



# Municipal Shellfish Program Outreach:

A handout to accompany a presentation for town councils and board of selectmen in Casco Bay

***Prepared by: Casco Bay Regional Shellfish Working Group***

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This document serves as a resource for municipal shellfish/marine resource committees to share with members of their town council or board of selectmen. This handout accompanies a template for a PowerPoint presentation, which is available by contacting [Jessica@tidalbayconsulting.com](mailto:Jessica@tidalbayconsulting.com). These resources are expected to support shellfish conservation and management decisions through providing information on the ecological, cultural, and economic importance of shellfish harvesting. They may be used in preparation for a shellfish committee request for town council/board of selectmen action or a general presentation. Members of the Casco Bay Regional Shellfish Working Group (CBRSWG) requested these resources and participated in developing them. This handout, as well as the presentation have general information and serve as a template for town-specific information.

## Purpose of Municipal Shellfish Co-Management Program

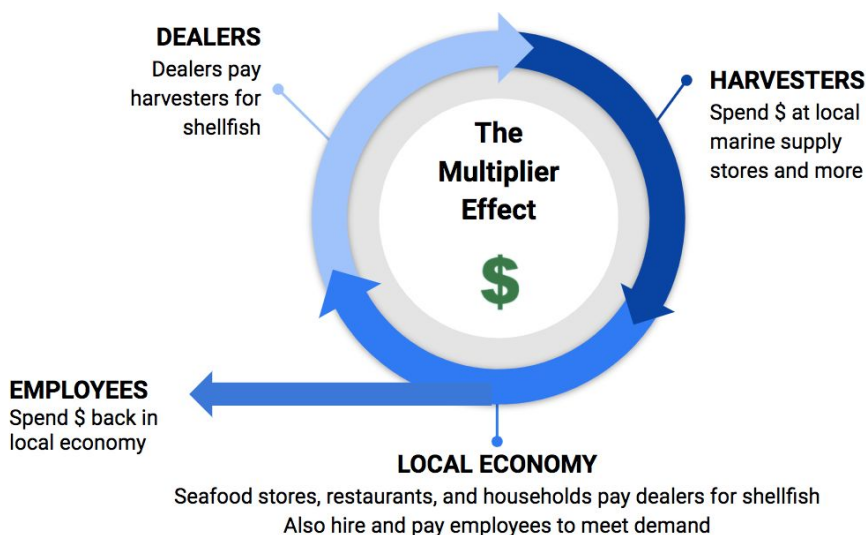
Goals	Activities	Tools
<ul style="list-style-type: none"> <li>Control access</li> <li>Maximize individual harvest</li> <li>Provide maximum utilization</li> <li>Maintain a sustainable yield</li> <li>Increase the shellfish resource</li> </ul>	<ul style="list-style-type: none"> <li>Setting license types &amp; numbers</li> <li>Establishing conservation areas</li> <li>Restricting harvest amount/time/season</li> <li>Protection from predation with traps</li> </ul>	<ul style="list-style-type: none"> <li>Clam flat surveys</li> <li>Harvester questionnaires</li> <li>Committee meetings</li> <li>Enforcement</li> </ul>

Source: Maine DMR Municipal Shellfish Management Town Handbook (2018)

## Importance of Shellfish Fishery to Municipalities

Licenses (employment)	Ecosystem Services	Cultural Heritage	Economic Benefits
<ul style="list-style-type: none"> <li>Commercial</li> <li>Student</li> <li>Recreational</li> </ul>	<ul style="list-style-type: none"> <li>Water purification</li> <li>Protection from erosion</li> <li>Nutrient cycling &amp; dissolved oxygen levels</li> </ul>	<ul style="list-style-type: none"> <li>Once ME became a state, power over shellfish resources was given to towns</li> <li>Clamming= integral part of state's history</li> <li>Also a recreational tradition</li> </ul>	<ul style="list-style-type: none"> <li>Economic benefits from shellfish industry are spread across local economy</li> <li>Multiplier effect</li> <li>Town revenue from license sales</li> </ul>

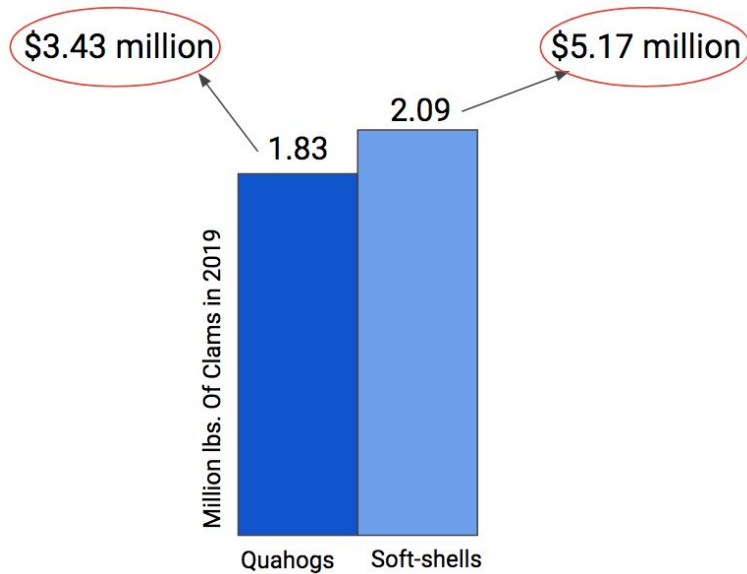
## The Multiplier Effect



- The economic benefits from the shellfish industry are cyclical, and follow a pattern known as the multiplier effect.
- Any dollar initially spent on shellfish is transferred between stakeholders, with great returns to the local economy.

## Value of Landings to Casco Bay Region

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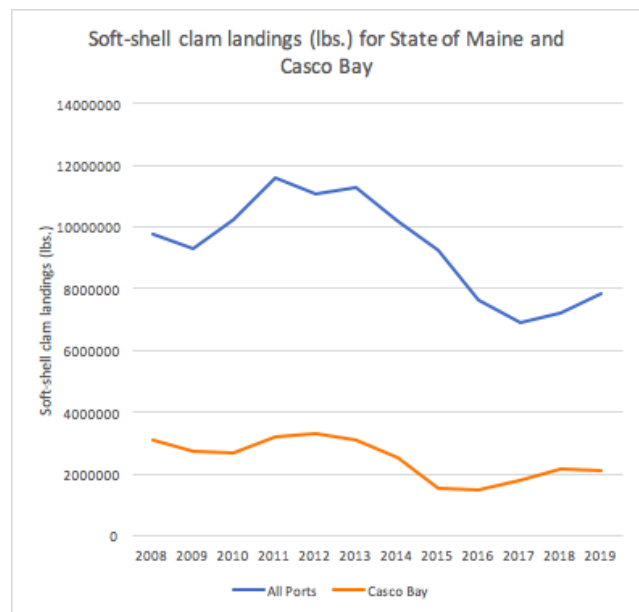
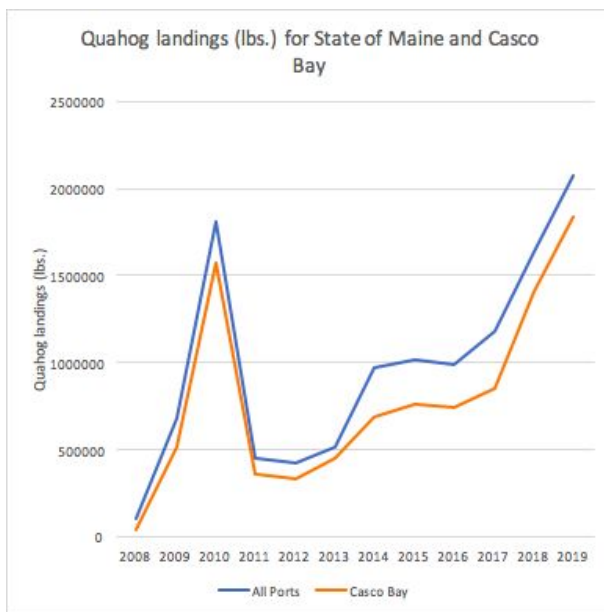


- In 2019, towns\* in the Casco Bay Regional Shellfish Working Group (CBRSWG) brought in 1.83 million lbs. of quahogs, \$3.43 million in landings.
- In 2019, towns in the CBRSWG brought in 2.09 million lbs. of soft-shell clams, \$3.59 million in landings.
- Due to the multiplier effect, the actual value of the fishery to the Casco Bay Region is significantly greater.

• Source: Maine DMR Historical Commercial Landings Data

\*Towns include: Scarborough, Cumberland, Chebeague Island, Yarmouth, Freeport, Brunswick, Harpswell, West Bath, Georgetown, Phippsburg, Arrowsic, and Woolwich

## Trends in Shellfish Landings in Casco Bay and Maine

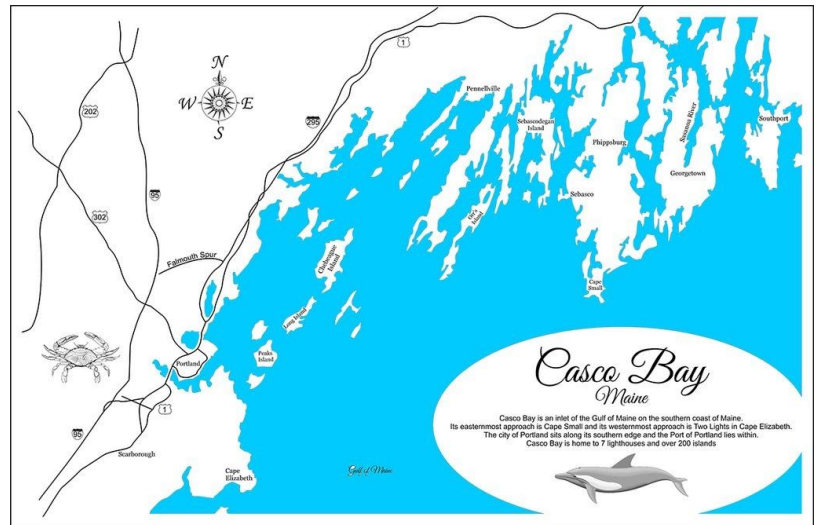


- These graphs reflect quahog and soft-shell clam landings in pounds for the towns in the CBRSWG and the state of Maine as a whole between 2008 and 2019\* (blue line is Maine, orange is towns in the CBRSWG). Please note the difference in scale (Y axis) of landings.
- Quahog landings in Casco Bay appear to drive state trends because warmer water temperatures in southern Maine support quahog abundance, whereas other regions along the coast have cooler waters.
- Quahog landings have generally been increasing since 2012, while soft-shell clam landings have generally been decreasing in that same time period.
- These graphs demonstrate a recent trend: Casco Bay harvesters are increasingly digging more for quahogs compared to soft-shells.
  - Predation by invasive green crabs (Beal et al. 2018) and milky ribbon worms is affecting soft-shell populations and subsequently, the landings.
  - At the same time, increasing demand for quahogs for the half shell market has made quahogs a more valuable target for harvesters than soft-shells.
- Source: Maine DMR Historical Commercial Landings Data
  - \*Note: 2019 data is preliminary.

## The Casco Bay Ecosystem

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- Casco Bay is an estuary; a place where rivers and tides converge. The rivers add nutrients while the tides contribute cold, oxygen-rich seawater.
- Casco Bay is ringed by 14 coastal communities.
- Because Casco Bay is an estuary where many rivers come together, the actions of one town in the Casco Bay region can impact the health of the entire Bay's ecosystem.
- The Casco Bay Watershed Region is home to one-quarter of Maine's population and one-third of the total jobs in the state, despite containing just 4.4% of the state's land mass.
- Source: Friends of Casco Bay and Casco Bay Estuary Partnership.



## Co-management

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- Co-management (Co-M) addresses the issue of overexploitation of common pool resources (i.e., shellfish), and has been implemented locally in many fisheries around the globe.
- Co-M provides for a role in cooperative management in which shellfish harvesters are involved in decision making processes.
- Shellfish that exist in the intertidal zone are co-managed between the state of Maine and the municipalities.
- Maine Department of Marine Resources (DMR) is responsible for shoreline point-source pollution surveying, water quality testing, and the related opening and closing of flats.
- Municipalities are responsible for creating ordinances, determining license numbers, enforcement, and conservation.

## Issues Facing the Shellfish Fishery

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- The Gulf of Maine is one of the fastest warming bodies of water in the world<sup>1</sup> → alters the food web.
  - Warmer water means predators are feeding for more time each year.
  - Increased rate of clam predation by milky ribbon worms and green crabs<sup>2</sup>
- Ocean acidification weakens clam shells and can even dissolve them completely.
  - Impairs their ability to grow, reproduce, and fight off disease
- Closures of flats due to biotoxins, bacteria, and rainfall can have a negative impact on economic outcomes for harvesters.
  - Conservation and anti-pollution projects to improve the health of flats could help limit the number of closures.
- Limited entry into the fishery
  - In many towns, there is a greater demand for commercial shellfish harvesting licenses than the available supply.
- Limited number of harvester access points to the intertidal
  - This has made it more difficult for harvesters to access the intertidal without an airboat or skiff.

## Opportunities for the Shellfish Fishery

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- Harvester-driven conservation projects
- Utilizing available grant funding and technical assistance
- Increasing water quality monitoring partnerships between towns and states
  - Can help towns reopen closed areas by determining what events are causing pollution (i.e., conditionally approved areas based on bacteria levels)
- Expand predator control efforts for green crabs and explore mitigation options for milky ribbon worms
- Reseeding or relaying clams to restore populations and boost harvest

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<sup>1</sup> Pershing, A.J., Alexander, M.A., Hernandez, C.M., Kerr, L.A., Le Bris, A., Mills, K.E., Nye, J.A., Record, N.R., Scannell, H.A., Scott, J.D., Sherwood, G.D., & Thomas, A.C. 2015. Slow adaptation in the face of rapid warming leads to collapse of the Gulf of Maine cod fishery. *Science*. Vol. 350 (6262), 809-812.

<sup>2</sup> Beal, B.F., Coffin, C.R., Randall, S.F., Goodenow, C.A., Pepperman, K.E., Ellis, B.W., Jourdet, C.B., & Protopopescu, G.C. (2018). Spatial Variability in Recruitment of an Infaunal Bivalve: Experimental Effects of Predator Exclusion on the Softshell Clam (*Mya arenaria* L.) along Three Tidal Estuaries in Southern Maine, USA. *Journal of Shellfish Research*, 37 (1), 1-27.

## The Casco Bay Regional Shellfish Working Group (CBRSWG)

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- Encompasses 13 coastal communities that harvest shellfish from Casco Bay, facing similar challenges.
- The CBRSWG was created in 2019 to facilitate better co-management of shellfish resources between stakeholders.
- Goals include: improving communication and collaboration of clam harvesters, sharing information on best management practices, and identifying conservation projects to ensure a sustainable fishery.
- The CBRSWG provides a forum for meetings and communications; has prepared guidance documents on the following topics: how to manage multiple shellfish species; milky ribbon worm predation and mitigation; quahog conservation and restoration; and is in the process of developing a community shellfish database for Casco Bay.



*This section includes a town-specific template that shellfish/marine resource committees may elect to complete prior to the presentation.*

### Current Agenda Items in [Town]

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- Item 1
- Item 2

### Request for [Town Council/Board of Selectmen] Action

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- Request 1
- Request 2

**Marine Resource Committee Members:**  
*Fill out name, name, name, Shellfish Liaison*

**Meeting Time and Location:**  
*Fill out time and location*