Shellfish 101

A Primer on Local Shellfish Life History and Care

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Overview

- Introduction to Shellfish
- Local Shellfish Species
- Falmouth's Shellfish Propagation
- Shellfish Data Collection

What are "Shellfish"?

Mollusks

- Gastropods

- Chitons

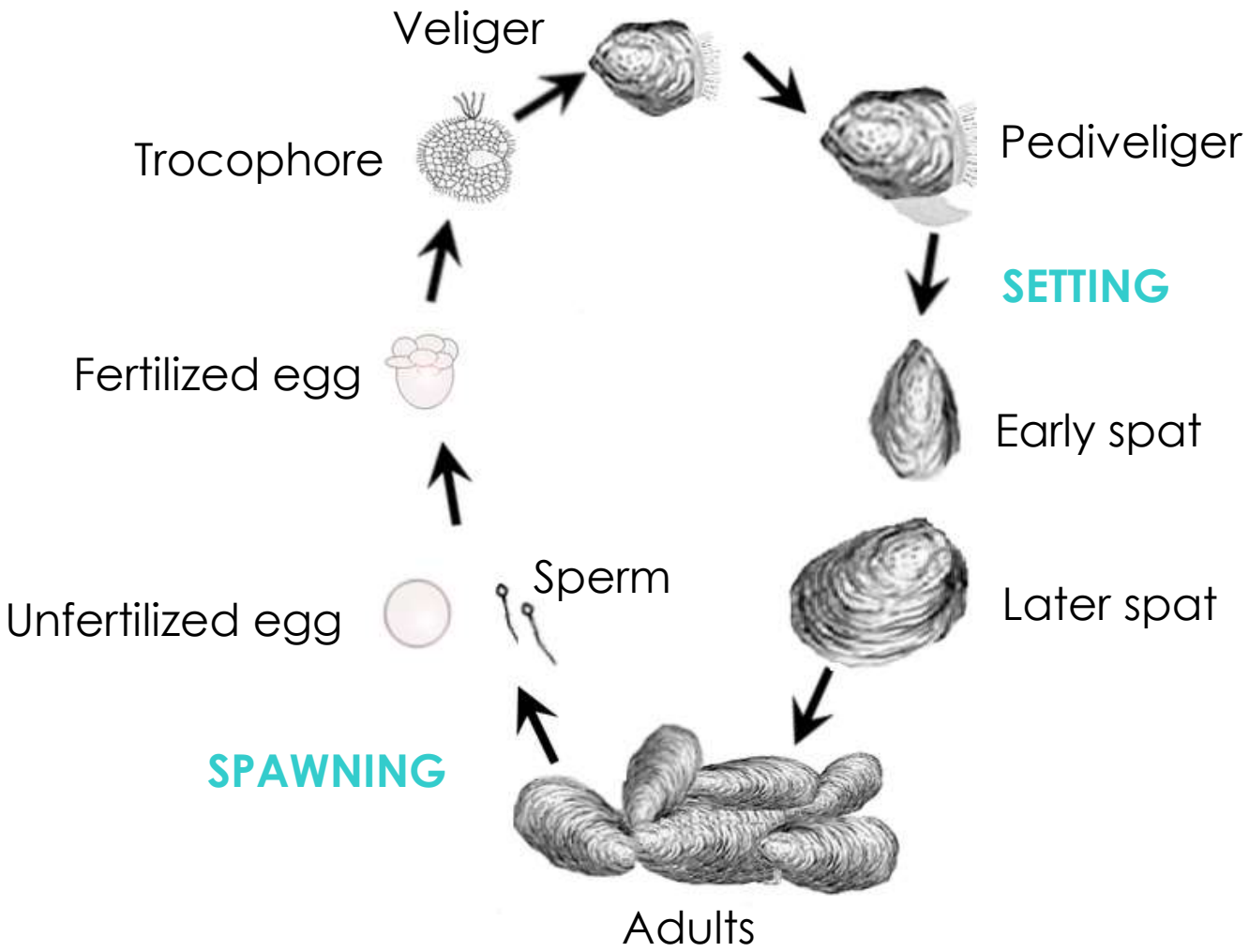
- Cephalopods

- Bivalves (Shellfish)

What are "Shellfish"?

- Shellfish are **BIVALVE** mollusks
  - Meaning they have two shells connected by a hinge
- Shellfish are filter feeders
  - Feed on phytoplankton (microscopic plants) in the seawater
    - Many species are candidates for water quality operations
- Shellfish species differ in:
  - Morphology (shape and size)
  - Ecology (where and how they live)

Shellfish Life Cycle



New England Shellfish Species

- Oyster
- Quahog
- Bay Scallop
- Softshell Clam
- Sea scallop
- Blue mussel
- Razor clam
- Blue mussel
- Ribbed mussel
- Blood ark
- Surf Clam

Commonly Harvested Shellfish Species

- Oyster
- Quahog
- Bay Scallop
- Softshell Clam
- Sea scallop
- Blue mussel
- Razor clam

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Eastern Oyster *Crassostrea virginica*

- Popular restaurant delicacy
- High filtration rate
- Fast-growing, sessile species, no foot
- Highly tolerant of extreme environmental conditions
- Can close their shells completely
- Moderately deep, elongated, gray-white to gray-brown, rough, spoon-shaped shell

Northern Quahog *Mercenaria mercenaria*

- Sold by names reflecting size (1 1/2 to 5 inches), from littlenecks to cherrystones, topnecks and chowders
- Slow-growing, infaunal species with a foot for burrowing
- Tolerant of varying environmental conditions
- Can close their shells completely
- Have an off-white, oval, symmetrical shell with a purple or violet border inside

Bay Scallop *Argopecten irradians*

- Harvested for adductor muscle, not stomach
- Highly mobile, swim by jet propulsion
- Specialized morphology with irridiophores
- Intolerant of varying environmental conditions
- Have an almost perfectly circular corrugated shell

Softshell Clam *Mya arenaria*

- "Steamer clam" or common "fried clam" averages 1 1/2 to 3 inches in length
- Infaunal species with a foot for burrowing
- Cannot close completely because of a protruding siphon
- Intolerant of varying environmental conditions
- Have an oval-shaped shell that is thin and very brittle

Shellfish ABC'S

A t t a c h

B u r r o w

C a n ' t c l o s e

S w i m

Shellfish 123's

1 1-inch wide legal quahog

2 2-inch long legal softshell clam

3 3-inch long legal oyster

The Life of Falmouth Shellfish

- Shellfish seed (baby shellfish) arrives to Falmouth MES from hatcheries in late May
- Seed cared for in primary nursery upweller tanks until seed can retain in grow-out gear
  - Different species have different life histories: so different husbandry strategies, gear, and growing techniques used for each
- Gear maintained until late fall, when shellfish are seeded or bottom-planted
- Seeded shellfish areas open the following fall for the taking of shellfish (depending on species)

Species Falmouth Propagates

OYSTERS

QUAHOGS

BAY SCALLOPS

Care and Propagation of Shellfish

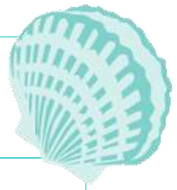
OYSTERS

- Traditional upweller
- Can clean animals easily with freshwater
- Need frequent cleanings
- Can be grown in various in grow-out gear

QUAHOGS

- Traditional upweller
- Can clean animals easily with freshwater
- Need routine cleanings
- At a certain size, need grow-out gear with substrate

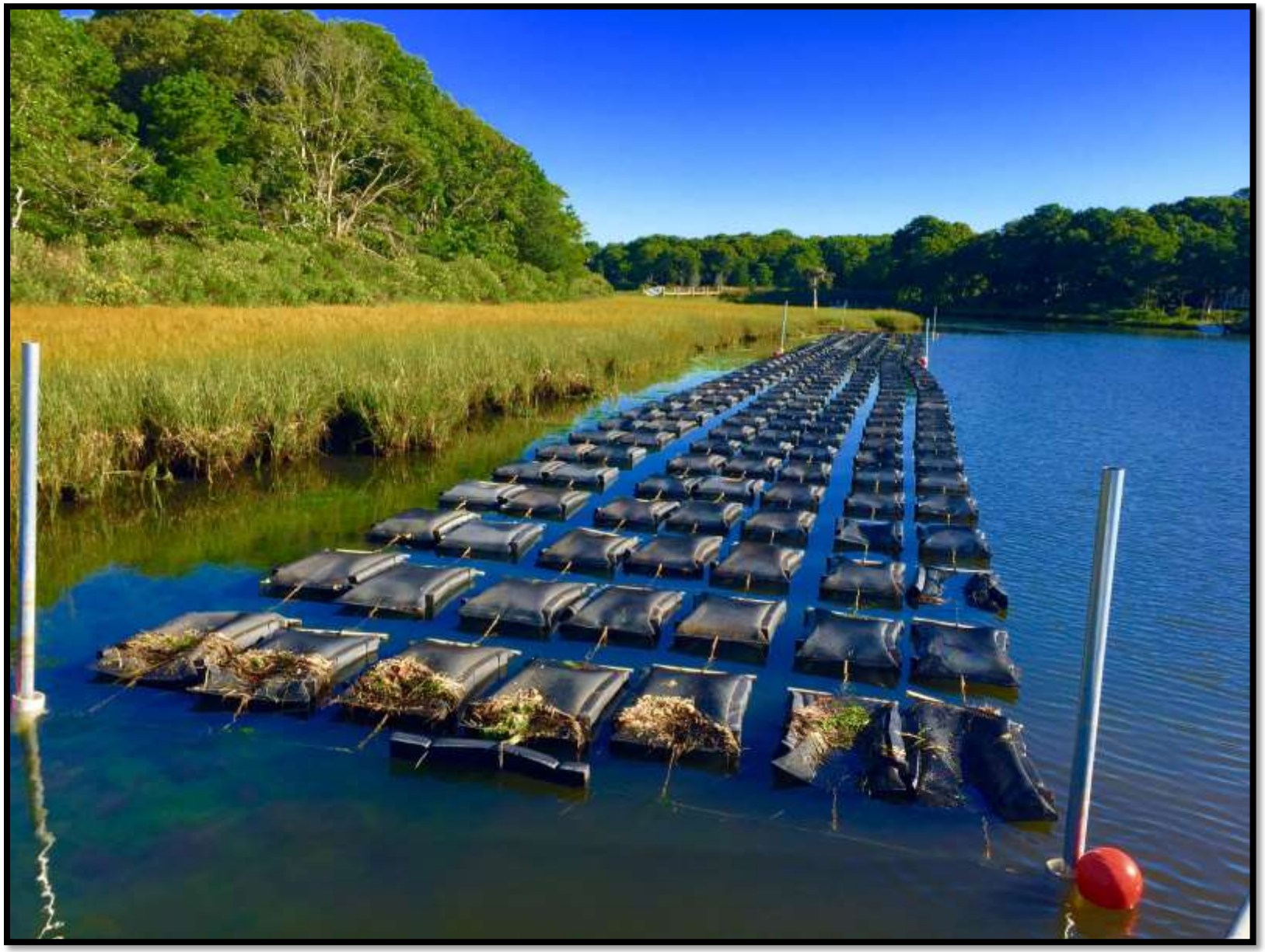
BAY SCALLOPS



- Modified upweller silos
- Cannot be cleaned with freshwater
- Need frequent cleanings
- Need ample space in grow-out gear

Falmouth Marina Upwellers

Oyster seed



Oyster grow-out gear

Oysters prior to seeding

Quahog seed

Quahog grow-out gear

Quahogs prior to seeding

Bay scallop seed

Bay scallop grow-out gear

Bay scallops prior to seeding (right)

2018 Little Pond Farm

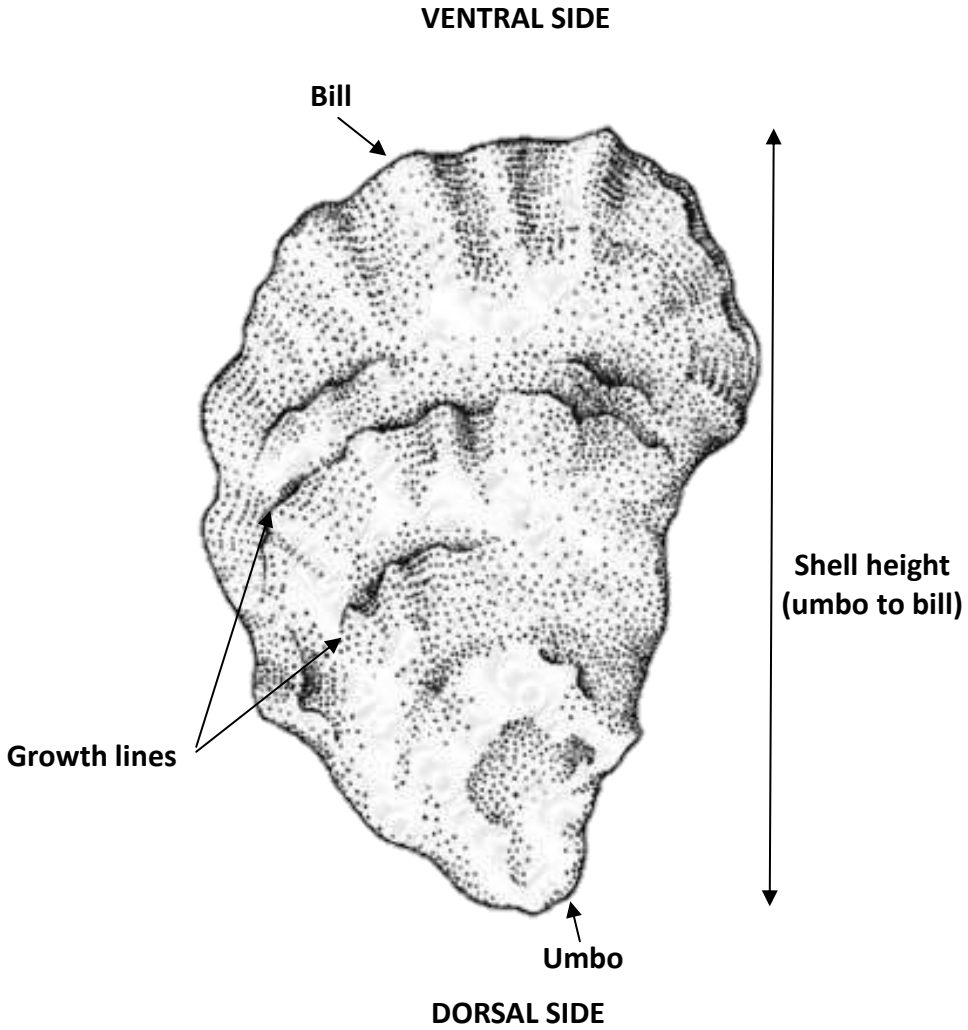
2018 Little Pond Farm

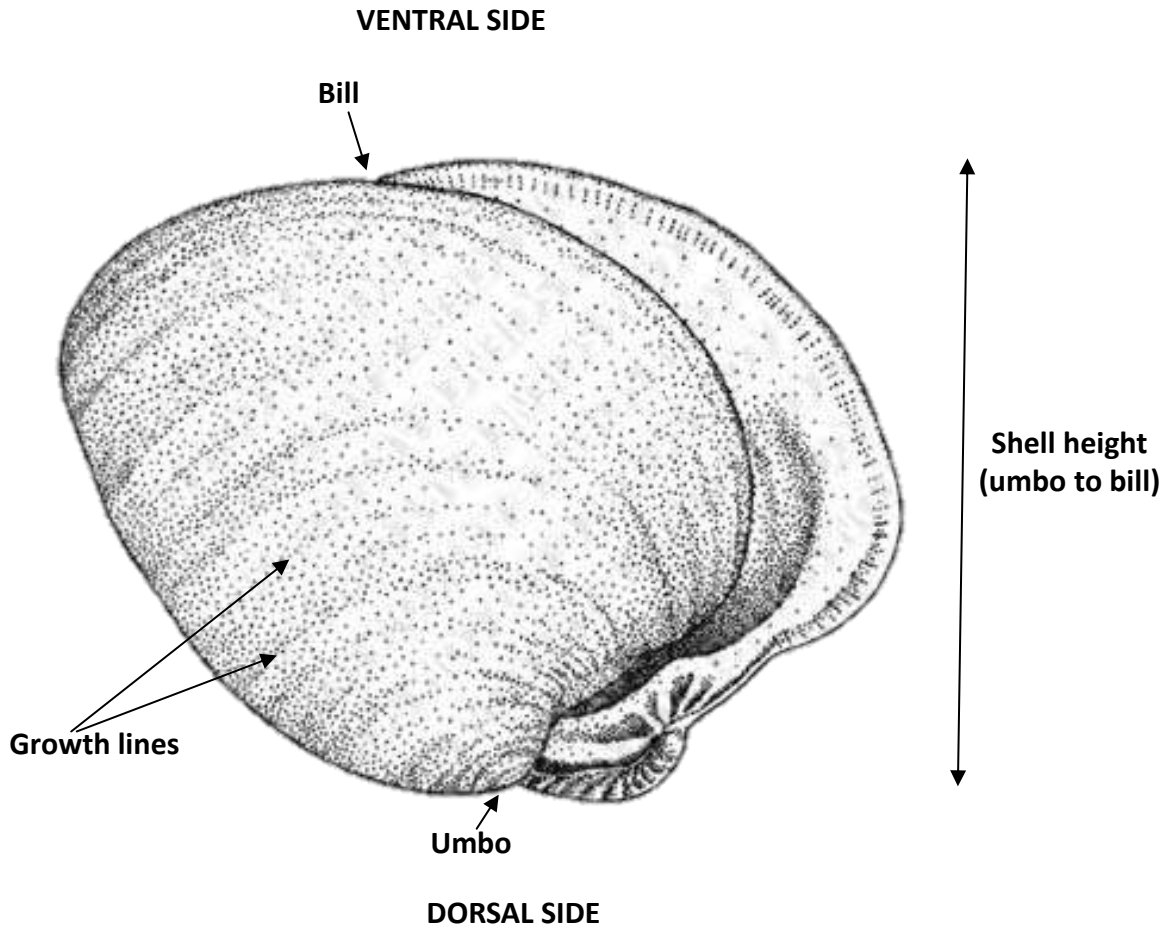
Shellfish Data Collection

- Helps to assess the health and growth of shellfish
  - Shell height (umbo to bill) and wet weight are good measurements to take
  - Doing this routinely helps to catch any disease early
- Helps to ensures receipt of a good product from hatcheries
  - Helps to make informed decisions of where to buy seed from
- Combined with water quality data, provides a powerful snapshot of the growing season
  - Water temperature, dissolved oxygen, and data can be useful

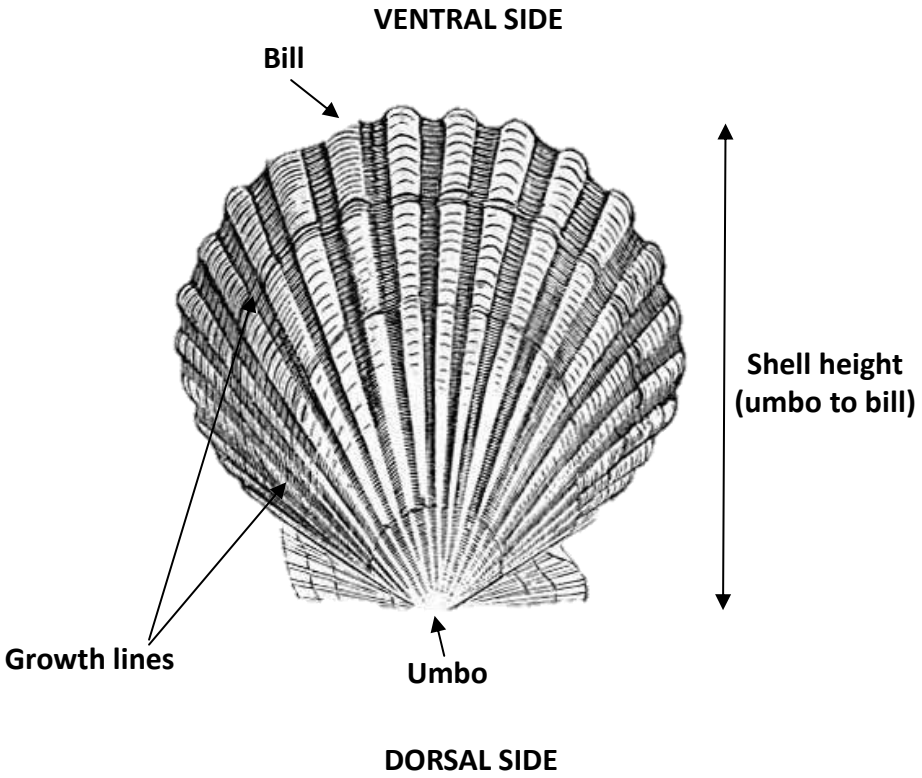
Shellfish data collection instruments

OYSTER ANATOMY





QUAHOG ANATOMY



BAY SCALLOP ANATOMY

LITTLE POND SHELLFISH GROWTH DATA SHEET

Date: _____ Time: _____

Species: **circle one** Oyster (*C. virginica*) Quahog (*M. mercenaria*) Bay scallop (*A. irridians*)

Hatchery: **circle one** Mook Sea Farm Muscongus ARC

Sample ID (bag/cage number): _____

	SHELL HEIGHT (mm)
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	
25	

TOTAL ALIVE

_____

TOTAL DEAD

_____

TOTAL SAMPLE WET WEIGHT (g)

_____

WATER TEMPERATURE (°C)

_____

DISSOLVED OXYGEN (mg/L)

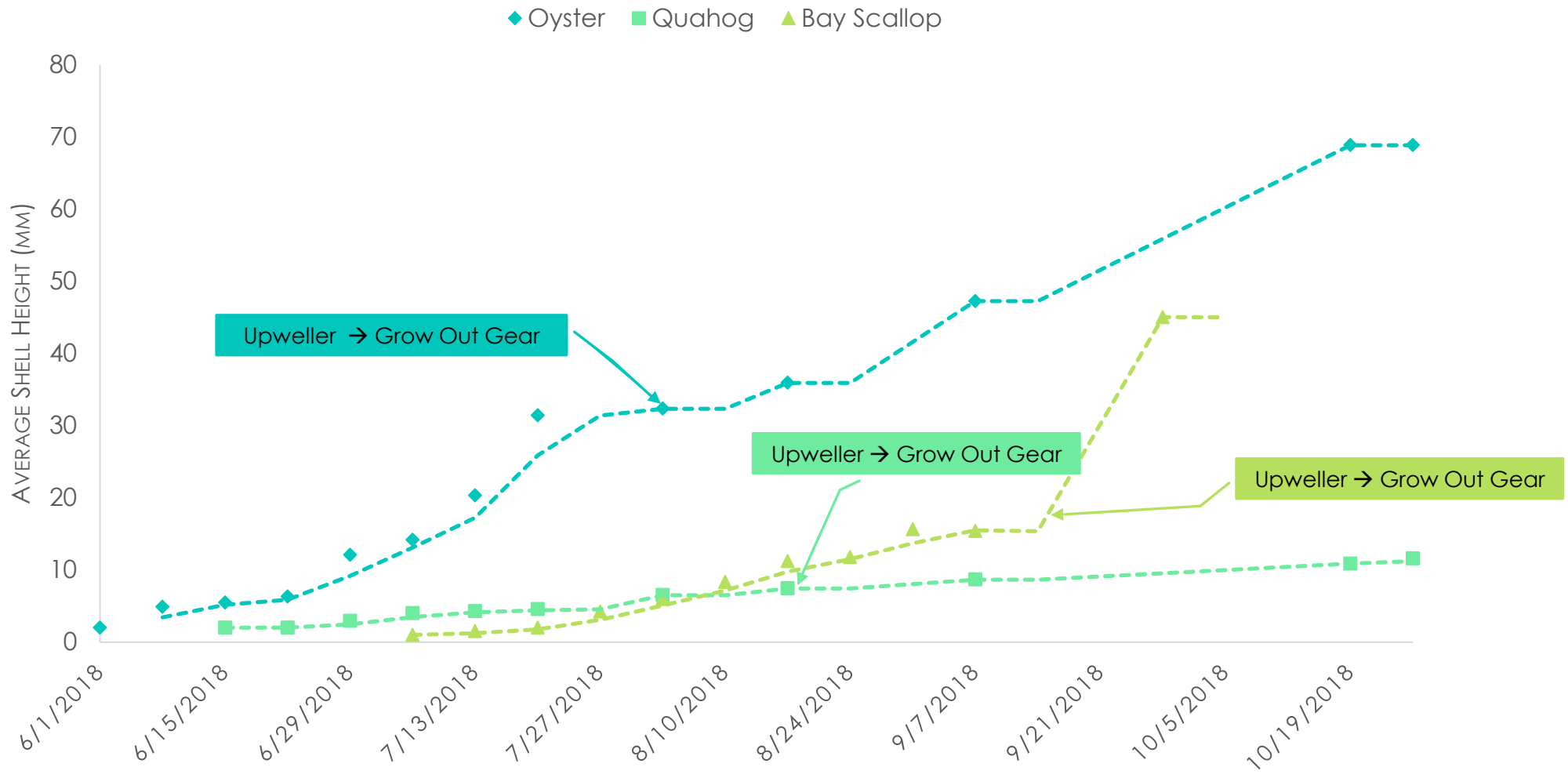
_____

SALINITY (ppt)

_____

Notes:

2018 Falmouth Shellfish Seed Growth



Shellfish growth chart

In Summary

- Shellfish are **BIVALVE** mollusks: two shells connected by a hinge
- Shellfish are filter feeders, consuming phytoplankton in seawater
- There are many shellfish species native to New England, and several are harvested for consumption
- Shellfish species differ in legal harvest sizes
- Shellfish species have different care needs and growing methods
- Data collection is valuable to assessing shellfish health and growth

Questions?

DON'T HESITATE TO ASK ME LATER!

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