

Shellfish Advisory Council Management Committee

Matrix of recommendations from the ShAC/DMR regional shellfish workshops in spring of 2022, including existing resources and implementation options drafted by the ShAC management committee

Meeting Materials – ShAC Q1 Meeting March 27, 2023

ShAC members will be prioritizing recommendations that involve the state. Recommendations that involve towns will be shared with municipal shellfish programs in spring of 2023.

Shellfish Advisory Council - Matrix of recommendations from regional workshops in spring of 2022

What - suggestion/idea (from ShAC/DMR regional meeting notes/summary report)	Who - responsible (town, state, federal, tribal, or other - e.g., NGO, Academia, etc.)	When - Timing (short-term, medium, or long-term)	How - Process - (e.g., ordinance change, regulatory change, outreach, engagement, etc.)	Priority (High, Med, Low) - assigned to state-level actions by ShAC, after discussion of completed matrix	Existing Resources
Shore Access (walk-in)					
Developing a similar program to IF&W "Hunter Access Program" (i.e., book that reviews relevant laws) to share with harvesters upon receiving their state license, or to share with municipal shellfish committees	State (DMR), town	medium to long-term	DMR contact IF&W for more information; Conduct review of what information towns distribute w/ licenses (e.g. Milbridge, Frenchman Bay); Develop content (considering literacy), assign program staff, update website and materials, and distribute along with state license applications/renewals (along w/ town student licenses/apprenticeship programs)		Also review IFW Outdoor Partner Program (Landowner Relations Program).
Create a pamphlet for potential coastal landowners that includes language on promoting harvester access	State (Maine Coastal Program/DACF), town, other (Maine Sea Grant, Maine Coast Fishermen's Association)	medium	Collaborate on developing statewide, regional, and/or local information for pamphlet; fundraise to develop and design the materials; distribute to riparian owners, realtors, chamber of commerce, etc.		Maine Sea Grant developed similar pamphlets for Harpswell and Beals in the early 2000s. MCFA released a pamphlet for Harpswell in 2022.
Create tax break incentives (or more effectively advertise them) for landowners providing harvester access	State (Bureau of Taxation), town	long-term	Create something like the "land share" program that IF&W has or "open space" that DACF runs (different categories of open space). Could result in a legislative bill. Interim measure - Connect with Maine Coastal Program and others with expertise to learn more information.		Current Use Taxation Program - Open space and Working Waterfront options.
Create standard language for municipal comprehensive planning that includes preserving harvester access	State (DACF/Municipal Planning Assistance Program), town	long-term	Review model comp plan guidelines (2005) and update? Also consider information from Climate Action Planning/Maine Won't Wait. Address shellfish issues like shore access, funding for wardens, leadership, etc.; perhaps also consider language for model ordinances (shoreland zone/land use ordinances)		Milbridge worked with WCCOG on their comprehensive plan (Judy East)
Generate a fund for shellfish harvesters to draw from to preserve access on a statewide level through small grants	State (MCP, DACF, LMF), industry association	long-term	Similar to other suggestions, funding could be raised through increasing license fees (legislative process or the secretary of state- TBD), creating a shellfish license plate (there is moratorium on special license plates through July 2023), or through legislative appropriations or DMR budget appropriations. Grant amounts would need to be a minimum of \$10K to address access. <i>DMR mini grants would NOT cover access as an eligible project to fund.</i>		Maine Coastal Program Shore and Harbor Grants, DACF Coastal Community Grants, Land for Maine's Future Working Waterfront Access Protection Program
Provide services to landowners in exchange for access	Town	medium	Educate harvesters (through clam committees) around gaining personal (individual) permission, offering caretaking services for properties, provide funds for private road maintenance, improve trails, offer clams, etc. Also, communicate information about conservation, trash clean-up, etc. adjacent to property. Police chief/warden also recognize that clambers have eyes on property for security.		
Provide educational opportunities for realtors	State (Office of Professional and Occupational Regulation - Real Estate Commission), town	medium	Create trainings on working waterfront, pamphlets and talking points so buyers understand the role of fishing in the community. Communicate the benefits for clambers to provide services to land owners. Also two-way street on informing clambers on land owners rights. Potentially coordinate with the Maine Real Estate Commission on training and/or outreach on this topic.		Gouldsboro Shore Access Project, Casco Bay Regional Shellfish Working Group, and Maine Coast Fishermen's Association (Harpswell ww brochure), Deer Isle/Stonington outreach program (in the past)

Add information about shore access to DMR door tags	State (DMR Bureau of Public Health)	short-term	Provide links to information about the fishery, including incentives for providing coastal access, connection with local seafood, etc.	DMR conducts sanitary shoreline surveys without specific legal authority, which should be considered when adding any non-legal messages.
Highlight the importance of shore access to local land trusts	Town	medium	Connect land trusts to shellfish committees, etc.	Downeast Conservation Network, Gouldsboro Shore Access - MCHT and Frenchman Bay Conservancy, Casco Bay Regional Shellfish WG - meeting w/ land trusts, Maine Indian Tribal-State Commission just published a special report, Sea Run.
Municipal planning committees (in collaboration with shellfish committees) should develop recommendations for shore access, including parking	Town	long-term	Develop ordinance changes etc. to provide shore access in new developments and include parking. This language can also be incorporated into comprehensive plans. Also connect with conservation committees and other planning committees. Standard language could also be incorporated into the next iteration of the Maine Shellfish Handbook and/or online.	Once drafted, reach out to planning consultants; Maine Shellfish Learning Network (MSLN) - Lamoine project profile (for example)
Increase availability and use of DMR coastal grants, including working waterfront grants	State (Maine Coastal Program, DACF - Municipal Planning Assistance Program, Land For Maine's Future), town	short-term	Increase funds, increase awareness, and help towns access to grants; funding priorities should emphasize the importance of shore access to the intertidal. Create an online map or document that helps committees identify contacts/organizations for technical assistance. Also have a link to that information from the Maine Municipal Association website.	Maine Coastal Program Funding Guide - https://www.maine.gov/dmr/programs/maine-coastal-program/coastal-access
Incentivize/increase easements on private property to provide more shore access	State, town, other (land trusts - local and state)	long-term	Find funding to compensate landowners, increase awareness and importance. Connect with other land owner compensation programs. Provide information on limited liability under Maine state law for landowners.	Kennebec Estuary Land Trust - has easement language for one of their properties to allow commercial harvesting and parking. Current Use Taxation Program - Working Waterfront. Gouldsboro Shore - landowner liability research.
Inventory shore access points including walk-in locations	State (MCP), town	medium to long-term	Inventory and identify access points, provide information on a web platform that various parties could contribute to. Consider confidentiality of this information, especially with individual handshake agreements for access through private property.	Manomet - Intertidal Access mapping project (5 towns in Casco Bay); MCHT - working on a GIS layer; Maine Coastal Program - working on updating their coastal access guides
Tax the intertidal property owned by upland landowners	State (Maine Revenue Service) or town (tax assessor office)	long-term	Create legislation to tax intertidal lands. Public trust doctrine (rockweed case opened up questions about ownership). This is a private/public issue that has been the focus of court cases, and is a complicated legal issues. Towns may be able to have authority over this issue.	

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Licensing (barriers and opportunities to access)					
Creating new pricing for different types of licenses based on age, where seniors (free), juniors (free), 17-18 (cost less), 18-65 (cost the most)	State, town	short-term	Ordinance change; Outreach - State/ShAC can provide educational materials about what categories are allowed and the 10% rule applies to each category.		Lubec example - they have one general license category, but different fee structures based on age.
Allow for more flexibility in terms of proof of residency, including vehicle registration, utility bills, IDs, etc. (This comment may also be interpreted as increasing flexibility to meet town residency requirements.)	Town	short-term	Ordinance change, town office policies, education - creating 'grandfather' language for residency requirement.		State to clarify that they don't define residency, and what options are available for towns. Bates college students conducted a review of 'residency' requirements in shellfish ordinances across the state (report is available by request to Bridie McCreavy).
Raise fees for non-residents to help cover warden salary	State, town	short-term	State statute (legislation states that non-residents can't be charged more than 150% over resident licences) unless it's a change across the board (resident and non-resident fees). This would also require an ordinance change.		See 12 MRS §6671 [PL 1997, c. 589, §1 (RPR); PL 1997, c. 589, §2 (AFF).] for more information on current regulations.
Allow any non-resident child (younger than 16) to dig without buying a municipal license	Town	medium	Ordinance change		
Improve municipal license accessibility	State, town, MITSC, Wabanaki Alliance	medium to long-term	For students, all citizens of Maine, First Nations; open licensing, reduced fees, etc. Ordinance changes. Educational opportunity (state) to provide tools for towns to achieve some accessibility. Also considerations with Maine Indian Settlement Act (treating tribes like municipalities instead of sovereign tribal governments) - may be wrapped into renegotiations with this Act.		Example - Pembroke, Perry and Eastport - Tribal License (allow to clam anywhere); however, state statute restricts access to require municipal license aside from harvesting in open areas. Elver fishery as example of tribal access - a very lengthy and involved process.
Prioritize areas for commercial diggers, and then determine areas that could be opened for non-residents without impacting commercial harvester livelihoods and be limited to a bushel, or similar amount, or alternatively limited to seasonal access.	State, town	medium	Ordinance change or legislative change (if there is interest in restricting commercial harvest)		Clarify that towns can only limit recreational harvest areas, aside from setting output controls. However, a legislative revision could change this authority.
Restrict the amount of non-resident municipal licenses held by one individual on a statewide level	State, town	long-term	At state level, could create a law that would disallow individuals to hold multiple non-resident licenses. Current state focus is primarily on 10% non-resident license allocation. This could be an equity issue, and is best addressed at the town level. Ordinance change could address this. Would require coordinated enforcement between states and towns. Complicated to address and not an interest for state to address.		Recommended for towns to address this, and not address it at the state legislative/enforcement level.
Create a new type of license be created for Wabanaki peoples that could allow for "historical territorial commercial harvesting," rather than a state and/or municipal shellfish license	State, tribal, other	long-term	Establish law or constitutional change. Intertwined with tribal sovereignty legislation. Tribal ordinances. Could apply for municipal non-resident licenses (towns would need to advertise availability). Consider fairness and reciprocity. Complicated issue.		Pleasant Point (Passamaquoddy) is working on a shellfish ordinance. Damariscotta - has shell middens, also has surplus of non-resident licenses that could be open to tribal harvest.

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Open additional licenses [or reduced fee licenses] in exchange for conservation time	Town	medium	Add free licenses to allow additional participants if they do conservation time.	Education around options for conservation incentives around license fees. Some towns require conservation, others have voluntary programs, which affects participation. Lubec has a Tier system = full price license (\$300), if you attend meetings = reduced price (\$250), if you attend meetings + participate in conservation work = further reduction (\$100)
Standardize residency requirements	State (DMR), town	medium	Create standard requirements through regulation. Towns are accountable for their residency requirements, and have been challenged in court (and have lost cases). Trade-off between state standard regulations/local flexibility/jurisdiction. Educate town clerks. Towns should have robust requirements for documentation to prove residency.	Some towns in southern Maine are re-defining 'residency' to allow harvesters who move out of town to maintain their license. Educate towns about a standard set of documents that are more full proof indicators of permanent residency (for example, state drivers license residency requirements, etc). Who would enforce this? DMR has residency recommendations in the model ordinance.
Improve communication with municipal license holders	Town	short-term	Remind license holders of timing and options to renew licenses. Advertise non-resident licenses when they are available. Compile a packet of information for license holders when you renew or get a new license. Post information online, for example, on Facebook.	Milbridge process - they also mail notices to all current license holders and those on waitlist. Lubec also has a Facebook page that is updated with all relevant information.
Set license numbers based on assessed resource	State (DMR), town, other	medium	Conduct resource surveys by species and set licenses for the following year. This type of assessment is beyond the capacity of some towns to conduct. Towns also use different methods and approaches to surveys. Towns can require harvester-reported data on landings. State needs to identify some criteria for towns (and open/state managed areas) to meet to support allocation changes. For example, town landings data, harvester testimony, resource assessment or visual assessment.	Issue - towns proposal license allocation changes to the state without data to support increases or decreases in license numbers. State-managed flats are also not tied to resource surveys. The state regularly assesses state-managed flats. Educate towns about availability of the Maine DMR landings portal. Example - Milbridge has harvester reporting.
Evaluate the pros/cons of reciprocal licensing	Town	long-term	Committees can consider reciprocal licensing agreements, which increase area harvesters can access, allow for shared financial responsibilities for enforcement, etc. Municipal law governs this option, and there has to be a formal reciprocity agreement.	Milbridge has reciprocity with Stueben and Harrington. They have a reciprocity agreement in place. Damariscotta - Newcastle also have an agreement. Educate about Maine Municipal Assoc - requirements about formal agreements.
Use student licensing to increase fishery participation	Town	medium	Include an apprentice phase into licenses/ordinances, provide lower cost/entry level licenses, consider age in license structures, provide education, etc.	St. George - incentive for students - first year you get a free license. Lubec - under the age of 16 (free), 16-21 is half-price with proof of school. Brunswick shellfish ordinance - student licensing revisions. Milbridge only licenses 16 and over, but it's open to harvest for younger participants.

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Shellfish Conservation					
<i>Participation in conservation</i>					
Encourage/increase participation in conservation activities especially by harvesters	Town	medium	Incentivize participation through reduction in license fees, points earned for license qualification, clear results demonstrated, allow people to pay if they don't want to participate, etc.		Educate other towns on what options are available to increase harvester participation. Some towns that made conservation voluntary have gone back to required hours for lack of participation. Milbridge shifted currency from hours to activities.
<i>Permitting</i>					
Improve process and timeliness of permits required for conservation activities	State, federal (ACOE)	long-term	Address bottlenecks in permitting: shorten turn-around for DMR permits (transplant, conservation closure, etc.). Can state coordinate with ACOE for a streamlined state umbrella permit for certain shellfish activities / towns would be tiered under?		
<i>Funding</i>					
DMR should consider an increase in the state license fee to create a research/management fund for town shellfish programs.	State	medium	Statute change for licenses fees. There's precedence for this approach in other fisheries. There is a license fee surcharge that gives a surplus to a dedicated shellfish fund. This is possible if there is interest from the shellfish industry.		
The legislature should create a shellfish license plate to generate funds for municipal shellfish management like other specialty Maine license plates for wildlife, lobster research and the Humane Society.	State	medium	Legislative - need a petition to demonstrate willingness to buy. There is a current moratorium on speciality plates through July 2023. Managed by the Secretary of State and Department of Transportation.		Also consider other creative fundraising approaches that are not policy related, for example, 5K, raffles, Yarmouth Clam Festival, etc. Important to discuss how money gets allocated, who can apply, etc.
<i>Conservation Activities, Municipal Aquaculture and Other Resources</i>					
Track predator abundance	State, town, other	long-term	Develop survey protocols, database and report out, repeat state-wide surveys like green crab trapping to monitor trends. Can DMR coordinate all the ongoing efforts to collect these data, and perhaps prioritize all the activities to determine collective impact? Bring all partners together to get a shared understanding and identify gaps. Also consider balance between data collection and actual mitigation measures against predation (switch from counting to killing). Track how many towns have the special license for crab trapping (maybe around six towns). How many individuals hold commercial green crab licenses?		DMR, Manomet and DEI are monitoring green crabs.
Evaluation of wild seed transplant activities	State, town	medium	Assess flat before and after seed transplant to see if it improves the resource. Towns need the transplant and relay permit to conduct this activity. Share practices for quantitative and qualitative approaches to pre- and post- assessment. Need for research priorities discussion.		Brunswick has done this with quahogs. Georgetown has also transplanted adult quahogs. Examples of several towns stopping this activity for multiple reasons. Milbridge relayed from closed flats - waited 6 months after, per regs. Educate - share best practices around seeding and transplanting. See the CBRSWG - Conservation Activity Summary Document (linked below).

Use brushing to increase seed sets	Town	short-term	Consider what materials are used, for example, conifers create a refuge for green crabs and hardwood can result in fewer green crabs because there are fewer hiding places. The area/location of brushing is an important consideration as well - location in the intertidal, sediment type, and proximity to eelgrass. Also, the placement (and space between) brushing, plus the size of brush are also considerations. If towns conduct this activity, assessing the outcome of this is important.	Share best practices of sediment, location in the intertidal, placement, size, and materials WRT effectiveness.
Plan and evaluate conservation activities	State, town	medium	Develop a map of the town mudflats, plan activities (inputs and outcomes/outputs) and then monitor their success, document and share with towns or regional groups.	State has these data from towns annual management reviews (inputs, but not outputs). Outputs should be added to the following year annual reports.
Provide an assessment of the effectiveness of conservation activities	State, town, others	short-term	Refer to the Casco Bay Regional Shellfish Working Group's Municipal Conservation Activity Summary	Municipal Shellfish Conservation Activity Summary
Increase/support quahog seeding efforts	State, town	medium	Quahogs are perhaps more predator resistant, abundance is increasing with warming waters, and they can be more valuable than soft-shell clams (market dependent). Legislative process can help facilitate this. Towns that have quahogs in their ordinance can oversee conservation.	CBRSWG - Quahog management and conservation guidance document
Develop new supply streams to increase hatchery seed capacity for conservation projects	State (DMR aquaculture division), town, and other	medium to long-term	Provide more reliable seed sources for transplants/seeding. Also, increase education around the rules/regulations around sourcing seed within Maine and out-of-state. Can state subsidize (or manage) a hatchery and/or seed for the public resource? Can towns and/or the state provide business/tax incentives or infrastructure for private hatcheries?	Currently only private hatcheries - and only 'approved' hatcheries (can be out of state if they meet requirements and get a permit from DMR). Quahog seed, specifically cannot be brought in from out-of-state hatcheries. Example - Gouldsboro shellfish hatchery. Towns can also consider spat collection boxes.
Re-evaluate, or describe municipal aquaculture leasing responsibility more in terms of liability associated with individual towns	State, town	medium to long-term	Regulatory and ordinances changes	Brunswick example - statute allows towns to have authority over leasing, but then they take on legal liability.
Create a separate permit for municipal LPAs and move process from the DMR Aquaculture Division	State	long-term	Change laws and regulation to allow a separate category of "aquaculture" for municipal shellfish conservation projects. Application could be similar to process for transfer and relay permits.	MSLN Guide to Municipal LPAs, other ongoing conversations on this topic.

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Shellfish Management					
Evaluate the content of annual shellfish management review reports	State, town	long-term	Revise annual reports to make them easier to fill out but also collect relevant data that can be used and presented to the public, include count of summonses so enforcement can be highlighted. Also support data management to improve data accessibility.		The form has been updated before, and a few groups have been working towards this , and conducted a survey. The results of the survey should be shared. College of the Atlantic is also working on this.
Strengthen and support the roles of municipal wardens in shellfish program	Town	medium	Strengthen leadership role and meeting facilitation, guidance around job description, management plan (report), etc. Consider capacity limitations as well.		
Improving information sharing to help with understanding of shellfish regulations	State	medium	Harvester education, apprentice program, water quality closure communications. How do we get more information out there AND how is it received?		This is challenging and some individuals are applying regulations from one species to others. Water quality regulations are also challenging for some. Frenchman's Bay may create materials/QR codes around water quality and closures, especially recreational harvesters. Lubec town provides info to recreational diggers about open/closed areas - Facebook also helps w/ communications.
Improve landings data	State, town	long-term	The State can provide dealer data but not on a fine scale, towns can require reporting and obtain data on a finer scale, could implement a alpha-numeric system to increase reporting accuracy. Towns would like some details around highest production areas for landings to focus their conservation and management activities in those areas. However, confidentiality rules limit state dissemination of local data. Harvester reporting could address this. Can towns request confidential data through a non-disclosure agreement?		Some towns require this, the State has the landings portal that displays shellfish landings data. There are 4-5 towns who have harvester-reported data.
Provide annual harvest report at finest scale possible	State	short-term	Refine data to lowest level possible and provide to municipalities and the public. DMR can provide landings data when requested, although they don't typically provide all data. State is planning to prepare an annual landings report by town on an annual basis.		
Allow harvesters to self regulate based on resource availability	Town	short-term	Open licensing, market dictates harvest effort - local decision.		
Define shellfish committee structure	State, town	medium	Change statute to require shellfish committees if you have an ordinance. Also consider defining minimum and diverse representation (types of membership, with at least one harvester or a min # of harvesters). Harvester representation in decision making is important. Ordinances would then reflect any changes to state regs.		Frenchman Bay Regional Shellfish committee are affected by ethics ordinance that recuses harvesters from discussions/voting with conflict of interest.

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Prioritize issues/projects for municipal shellfish program	Town	medium	Develop a shellfish management plan that prioritizes issues and focus on the most important first. Separate from ordinance. This is required by state reg, but in practice, many towns consider the ordinance and/or annual management review to meet this requirement. Could develop a model shellfish management plan as a template.	
Towns should consider how minimum and maximum size limits would support the local resource	Town	medium	Towns should consider a recommendation to setting a maximum size in their ordinances to increase survival and productivity	
Remove the Shellfish Management Program from Bureau of Public Health (BPH)	State	long-term	Change organization of BPH through state budget initiative. Also consider how new staffing and organizational changes have addressed some of the concerns behind this suggestion.	Conversations around roles and responsibilities are happening. The new staff capacity within the Nearshore Marine Resource Program is starting to address the issues behind this suggestion. This originally came from an audit of DMR in 2013.
Improve management of state managed areas (towns without a municipal ordinance)	State	long-term	Increase management of non-program towns, hold to the same minimum standards as municipal programs. At a minimum, allow the State to place conservation closures, and/or review effort based on survey data or similar. Would require a statute change to give the state more/different authority in state-managed areas. Perhaps conduct a review of the disparity of authority/regulations in town-managed vs. state-managed mudflats.	State is responsible for depuration permits in prohibited and restricted areas. They also evaluate mussels, but not necessarily on a statewide basis (focused on Lamoine and Jordan). Non-program towns have been managed by the state, but they don't have a conservation or management tool (outside of water quality) to put measures in place.
Repeal regulations defining municipal shellfish jurisdiction to between high water and subtidal (<i>12 MRS §6671</i>) [<i>PL 2017, c. 350, §2 (NEW).</i>] (<i>proposed as LD 1519</i>)	State	long-term	Requires a legislative change and new definition. There are Supreme court rulings on this ownership issue as well.	This has been confusing for towns to enforce, especially with different definitions of the intertidal zone/low tide, and being able to delineate between the tidal zones. These boundaries are not on maps. It also resulted in a gray area in a band between MLW and lowest tide of the year where aquaculture leases could be permitted by the state in an area that was managed by towns. Extreme low tide (1-ft water), hand-pulling, and question about town-license vs. state license (enforcement issue) - is why the definition was revised.
Improve planning for resource management	State, town	medium	Develop resource management plans that look towards the future, schedule conservation activities, assess results, conduct resource assessments, rotate flats, adjust licensing etc. Create a template that towns can tailor and share with other towns. Similar to town comprehensive plans (10-year forecast), looking at specific shellfish flats and water quality, etc.	In statute, shellfish management plans were required in order to have an ordinance, but the requirement was lost. In 2023, the State will require towns to have a shellfish management plan.

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Technical assistance, training, outreach/education, and communication					
Increase number of DMR area biologists	State	short-term	The recent State budget includes three new positions for Shellfish Management Program. There is still interest in hiring a 4th Marine Resource Scientist, and then transitioning the three regions to four regions/four people. DMR will continue working on the state budget.		Two of the DMR new hires will support some of the towns and state-managed resources. The supervisory biologist will oversee the program.
Increase direct communication between shellfish committees and DMR	State, town	short-term to medium	Institute regular regional meetings (DMR), increase DMR staffing levels, increase DMR attendance at town shellfish meetings, committee chairs/warden or MRCO communicate with DMR on regular basis. Towns can also invite area biologists and water quality staff to meetings. DMR staff should reach out to the towns at least annually to attend a meeting.		DMR instituted regional meetings on at least an annual basis. Staff has increased by three for 2023.
Improve public perception of shellfish industry	Town, others - harvesters	short-term	Landowner appreciation events, face-to-face interactions, town planning/zoning, education materials, community listening sessions, and media (local or regional news)		
Provide annual report information to the public	State	medium to long-term	Add links to annual reports on DMR's webpage with town information - ordinances, licenses, etc. The state could summarize information in annual reports. Towns can also provide information on their websites.		DMR is starting to think about how to summarize and share data back out to towns. In the interim, towns can request reports from the DMR.
Increase communication on social media (e.g., Facebook, etc) to keep harvesters informed	State, town	medium to long-term	DMR and towns develop social media accounts and establish strong system of keeping them updated and relevant.		Lubec has a clam bulletin Facebook page where they post meetings, topics, licenses, etc. Georges River Regional program posts similar information online for all five towns.
Public relations effort to help citizens view shellfish fisheries as part of the community v. "other"	State (DMR - Website/Marketing), town	medium	Secure funding and hire marketing group to develop materials and events. See examples of lobster and buy Maine lobster. Marketing the industry and not just the product.		Maine Won't Wait - Seafood Promotion Council - in development (SEA Maine). DMR - Seafood from Maine website. ShAC - got approval to use Maine quality seal - for any certified seafood dealer.

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Increase regional cooperation in informal ways	State, town	short-term	Create times and places for regions to come together to discuss shellfish conservation and management.	DMR regional meetings are happening annually. The Casco Bay Regional Shellfish Working Group convenes meetings in southern Maine. Downeast Maine has regional meetings as well.
Develop handouts for recreational diggers	State, town, others	Short- to medium term	Develop education materials including QR codes for closures, licensing, identification, limits, etc. Consider having town clerks distribute with license application.	Downeast towns have distributed this information in the past with licenses (Pembroke, Perry, Eastport). Lubec is working on a one-pager that has a map, shows where closed areas are, and distributes with licenses.
Promote available management and informational resources on DMR website	State	medium	Provide instruction on using interactive web map, webpages, landings data, etc. Try to determine how best to reach towns and harvesters to share these resources. Working through town clerks, town committees, etc. Area biologists can also share this information when they attend town meetings.	DMR has new website. The regional DMR meetings are providing demonstrations of these online resources. Linking to the landings information page from the shellfish management webpage.
Increase shellfish education in local school curriculums	State, town, school, nonprofits	medium	Develop programs to engage students at all levels to increase awareness of shellfish industry and highlight it as a potential profession. Potential funding sources (TBD) for purchasing boots to get children on the mudflats, for example \$2,000, and then Hamilton Marine donated boots. Can curriculum be shared from existing programs with students?	Kennebec Estuary Land Trust worked with elementary students. Brunswick high school has worked with the MRC. Freeport middle school works with Downeast Institute and the Clam Committee. Georges River works with Herring Gut and students (all ages) on pollution sources. GMRI and Manomet have a community science curriculum for green crab data. Lubec has taken trips with summer school children. Gouldsboro and Schoodic Institute have done a lot of conservation and management projects with students.

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Data and Information Needs					
Provide more environmental information on factors such as nutrient levels, temperatures, salinity, river flow measurements, etc. This data can be collected (using standard protocols) from increased measurements during current water quality testing, or providing funds for municipalities to take similar biological measurements.	State, town, other	medium	Purchasing new monitoring equipment, setting up database, providing additional training, and coordinating with other organizations (i.e. nonprofits and academia) that may already be collecting this information. State provide information to towns on conditional closure areas (rainfall), and other general information. Identify funding resources.		Georges River hydrodynamic modeling and flow (U Maine/Gabby Hillyer). Lauren Ross - Working with Waldoboro on Medomak River hydrodynamic modeling. Towns have been working with PCR testing and partnering with UNH/academia to conduct testing. Maine Sea Grant has helped fund eDNA testing. Some information is included in the Maine Clam Handbook. Yarmouth WWTP has worked with their Shellfish Committee on water quality testing. MSLN developed a water quality decision tree to help towns (visit: themudflat.org).
Provide model language for comprehensive plans	State, towns, regional organizations, nonprofits	medium to long-term	Provide model language that would include shellfish management and conservation		Regional councils of governments/economic develop corporations could support the development of model language.
More real-time modeling efforts like Bigelow Lab's PSP forecast	State, other (non-profits, research organizations)	long-term	Secure capable partners and funding plus data streams. A first priority could be to expand to ASP modeling.		Federal funding - NOAA MERHAB - significant resources are needed. https://coastalscience.noaa.gov/science-areas/stressor-impacts-mitigation/merhab/
DMR should conduct statewide stock assessments on a regular basis and share the information with municipal shellfish programs.	State, town	long-term	Develop capacity for more state-wide resource assessment work for all species, find funding and workforce, and provide state stock status report. DMR can also synthesize information towns provide and share back out.		DMR continues to assess open areas.
Increase stock assessment efforts by towns	State, town, other (nonprofit, academia, research)	medium	DMR can provide training for resource assessments. Identify where towns can find people to help conduct surveys (partnerships). Identify funding sources to conduct surveys (if they needed to outsource a contractor to do the work).		Some towns are trending more towards stock enhancement (seeding), and away from stock assessment.
Define the economic significance of the shellfish industry	State and others	long-term	Research to quantify direct economic contributions and indirect economic contributions. State could provide a contract to an economist to do this research. Would be highly beneficial for towns to have this information for their local economy. Also, consider value of access points.		Keith Evans has started research on the fishery. Kanae Tokunaga at GMRI is a fisheries economist. Mario Teisl, Kathleen Bell, Lynn Lewis (U Maine), and Jen Meredith (Colby) are also natural resource economists.

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Enhancing Effectiveness of Shellfish Committees					
Allowing shellfish conservation committees to work more directly with the state (rather than going through town councils/boards of selectmen).	Town	medium	Town ordinance change that defines governance and decision making authority between the committee and/or town council/board of selectmen.		
Increase harvester participation at shellfish committee meetings	Town	short-term	Incentivize participation (e.g., offer conservation hours towards required #), outreach, engagement, offer food, contentious issues, limit length, schedule regular meetings in advance, take busy season off, post agendas early, etc. Recognize different levels of value participants see from attending them. Consider remote participation (hybrid virtual meetings or televised meetings). Also consider the potential impacts of participation from buy-out of conservation hours. Send out agendas in advance.		
Increase harvester participation on shellfish committees	Town	medium	Incentivize membership, require a certain number of harvester seats on the committee, validate harvester input/local knowledge. Could review rationale for participation to better understand why they attend meetings. Ethics ordinances that some towns have are in conflict with the co-management model. Explore other avenues to connect with harvesters one-on-one and outside of formal town committees meetings. Send out agendas in advance.		
Providing resources and training for shellfish committees to learn key skills for running productive meetings	State, town	medium to long-term	Provide learning opportunities on running good meetings, including different perspectives, filling out paperwork, changing ordinances, etc. Maine Sea Grant has facilitation trainings (Kristen Grant). Regional marine resource scientists could also serve this role. The Maine Shellfish Handbook also has some basic information included. Town nominating committees could also provide training as they onboard new members to committees.		Maine Municipal Association offers this training for planning boards. It should/could be extended to shellfish committees.
Encourage committee participation from younger harvesters.	State, town	short-term	Ordinance change to require student license holders to attend meetings, offer conservation points on a volunteer basis (taking DOL regs into consideration), etc. At state level, could require meeting attendance (local, regional, or state) as part of their state license.		
Educating shellfish conservation committees on the responsibilities of managing the resource and introducing them to the information and tools to achieve this.	State, town, other	medium	Develop training materials and delivery mechanisms (e.g., online trainings, area biologist presentations, workbooks/guides, etc.). As a precursor, clarify roles and responsibilities between the State and town programs. Offer training to town clerks and any town council/selectman liaisons to shellfish committees.		Maine Shellfish Handbook is one resource. Maine Sea Grant mailed two copies to each town with a shellfish program in Spring 2022.
Engage selectboard/town council in shellfish management	Town	short-term	Establish a position for a selectman/town council member to serve as a liaison on the shellfish committee. Provide training if necessary.		Many towns are already using this model.
Develop leadership in municipal shellfish programs	State, town	long-term	Offer educational opportunities/training, mentors, guidance, etc. Consider diversity in forms of leadership and how it can show up in different ways (e.g., at meetings or behind the scenes).		
Ensure shellfish committee composition emphasizes wild harvesters	Town	medium	Structure shellfish committee membership to ensure wild harvesters are well represented, quorums could require shellfish harvesters to be present. Ordinance changes could reflect these values.		

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Water Quality/Pollution Abatement					
Improve coordination between DMR water quality sampling and town efforts	State, town	short-term	Institute regular regional meetings, increase DMR staffing levels, increase DMR attendance at town shellfish meetings, initiate new prioritization effort. Regional scientists and water quality staff could attend town meetings to share data/trends and information from water quality testing labs. Towns can also conduct their own fecal coliform (P90) water quality testing (although they may not be aware of this possibility). Educate towns on options for collecting/testing water samples.		DMR has initiated regional meetings, increased staffing, and regular attendance of water quality and science staff at town meetings. Some towns are conducting their own water quality testing.
Improve coordination with municipal officials to solve pollution problems	State, town	medium	Meetings to involve town officials (Licensed Plumbing Inspector), DMR staff, other state officials (DEP and/or DACF, DHHS), work plans or taskforces to solve problems. Increase communication among all involved parties.		MSLN Water Quality Decision Support Tree guide provides information on how to improve coordination. (Visit: themudflat.org)
Plan community efforts to improve water quality	State, town	medium	Hold meetings and events to involve town officials, DMR staff, other state officials, citizens, non-profits, students, etc. Create work plans or taskforces to solve problems, paint drains, and engage citizens scientists. Prioritize identifying land uses and actions that directly address water quality closures.		Georges River is doing this now with five towns, focused on dog waste. Waldoboro has also done similar work.
Conduct shoreline clean-ups	Town	short-term	Improves relationships/perceptions, helps preserve access, can be a community event.		Many towns conduct shoreline clean ups.
Incentivize landowners to maintain septic systems and remove overboard discharges	State, town	long-term	Secure funding for grants to remove OBDs and repair septic systems, institute tax rebates for regular maintenance, and require periodic inspections. Ordinance changes could address septic inspections and permits. Also, raising awareness of public reporting of water quality issues.		DEP Small Community Grants program sometimes has money for septic maintenance. Some towns in southern Maine do have ordinances around pumping out septic regularly in the shoreland zone and requiring permits to perform maintenance. DHHS and DEP have regulations around failing septic systems.
Educate up-river towns of pollution impacts downstream	State, town, other (nonprofits)	medium	Provide education materials, presentations, etc. to towns up-stream of shellfish flats, and develop incentives for them to reduce pollution sources. Towns should increase coordination with DMR water quality staff (perhaps to conduct upstream testing).		
Reduce the impact of dredging on shellfish flats	State and federal (ACOE)	long-term	Utilize permitting process to consider dredging impacts on the mudflats, and any mitigation measures. Consider timing of the dredging (e.g., spawning/conservation closures) and beneficial uses of dredge materials.		
Consider the impacts of contaminants like PFAS from industrial sites on shellfish flats	Town, state and federal (ACOE)	long-term	Conduct pilot testing of shellfish meats and mudflats, and carefully consider remediation options.		DEP is looking into this, although with a focus on drinking water and not necessarily mudflats/shellfish. EPA and FDA are looking at shellfish.

Shellfish Advisory Council - Matrix of recommendations from regional workshops in spring of 2022

Towns can conduct independent shoreline sanitation surveys, water testing, and pollution tracking.	State, town	long-term	sources are addressed and mitigated. The state can help towns secure funding, identify subject-matter experts, and identify labs to test water samples.	
Training citizens, including harvesters, landowners, and municipal officials, to recognize pollution sources	State, town	medium	DEP and local communities provide training and standard reporting protocols. Identify options to recruit people to participate.	
Educate citizens, municipal officials, etc. about wildlife and domestic animal waste	Town and other state agencies (IF&W, DEP, DACF, Animal Welfare)	medium	Develop educational materials, policy guidelines, Best Management Practices, etc. Post on town websites and present during town meetings. Prioritize for water quality mitigation (i.e., wildlife sources are challenging to track and mitigate vs. domestic animals). Wildlife - focus on deterrence and habitat vs removal.	
Clarity around who to contact/involve regarding pollution issues	Town, DMR, and other state agencies (IF&W, DEP, DACF)	short-term	Refer to a flow chart in the Water Quality Decision Support Tree developed by the Maine Shellfish Learning Network. Build out materials to provide to towns, and supply printed versions.	https://themudflat.org/water-quality-decision-support/
Increase involvement of local Code Enforcement Officers (CEOs) in pollution/water quality issues	State (DHHS, Fire Marshall Office), town	short-term	CEOs and LPis should have job description/duties that emphasizes the importance of water quality for shellfish harvest areas. State Fire Marshall Office have authority over code enforcement training.	
Establish priority system for reopening flats	State, town	medium	DMR solicit priorities from towns, and drafts investigative reports. Towns mitigate pollution sources. Identify outreach options to increase understanding of the process in towns. Consider establishing a more formal process where towns and the state can coordinate on closed mudflats. Perhaps identify the process that towns are using to address these issues (and consider other factors, e.g. resource status). Town involvement in testing helps educate and empower towns in the process.	This process is happening in some towns, other towns may not have a full understanding. Water quality staff from DMR will start attending town meetings on an annual basis.
Establish guidelines around lab results (especially water quality)	State, town	short-term	Create and post guidance on how town collected water tests can be used and from which labs. Towns should coordinate directly with DMR on the process, as there are nuances depending on the testing/desired outcomes.	DMR has a list of approved labs.
Real-time communication around water testing results	State	long-term	Provide real-time data on web platform, currently annual data is available on DMR's website (Public Health Map Viewer). DMR could also provide an explanation of the water quality tests conducted, the results, and the predictive nature of the data (in non-technical terms).	DMR is working to address this recommendation. They need to develop new software, etc. to increase results, to more frequently, perhaps weekly.

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Enforcement					
Increase the number of DMR Marine Patrol Officers (MPOs)	State	long-term	Requires a DMR budget increase and effective recruitment and retention practices. There are also challenges with the Academy and training. In the interim, possibly review the geographic distribution of MPOs to increase reach and effectiveness of existing officers.		
Clarify roles between DMR MPOs and municipal wardens	State, county, town	medium	Provide clear job descriptions and handbook to municipal wardens, increase content at warden training events. Initial shellfish warden training duration and recertification could be increased. Conflict of interest is also a consideration with municipal shellfish wardens and individuals who apply for certification (e.g., harvesters). Some towns are hiring county sheriff offices to provide enforcement.		See animal control certification for reference.