

Center Oyster Efforts: Oyster Buy-back Program, Spat Monitoring, & Reef Performance at One-year

February 6, 2026

Presentation to the Center for the Inland Bays, Scientific and Technical
Advisory Committee

Presented by Meghan Noe Fellows; Work performed
by staff, interns, volunteers and partners



DELAWARE
CENTER FOR THE
INLAND BAYS
preserve • protect • restore

2021

Oyster Spat and Restoration in the Inland Bays

An Opportunity For A Partnership Between Growers and Restoration Practitioners

2025

Oyster Restoration in the DE Inland Bays

Pasture Point Reef
Construction

Science Technician: Morgan Krell



2026

Piloting Low-Cost Oyster Spat Monitoring Devices in the Inland Bays

Morgan Krell, Jessica Janney and
Meghan Noe Fellows



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- Buy-back
- Spat collecting
- Reef update

Oyster “Buy-back” idea presented in 2021

“Uglies Purchase Program” (Concept)

- Growers set aside overly set oysters
- A few times a year the CIB collects these oysters from each grower
- Pay the growers for the uglies
- Deploy the uglies on reef projects to fulfill ecological functions like filtration and habitat creation

Funds for first year capped at a few thousand dollars, will need to determine what level of spat set is desired, what exact purchase price will be

Oyster “Buy-back” idea implemented in 2025

Funding

TNC SOAR

EQIP

Voluntary Donations

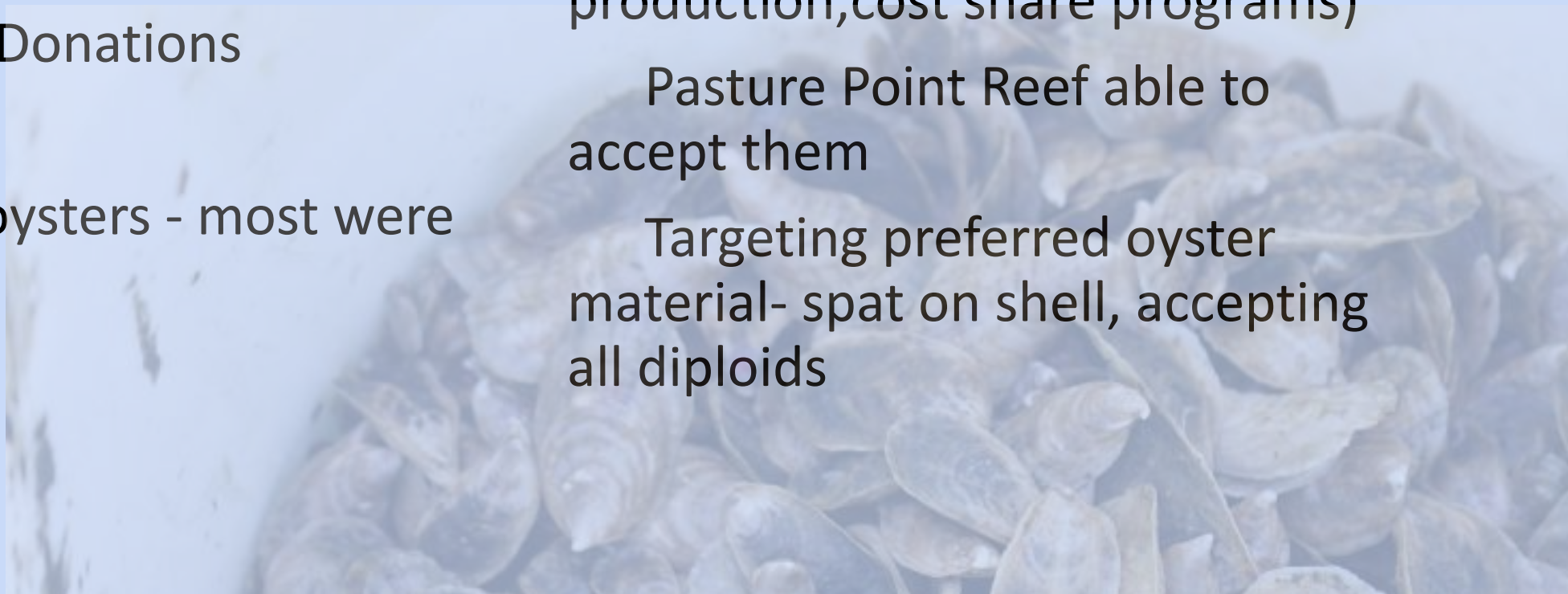
Over 66,000 oysters - most were donated!

What Changed?

Availability of diploid oysters (established farms; UD Hatchery production, cost share programs)

Pasture Point Reef able to accept them

Targeting preferred oyster material- spat on shell, accepting all diploids



Oyster “Buy-back” ideas for improvement

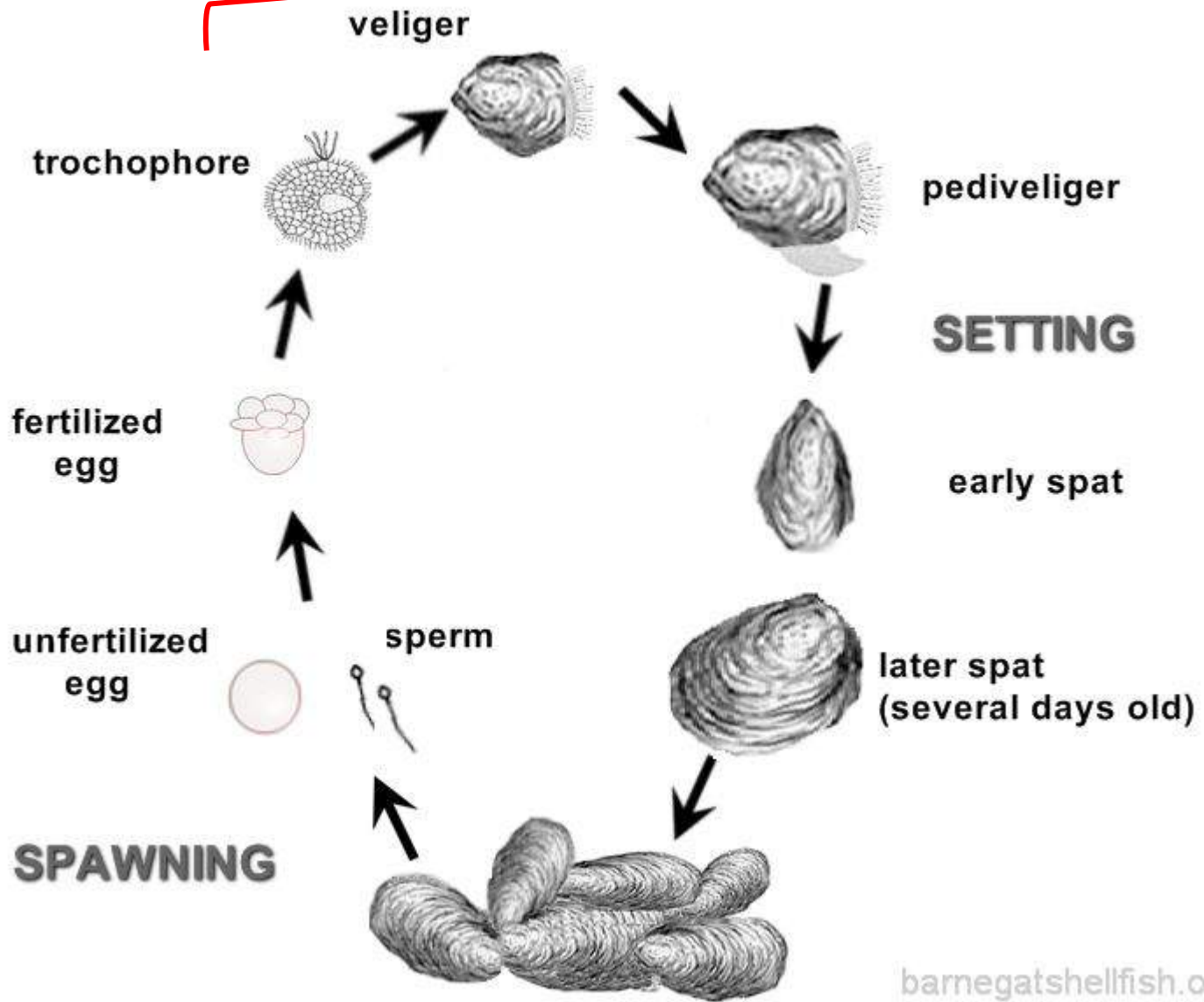
- Secure steady funding source
- Currently EQIP wants to see 1 year of monitoring before buying more oysters
- Target spat on shell oysters



Why the focus on spat?

Spat formation

~ 2-3 weeks in the water column (can travel far during this time)





Spat Issues For Growers

- Set oysters can ruin value of raw bar market oysters
- Problem seen in many other estuaries in region



<https://www.delawarepublic.org/post/dnrec-taking-more-aquaculture-applications-could-bay-bacteria-hold-people-back>



CIB Goal: Restore Native Oyster Populations

- Oyster Gardening
- Advocating for and promoting aquaculture
- **Reef Creation**

Spat are Critical

- Without Spat continually supplying reef with new oysters as old oysters die, no reef can be sustained
- Seeing signs of increased spat in past few years



Potential reef sites

- Cultch Piles
 - Require subsampling/excavation
 - In deeper waters - scuba or dredge
- Living Shorelines
- Concrete Structures
 - WADs, Oyster Castles, Cinder Blocks, etc.



Shell Bags

- Benthic assessment
- Risk of burial
- Difficult to locate
- Natural analog

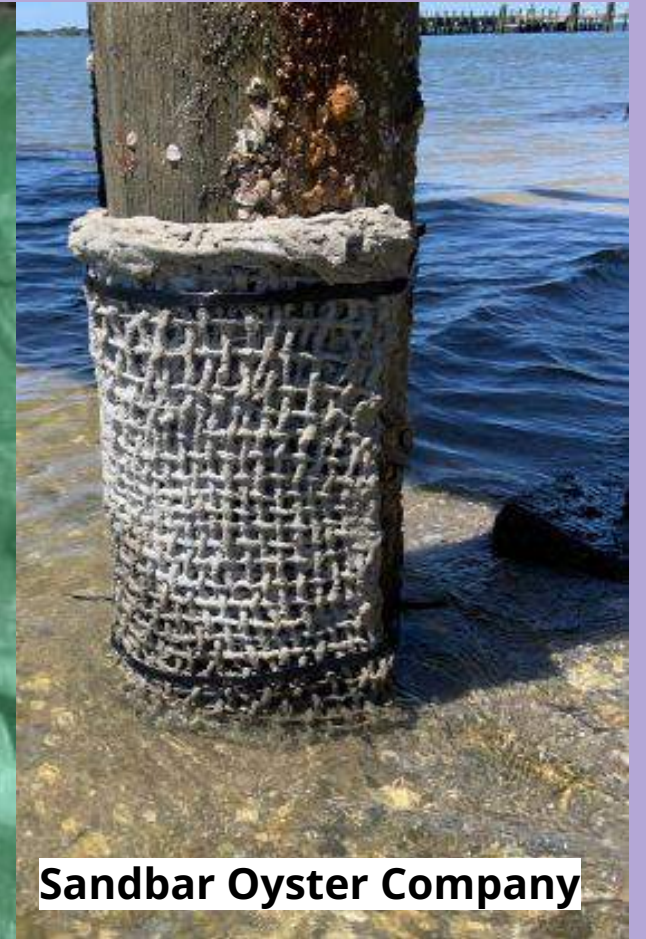


Natural fibers soaked in concrete

- Customizable
- Easily retrofitted to existing structures
- Can be impregnated with crushed shells
- Designed to be either left in place or moved to a more suitable restoration location once spat set occurs



Krell Modified Design

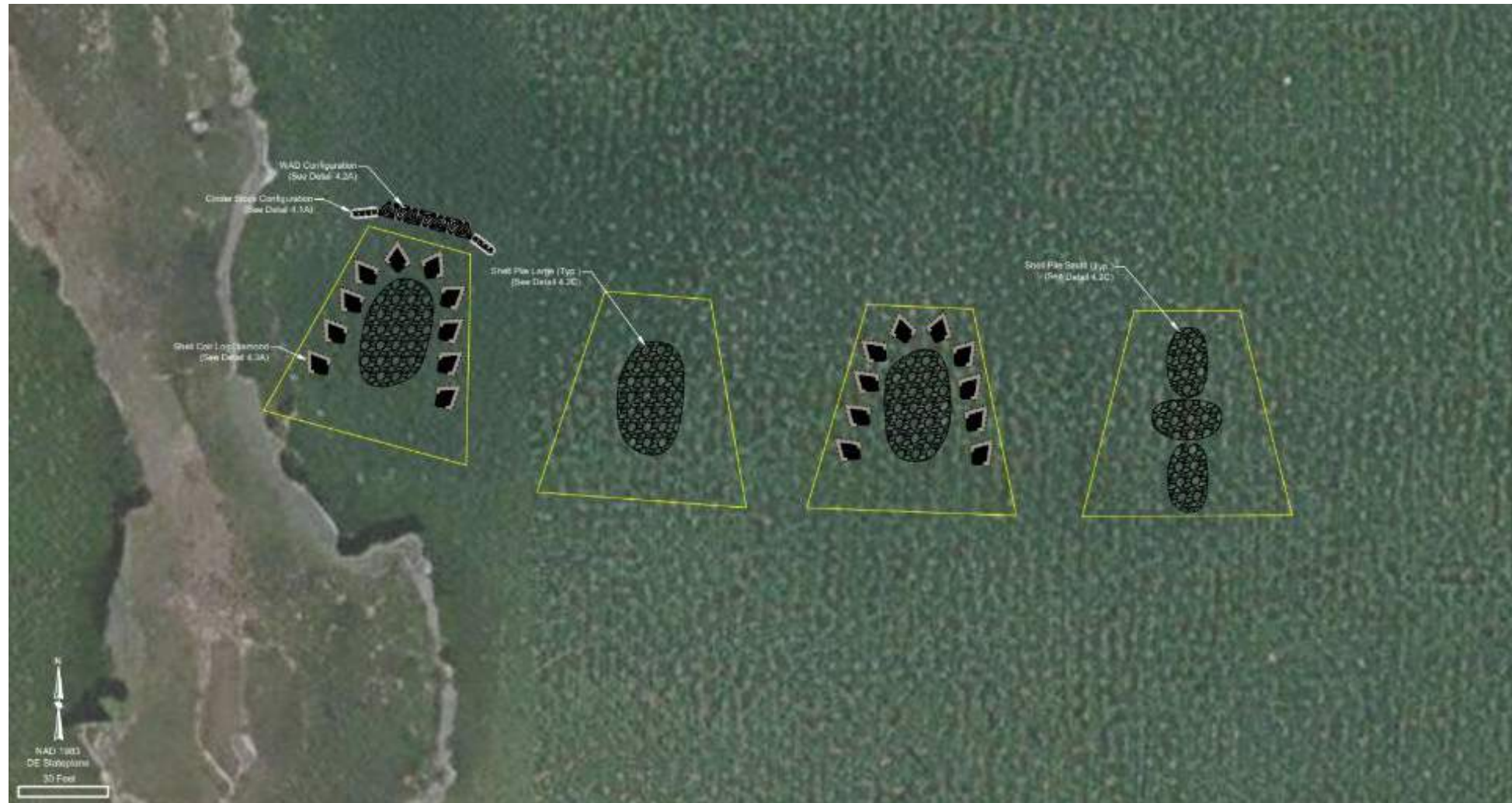


Sandbar Oyster Company

Comparison of Factors Influencing Spat Monitoring Gear Selection

	Reef Site Cultch	Reef Site Concrete	Shell Bag	Bottle String	Shell String	Natural Fiber + Concrete Slurry
Benthic Recruitment	✓		✓			✓
Vertical Evaluation		✓		✓	✓	✓
Reuse as seed oysters				✓		
Reuse as spat on shell	✓		✓		✓	
Requires Attachment				✓	✓	✓
High Energy	✓	✓	✓			✓
Soft Sediments	✓	✓		✓	✓	✓
Evaluation in lab	✓		✓	✓	✓	✓
Ease of replacement			✓	✓	✓	✓

Reef Design



Reef Construction



February 2025





Pasture Point Reef at End of Year 1

Settlement of loose shell piles

Wild spat detected on reef and spat collectors - at least two events

Before winter 2025 stocking (Goal is 100 oysters/meter²):

All subunits - Average of 54.75 \pm 21 oysters/meter²

Stocked subunits - Average of 67 \pm 25 oysters/meter²

Average live oysters 33%; real live count estimate **18/m²**

Additional associated fauna in 2025: silver perch, oyster toadfish, summer flounder and spotfin butterfly fish; more female blue crabs captured

Oyster condition reef < lease, 25% of reef oysters were 'high quality';
pathogen free

Thank you

Morgan Krell, Andrew McGowan and Doug Janeic (& Northland Airboats)

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DNREC - Community Water Quality Improvement Grant

EPA 320 - National Estuarine Program

The Nature Conservancy

Jess Janey & Matt Buczik Shellfish Specialist Interns

Ed Hale & Alyssa Campbell UD

Delaware Cultured Seafood, Arrowhead Point Oysters, Inland Bays Shellfisheries,

Nancy James Oysters, Delaware Delicious Oysters

Where are our Spat Coming From?

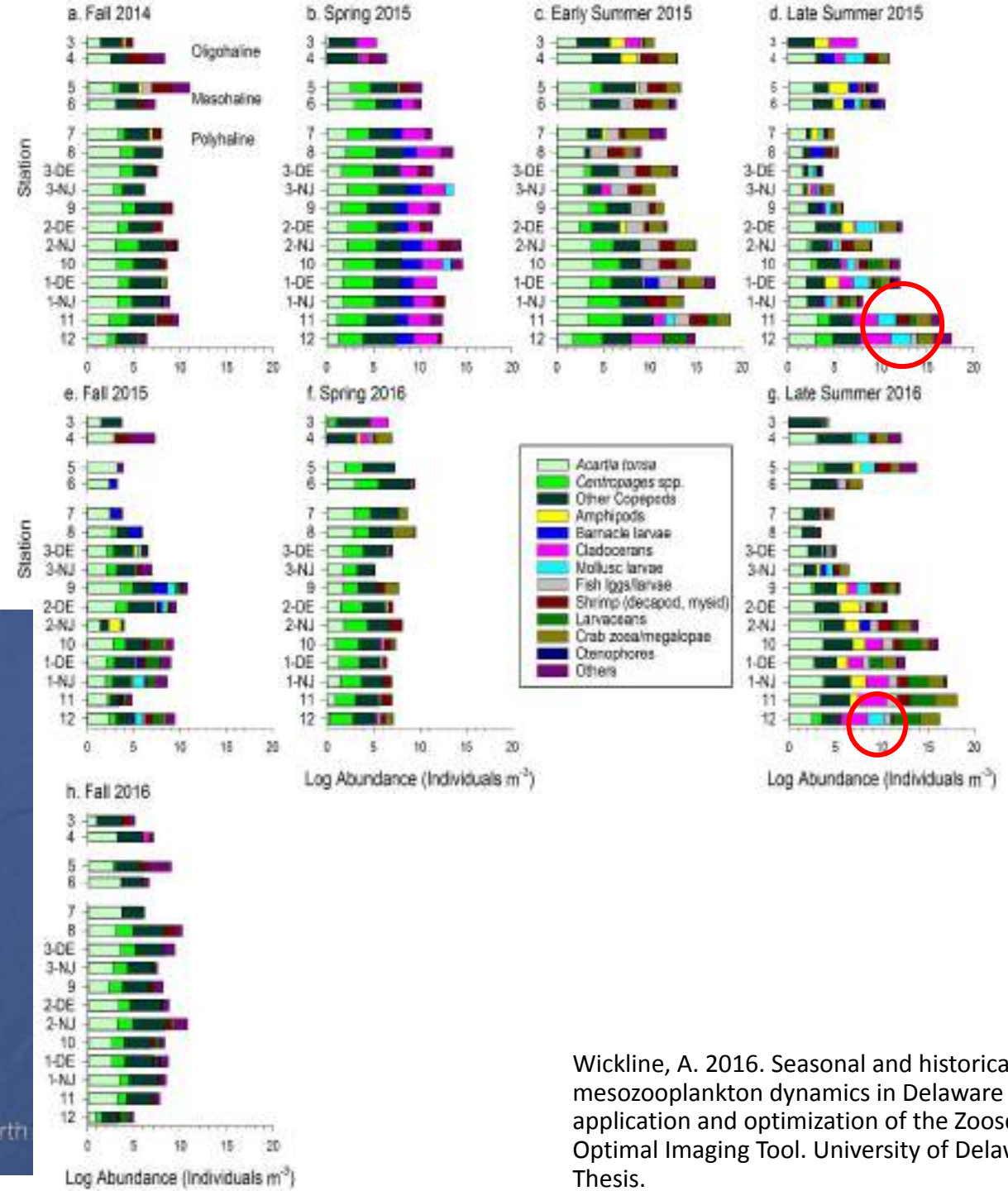
Borsum, 2018. Genetics and monitoring of eastern oysters *Crassostrea virginica* within Delaware Inland Bays. Delaware State Thesis.

- Examined genetic similarities between wild spat settled in the Inland Bays, oysters produced by CIB, and wild Delaware Bay oysters
- **No contribution from oysters produced by CIB found in wild spat set, indicating our spat contribution is low**
- **Spat set coming from a wild source**

Where are our Spat Coming From?

Maybe Delaware Bay?

Closest source of large wild reefs



Wickline, A. 2016. Seasonal and historical mesozooplankton dynamics in Delaware Bay: an application and optimization of the Zooscan Optimal Imaging Tool. University of Delaware Thesis.