

# An Overview of Falmouth's Shellfish Program

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November 7, 2018

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MES Deputy Director, Shellfish Constable

# Overview

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- Continuing Projects
- Service Partners
- 2017 Challenges
- New in 2018
- Follow-Ups
- Action Required
- Conclusion

# Continuing Projects

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Projects continued from previous years

# Continuing Projects

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- Little Pond Oyster Propagation
- Quahog Propagation
- Bay scallop propagation program with Ward Aquafarms
- Summary of Intermediary Oyster Seed Sales

# Little Pond Oyster Farm

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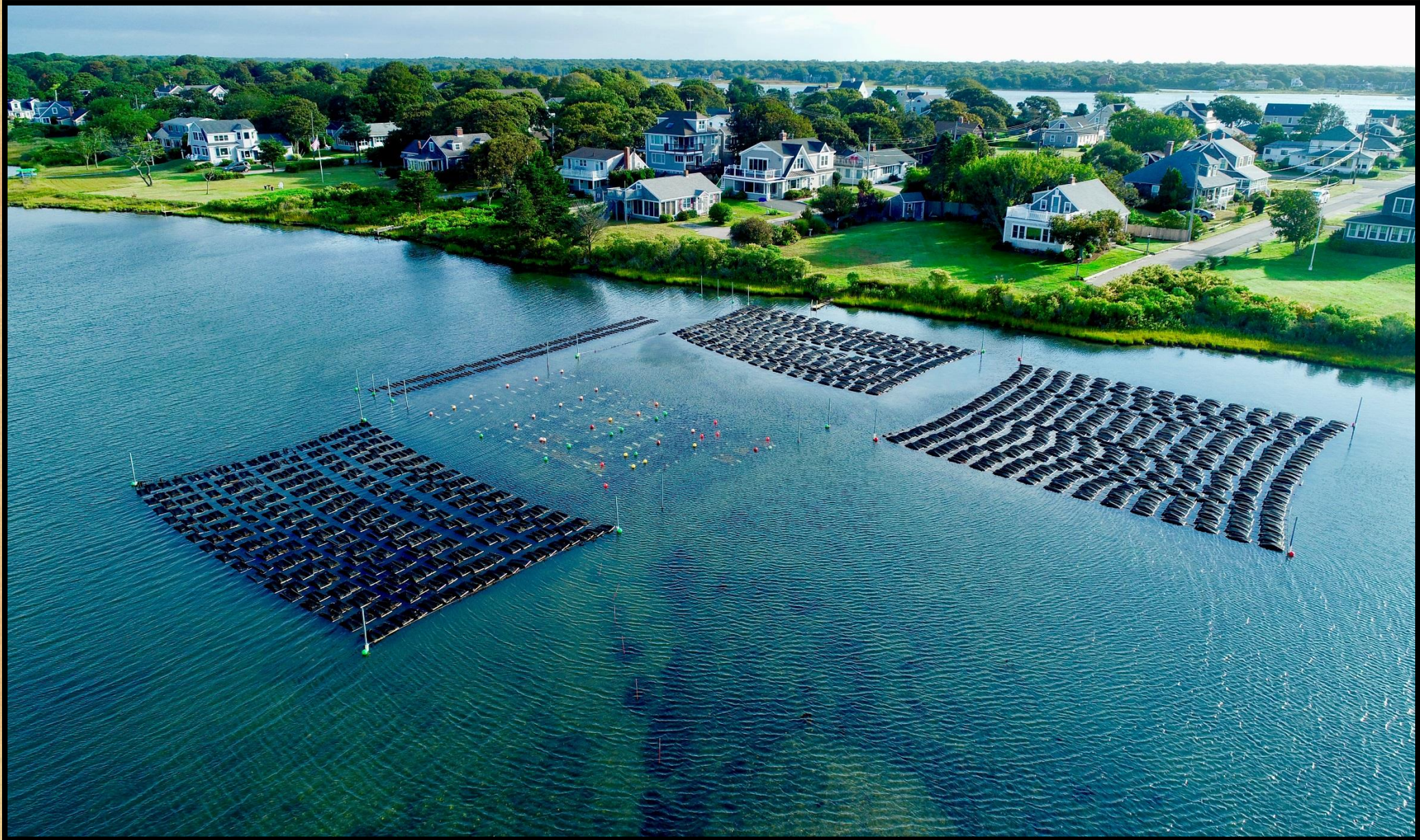
- In 2018, 1.5 million oyster seed purchased
  - Seed purchased from two Maine hatcheries
    - Mook Sea Farm
    - Muscongus Bay Aquaculture
- Continued use of Falmouth Floating Four Corners farm design



2016 Little Pond farm



2017 Little Pond farm

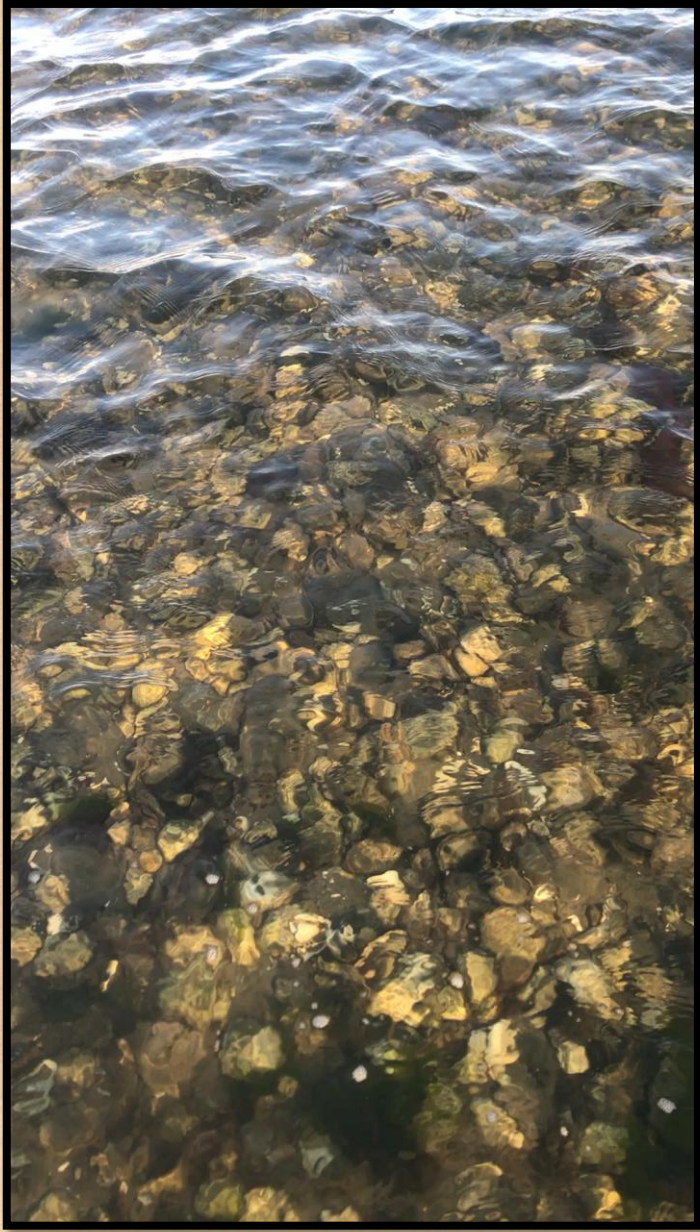


2018 Little Pond farm





Oyster seeding in West Falmouth Harbor



Mid-December oyster opening in Green Pond

# Quahog Propagation

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- Continued to propagate quahogs in 2018
- Continued in-town quahog relays from Little Pond
- MES is still looking for and working with hatcheries to obtain/develop methods for growing quahogs to the size needed to easily field plant
  - In 2018, expanded grow-out in bottom trays
- Future work:
  - Grow-out trials in bottom trays at various stocking densities
  - Quahog overwintering

# Bay scallop propagation program with Ward Aquafarms

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- Partnership with Dan Ward (Ward Aquafarms)
- Trial of propagating 100,000 bay scallop seed
- Started in West Falmouth upweller
- Transitioned to floating scallop bags in Little Pond
- Seeded in Waquoit and Little Harbor



How small the bay scallop seed starts!



The tiny bay scallop seed at the start of the scallop propagation project



Early bay scallop seed; actual size (left) and zoomed in comparison to quahog seed (right)



Growth of propagated bay scallops at West Falmouth upweller site





Video of bay scallop propagation in partnership with Ward Aquafarms



Floating scallop farm in Little Pond



Propagated bay scallops prior to being seeded

# Summary of Intermediary Oyster Seed Sales

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- Sold 7.69% of oysters grown in 2015
  - \$25,483.00 total in seed sales
    - Town of Orleans bought 138,400 oysters
- Sold 4.75% of oysters grown in 2016 (or 133,000 animals)
  - \$29,260.00 total in seed sales
    - Town of Orleans bought 58,000 oysters (invoice of \$12,760.00)
    - Town of Bourne bought 75,000 oysters (invoice of \$16,500.00)

# Service Partners

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Providing Cost-Free assistance to the MES Shellfish program

# Service Partners

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- Quincy College - Aquaculture Certificate Program
- Falmouth Rod & Gun Club
- Barnstable County Sheriff's Dept. inmates
- AmeriCorps Cape Cod
  - Group service projects
  - Individual Placement
- Local community volunteers

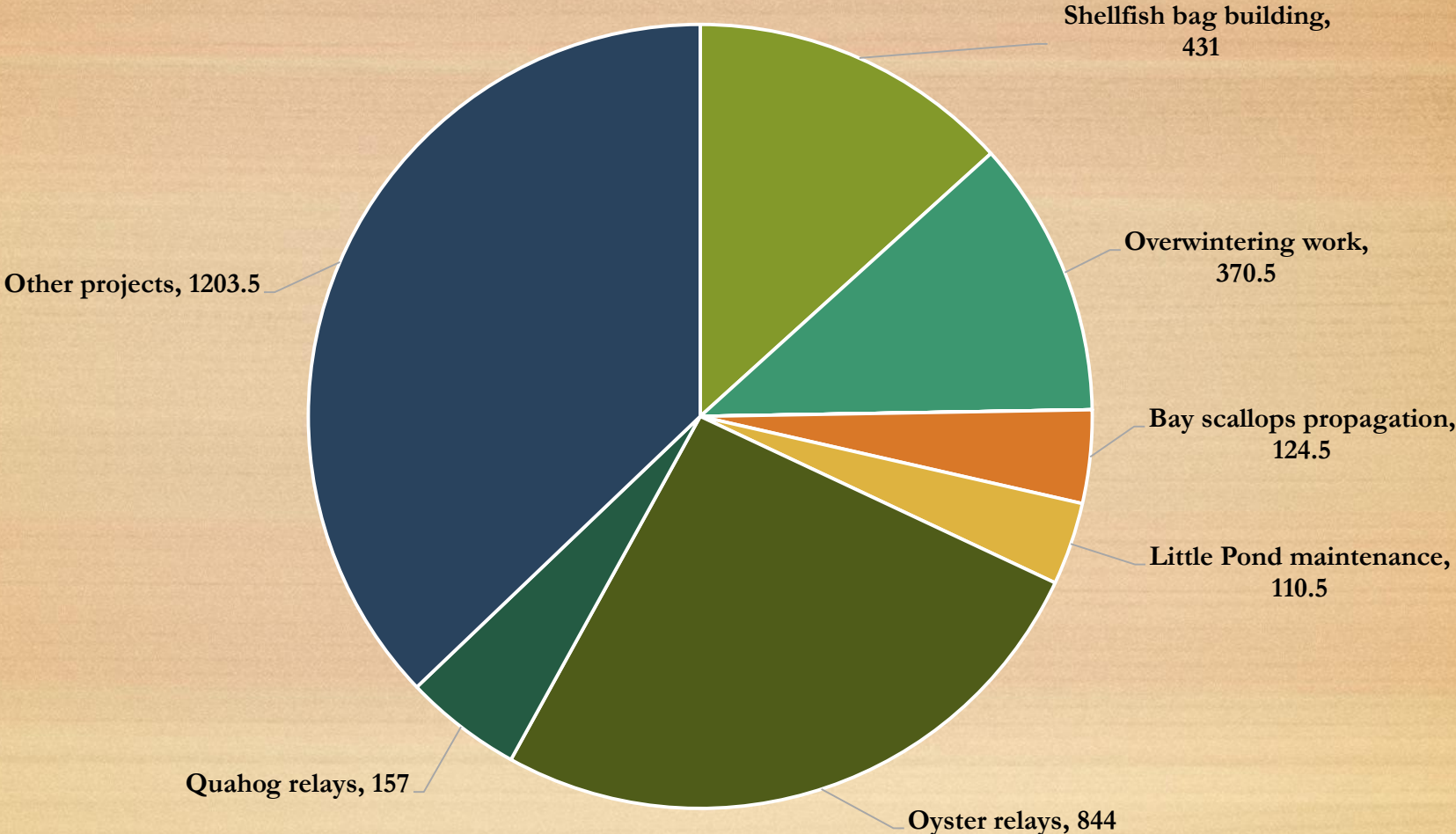
# Tracking Service Partner Hours

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- MES has been tracking all volunteer service hours since April 2017
- In 2018, nearly doubled the number of service hours from 2017

# 2018 SHELLFISH VOLUNTEER HOURS

*3,241 Total Hours since 1/1/2018*





## 2018 Volunteer Service Hours by Service Partner Organization

As of 11/7/2018

### **QUINCY COLLEGE STUDENT HOURS**

Owen Apuzzi	59
Richard Michael	90
John Bevilacqua	61
Thomas McGuinness	59
Scott Harrington	15

### **AMERICORPS CAPE COD INDIVIDUAL PLACEMENT HOURS**

Taryn Szalay	168
Jennifer Lin	24
Colin Buckner	8

### **BARNSTABLE COUNTY HOURS**

Sheriff's Dept. Inmates	503
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### **FALMOUTH ROD & GUN CLUB HOURS**

Members	166
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### **COMMERCIAL DIGGER HOURS**

License holders	93
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### **LOCAL COMMUNITY HOURS**

Shellfish Division Volunteers	771
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### **AMERICORPS CAPE COD SERVICE HOURS**

Group Service Projects	876.5
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### **MASS MARITIME ACADEMY STUDENT HOURS**

Elizabeth Demma	182.5
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# Tracking Service Partner Hours

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- Assuming value of \$16.00/hour, and projected ~3,500 volunteer hours by the end of the year
  - Volunteering efforts is equivalent to a \$56,000 position



2017 Falmouth MES Shellfish Division Volunteer Recruitment Video

# 2017 Challenges

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Learning from disaster

# *Best Revenge* Boat Fire

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- Occurred on July 11<sup>th</sup>, 2017
- Claim filled with insurance
- Due to potential for diesel fuel in upwellers, upwellers were taken offline
- Science Wares, Inc. helped MES develop gear for seed survival
- As many shellfish seed as possible moved from upwellers to spat bags in Little Pond
- In the end, it was a good lesson in hazard planning
  - Having gear on hand (e.g. boom, spat bags)
  - What to do in the event of no electricity
  - This event made the Shellfish Program more resilient to man-made and natural disasters



*Best Revenge boat fire*



*Best Revenge boat fire*



Aftermath of *Best Revenge* boat fire





Diesel fuel spill from *Best Revenge* boat fire

# New in 2018

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New shellfish projects and programs for MES

# New in 2018

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- First year of NOAA-funded Waquoit Bay grant
- Bournes Pond project with WQMC and Dr. Brian Howes
- New oyster overwintering methods

# Waquoit Bay Grant

In collaboration with Stonehill College, WHOI, and WBNERR

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- Grant awarded to conduct study to evaluate 3 popular oyster aquaculture systems – floating bags, rack mount systems and bottom cages – for their efficiency at exporting N to the sediments and stimulating the sediment-hosted biological community to remove N
  - Results generated and insights gained will be used to inform water quality plans and develop training and a best practices guide for towns, growers, state and regional agencies
    - Falmouth MES is an end-user

# Bournes Pond project with WQMC and Dr. Brian Howes

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- SMAST and Dr. Howes contracted by the Water Quality Management committee to conduct work relative to nutrient uptake in shellfish
- 3 farms in Bournes Pond containing second year oysters
  - Oyster growth and weight was tracked, and heat maps depicting heaviest bags were generated



Bournes Pond Farm #1 (2018)





Bournes Pond Farm #2 (right) and #3 (left) (2018)





2	16	14.05	17	15.25	14.35	9.05	13.85	16.6	13.2	14.25	14.4	14.5	14.2	15.45	12.45	13.35	15.45	16.65	15.5	14.4	
15.15	12.25	15.25	14.85	13.95	14.35	14.4	14	13.75	14.75	11.95	14.55	9	12.3	14.25	13.35	13.65	13.8	13.6	12.35	12.1	
15.65	16.5	14.8	14.2	14.5	14.95	14.45	15.5	13.1	11.4	16	16.85	14	13.35	16	13.75	15.1	14.1	14	10.55		
14.05	12.05	15.1	14.25	13.5	15.05	13.25	15.25	11.1	13.65	14.2	12.9	12.2	14.45	13.9	13.15	13.7	12	5.85	14.5		
17.25	16.95	14.95	13.25	12.35	13	12.95	11.75	13.75	13.95	12.65	13.15	14	16.05	13.1	13.95	14.4	13.5	16.3	13.2	11.35	
16.3	13.8	14.4	16.05	17.5	14.4	12.9	8.25	13.55	14.55	11.5	15.3	11.8	13.7	13.3	15.7	11.55	13.65	11.1	14.35	12.2	
17.55	15.85	12.65	12.85	13.95	14.9	14.25	16.15	12.95	14.05	15.25	14.8	14.75	14.85	16.25	13.25	14.45	16.85	14	12.9		
17.05	19.4	15.55	14.85	12.75	15	15.7	16.3	14.7	16.85	11.55	15.55	13.3	14.3	14.75	13.35	14.9	16.05	14.8	14.65		
15.95	16.75	10.7	16.95	11.8	12.25	13.85	14.9	15.35	14.05	12.65	12.9	13.7	13.75	14.3	11.55	15.3	15.15	17.2	13.1		
17.15	16.65	16	16.05	16.7	15.1	14.85	15.3	14.25	15.85	14.6	18.1	13.65	15.9	12.3	12.25	13.85	14.6	16.3	16.95		
14.15	11.5	9.6	15	10.6	14.4	13.45	12.25	14.35	11.85	17.3	15.1	12.3	13.95	14.2	16.6	12.55	14.25	15.65			
17.7	14.9	11.9	16.2	16.05	11.9	11.2	14.1	13.65	14.1	16	10.45	10.85	9	12.45	9.3	9	13.95	19.2	11.6	16.55	12.65
10.5	9.4	15.1	11.75	14.9	10.45	9.4	14.5	11.25	11.75	13.75	10.95	9.3	15.15	17.2	16.35	15.9	14	15.25	16.5	8.15	13.4
10.6	13.2	9.95	12.7	9.55	18.8	9.45	13.55	18.7	16.1	14	6.05										
21.5	18.5	13.6	12.55	12.5	15.15	16.7	13.1	13.5	16.15	16.25	19.9	17.1	18.95	18.9	19.45	11.95	17.15	19	19.2		

Bournes Pond Farm #2 with heat map showing heaviest oyster bags



8.9	14.65	17.65	17.95	19.65	16	15.4	14.95	14.6	16.45	20.9	18.1	18.9	4.9		
22.25	5.55	12.65	17.9	16.65	14	20.4	14.3	19.05	14.3	14	14.15	17.95	0		
14.6	22.4	18.75	14.05	9.05	17.4	14.65	16	13.3	17.25	13.05	12.7	13.35	15.9		
15.9	19.3	16.1	16.5	17.45	14.35	12.15	18.3	17.85	15.35	15.2	16.45	14.3	12.4	14.65	18.4
15.55	19.5	16.2	17.1	16.05	16.9	14.45	15.6	12.7	14.1	14.65	12	11.75	17.6		
16.3	15.75	15	18.45	15.45	16	14.5	14.5	14.55	15.35	14.7	15.5	12.5	17.35		
16.85	16.55	13.5	15.5	16.45	15.45	16	13.9	14.45	10.5	14	15.1	15.45	16.5	21.8	
17.25	16.45	14.3	17.05	13.45	13.8	14.35	12.7	14.9	13.75	14.75	13.2	2.3			
0.38	19.85	17.25	15.75	15.35	0	15.65	15.15	16.65	15.6	15	0	19.35	0.6		

Bournes Pond Farm #3 with heat map showing heaviest oyster bags

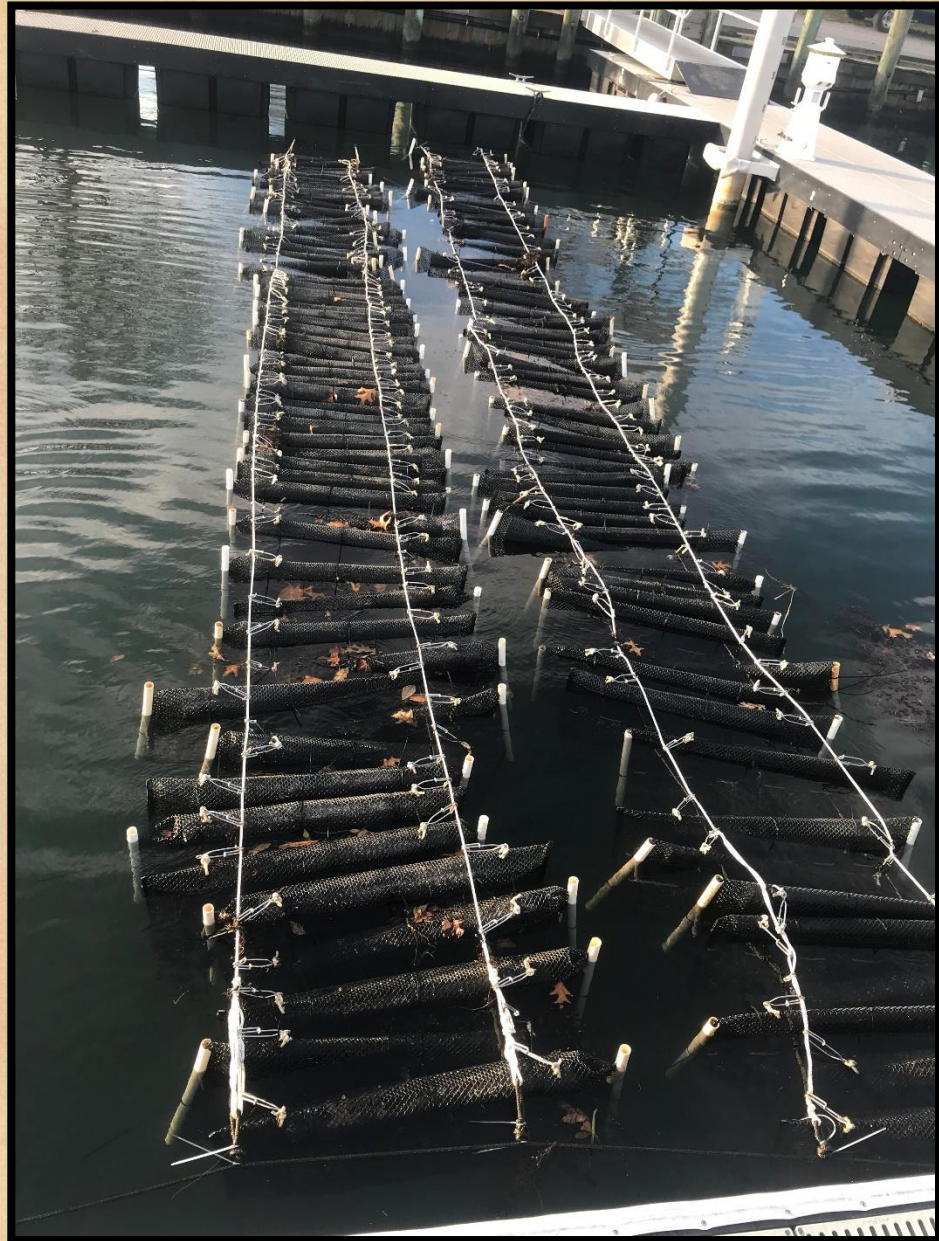
# New oyster overwintering methods

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- Storage container
- Slips



New oyster overwintering storage pit



New oyster overwintering system in Falmouth Inner Harbor Marina slips

# Follow-Ups

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Evaluating project success

# 2016 EPA Grant: West Falmouth Oyster Bed Project

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- Recap of the project in a few photos



1,500 bags of remote set delivered by MES staff to staging area of Snug Harbor installation site





1,500 bags of remote set being installed in the water by MES staff

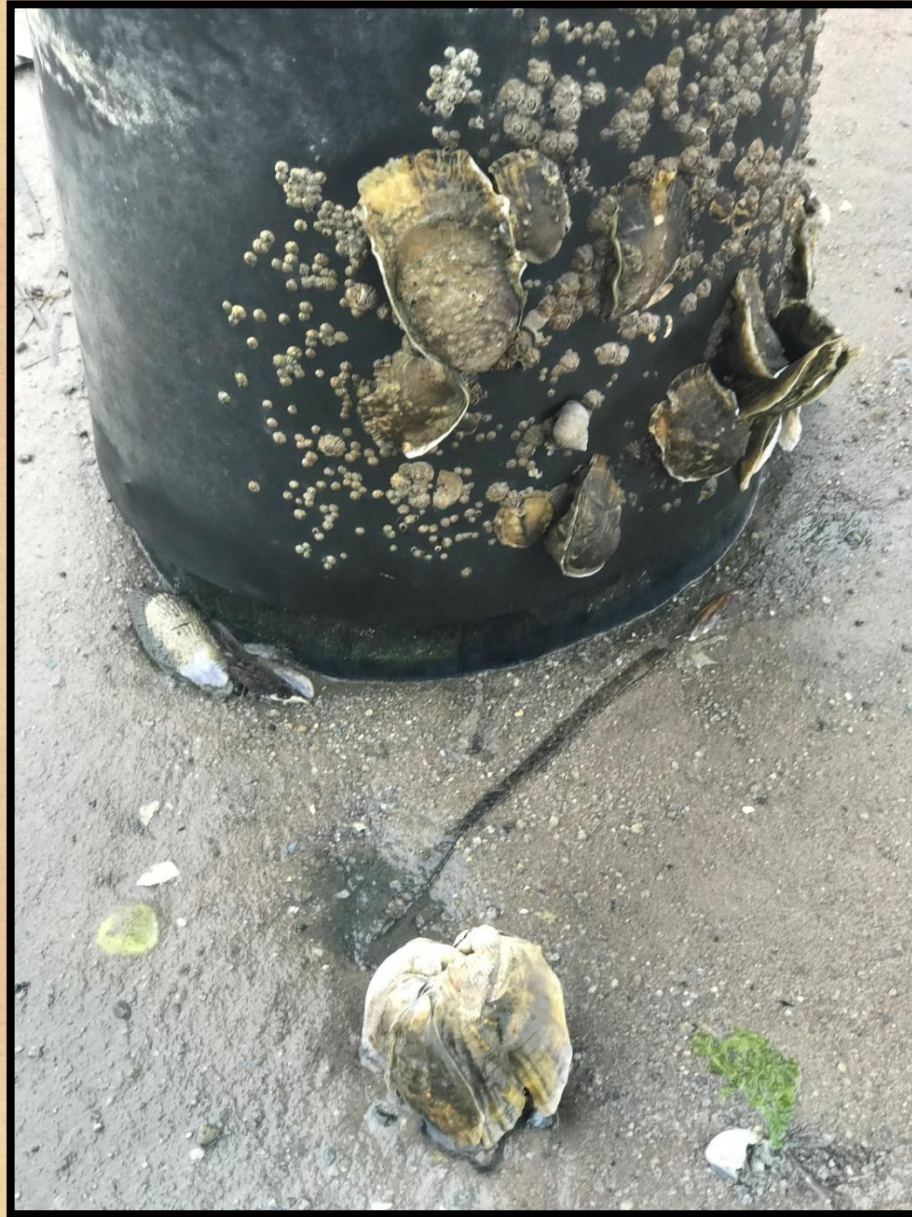


Installation of remote set in floating bags and bottom trays

# 2016 EPA Grant: West Falmouth Oyster Bed Project

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- This grant project is showing to be successful in re-establishing oyster reefs
- New dock in winter of 2016 is already seeing growth of new oysters spawned in the estuary
- Possible regulations addressing animals when attached to not allow harvest of developing reef



Naturally-occurring oyster spawn in West Falmouth Harbor



Video of naturally-occurring oyster spawn in West Falmouth Harbor

# Conclusion

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Commercial shellfishermen harvest oysters during 2017 Megansett Harbor oyster opening

Questions?

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