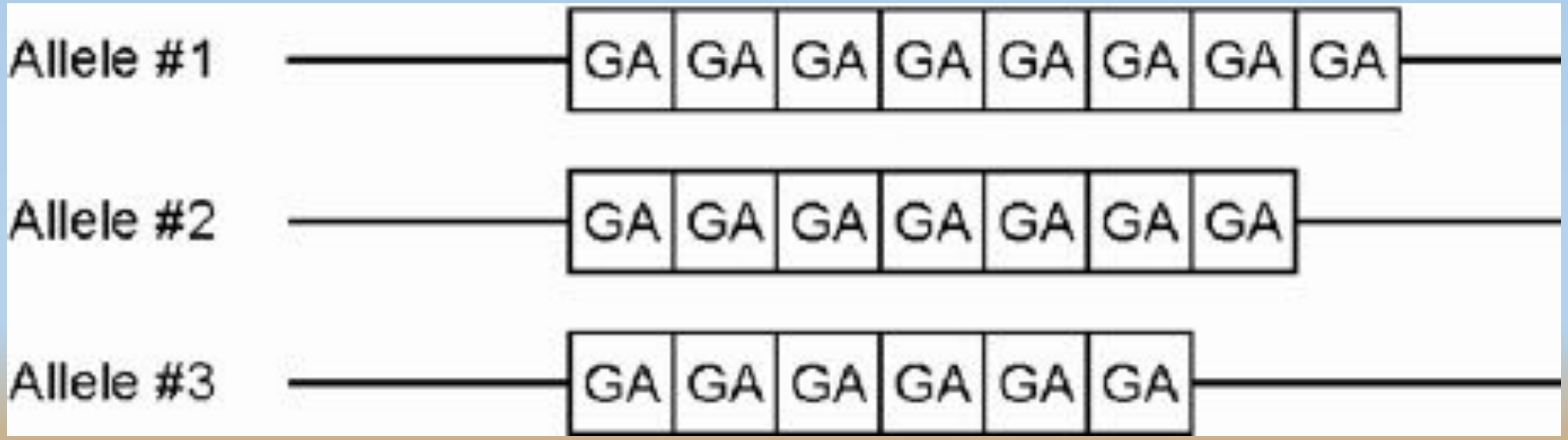
- 4 locations per bay; 3 spat collectors at each site.
- Identify locations where settlement is occurring.
- Use wild set spat for genetic microsatellite analysis.

Spat Collection Results



Microsatellite Analysis

- Regions amplified are short base pair repeats.
- Highly polymorphic regions are required to compare frequency differences.



Surveys

- Rip Rap using swath methods to acquire densities.
- Quantify physical characteristics
- Goal is to develop repeatable methods for monitoring .


RB-2
RB-1
IR-3
IR-1
IRIN-N
IRIN-S
Oyster
Density(Oysters/m^3)
0.120000
0.120001 - 0.220000
0.220001 - 0.540000
0.540001 - 1.110000
1.110001 - 4.520000
0
1.25
2.5
5 Kilometers

Baseline and Long Term Data

- Long term environmental data is receiving less funding, yet contributing more to development of policy and ecological theories (Hughes 2017).
- Essential knowledge in order to mitigate effectively to environmental change.
- Require clear goals, robust design, evaluations, and rigorous documentation.
- Works best with inclusive participation and collaboration by the scientific community.

Next Steps

- Complete surveys and test new primer candidates for highly polymorphic regions.
- Get 50 oysters from hatchery strains that have been used for restoration in Assawoman Bay.
- Gather, combine, and interpret water quality to begin to address factors driving distribution of oysters

Implications

Better inform managers, policy makers, and conservation groups about their oyster natural resources.

Understand impacts of hatchery lines to local oyster population dynamics


SUNDAY
JULY
17TH
MAKE THE
OYSTER GREAT
AGAIN!