

Final Report

Identifying and Prioritizing Restoration Opportunities for Coastal Aquatic Habitats in the Massachusetts Bays Region

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Introduction

Successful habitat restoration projects require careful planning, design and sustained management. [Minkin and Ladd \(2003\)](#) found that the location of projects used for habitat restoration is critical in determining, developing, and preserving habitat functions. Restoration success has been found to improve when site-selection decision making utilizes a watershed approach ([NRC 2001](#)). Identifying appropriate restoration projects for coastal aquatic habitats requires input from an array of qualified state agencies, local governments, grass roots organizations, and local user groups. In Massachusetts, there have been wide-ranging efforts to develop restoration management tools.

Funding for this project was awarded to the Massachusetts Division of Marine Fisheries (*MarineFisheries*) in February 2012 by the Mass Bays Program (MBP) to address the following questions: 1) Are there significant information gaps within the Mass Bays region that need to be identified when developing habitat restoration priority lists, and 2) How can we develop a sustainable methodology for assessing priority restoration sites on a larger, regional scale? By identifying and prioritizing restoration activities within the Mass Bays region, *MarineFisheries* can make informed and appropriate decisions when administering the In-Lieu Fee (ILF) program or other potential funding sources to achieve the goal of no net loss to aquatic habitat area, functions and values. Additionally, the development of a project ranking tool will allow *MarineFisheries* and other stakeholders to compare potential restoration projects across multiple habitat types and communities, with the goal of improving project selection and the likelihood of restoration success.

Background

Pursuant to the 2008 Army Corps of Engineers (the Corps) regulations for the Compensatory Mitigation for Losses of Aquatic Resources (33 CFR Parts 325 and 332), *MarineFisheries* maintains a trust account and administers the In-Lieu Fee (ILF) program for the Corps in Massachusetts. The ILF program is available as a mitigation option for certain construction impacts to aquatic resources and habitats of managed diadromous fish, marine finfish and shellfish species in Massachusetts' waters, authorized under the Corps Massachusetts General Permit (GP). Permittee-responsible mitigation options for small impacts are often infeasible or less environmentally beneficial. Therefore, the ILF program was developed to provide an alternative to permittee-responsible compensatory mitigation in order to achieve the goal of "no net loss" to aquatic habitat area, functions and values. Mitigation funds from ILF are used to target projects or locations that can demonstrate a higher degree of success in restoring impacted habitats. For more information about the program, visit <http://www.nae.usace.army.mil/Regulatory/Mitigation/ma.htm>.

The ILF program tracks direct and indirect Corps-permitted impacts to 5 key habitat types: open water, submerged aquatic vegetation (SAV), salt marsh, intertidal (tidal flats, shellfish beds), and coastal streams with the goal of identifying and implementing restoration and enhancement efforts for these habitats (preferably in-kind). Examples of potential restoration project types for each habitat category are listed in [Table 1](#). These habitat categories will be used when identifying potential restoration projects in the region during a project inventorying exercise, as well as when developing a project prioritization tool.

Table 1. Restoration priorities for coastal and estuarine habitat impacts under MA ILF

Open Water	Water quality improvement	Salt marsh	Salt marsh restoration
	Sediment remediation		Removal of tidal restrictions
	Marine debris removal		Sediment remediation
	Fish habitat enhancement		Conservation easements
	Coastal fill removal	Streams	Fish passage (dam removal, ladders)
	Shellfish restoration		Water level management
			Water quality improvements
SAV	Eelgrass planting	Intertidal	Marine debris removal
	Modification of mooring hardware		Shellfish restoration

Three coastal regions ([Figure 1](#)) have been established using a watershed approach to allow for the appropriation of funds toward restoration efforts within each region (preferably in-place). Communities within the MBP region comprise almost the entire coastal extent of the North and Central ILF coastal regions, with several communities along Cape Cod Bay extending partially into the Southern coastal region ([Figure 2](#)). To date, the ILF program has accrued \$194,652 for the restoration of coastal aquatic resource habitats in Massachusetts ([Figure 3](#)). This money must be used exclusively for funding aquatic habitat restoration and enhancement projects.

The MA ILF Program is currently undergoing an expansion by the Massachusetts Department of Fish and Game (DFG). This expanded program is expected to be in operation within the next 6 to 12 months and will be a comprehensive statewide ILF program that includes restoration and enhancement opportunities for both inland and coastal aquatic habitats. ILF-eligible permit categories will also include the Corps Individual Permits (IP), which do not qualify under the existing program. This expansion is expected to generate hundreds of thousands of dollars annually for aquatic habitat restoration, enhancement and preservation projects in Massachusetts, including substantially more funding to address impacts to coastal aquatic habitats.

Materials developed through this grant were tested using a process to select restoration opportunities for funding through the *Marine Fisheries* first ILF Program funding round in December 2012. The lessons learned from this exercise are discussed in detail in the Management Recommendations section. The tabulated results of this process are included in [Appendix J](#).

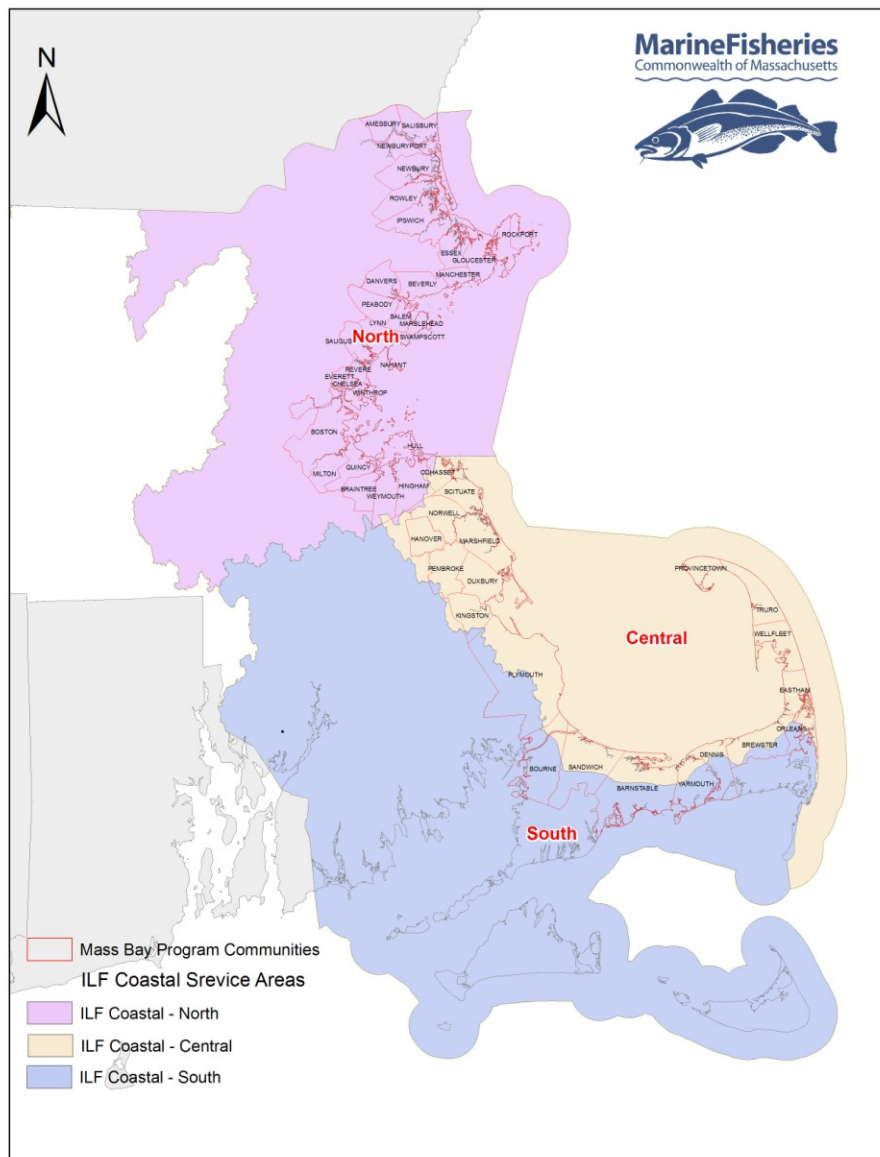


Figure 1. Massachusetts In Lieu Fee Program areas

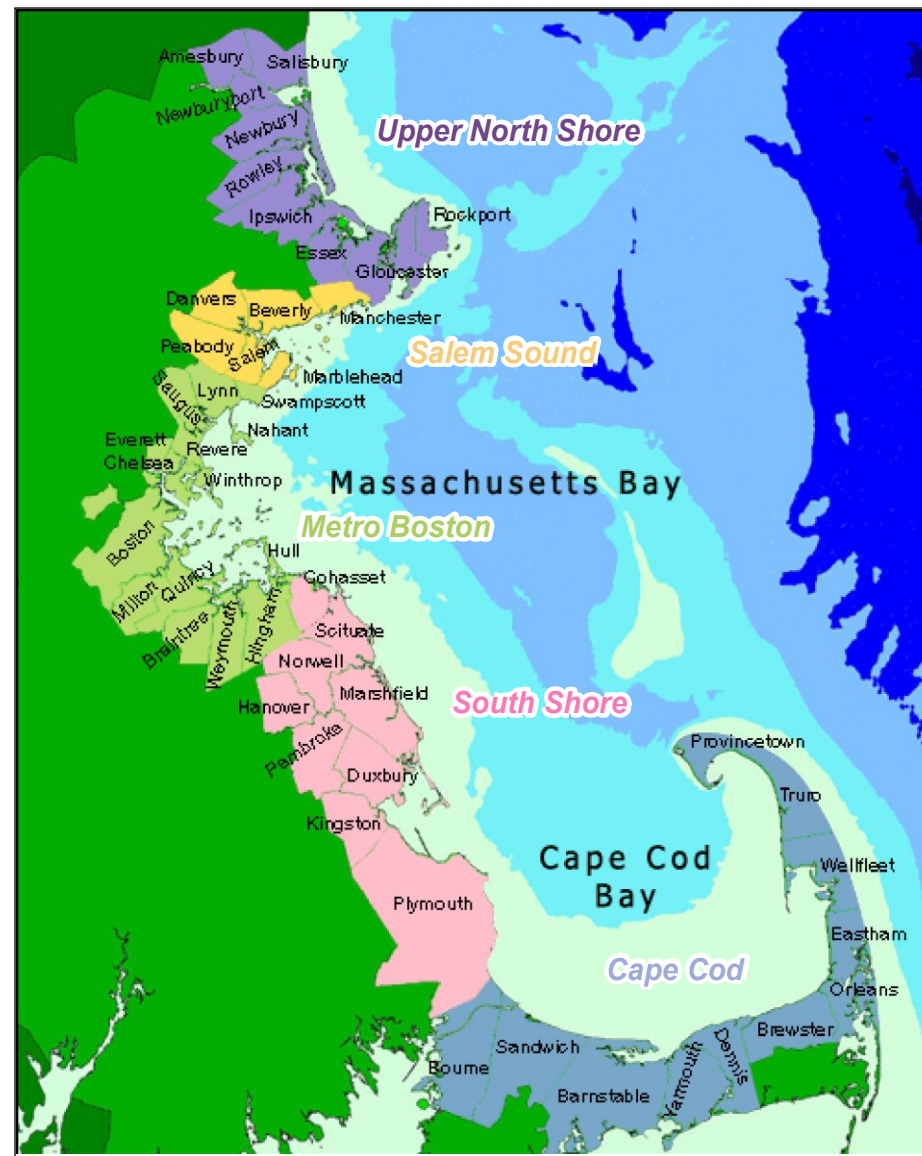


Figure 2. Massachusetts Bays Program areas

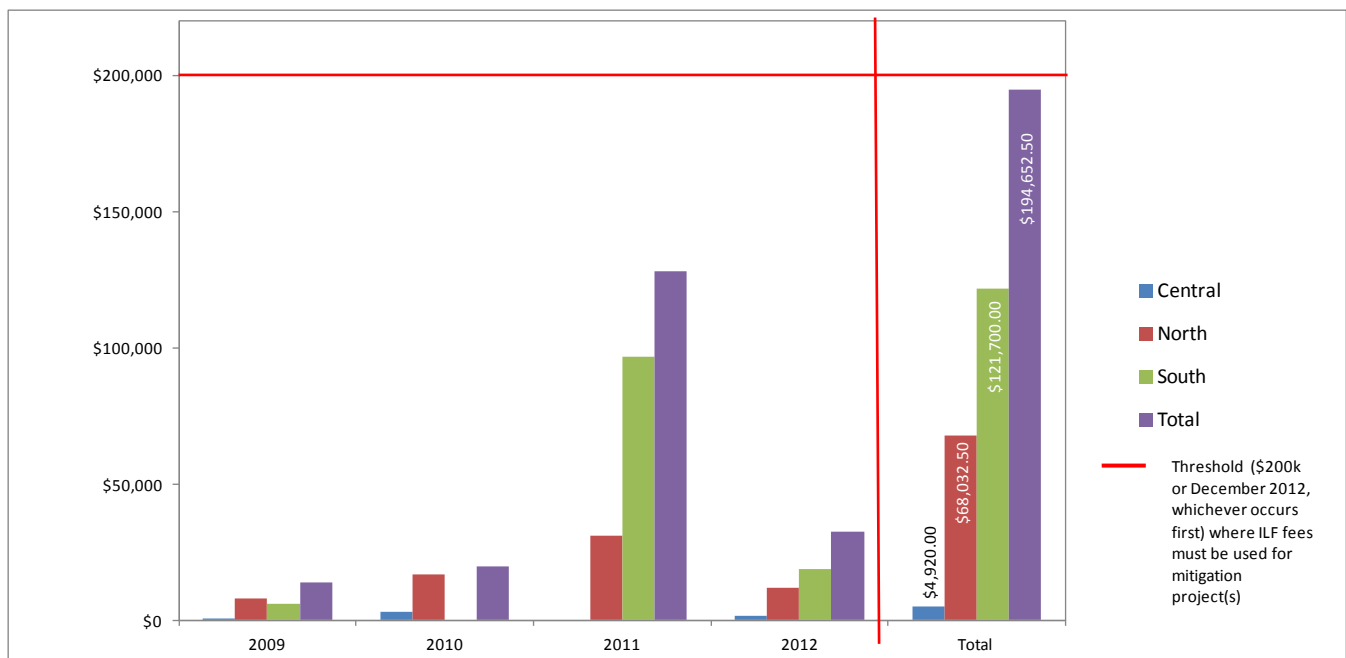


Figure 3. Funds accrued under the ILF Program since 2009 by ILF region. Fiscal and temporal thresholds, shown in red, trigger the requirement to apply funds toward mitigation projects.

Goals

MarineFisheries initiated this project to answer two important questions: first, are there significant information gaps (i.e. underrepresented locations or untargeted habitat types) within the MBP region that need to be identified when developing restoration priority lists? Next, using the input and expertise from existing efforts to prioritize restoration habitats on localized scales, how can we develop a sustainable methodology for assessing priority restoration sites on a larger, regional scale that can improve the ability of partner organizations and communities to restore and manage coastal aquatic habitats and resources?

The primary objectives of this project are to:

- Compile existing restoration priority lists that have been developed within the MBP region with input from qualified state agencies, regional planning entities, local governments, grass roots organizations, and local user groups;
- Identify data gaps such as underrepresented locations or untargeted habitat types; and
- Develop a sound, technical, repeatable ranking methodology for prioritizing potential restoration and enhancement projects.

Tasks

The following tasks were developed to guide *MarineFisheries* in answering the project questions:

Planning Task 1:

- Compile existing habitat restoration priority lists from relevant state agencies, regional planning entities watershed groups, grassroots organizations and literature resources within the study area;
- Organize identified restoration opportunities into five habitat categories ([Table 1](#)) and assign a location for each identified opportunity to one of the 50 communities within MBP regions. Maintain data in excel matrices;
- Analyze data using GIS mapping software; and
- Identify any information gaps (includes identifying underrepresented communities within the MBP area as well as untargeted habitat types).

Planning Task 2:

- Compile existing methodologies used for ranking habitat restoration priorities from any relevant state agencies, watershed groups, and grass roots organizations;
- Develop a sound, technical, repeatable ranking methodology for prioritizing restoration opportunities;
- Conduct regional stakeholder workshops to gather additional input, present and discuss findings, further develop the ranking method, and outline next steps;
- Synthesize input from stakeholder meetings to modify the ranking methodology and summarize findings in a final report; and
- Publicize findings on *Marine Fisheries* and/or other appropriate website(s).

Deliverables

- Conduct project kick-off meeting
Deliverable 1: Final scope of work and completed contract
Delivery due date: 3/8/2012 and 3/29/2012
Date completed: 3/8/2012 and 3/29/2012
- Compilation of existing information
Deliverable 2: Draft list of habitat restoration resources and opportunities, and a draft synthesis of project ranking methodologies
Delivery due date: 6/29/2012
Date completed: 6/25/2012
- Conduct regional stakeholder workshops to present information, gather comments, and identify gaps
Deliverable 3: Agenda and list of stakeholders invited to participate
Delivery due date: 9/28/2012
Date completed: 9/26/2012
- Develop ranking methodology and identify restoration opportunities
Deliverable 4a: Draft report and recommendations
Delivery due date: 11/16/2012
Date completed: 11/16/2012
Deliverable 4b: Final report summarizing findings and including recommendations
Delivery due date: 12/31/2012
Date completed: 12/21/2012 *this report*

Methods

Task 1: Are there significant information gaps within the Mass Bays region that need to be identified when developing habitat restoration priority lists?

Compiling priority restoration project lists

To accomplish the objectives of this task, over 40 stakeholders from relevant state and federal agencies and programs, watershed groups, and grassroots organizations within the MBP region were researched via the internet and published materials, and/or contacted via phone and email to inquire about their organization's restoration priorities ([Appendix A](#)). Groups were asked to provide information about potential restoration projects in their area that were of high priority to that group. Project data were compiled into a series of excel matrices displaying projects by habitat type, project type and town (summarized in [Appendix B](#). For the

full database, contact the authors of this report). We utilized the five habitat types identified by the Massachusetts ILF Program ([Table 1](#)) to categorize each restoration project by habitat. Projects spanning town boundaries were assigned one town based on where the majority of the work was proposed. Organizing the data by habitat type and community in excel matrices allowed for easy input into GIS for spatial analysis.

We encountered some hurdles in the information gathering process and realized some caveats to the use of the data produced by this effort, including the following:

- Finding and reaching the right contacts was a challenge during the inventory phase of this work. Information may be missing if we were unable to reach a relevant group, were unaware of a group, or the group opted not to share information.
- The definition of “priority” was not specified during the inventory exercise, i.e. we included any projects that the stakeholder group interpreted as their “priorities”, whatever their basis may have been.
- Projects were not sorted by project size, magnitude of impact/benefit, feasibility, or cost; they were simply compiled raw.
- Projects identified by querying online resources were not monitored for updates to their current status, thus some data may be outdated.
- Discretion was used when entering a project list into the matrix. For example, the Great Marsh Restoration Plan lists “high”, “medium” and “low” priority projects, but only those of “high” or “medium” priority were entered into the matrix to avoid listing hundreds of similar projects for the same community. Refer to [Appendix C](#) for detailed notes on mining restoration data from specific resources.
- General priorities were avoided for the purposes of this compilation. Many general habitat improvement/restoration projects exist without specific site selection (i.e. need for coast-wide marine debris removal program, general water quality improvement, etc).

Despite these limitations, this task projected priority list information as a snapshot in time to compare projects by community and habitat type to identify potential gaps. The maps, figures and project lists resulting from this work can be expected to change substantially over time. The data inventory and investigation of gaps are simply first steps toward identifying habitat restoration priorities regionally.

Querying MarineFisheries coastal impact data

MarineFisheries Environmental Review staff comment on permit applications for coastal construction projects, coastal management plans, and other non-fishing coastal activities in an advisory capacity to municipal conservation commissions, the Department of Environmental Protection (DEP), Massachusetts Environmental Policy Act (MEPA), Coastal Zone Management (CZM), and the Corps. *MarineFisheries* maintains a coastal alteration project tracking log containing information from a variety of permit applications. To examine potential gaps in restoration potential across different habitat types, we conducted a basic frequency analysis comparing restoration priorities in each MBP region and community to the frequency of coastal alterations, or impacts, within the same regions over a three year period. This simple analysis did not take into account the size or duration of individual impacts or restoration projects, nor were the data normalized by any other variables.

Between 2009 and 2011, over 900 coastal alteration projects were submitted for environmental review in Massachusetts, 621 of which were in the MBP region. After discarding inapplicable projects (i.e. repeat submissions, restoration projects, repairs to existing structures, non applicable habitats) from this list, the remaining 298 coastal impacts from 231 individual coastal alteration projects ([Appendix D](#)) were categorized

by town and habitat type. This compilation does not cover every impact to our coastal habitats, but it can be used as a proxy for construction-based impacts.

Analysis in GIS

Project counts from the coastal impact data (from the Environmental Review log) and potential restoration project data (from stakeholders) queries were mapped in GIS to visualize data spatially and by habitat type to look for gaps. We first looked for gaps by MBP regions, and then on a localized level by individual community.

The GIS maps produced in this effort portray a snapshot in time of the available data. Project counts by town and habitat type have not been standardized or normalized to reflect differences in individual project sizes for impacts or restoration, and other information may be missing, unavailable, or outdated. These figures should be used with caution. Individual project sizes (i.e. acres, LF, sq. ft.) were not considered in this analysis as the scope, budget and timeline of this project did not allow for that level of investigation, though we recognize this type of expanded analysis would be a valuable next step.

Task 2: How can we develop a sustainable methodology for assessing priority restoration sites on a larger, regional scale?

Compiling ranking resources

An internet-based literature search was performed to seek out relevant restoration project scoring methods in our region and nation-wide. Additionally, some stakeholder groups were asked to provide their project evaluation methodologies, if applicable. Our goal was to find several ranking methods relevant to each of the five habitat categories in [Table 1](#), and to use these methods as a guide in designing a developmental tool that would allow for scoring projects across a variety of habitats and communities. Refer to [Appendix E](#) for a list of project ranking resources.

Creating a worksheet and guidance document

We combined items from several of the ranking methods listed in [Appendix E](#) to create a draft scoring worksheet. The result was an eight page document containing dozens of scoring parameters, possible values, and scoring rules. We then condensed each section, finding scoring parameters that were relevant across all 5 habitat types and adding new parameters as appropriate. We included a multiplier function that allows users to weight parameters differently according to their needs. Using this tool, users have the ability to add scoring categories, apply their own point system, and assign different multiplier values.

A draft of the tool was evaluated during two stakeholder workshops for content and utility. Stakeholders helped to identify several potential problems with the tool, including difficulty keeping the ranking method brief while still encompassing all the necessary parameters, and dealing with very high variability in project ranking methods used by the various stakeholders/agencies (depending on what specific habitat functions the organization hoped to protect/create, their funding source, level of public interest and community support, etc). Based on stakeholder comments, a guidance document was created to define terms and instructions to users. After incorporating stakeholder feedback, the tool was used in a case-study where restoration projects were ranked for funding under the ILF program.

For this case study, we allocated 30% of the total points awarded to the Cost and Relevance section, 40% to the Ecosystem Function section, and 30% to Technical and Scientific Merit. We selected a maximum possible score of 200 point, thereby giving the three sections 60, 80, and 60 possible points respectively. Definitions of all the scoring parameters were provided to project reviewers with the ranking tool.

Stakeholder workshops

Two stakeholder workshops were hosted as part of this project to gather input on findings and to refine the project ranking tool. Workshops were held at the *Marine Fisheries* ARMFS office in Gloucester on 10/2/12 and at the Plymouth town hall on 10/18/12. Invitations were sent via email to over 70 stakeholders, and workshop dates were decided upon via Doodle polls to allow for the greatest amount of involvement. A total of 29 representatives from local watershed groups, non-profits, and government agencies participated in the workshops ([Appendix F](#)). The structure followed a PowerPoint presentation which outlined methods and results of each task, followed by a round-table discussion with key questions posed to the stakeholder group ([Appendix G](#)). Discussions that were generated by the workshops highlighted regional habitat restoration goals, gaps, and trends, and provided valuable information and feedback to this project. Stakeholders were given workshop packets containing a print out of the PowerPoint, the project ranking worksheet (at that time, in draft format) and other supporting materials. Comments and discussions were recorded both by digital audio file (available by request) and written notes ([Appendix H](#)). Attendees were also given the opportunity to provide additional comments after the meeting via email.

Results & Discussion

Task 1

To investigate spatial restoration gaps, data were first mapped by project count per MBP region using GIS ([Figures 4a, 4b](#)).

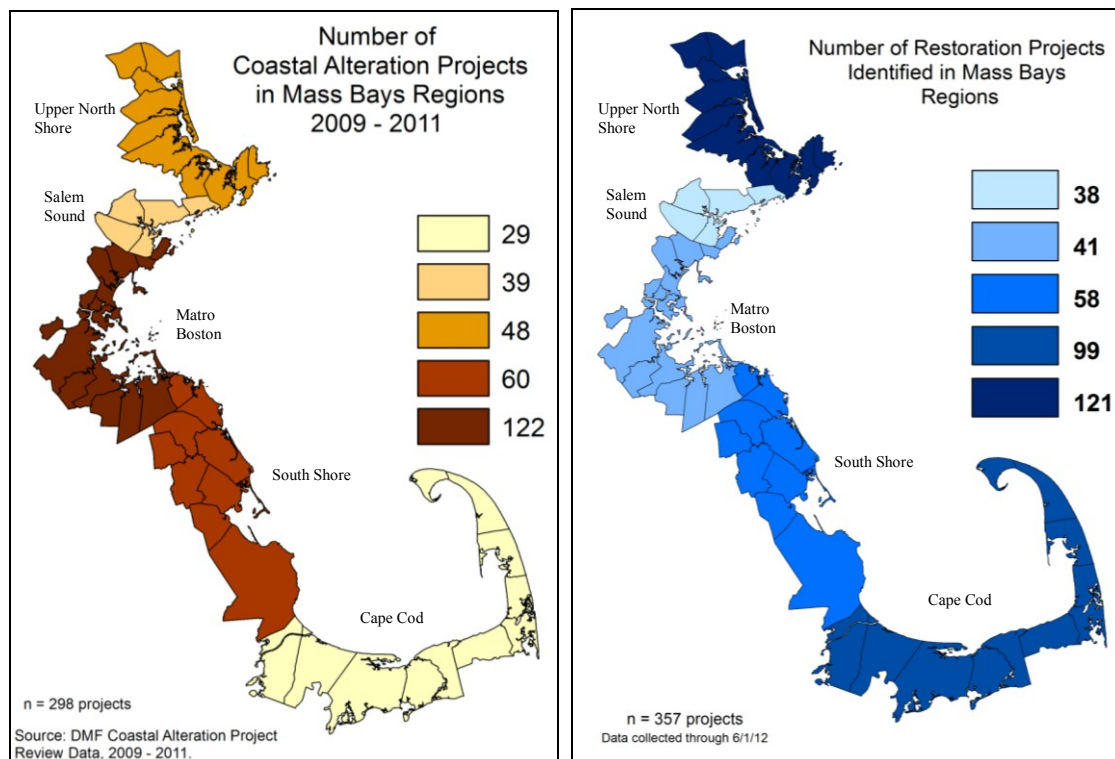


Figure 4. Project counts by MBP region for Coastal Impact projects (n= 298) (a) and Potential restoration project (n = 357) (b)

A few notable observations from these maps include a higher concentration of impact projects in the Boston region ([Figure 4a](#)) versus a lower concentration of potential restoration projects in that region ([Figure 4b](#)). In contrast, Cape Cod and the Upper North Shore have a higher count of potential restoration projects, with relatively lower counts of impact projects. Understanding that these figures represent raw project counts

only and not square footage of impacts versus restoration, our next step was to further refine the maps by project counts per distinct community and habitat type for coastal impact data ([Figure 5](#)) and potential restoration project data ([Figure 6](#)).

COASTAL ALTERATION PROJECTS

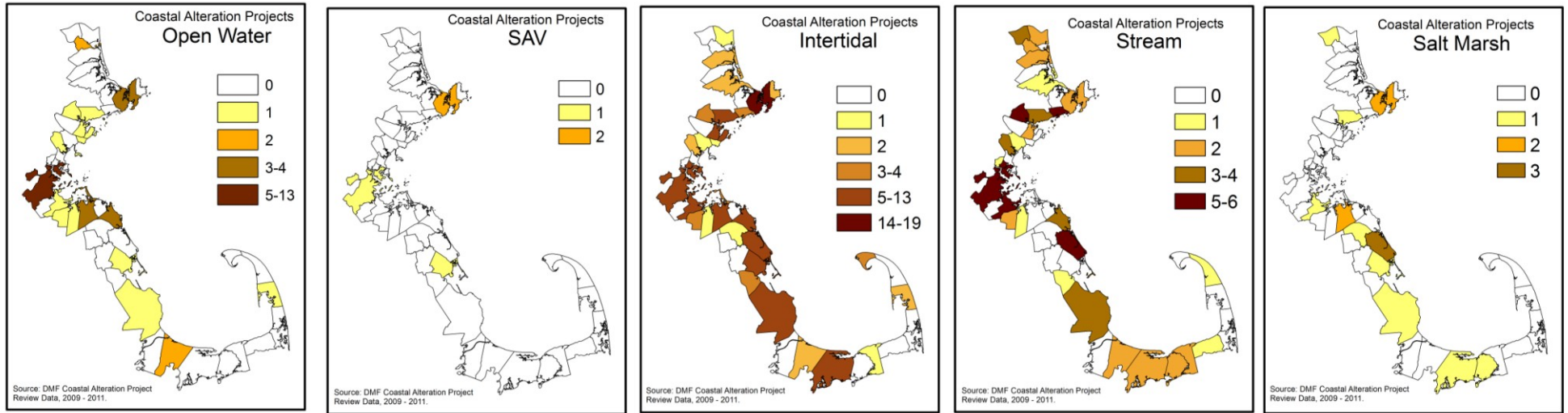


Figure 5. Coastal impact project counts per town per habitat type. Source: environmental review log data (2009-2011)

IDENTIFIED POTENTIAL RESTORATION PROJECTS

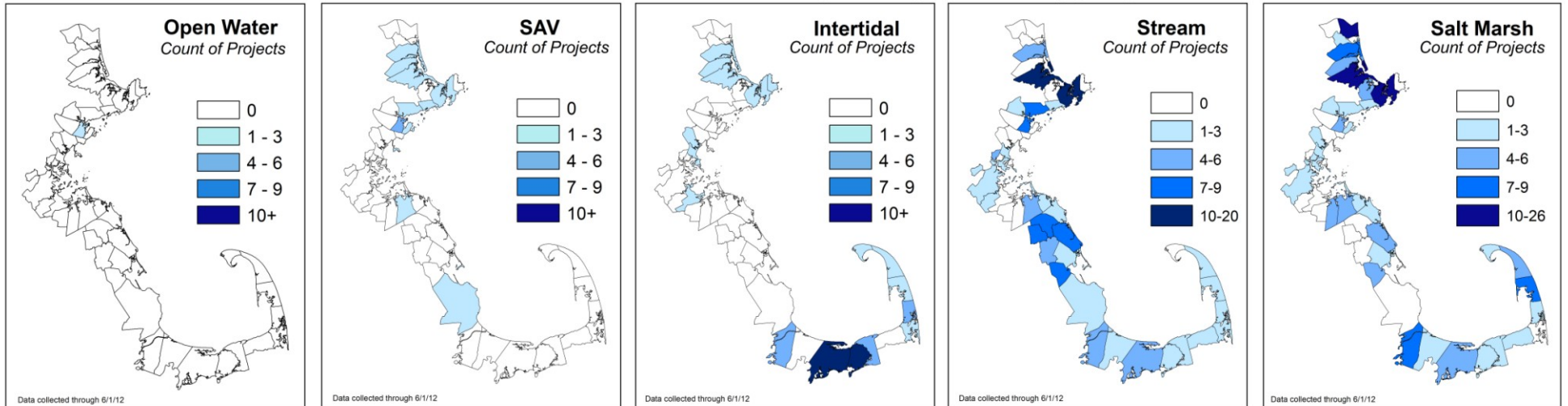


Figure 6. Potential restoration project counts per town per habitat type. Source: stakeholder information (spring 2012)

Analysis of the Environmental Review data shows that the number of coastal impact projects varies both by habitat type and town, with SAV having the fewest reviewed projects during that time, only 2% of all alteration projects. Intertidal and stream habitats have much higher project counts, at 45% and 30% of all reviewed projects, respectively ([Figure 5](#)). Open water accounted for 14% of the reviewed projects, and Salt Marsh 8%. It is important to note this assessment evaluates individual project counts, not acreage of impacts, or size relative to available habitat (i.e. eelgrass may have had fewer reviewed projects during this time, but proportionally the impact to that resource could be much more substantial than the graphic implies due to the limited nature of the habitat itself when compared to other habitat types (such as open water)). A concentration of coastal impact counts is apparent in Boston and the surrounding metro-area for some of the habitat types, such as Open Water and Salt Marsh.

Analysis of the potential restoration project inventory data shows that certain habitat types occur more frequently than others on regional restoration priority lists ([Figure 6](#)). For example, we collected more potential stream and salt marsh restoration projects than any other habitat type (80% of all projects were either stream (38%) or salt marsh (42%)). Open water restoration projects only made up 1% of those listed, intertidal 15%, and SAV projects 4%. Gaps are apparent between where the impacts have been proposed and where restoration priorities have been identified. For example, 14% of identified impacts occurred in open water, but less than 1% of the identified restoration projects occur there. Intertidal habitat comprised 45% of all the identified impacts but only 15% of the identified restoration priorities. As for spatial gaps, concentrations of identified restoration priorities are present in some ecologically and culturally important areas like the Great Marsh, Eastern Cape Cod, and major tidal rivers. There are apparent spatial gaps in known restoration priorities in coastal communities surrounding the metropolitan Boston area.

To gain a better understanding of why these gaps are present, we presented this information at the stakeholder workshops, which generated tremendous input on our methods and data comprehensiveness. Key comments are bulleted in the [Stakeholder Workshops](#) section below.

Task 2

The deliverable of this task is a project ranking tool and guidance document for use when reviewing and ranking habitat restoration projects. The tool is a scoring worksheet that allows reviewers to numerically rank projects based on their overall benefit to the community's socio-economics, ecosystem function benefits, and technical merit/logistics of the project (see [Appendix I](#) for a printable Word document version; see [Information Sharing](#) section below for a link to the Excel version). Several fields can be adapted to the user's needs, including the habitat categories used, multiplier values, and scoring scales. Additional scoring categories can be added by the user as needed. We provide three suggested scoring scales that the user can choose from, or they can develop their own. A detailed guidance document defines key terms and narrates each question asked in the worksheet.

This tool was used in a case study by the MA ILF Program's restoration project review committee to score and select project proposals for funding under a recent funding opportunity. A committee of eight reviewers from state, federal and watershed groups used the tool to independently rank eight projects, with each reviewer scoring each project. The proposed restoration projects included phragmites control, dam removal, eelgrass test plot planting, and others. The applicant pool consisted of a variety of applicants including state and town agencies, universities and non-profits. Individual reviewers' project scores ranged from 33 points to 173 points (out of a possible maximum of 200) across the eight reviewed projects. The mean of all reviewer scores per project ranged from 102 to 141 points, standard deviation 12.3. We found that out of eight reviewers, two individuals consistently ranked projects lower than the rest of the group (reviewers 1 and 2, [Figure 7](#)) and one consistently ranked higher (reviewer 5). The remaining five reviewers generally gave projects similar scores. Projects were selected based on their overall adjusted average scores, their rank by

reviewer, and reviewer comments. The three projects with the highest overall scores were ultimately chosen in this process (projects 1, 4 and 6). Conflicts of interest were avoided by eliminating scores from reviewers who were affiliated with a particular project in any way, thus generating adjusted average scores. Refer to [Appendix J](#) for additional scoring data and statistics.

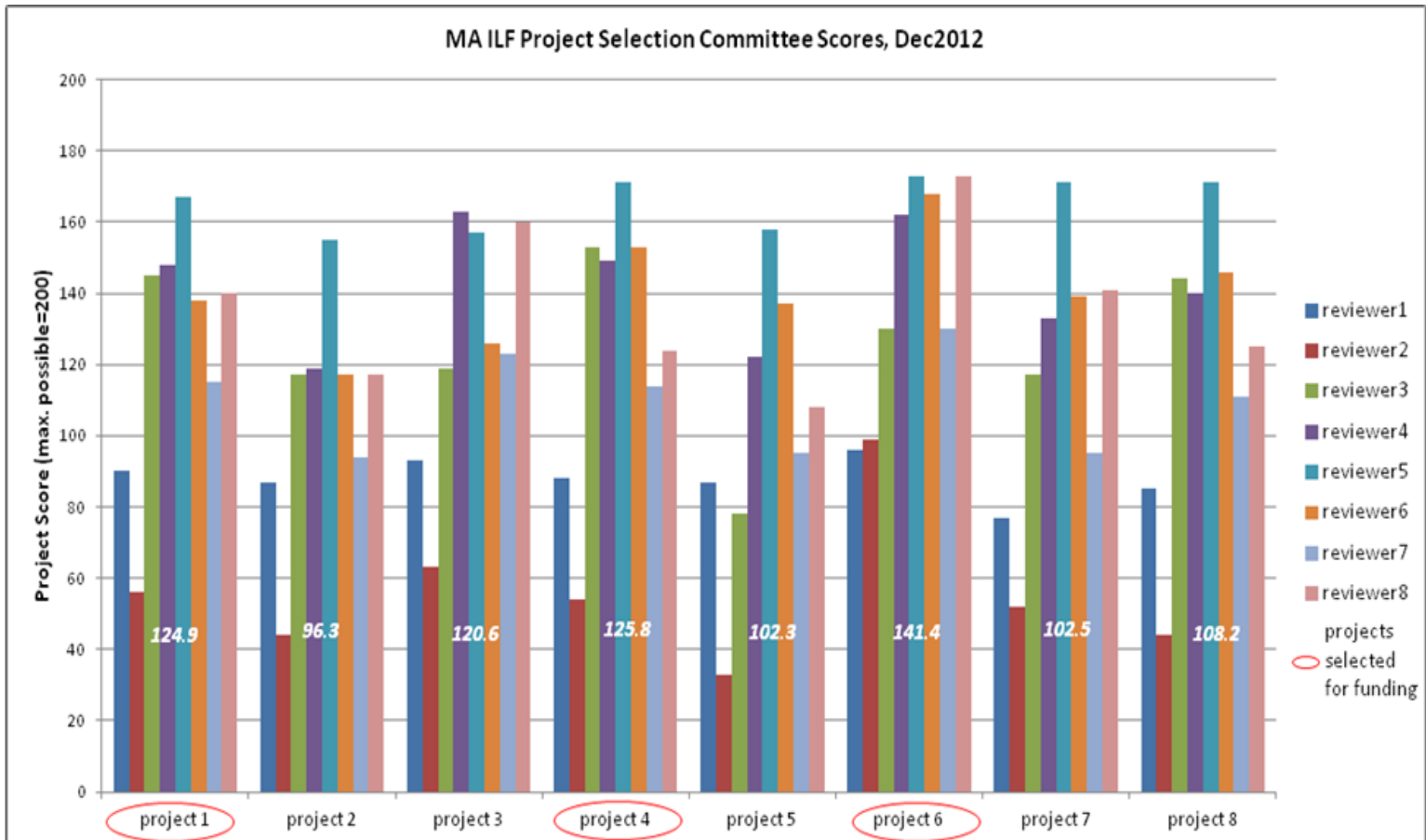


Figure 7. ILF Program Project Selection Committee scores for 8 submitted restoration projects using the ranking tool. Projects 1, 4 and 6 were the top three ranking projects (with total adjusted average scores of 125, 126 and 141 points respectively, shown in white italics) and were chosen for funding under the Program. Project names and details have been removed for confidentiality.

The review committee convened in a meeting on 11/30/12 to select projects for funding and share feedback regarding the use of the tool. Reviewers felt that it was a well organized and useful method, but had some difficulties with it as well. A brief survey was e-mailed to the committee for additional feedback. Responses included several suggestions such as shortening the scale from 0-5 to 0-3, condensing certain similar parameters, and clarifying parameters that involve secondary benefits to the project area. Committee responses will continue to be collected and incorporated as appropriate in future uses of the tool by the ILF Program.

Stakeholder Workshops

The first workshop, held on 10/2/12 at the *Marine Fisheries* office in Gloucester, had 14 participants from federal and state government agencies (ACOE, US EPA, CZM, NOAA, MADER, MADMF, MBP, MADEP;) and watershed groups (Ipswich River WA, Salem Sound Coastwatch, Eight Towns/Great Marsh; [Appendix F](#)). After a presentation of the methods and results of Task 1, a group discussion focused on the completeness

of our data set (did we miss any key groups in the inventory exercise?) and the information presented in the GIS figures. Some of the more noteworthy topics and comments brought up include:

- Few key players were missing from our contact list, and a few new contacts were provided by the group. (i.e. Ducks/Trout Unlimited, and some agencies (NPS, MA DCR)).
- We discussed the fact that our process utilized a regional approach, thus town-level agencies were not individually contacted. The group agreed that there may have been some benefit to their input, but a finer scale approach to data collection would have taken substantially more effort. There seems to be a lot of variability in town participation on restoration efforts, and it was our hope that restoration activity from more active towns would be represented through the watershed groups that were contacted.
- Use of the word “priority” may be misleading since it was not standardized across groups – consider using just “potential restoration projects”.
- Reasons for spatial gaps include:
 - Ability to find willing partners,
 - Difficulty of getting permits both for impacts and restoration,
 - Variability of the level of protection across different habitat types,
 - Differences between priorities by benefits versus priorities by opportunity,
 - Community support, and
 - Variability of project costs in urban vs. rural areas (i.e. contaminated sediment issues, etc).
- Reasons for gaps by habitat type include:
 - Variability in the amount of effort required for different habitat types (i.e. salt marsh is easier, cheaper and quicker than SAV), and
 - Availability of suitable restoration sites for some habitat types.
- A map with point locations showing restoration projects would be helpful.
- Ranking tool should have a guidance document to help users.
- Tool should allow users to modify certain categories to meet their needs.
- A sliding scale should be used for ranking parameters, rather than yes/no. This allows for scoring flexibility for the reviewer.
- Brief discussion of legal considerations associated with scoring / ranking and selecting projects.
- Prior to finalizing project scores, project review committees should create draft scores, then meet as a group to discuss and modify scores, if necessary.

The second workshop, held on 10/18/12 at the Plymouth Town Hall, had 15 participants from federal, state and town government agencies (ACOE, MADMF, MBP, Town of Plymouth Department of Marine and Environmental Affairs, Wellfleet Wastewater Committee) and watershed groups (North and South River WA, Association to Preserve Cape Cod, Provincetown Center for Coastal Studies, Cape Cod Commission, The Nature Conservancy, Cape Cod Conservation District, Neponset River Watershed Association). Noteworthy topics and comments discussed include:

- Some concern that our restoration project inventory is incomplete because town officials/conservation commissions were not queried. We identified this as a possible next step in this work, and an important factor to consider in future related work.
- Discussion of what habitat category includes salt ponds and coastal lakes, and whether these need their own category; likewise with shellfish.
- Reasons for spatial gaps include:
 - Land ownership issues in urban areas,
 - Availability of suitable restoration sites for some habitat types,
 - Variability of involvement / interest across different communities,
 - Impediments from old industry (added expensive and difficult to remove the pollutants).
- Reasons for gaps by habitat type include:
 - Variability of project costs.

- Difficulty of getting permits both for impacts and restoration,
- Variability of the accessibility to and level of protection across different habitat types,
- Ranking tool should be more adaptable for the user.
- Ranking tool should include a line to allow the reviewer to select from restoration, enhancement, mitigation, etc.
- Ranking tool should include an “other public benefits” parameter to for addressing public safety, public access, and other public benefits.

Refer to [Appendix H](#) for complete workshop notes. Overall, the stakeholder workshops greatly contributed to the success of this project. In addition, the workshops launched important discussions between stakeholders involved in restoration work and conveyed a strong message that information sharing of restoration efforts occurring in coastal Massachusetts is an important component that is currently lacking within the region. Some stakeholders provided additional input after the workshops regarding relevant contacts and potential restoration projects we may have missed. This information has been included at the ends of [Appendix A](#) and [Appendix B](#).

Information Sharing

Results of this project as well as project materials (PowerPoint, ranking tool, GIS maps, and final report) will be available via the *Marine Fisheries* website. The materials will be accessible in the coming months, through a new menu option at the following website:

http://www.mass.gov/dfwele/dmf/programsandprojects/habitat_index.htm#menu. Based on the input provided during our stakeholder meeting, it is clear that a necessary next step should be the establishment of a periodic restoration summit or workshop of coastal restoration resource managers. Future efforts to share information among the restoration community should also focus on the establishment of long-term goals from a regional perspective and include input from restoration stakeholders at all levels.

Management Recommendations

It is our hope that the results of this effort will improve the ability of coastal resource managers, regional planners, and local communities to identify and prioritize coastal and estuarine restoration efforts. While the primary focus of this work was to address the needs of the MA ILF program and the future restoration funding opportunities it will provide for the Commonwealth, the results of this effort are applicable to all other coastal habitat restoration opportunities within the MBP region.

Information gaps, by both location and habitat type were apparent in our analysis. These gaps were the result of varying local and regional priorities and interests, different levels of financial support for restoration efforts, how a habitat was defined, habitat availability regionally, perceived habitat value, coastal impact frequency, restoration cost variability for different habitat types and regions, and other reasons. Managers responsible for restoration efforts within their regions emphasized the need for better small scale mapping efforts that can more accurately identify coastal alteration impact areas and coastal restoration efforts (including mitigation) on local and regional scales to track both restoration and coastal development efforts. Other essential tools for guiding local and regional restoration efforts identified by resource managers include a list of well defined restoration habitat types (categories) for more consistency across municipalities and regions, and a working inventory of completed and proposed restoration efforts within each coastal region. These recommendations were compiled from an extensive list of regional restoration stakeholders, and should be taken into consideration by any group addressing coastal habitat restoration.

Coastal resource stakeholders also identified a need for better communication and a more connected effort between local, regional, state, and federal entities when addressing habitat restoration needs in Massachusetts,

and that all efforts would benefit from regularly scheduled “restoration summit” meetings to share and disseminate information on best practices, prioritization, and potential restoration funding sources. Programs such as MBP or MACZM appear to be the most suitable for facilitating meetings of this type given their regional coastal presence.

Methodologies for assessing restoration sites are substantially variable, with different agencies utilizing approaches for different objectives and applications. Some managers identified methodologies with a high degree of flexibility built into a tool to allow for project reviewers to use their discretion when assigning scores to a project. Other managers identified a more stringent approach with limited scoring flexibility (i.e. yes/no only) to remove any variability associated with individual project reviewers. All managers agreed that a tool developed to be as comprehensive as possible should contain well defined ranking parameters and scoring categories that adequately inform reviewers and are based on the goals and objectives of the restoration program. A unique combination of these recommendations has been incorporated into our project ranking tool.

Regional preferences, funding availability, local expertise, siting, and existing/identified habitat restoration priorities all factor into on-the-ground restoration efforts at some level. To account for this, our ranking tool was developed with a multiplier category that enables resource managers to assign higher scoring values to categories identified as being of a higher priority for their particular project needs. The tool was designed for and tested in a setting that incorporated several reviewers and allowed for both categorical and final scoring results to be tabulated, averaged, and ranked. Through the use of this tool, the MA ILF Program was able to select the three top ranked projects identified by a review committee for funding. While we received some feedback specific to some of the smaller details of the tool, overall its utility for project ranking appeared to be successful. A useful next step in the development of this tool is to have it tested through several additional funding opportunity rounds, including those for other stakeholder groups, and adjusted, if necessary.

This project establishes an extensive foundation for the development of a long-term capacity building effort to track restoration opportunities within the MBP region and beyond, and can serve as a model for the development of a larger scale plan that can be used statewide. In pursuit of this capacity building effort, *MarineFisheries* will continue to explore other funding opportunities to accomplish future steps detailed below.

Future Steps

Capacity Building Task 3 (will require applying for future funding opportunities):

- Perform web-based research and follow-up communications to keep the restoration inventory up-to-date.
- Query town-level government (conservation commissions, natural resource departments, etc) and any other key players missing in this preliminary effort.
- Work with other local, state, and federal agencies to generate a GIS database to display and update restoration priorities and track all restoration projects.
- Expand information gathering and ranking processes developed in this proposal to include all coastal areas of the Commonwealth.
- Continue to adapt the ranking tool as necessary to suit the needs of the ILF Program and other uses.

Acknowledgments

The project staff would like to thank the Mass Bays Program for funding this work. We acknowledge and thank the many representatives from local, state and federal agencies, watershed groups and non-profit organizations who contributed to this effort through phone/email interviews and during stakeholder workshops. Our thanks go out to the *MarineFisheries* Fish Habitat program staff for their input and time commitment, and to the ILF program’s project scoring committee for testing our ranking tool.

References

- Minkin, P. and R. Ladd. 2003. Success of Corps-Required mitigation in New England. USACE New England District.
- National Research Council. 2001. Compensating for Wetland Losses under the Clean Water Act. National Academy Press. Washington DC, 322p.

Appendix A. Organizations Researched and/or Contacted for Restoration Information

ORGANIZATIONS RESEARCHED AND/OR CONTACTED FOR POTENTIAL RESTORATION INFO:	
Government:	
MA Division of Ecological Restoration, Hunt Durey, Beth Lambert	<ul style="list-style-type: none"> Ebb & Flow newsletter #11 Great Marsh Wetlands Restoration Plan
MA Division of Marine Fisheries, Neil Churchill, Tay Evans, Greg Bettencourt, Brad Chase	<ul style="list-style-type: none"> Pers. comm. Reback, K.E., P.D. Brady, K.D. McLaughlin, and C.G. Milliken. 2004. A survey of anadromous fish passage in coastal Massachusetts: Part 4. Boston and North Coastal. AND Part 2. Cape Cod and the Islands. Fishways & obstructions GIS layer (in progress) Shellfish priorities (email)
MA Department of Environmental Protection	<ul style="list-style-type: none"> Boston Harbor Watersheds Water Quality & Hydrologic Investigations
MA Division Conservation and Recreation	<ul style="list-style-type: none"> Newbury Estuary Plan
NOAA Restoration Center, Eric Hutchins	<ul style="list-style-type: none"> Pers. comm. Assessment query www8.nos.noaa.gov/bhv/spatbibindex.html
Mass Bays Program, Lisa Engler, Jay Baker, Regional Coordinators	<ul style="list-style-type: none"> Pers. comm.
NPS Cape Cod Bay National Seashore, Tim Smith	<ul style="list-style-type: none"> Pers. comm.
MA CZM, Dan Sampson	<ul style="list-style-type: none"> Pers. comm.
ACFHP	<ul style="list-style-type: none"> has Conservation Strategic Plan but doesn't list specific areas or projects (i.e. general projects, not used)
City of Salem	<ul style="list-style-type: none"> Salem Harbor Plan (2008)
City of Gloucester via Audubon	<ul style="list-style-type: none"> Comprehensive River and Stream Habitat Restoration Report (2003)
Metropolitan Area Planning Council	<ul style="list-style-type: none"> Atlas of Tidal Restrictions on the South Shore of Massachusetts (2001)
Natural Resource Conservation Service / Dept of Agriculture	<ul style="list-style-type: none"> Cape Cod Water Resources Restoration Project final watershed plan (2006)
Non-profit/Other:	
Salem Sound Coastwatch, Barbara Warren	<ul style="list-style-type: none"> Pers. comm.
The Trustees of Reservations, Russell Hopping	<ul style="list-style-type: none"> Pers. comm. Provided list of priorities (email)
Eight Towns and the Bay, Peter Phippen	<ul style="list-style-type: none"> Pers. comm. Provided list of priorities (email)
PIER2, Brian Kelder (also from IRWA)	<ul style="list-style-type: none"> Pers. comm.; provided list of priorities (email) Restoration Action Agenda (draft)
The Nature Conservancy, Jon Kachmar	<ul style="list-style-type: none"> Pers. comm.
UMass Boston, Anamarija Frankic, Tim Maguire	<ul style="list-style-type: none"> Pers. comm. Maguire thesis (draft)

Mass Audubon, regional managers
<ul style="list-style-type: none"> no response yet
Tidmarsh Farms, Inc.
<ul style="list-style-type: none"> Restoration project info from tidmarshfarms.com
Watershed Groups:
Saugus River Watershed Council
<ul style="list-style-type: none"> no response yet
Parker River Clean Water Association
<ul style="list-style-type: none"> Restoration project info from website http://www.busesvision.info/parker_river/
Ipswich River Watershed Association, Brian Kelder (also PIER2)
<ul style="list-style-type: none"> Pers. comm. IRWA restoration priority profile documents (2006)
Mystic River Watershed Association, Patrick Herron
<ul style="list-style-type: none"> Pers. comm. Provided list of restoration interests, some relevant to habitat
Friends of Alewife Reservation
<ul style="list-style-type: none"> no applicable work from website
Friends of the Mystic River
<ul style="list-style-type: none"> no applicable work from website
Groundwork Somerville
<ul style="list-style-type: none"> no applicable work from website, more education/outreach
Charles River Watershed Association
<ul style="list-style-type: none"> Website has info on Muddy River restoration (MMOC) Emailed for more info, no response yet
Charles River Conservancy
<ul style="list-style-type: none"> no applicable work from website, more parks/public restoration
Neponset River Watershed Association
<ul style="list-style-type: none"> Restoration project info from neponset.org
Quincy Environmental Network
<ul style="list-style-type: none"> no applicable work from website
Fore River Watershed Association
<ul style="list-style-type: none"> no applicable work from website, mostly fecal coliform sampling.
Weir River Watershed Association
<ul style="list-style-type: none"> Smelt restoration info from website weirriver.org
North & South Rivers Watershed Association
<ul style="list-style-type: none"> North and South Rivers Stream Prioritization Project (2011)
First Herring Brook Watershed Initiative
<ul style="list-style-type: none"> no applicable work from website. Associated with NSRWA
Jones River Watershed Association
<ul style="list-style-type: none"> Restoration Plan for Stony Brook and Tussock Brook, Kingston MA (2011) Wapping Road Dam Feasibility Study (2009)
Eel River Watershed Association
<ul style="list-style-type: none"> no applicable work from website
Pembroke Watershed Association
<ul style="list-style-type: none"> no applicable work from website, mostly pond clean-ups
Cape Cod Commission, Erin Jackson, Heather McElroy
<ul style="list-style-type: none"> Pers. comm. Atlas of tidal restrictions
Association for the Preservation of Cape Cod, Jo Ann Muramoto (also Mass Bays regional coordinator)
<ul style="list-style-type: none"> Pers. comm. (wants to meet)
The Compact of the Cape Cod Conservation Trusts, Inc.
<ul style="list-style-type: none"> Protection wish list at http://www.compact.cape.com/wishList.htm

ADDITIONAL CONTACT INFO PROVIDED AT STAKEHOLDER WORKSHOPS
(note: these resources were not contacted for project information)

Friends of the Herring River, Don Palladino

Essex County Green Belt, Ed Becker

EPA, Ed Reiner

National Park Service, Boston Islands

Mass DCR

Local conservation commissions and shellfish constables/wardens

Trout Unlimited, MA/RI Council

Ducks Unlimited, Dr. Craig Ferris

Barnstable County Cooperative Extension

Woods Hole Sea Grant

Friends of Elisville Marsh

Mass Audubon, Mark Faherty

Appendix B. Habitat Restoration Project Matrix Summary

This appendix includes a summary table of restoration project data collected for *Task 1*. Project data collected through stakeholder interviews and web-based research are organized by habitat type, project type and town. Projects spanning town boundaries were assigned one town based on where the majority of the work was proposed. For the full dataset, contact Jillian.Carr@state.ma.us or Mark.Rousseau@state.ma.us.

TOWN	Open Water	SAV	Salt Marsh	Stream	Intertidal	Town Sum	Region Sum	MBP Reg	
AMESBURY	0	0	0	0	0	0		Upper North Shore	
SALISBURY	0	0	13	0	0	13			
NEWBURYPORT	0	0	1	0	0	1			
NEWBURY	0	1	8	4	1	14			
ROWLEY	0	1	4	0	1	6			
IPSWICH	0	1	11	20	1	33			
ESSEX	0	0	6	0	0	6			
ROCKPORT	0	0	0	0	1	1			
GLOUCESTER	0	1	26	16	0	43	117	Salem Sound	
MANCHESTER	0	1	1	1	0	3			
BEVERLY	0	2	3	8	0	13			
DANVERS	0	0	2	2	0	4			
PEABODY	0	0	0	0	0	0			
SALEM	3	4	4	7	0	18	38		
MARBLEHEAD	0	1	1	0	0	2			
LYNN	0	0	0	0	0	0		Metro Boston	
SWAMPSCOTT	0	0	0	0	0	0			
SAUGUS	0	0	3	0	0	3			
NAHANT	0	1	0	0	0	1			
REVERE	0	0	1	1	0	2			
EVERETT	0	0	0	4	0	4			
CHELSEA	0	0	1	0	0	1			
WINTHROP	0	0	0	0	0	0			
BOSTON	0	0	1	1	0	2			
MILTON	0	0	0	2	0	2			
QUINCY	0	0	0	0	1	1			
BRAINTREE	0	0	0	0	0	0			
WEYMOUTH	0	0	4	0	0	4			
HINGHAM	0	1	6	4	0	11			
HULL	0	0	2	1	0	3	36		
COHASSET	0	0	2	1	0	3		South Shore	
SCITUATE	0	0	3	1	0	4			
NORWELL	0	0	0	8	0	8			
HANOVER	0	0	0	7	0	7			
MARSHFIELD	0	0	5	7	0	12			
PEMBROKE	0	0	0	5	0	5			
DUXBURY	0	0	2	2	0	4			
KINGSTON	0	0	4	7	0	11			
PLYMOUTH	0	1	0	3	0	4	58		
BOURNE	0	0	7	4	4	15			
SANDWICH	0	0	1	1	0	2			
BARNSTABLE	0	0	4	6	15	25			
YARMOUTH	0	0	3	1	12	16			
DENNIS	0	0	1	1	4	6			
BREWSTER	0	0	2	1	0	3			
ORLEANS	0	0	0	1	3	4			
EASTHAM	0	0	1	1	4	6		Cape Cod	
WELLFLEET	0	0	8	3	3	14			
TRURO	0	0	4	1	1	6			
PROVINCETOWN	0	0	1	0	1	2	99		
total	3	15	146	132	52	348			
% of total projects	1%	4%	42%	38%	15%				

Appendix C. Notes on Methods for Mining Restoration Data

- Projects found by querying online resources were not confirmed with their leading organization for whether or not they were already completed (accurate as of 3/6/12)
- **Great Marsh Restoration Plan** projects were listed in the matrix if they were classified as “high” or “medium” priority, because there are too many marsh projects to list for that region. Low priority projects should still be included in the appendix of raw data. Did not include projects that were double-listed or redundant, or projects that were coded as “under development”
- Data from **Salem Harbor Plan** (Appendix C: Environmental Enhancements): because particular habitats and particular project types were identified as priorities, they were listed in the database even though in most cases specific sites were not identified. “Upland” projects were entered into the appropriate Stream categories because the restoration activities would impact waters emptying into Salem Harbor. “intertidal” projects were listed in the appropriate Salt Marsh categories. “Subtidal/Open Water” projects were listed in either Open Water or SAV categories.
- Data from the **City of Gloucester Comprehensive River and Stream Restoration** Report: only priority/major sites (32) that were identified in the report were used in the database. There were too many sites that fell under low-priority (i.e. “minor”...about 193 sites), which would be too many to add to the Gloucester stream habitat matrix. There is a full info sheet for each of site (major and minor) if we want to revisit in the future. For the priority sites, the project and habitat were reviewed to categorize it as either river or salt marsh restoration.
- **Cape Cod Water Resources Restoration Project**: note that over 435 project sites were considered, and 76 priority sites were selected (for salt marsh, fish passage, and stormwater/shellfish remediation).
 - For shellfish restoration areas: used CCWRRP list, and included both “priority” and non-priority sites because the list was already narrowed for most important projects, and then DMF prioritized again for only those projects that could change an area’s classification. ((Shellfish ranking, From CCWRRP: Further review and discussion by DMF Area Shellfish Biologists resulted in some re-ordering of the list using subjective criteria, including relationships between areas, the importance and diversity of the shellfishery, and present sanitary classification of the areas. During this process, the highest priority was given to the preservation of open, productive areas where imminent closure was probable. It was decided that these areas present the highest probability for success of mitigation measures and the greatest cost benefit, as opposed to seeking possible reclassification of areas currently closed. After this process was completed, a final prioritized list of 35 sites was produced. In the process of reviewing these 35 priority sites with town officials for their concurrence, 17 additional sites were identified and had to be re-ranked by DMF. From this final list of 52 sites, the 26 priority were selected for this plan based upon DMF’s recommendations on which proposed remediation measures would have a potential impact on classification (high potential = 5, moderate = 3, low = 1). Sites rated as low potential were excluded.))
 - For fish runs, I used only the sites identified in the CCWRRP table as “priority”, AND non-priority sites where the “need” value > 0. The need=0 sites in the table have comments stating that the passage is passable/adequate, no action is needed, etc. ((Fish Run ranking, From CCWRRP: The 93 fish passage sites were ranked by DMF using 12 criteria that assessed relative ecological, economic, and social importance as well as the practicality of providing or improving fish passage on Cape Cod. A description of the criteria used to rank the sites and an explanation of the values given for each criterion are shown in Table 6-2. Positive values represent benefits to the overall stream system, and negative values represent impairments. The ranges of values as well as the values themselves were developed by the DMF anadromous fish biologists. The values given for all the criteria were summed to determine a total score for each project site. Sites that ranked high but were given the value “0” for the need criterion were eliminated. The highest ranking 24 remaining sites were selected as priority sites for fish passage restoration. Table B-2 in Appendix B summarizes the evaluation DMF used to rank the original 93 fish passage sites, with the top 24 sites identified by shading. DMF is using the evaluation procedure it developed for this Project to evaluate the remaining statewide fish passage obstructions identified by DMF.))
 - For Salt Marshes, I used the priority sites determined in the CCWRRP. ((Marsh ranking, From CCWRRP: NRCS began the process of selecting the salt marsh sites by consulting with two coastal atlases of tidally restricted salt marshes prepared for the Massachusetts Wetlands Restoration Program: The Cape Cod Atlas of Tidally Restricted Salt Marshes (Cape Cod

Commission 2001) and the Atlas of Tidally Restricted Salt Marshes in the Buzzards Bay Watershed (Buzzards Bay Project National Estuary program 2002). Combined with site visits, these atlases provided detailed information on 182 tidally restricted marshes on Cape Cod. Field data were collected for each site, including information on marsh elevation, culvert inverts, site accessibility, and nearby utilities. In addition, photos were taken of each site. Town officials were contacted to assess their interest in restoring tidal flow to a particular site. A rating matrix was developed to display the following information to rank the sites (see report). Each site was further screened by assessing the feasibility of restoration. *Sites were dropped if they could not feasibly be restored, if local interest was considered low or moderate, if restoring tidal flow would adversely affect nearby septic tanks or private wells, or if the site was already being addressed by another agency. NRCS conferred again with town officials to verify their interest and support for the remaining sites. The result is a list of 26 salt marsh sites considered high priority for restoration by NRCS and Barnstable County towns.*))

- **NOAA Assessment Query** (www8.nos.noaa.gov/bhv/spatbibindex.html): generates a list of indicators (measures of habitat condition), threats (or stressors), and/or actions (conservation recommendations) for a specific waterbody or watershed, with sources cited. I queried ACTIONS and sorted through them to find relevant recommendations (i.e. restore flows in Merrimac for fish passage).
- **DER projects:** used recent publication of 11 priority restoration projects for 2012. Some of these may be underway already.
- **NSRWA Prioritization Project (2011):** This report lists hundreds of potential projects with ranking systems. Only those listed as “priority” were added to the list. Priority sites were those with obstructions and high natural resource scores.
- **Atlas of Tidal Restrictions on the South Shore of Massachusetts (MAPC):** from table 3 – Summary of Tidal Restriction Site Restoration Prioritization, included any “High” priority projects in the list. May need to consider including “medium” projects to allow for equal town representation.

Appendix D. Coastal Alteration Project Summary, 2009 – 2011.

Projects reviewed by Environmental Review team, 2009-2011 within MBP coastal communities

 project counts ≥5

Mass Bays Program Communities	2011 Projects (215 Projects in 43 Towns)	2010 Projects (202 Projects in 42 Towns)	2009 Projects (204 in 49)	Total - 621
Amesbury	2	4	2	8
Salisbury	5	1	2	8
Newburyport		8	7	15
Newbury	3	2	1	6
Rowley	1		9	10
Ipwich	1	3	1	5
Essex				0
Rockport	2	4	1	7
Gloucester	27	20	19	66
Manchester	5	8	3	16
Beverly	9	9	4	22
Danvers	1	4	6	11
Peabody		1	1	2
Salem	5	5	3	13
Marblehead	4	8	3	15
Lynn	1	1	1	3
Swampscott	1		2	3
Saugus	5	1	4	10
Nahant		1	3	4
Revere	2	2	5	9
Everett	1		2	3
Chelsea	7	2	1	10
Winthrop	2	3	4	9

Mass Bays Program Communities	2011 Projects (215 Projects in 43 Towns)	2010 Projects (202 Projects in 42 Towns)	2009 Projects (204 in 49)	Total - 621
Boston	39	21	22	82
Milton			1	1
Quincy	8	7	8	23
Braintree		2	2	4
Weymouth	3	6	2	11
Hingham	4	8	4	16
Hull	1	6	5	12
Cambridge	2	1	7	10
Cohasset				0
Dorchester			4	4
Scituate	11	6	13	30
Norwell	1		1	2
Hanover			1	1
Marshfield	9	7	4	20
Pembroke	1			1
Duxbury	7	4	5	16
Kingston	3	4	3	10
Plymouth	8	13	5	26
Bourne	1	1	2	4
Sandwich	2	2	2	6
Barnstable	5	1	5	11
Yarmouth	3	1	1	5
Dennis	2	2	1	5
Brewster	3	8	2	13
Orleans	3	1	1	5
Eastham	1	2	0	3
Wellfleet	4	2	9	15
Truro	4	2	2	8
SNE BIGHT	1			1
Provincetown	5	8	8	21
TOTALS	215	202	204	621

Summary of project counts from environmental review data collected between 2009-2011.A total of 298 projects were included in our GIS maps and analysis.

Environmental Review data summary:	
Total projects reviewed, 2009-2011	>900
Projects within MBP communities	621
Projects relevant to the 5 key habitat types identified in this project, within MBP communities (excluding: non-applicable habitat types, repairs to existing structures, restoration projects, projects reviewed as resubmissions, etc.)	231
Restoration projects reviewed	50
Habitat impact counts (i.e. one project may impact multiple habitat types, so it was counted under each habitat category as a distinct project.) THESE ARE THE DATA USED IN THE GIS MAPS.	298

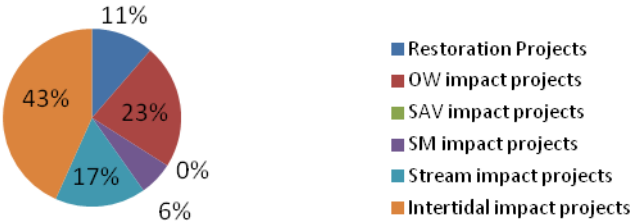
Notes - (put major rivers in stream cat, intertidal includes projects that go from bulkheads and do partial dredge in streams or harbors)

NS=North Shore review team (project likely occurs in NS region)
SS=South Shore review team (project likely occurs in SS region)

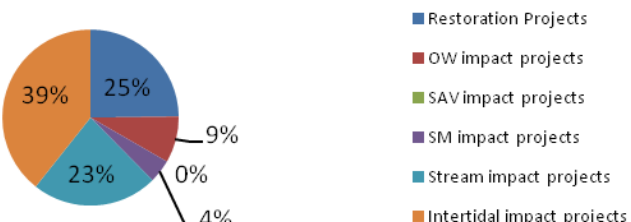
Project Counts	2009 NS	2009 SS	2009 Total	2010 NS	2010 SS	2010 Total	2011 NS	2011 SS	2011 Total	Overall Tot
All relevant projects (see desc above)	51	14	65	44	20	64	65	37	102	231
Restoration Projects	10	1	11	17	12	29	6	4	10	50
OW impact projects	18	4	22	7	3	10	13	2	14	46
SAV impact projects	0	0	0	0	0	0	3	1	4	4
SM impact projects	4	2	6	2	3	5	2	3	5	16
Stream impact projects	14	2	16	18	9	27	23	11	34	77
Intertidal impact projects	32	10	42	32	14	46	41	26	67	155

298

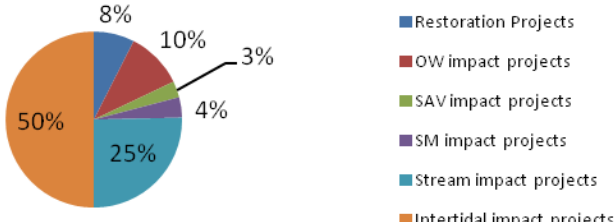
2009 DMF Environmental Review Projects in Mass Bay Communities



2010 DMF Environmental Review Projects in Mass Bay Communities



2011 DMF Environmental Review Projects in Mass Bay Communities



Appendix E. Project Ranking Resources

Resources for Prioritization Ranking Methodology				
Open Water	SAVs	Intertidal	Salt Marsh	Stream
(no ranking methods found)	RI Habitat Restoration Portal (GIS ranking tool) http://www.edc.uri.edu/restoration/html/spatial/habmodel.htm	Brumbaugh, R.D., M.W. Beck, L. D. Coen, L.Craig and P. Hicks. 2006. A Practitioners' Guide to the Design and Monitoring of Shellfish Restoration Projects: An Ecosystem Services Approach. The Nature Conservancy, Arlington, VA.	(wetlands) U.S. DEPARTMENT OF AGRICULTURE Natural Resources Conservation Service WETLAND RESERVE PROGRAM RANKING CRITERIA WV-300-27 Rev. 11/10	WA State Dept. of Ecology Flow Achievement and Watershed Plan Implementation Grant Program, Conservation application evaluation worksheet
	HUBLINE PIPELINE PROJECT Eelgrass Restoration Site Selection Analysis Prepared by TRC Environmental and Battelle. 2009	DMF prioritization of water quality projects (see Bettencourt email)	VERMONT 2012 WETLAND RESERVE PROGRAM RANKING CRITERIA	DER scoring (pending: we have their scores but no criteria)
	Short et al. (2002) Site-selection model for optimal transplantation of eelgrass <i>Zostera marina</i> in the northeastern US. Mar Ecol Prog Ser (227)253–267		RI Habitat Restoration Portal (GIS ranking tool) http://www.edc.uri.edu/restoration/html/spatial/habmodel.htm	NSRWA Stream Prioritization Project 2011
			Johnston et al. Combining Economic and Ecological Indicators to Prioritize Salt Marsh Restoration Actions. Am. J. Agr. Econ. (2002) 84 (5): 1362-1370.	RI Habitat Restoration Portal (GIS ranking tool) http://www.edc.uri.edu/restoration/html/spatial/habmodel.htm
			Wetlands functions to consider: http://www.beginningwithhabitat.org/the_maps/map7.html	DMF Scoring (get from B.Chase in June (report))
			(wetlands) Kauffman, J.L. (2007) DEVELOPMENT AND APPLICATION OF A GIS BASED EVALUATION FOR PRIORITIZATION OF WETLAND RESTORATION OPPORTUNITIES. Humboldt State University, thesis	Lower Columbia River Restoration Prioritization Framework (2006) LCREP

Open Water	SAVs	Intertidal	Salt Marsh	Stream
			(wetlands) IDENTIFICATION AND PRIORITIZATION OF AQUATIC HABITAT RESTORATION PROJECTS AT A WATERSHED SCALE, BIRCH BAY, WASHINGTON by Adam W. Merrill May 2010, thesis	Ellen Wohl et al. (2005) River restoration. WATER RESOURCES RESEARCH, VOL. 41, W10301
				IDENTIFICATION AND PRIORITIZATION OF AQUATIC HABITAT RESTORATION PROJECTS AT A WATERSHED SCALE, BIRCH BAY, WASHINGTON by Adam W. Merrill May 2010, thesis
				Natural Resources Conservation Service Application Ranking Summary Riparian Habitat Restoration and Management
				Natural Resources Conservation Service Application Ranking Summary Stream Habitat Restoration and Management

General (all habitats) references:

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- Allen, W.L. et al (2011). Identifying and selecting strategic mitigation opportunities: Criteria design and project evaluation using Logic Scoring of Preference and optimization. *Journal of Conservation Planning* Vol 7. p61-68.
- Bohn, B. A., & Kershner, J. L. (2002). Establishing aquatic restoration priorities using a watershed approach. *Journal of Environmental Management*, 64, 355-363.
- City of Lincoln NE Public Works & Utilities: Prioritization Methodology Report *For Watershed Master Planning Projects* December 2006
- Developing a metric for prioritizing restoration projects within Maumee area of concern: Final Report, 2007 Ohio EPA
- Ecological Restoration - EPA 841-F-95-007 (November 1995). Chapter 4: A Decision Making Guide for Restoration.
- Hyman, J.B. (2000) A General Framework for Prioritizing Land Units for Ecological Protection and Restoration. *Environmental Management* Vol. 25, No. 1, pp. 23-35
- Kunert, Kelly (2005). A GIS approach to habitat restoration site selection and prioritization in the New York-New Jersey Harbor Estuary. Masters thesis, Duke Univ.
- National Research Council. 1992 Restoration of Aquatic Ecosystems: Science, Technology, and Public Policy. Washington, DC: National Academy Press. (note: especially pages 55-70, 358)
- Rhode Island Habitat Restoration Team Portal Demonstration Workshop Report. December 23, 2003
- Robb, J. T. (2002). Assessing wetland compensatory mitigation sites to aid in establishing mitigation ratios. *Wetlands*, 22(2), 435-440
- US EPA webinar: "Recovery Potential Screening: A tool for comparing impaired waters restorability" 2/22/2012

Appendix F. Workshop Participants

Workshop Participants

IDENTIFYING & PRIORITIZING RESTORATION OPPORTUNITIES

October 2, 2012, ARMFS Field Station, Gloucester MA

NAME	AFFILIATION
Jillian Carr	MA DMF
Mark Rousseau	MA DMF
Tay Evans	MA DMF
Phil Colarusso	US EPA
Ruth Ladd	ACOE
James Sprague	MA DEP
Eric Hutchins	NOAA
Hunt Durey	MA DER
Brian Kelder	IRWA
Valerie Gingrich	CZM
Kathryn Ford	MA DMF
Peter Phippen	MBP/ETGM
Lisa Berry Engler	MBP
Kate Ostriki	MA DMF
Barbara Warren	MBP/SSCW

Workshop Participants

IDENTIFYING & PRIORITIZING RESTORATION OPPORTUNITIES

October 18, 2012, Plymouth Town Hall, Mayflower Room

Jillian Carr	MA DMF
Mark Rousseau	MA DMF
Eileen Feeney	MA DMF
Kate Ostriki	MA DMF
Rick Kristoff	ACOE
Sara Grady	MBP/NSRWA
JoAnn Muramoto	MBP/APCC
Pat Hughes	PCCC
Kim Tower	Plymouth Environmental Mgmt
David Gould	Plymouth Environmental Mgmt
Heather McElron	CCC
Casey Shetterly	TNC
Cathy Bozek	TNC
Martha Rheinhardt	CCCD
Carly Rocklen	Neponset RWA
Curt Felix	Wellfleet WC
Abigail Franklin	CCCD
Prassede Vella	MBP/CZM

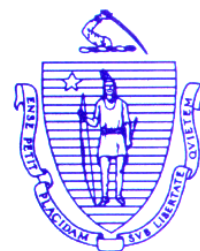


Paul J. Diodati
Director

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Deval Patrick
Governor
Timothy P. Murray
Lt. Governor
Richard K. Sullivan, Jr.
Secretary
Mary B. Griffin
Commissioner

AGENDA

STAKEHOLDER INPUT AND RANKING METHOD WORKSHOP

Tuesday October 02, 2012 1:00-4:30pm Marine Fisheries ARMFS Conference Room
30 Emerson Avenue, Gloucester MA 01930 / 978-282-0308

&

Thursday October 18, 2012 1:00-4:30pm Plymouth Town Hall, Mayflower Room
11 Lincoln Street, Plymouth MA 02360 / 508-747-1620

Jillian Weber Carr, Mark Rousseau (PI), Katelyn Ostrikis

This workshop will focus on a discussion of work performed under a Mass Bays Program (MBP) grant entitled *Identifying and Prioritizing Restoration Opportunities for Coastal Aquatic Habitats in the Mass Bays Region*. We will review the results of a restoration priority inventorying and mapping exercise, and ask participants to help identify reasons for gaps. After the break, we will present our project ranking methodology and open the floor to a discussion of its utility.

1:00 –
1:15pm

Introduction

- Welcome/Introductions
- Overview of the grant and scope of work
- Our goals
 - Now:
Look for gaps in identified restoration priorities both by region and habitat type
Develop a ranking system for prioritizing future projects
 - Future:
Use in ILF mitigation project selection process
Public dissemination of results and planning tools

1:15 –
2:30pm

Task 1: Identifying restoration priorities in the MBP region

- Review of project results, posters and maps
 - Are any key players missing from our inventory (refer to contact list)?
 - What are possible reasons for restoration priority gaps by community?
 - What are possible reasons for restoration priority gaps by habitat?
 - Are gaps real or artifacts of information we missed?
 - Submit comments/additions via email or phone (2 weeks)
- How can this data be beneficial to resource managers?

2:30 –
2:45pm

Break: Refreshments & Poster viewing

2:45 –
4:15pm

Task 2: Project Ranking Methodology

- Roundtable discussion & review of ranking worksheet
 - Are any important parameters missing?
 - Are rating scales appropriate for each parameter?
 - Where should yes/no vs. sliding scales be used?
 - How should each section be weighted?
 - Should multipliers be used, if so, can they take the place of weighting each section with a percentage?
 - Ideas on how to deal with scoring ratio questions (i.e. acres restored to acres impacted)?
 - Do you see anything that can be condensed or simplified?
- How can this method be improved?
- Is it usable in your organization, why or why not?
 - Request for trial runs in your organization

4:15 –
4:30pm

Closing Remarks

Identifying and Prioritizing Restoration Opportunities for Coastal Aquatic Habitats in the Mass Bays Region



Identifying and Prioritizing Restoration Opportunities for Coastal Aquatic Habitats in the Mass Bays Region

- **Welcome**
- **Introductions**
- **Project Background**

- Mass Bays Program Research and Planning Grant
- Two important questions:

Task 1: Are there significant information gaps within the Mass Bays region that need to be identified when developing coastal restoration priority lists?

Task 2: How can we develop a sustainable methodology for assessing priority restoration sites on a larger, regional scale?

Identifying and Prioritizing Restoration Opportunities for Coastal Aquatic Habitats in the Mass Bays Region

TASK 1

- **Approach: Compiling existing restoration priority lists**
 - Contact over 40 relevant state agencies, watershed groups, and grassroots organizations
 - Organize restoration opportunities into 5 habitat categories
 - Compile data into a series of excel matrices
 - Map data using GIS to visualize gaps by region and habitat type
- **Extension work**
 - Analyze the last 3 years of MA *Marine Fisheries* Environmental Review data
- **Hurdles & Issues**
 - Making the right contacts
 - Categorizing projects into communities and habitat types
 - Understanding the limits of the data
 - Project size, cost, current status, etc not considered
- **Results & Discussion**

Five key coastal habitat categories and examples of project types identified by MA In Lieu Fee program's Steering Committee

Open Water	Water quality improvement	Salt marsh	Salt marsh restoration
	Sediment remediation		Removal of tidal restrictions
	Marine debris removal		Sediment remediation
	Fish habitat enhancement		Conservation easements
	Coastal fill	Streams	Fish passage (dam removal, ladders)
	Shellfish restoration		Water level management
SAV	Elgrass planting		Water quality improvements
	Modification of mooring hardware	Intertidal	Marine debris removal
			Shellfish restoration



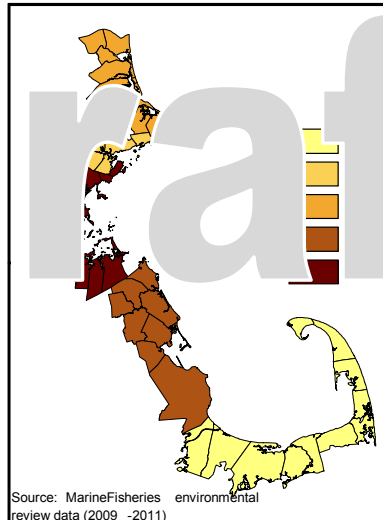
Identifying and Prioritizing Restoration Opportunities for Coastal Aquatic Habitats in the Mass Bays Region

Task 1: Results

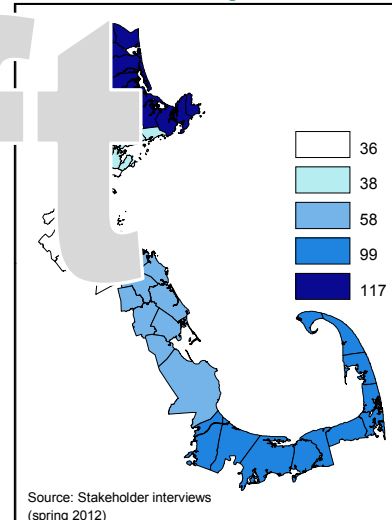
Massachusetts Bays Program Regions



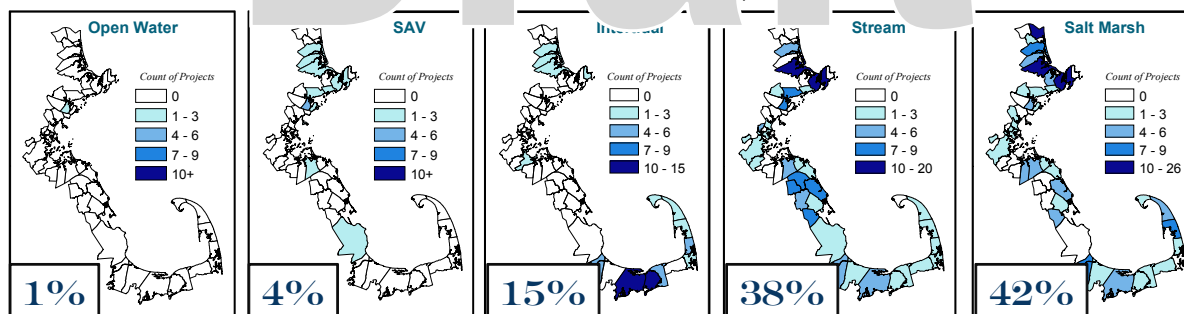
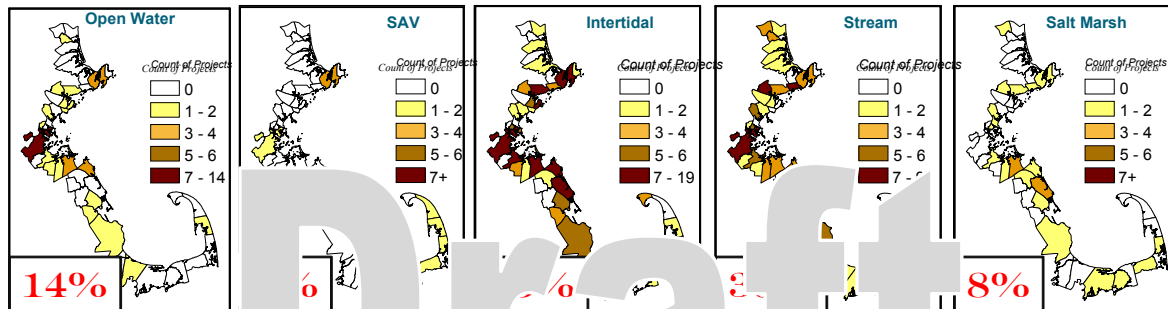
Number of Coastal Alteration Projects by MBP Region



Number of Potential Restoration Projects by MBP Region



Number of Coastal Alteration Projects by Habitat Type per Town, 2009 - 2011
(Source: Marine Fisheries Environmental Review data)



Identifying and Prioritizing Restoration Opportunities for Coastal Aquatic Habitats in the Mass Bays Region

Task 1: Group Discussion Topics

General Questions – project background, methods, etc

Finding and Explaining the Gaps

- Are any key players missing from our inventory (refer to contact list)?
- What are possible reasons for restoration priority gaps by community?
- What are possible reasons for restoration priority gaps by habitat?
- Are gaps real or artifacts of information we missed?
- Submit comments/additions via email or phone (2 weeks)

Making it Useful

- How can this work be beneficial to resource managers?

Identifying and Prioritizing Restoration Opportunities for Coastal Aquatic Habitats in the Mass Bays Region

TASK 2

- **Approach: Developing a ranking methodology**
 - Compiled existing literature and project ranking methods from stakeholders
 - Pared down to a 3-page worksheet
- **Hurdles & Issues**
 - Difficult to keep the compilation brief while still covering the important parameters
 - “Apples to oranges” dilemma: many different ranking methods to use, but may be biased depending on what habitat functions the organization is hoping to restore, their funding source, community support, etc.
- **Results & Discussion**

Review Date _____
 Project Reviewer _____
 Total Score _____
 Recommended for Funding (y/n) _____

Project Name _____
 Project Status (New/Ongoing) _____
 Amount requested _____
 Project location _____
 Communities _____
 Address or location _____

Note to reviewers: Please complete this section of the form prior to using this scoring sheet. The scoring categories and multipliers for each

In the *Ecosystem Function* section, project types. If the project is a restoration project, it should be scored based on the five key priority habitats identified by the MA Department of Marine Fisheries (ILF) Project Review Committee. The scoring categories and multipliers for each

Optional Scoring Guidelines			
"Scale 1"	"Scale 2"	"Y/N" Scale	Score
None	N/A	No	0
Low	Unsatisfactory		1
Low/Med	Satisfactory		2
Medium	Good		3
Med/High	Very Good		4
High	Excellent	Yes	5

Parameter	Scoring Scale Description	Score	Multi-plier	Comments
Cost and Relevance				
Total acres restored, all habitat types and buffers	(fill in; no score applied)	N/A		
Est. cost per acre restored	(fill in; no score applied)	N/A		
Total project cost (including any match funds)	(fill in; no score applied)	N/A		
Ratio of acres restored vs. identified acres impacted				
Match funds?				
If yes to match, ratio of match to amount requested				
Is proposed budget reasonable based on projects stated objectives				
Project is an extension / continuation of a current or previously funded project				
Project listed as a restoration priority by a state agency, non-profit, or in a watershed management plan				
Project has received endorsement from state, or federal agencies, and other groups				
Public information available / will be available				
Project information v. publically accessible (website, sign, etc.)				
Public information				

Parameter	Scoring Scale Description						Score	Multiplier	Comments
Ecosystem Function	Scoring Scale	Open Water	SAV	Inter-tidal	Stream	Salt Marsh			
Primary habitat (identify one) being restored									
Secondary habitats being restored									
Acreage of habitat restored (fill in all)	<i>no score applied</i>						N/A		
Secondary benefits to surrounding habitats or buffers									
Improvements to water quality (scale by primary)									
Proximity to existing functional habitats									
Benefit to climate change resiliency (water level management, ocean acidification, etc)									
Benefit to protected species or their habitat									
Benefit to comm./rec. species or their habitat									
Management of invasive species (monitoring, controlling)									
SECTION SCORE									

Draft

Parameter	Scoring Scale Description	Score	Multiplier	Comments
Technical and Scientific Merit				
Project conforms to applicable laws, regulations, and standards				
Design is adequate to achieve project goals				
Use of available scientific information				
Permits secured or likely to be secured within the proposed timeframe				
Proposed Plan achievable within the proposed timeline				
Appropriate site selection process used –evaluation of location including adjacent uses				
Avoidance of conflicting uses				
Long term protection (Conservation easement/ MPA/etc) strategy is proposed				
Qualification of Applicant (experience (CV's) / references)				
An appropriate duration for monitoring by a qualified person is proposed				
There are identified quantifiable parameters that can demonstrate project success				
An appropriate level of project maintenance is proposed				
SECTION SCORE				
TOTAL SCORE				

Identifying and Prioritizing Restoration Opportunities for Coastal Aquatic Habitats in the Mass Bays Region

Task 2: Group Discussion Topics

- Roundtable discussion & review of ranking worksheet
 - Are any important parameters missing?
 - Are rating scales appropriate for each parameter?
 - Where should yes/no vs. sliding scales be used?
 - How should each section be weighted?
 - Should multipliers be used, if so, can they take the place of weighting each section with a percentage?
 - Ideas on how to deal with scoring ratio questions (i.e. acres restored to acres impacted)?
 - Do you see anything that can be condensed or simplified?
- How can this method be improved?
- Is it usable in your organization, why or why not?
- Request for trial runs in your organization

MA In Lieu Fee (ILF) Program

- **RFR now open:**
 - Seeking on-the-ground habitat restoration proposals
 - 5 habitat categories: OW, SAV, stream, intertidal, SM
 - Approx \$170K for funding (no restrictions on how much you request)
 - visit Comm-Pass website www.comm-pass.com and search under *solicitations* tab for “ILF”.
 - Closes 10/31/12!

Appendix H. Workshop notes

Gloucester Field Station, October 2, 2012

1pm

Identifying and Prioritizing Restoration Opportunities for Coastal Aquatic Habitats in the Mass Bays Region

Jill Carr, Mark Rousseau and Kate Ostrikis

(Tay had comments about how the SAV maps have changed in restoration potential– get rid of Gloucester and Hingham and add Boston Harbor also add Danvers and Boston to Intertidal)

Attendance:

Phil Colarusso - EPA

Ruth Ladd - ACOE

James Sprague - DEP

Eric Hutchins – NOAA

Hunt Durey - MA DER

Brian Kelder - Ipswich River Watershed Assoc.

Valerie Gingrich – CZM

Kathryn Ford – DMF

Peter Phippin - MBP/ETGM

Lisa Berry Engler - Mass Bays Association

Barbara Warren – Salem Sound Coast Watch

Eric Hutchins – was this an official survey (about maps slide) no.

How do you mean **priority** restoration? However the stakeholder defined it within their organization.

1:23 Discussion 1 – Lead by Mark

Hunt D. – wetland migration sites (another possible habitat type) as sea level rises

Eric - Maybe just drop the word priority. Use identified restoration projects instead

Phil – top graphs seem to have def. happened or will be/ bottom graphs are projects that may be done – how to weed out more projects that will not be done vs what will be

DEP – has data on square footage the past few years of environmental review projects – contact Lisa Rhodes – also follows restoration projects too

Good message from restoration potential maps – see what habitat types have the most interest obviously salt marsh is big because so much time and energy has been focused on it to restore it

Missing Players:

Essex County Green Belt – Ed Becker

EPA – Ed Reiner

National Park Service – Boston Islands

Mass DCR

Local conchons and shellfish constables/wardens

Trout Unlimited – MA/RI Council (look up chapters website)

Ducks Unlimited – Dr Craig Ferris (Sippewisett)

As for whom we contact – limit it to what is our data set wants to show??

Reasons for Restoration Priority Gaps by Community/Habitat

- Ease of doing it i.e. salt marsh is easier/cheaper/quicker results vs. Open Water/SAV
- How to find willing partners. Prevent flooding with A salt marsh will get the whole community vs. again Open Water/SAV
- Some are easier to get permits – by town/habitat type
- Not all habitats are protected the same / regulations – some are easier to permit
- Priority by benefits vs priority by opportunity (very diff things)
- Community Support / Local Government (Plymouth is huge vs others and gets much more money)

- Cost of projects in urban areas especially higher (i.e. hit contaminated sediment issues, etc)

Reasons for Restoration Priority Gaps by Habitat (overlap with above)

- Ease of Project/Money/Resources
- Smaller acreage
- Our definition of Open Water – maybe call it subtidal (to include both the water column and the sediment below it)

When you ask again to redo maps

What are the best restoration opportunities in your area?

-

What is Subtidal vs. Open Water?

Is it open water or intertidal? Where do you draw the line?

Open Water – look @ NPDS permits because we really didn't review any open water projects then

Our Open Water is Subtidal not actually Open Water – our open water is the 2nd impact

How can this become more beneficial/ or is this not at all?

How much data was collected per project for restoration - very variable. There wasn't a form or cut off line for what would constitute for a project. Just wanted a #.

Should get a map with dot locations of restoration along with more info per project

Acreage of restoration / project parameters / project proponent / contact info

A lot of interest in seeing impacts mapped by acreage/sq.ft. (both DMF enviro review, and DEP's log (contact Lisa Rhodes)

Including mitigation efforts shows a fuller picture

Compare all of our data to what would benefit the species the most. Help our most endangered species/habitat & focus on fisheries benefits, better use of time

Could this information help show that other habitats need more work instead of say salt marsh. Like when open water is affected and they choose to restore a 2nd habitat type instead of open water – salt marsh is usually a go to. Maybe this data would help sway ideas of what that 2nd habitat should be.

This data helps show by towns and habitat and what overlaps. Certain towns have certain overwhelming projects happening to certain habitats – so where can we go next. Our environmental review map!

How to show mitigation/ ILF with this data that comes out of this data in relation to impacts that happened

Random comments:

Do we look at damage from like dredgers/scallop dredge

Will Open water ever become a potential restoration if it isn't addressed/an interest hasn't occurred? – HUBLINE / CAPE WIND

Task 2: Project Ranking Methodologies

2:45pm

Ruth – add to cover that not all parameters are for all uses, users can eliminate as necessary

Eric- use total scores for each sub-section rather than each parameter. Allows for more flexibility. OR, use sliding scale for all parameters rather than Y/N. need to give yourself flexibility to allow for reviewer's judgment and legal ramifications of not funding the highest ranking projects

Lisa- create a guidance document that describes each parameter, terms and scale options

Hunt- have individuals in the review committee do "draft" scores first, then convene a meeting to discuss and submit final scores as a group

Cost and Relevance Section

-ratio of acres restored vs. identified acres impacted

- o how do we do that? Is this meaningful? How do we use the scale/score? We picked this because it isn't just in relationship to size.

- How do you answer is the benefits of this little project help in relation to the surrounding area
- Capstone Idea Missing - For the question – is proposed budget reasonable? If you get a 0 here maybe it should negate it overall! Because if you get a 0 here you could potentially still slip through and get a good score. This should happen in a few cases
- How long can they hold money/give it out in phases?
- Permitting can be paid with grant money?
- Public Access – doesn't benefit SAV or Open Water projects? Keep or delete it? Maybe delete because this is mitigation so might not be appropriate

-comment about existing/current project status- no reason to score higher, should want new projects for ILF funds too

-maybe include “proximity to impacted habitat” to better deal w/ratio of restored to impacted question

Ecosystem Function

- Adjust scale for Primary vs. Secondary Habitats. Primary Habitat points should be greater than Secondary.

Technical and Scientific Merit

- none

From the commonwealths - create a uniform methodology

This methodology will rate projects one way, the MEPA methodology will rate it completely different.

However each grant has diff objectives so need diff questions.

To get right answers about project review a lot of upfront work needs to occur

How did applicant figure out cost per acre – goal of grant, the writers are responsible

We are missing: whatever money we give will allow project to be finished. It's not the beginning of their funding process – because we want to see the project completed. We want to not just pay for 10% of project.

Then we still accept a match for commitment reasons

Project cost is important too because if they get money from so many diff sources – ILF only gets the % of results. (100 acres restored but we funded 10 acres only so ILF only responsible for 10 acres not 100)

One thing missing – Get more points for habitat type restored. OW has given ILF most money so get more points when your project is OW restoration? Is this a possibility.

Who does background check to make sure applicant is telling truth – so ILF ends in No Net Loss.

Do we look at the investment made vs the output gained? We want to get the most for the money we give out.

Tool for future – can delete certain sections based on what this ranking method is being used for. Use asterisk (like removing public access one for ILF ranking)

Legal Questions need to be addressed. Do we have to pick the project that results in the highest #. We need to figure this out. We may be boxed in – so we maybe have a few questions that result in dialogue. Maybe not good that it is so finite. Build in more flexibility – we have so many Y/N questions.

This is why the habitat section is a sliding scale – that is the most important type. So maybe make the sliding scale 0-10.

Reword Y/N questions so they are all sliding scale questions. May be best. Also so it has a description along with a sliding scale.

Can we break down categories or group others? Like break down monitor plan (is it 1-3 years or 3-5 years diff points for that)

Maybe answer is reviewers can use whatever they want based on how detailed they want to be. So either Y/N or a slider scale.

Figure out how to give a better score based on cost/acre. Description answer?

Also have people who are experts give input on applications along with people who do scores.

Be aware of if keeping same people scoring. Are they consistent? What happens when you keep switching up who reviews.

*Have the group give draft score then talk openly about the project then give final scores. Dialogue between reviews is a huge benefit

Nothing can be simplified/condensed – most people want to expand it

Do we use this for ILF – yes. We’ve already spent so much time/effort on it so use it as a trial then go back and make edits. No reason to re do it all now.

Anyone interested in being a reviewer for ILF process. – Will email Mark.

Look at the question about is this project already started?? Need to check out how much credit we get.

ILF Questions:

Is there a deadline for when money will be used by. Should be 12-18 month limit.

At next meeting – try to walk through all categories of the ranking method. Get more feedback about each criteria. Maybe not talk about ILF so much. Try not to be so focused on ILF – focus that it can be used anywhere
Helpful to walk through the parameters by using an example project – get from Boston Harbor Group – def need 2 projects.

If we were to go a step further and map out acreage – do it with OW or Intertidal

Eric – downplay data analysis/maps because it’s not concrete enough

Scoring – Remove Y/N 0/5.

Actually remove all scoring numbers – and just wait for feedback about scoring and then present possible scoring and then see feedback. We wasted a lot of time on that today. Leave it open ended.

Check out how NH and Maine has done this process. RFPs

Plymouth Town Hall, October 18, 2012

1pm

Identifying and Prioritizing Restoration Opportunities for Coastal Aquatic Habitats in the Mass Bays Region

Jill Carr, Mark Rousseau and Kate Ostriakis

Eileen Feeney - DMF
Rick Kristoff – Army Corps of Engineers
Prassede Vella - CZM
Carly Rocklen – Neponset River Watershed Association
Matha Rheinhardt – Cape Cod Conservation District
Cathy Buzek - The Nature Conservancy
Casey Shetterly – The Nature Conservancy
Heather McElron – Cape Cod Commission
David Gould – Plymouth Environmental Management
Kim Tower – Plymouth Environmental Management
Pat Hughes – Provincetown Center for Coastal Studies
JoAnn Muramoto - Assoc. to Preserve Cape Cod/Mass Bays Cape Cod
Sara Grady - Mass Bays Program South Shore
Abigail Franklin – CC Conservation District
Curtis Felix – Wellfleet wastewater committee

Task 1: Identifying restoration priorities in the MBP region

Discussion 1:25

General Questions about presentation

JoAnn – what is open water? Subtidal. How about lakes and pond? That would be addressed via streams. She thinks lakes and ponds should be separate or maybe an extension of open water because of fish life cycle.

Pat – Where was the source of data from? Environmental Review including MEPA/ConCom/DEP

Casey – How to address the big gap of what's been affected to what's available to be restored, i.e. how SAV is smaller potential habitat than Intertidal. So how do you weigh them against each other for what has higher priorities?

Sara Grady – the # of potential restoration break down – how was it done? However the stakeholders say. What if 1 project had 4 phases like 4 culvert repairs for one stream project. – same answer.

JoAnn – Delineation program/project would be of interest to us and Prassede will have information.

Sara Grady – restoration list (including location and progress) maintained by a south shore coalition by Jeremy Bell at DER

Martha - Salt marsh – so many more restoration projects than impacts. DER concentrates very much on them / big focus. Low impact rate because they are so strongly regulated.

Thinks #'s are a pretty good ball park though of what's really happening.

Carly – mentioned how her organization can't really focus on eelgrass restoration yet because current conditions – water quality is so poor. So focus more on salt marsh or other areas.

Stream restorations became more abundant when DER started up. They maintain a list of completed restoration projects.

Mark – are they any missing key players?

JoAnn - Barnstable County Cooperative Extension / Woods Hole Sea Grant

Diane Murphy at Cape Cod? – has eelgrass restoration projects she is working on to identify habitat for eelgrass to be planted

Friends of Elisville Marsh

Town of Plymouth Environmental Management has a list of projects

Maybe should of contacted all conchs/constables/towns etc

Some of our projects on our restoration list were due to mitigation requirements?

Wellfleet – Oyster Restoration – FOHR Don Paletino tough with regulations and funding requirements But would help water quality

Mark Faherty – Mass Audubon

Martha Rheinhardt Cape Cod Conservation District Project Manager – felt strongly that we are missing info because we didn't contact town officials (issues with the scale used when contacting stakeholders)

NOAA has a ranking method – look up their community based restoration program and search for F.F.O.

Mark – What are possible reasons for restoration priority gaps by Community

Land ownership issues in urban areas – many coastal areas are privately owned. Fewer available areas for restoration.

Sara – some communities are more proactive. Town government employees.

JoAnn – what is a shellfish bed restoration? Is it just the animals being restored or also from Water Quality / sediment remediation. Does protection count?

Is planting clams on a flat to get harvesting in 3 years is that restoration or just sustaining the fisheries.

How do you compare habitats equally? Can you?

Trouble defining restoration – leave it up to people providing information to make decision.

What did the stakeholder get from Jill when she was asking for info? They rec'd 5 diff habitat lists and then the subdivision. Then the data could have been broken down by sub habitat but that would be too much work

Water quality degradation would lead to benefits for multiple habitats. Maybe use “integrated restoration” as a catch-all category

IF a project opens a shellfish habitat so then that area has an improvement and then leads to improvement to other areas

Another gap idea – put in shellfish then removing N from water then improving water quality?? Maybe make shellfish a separate habitat category?

Neponset River – has pcbs in sediment so can't even consider salt marsh or SAV restoration. So old industry impedes us now. Very expensive and work heavy to remove the pollution before you even start restoration.

Boston/New Bedford has a low amount of available land ownership by the town

Salt Marsh easiest habitat to restore

Mark – What are possible reasons for restoration priority gaps by Habitat?

What does Brackish Salt Marsh fall under – depending on source but usually only stream.

What to call tidal ways / inlet – what are they categorize as? That was categorized as stream.

How to refine how habitats are defined. Some areas have multiple habitats. A bunch of overlap between 5 categories.

Habitat categories need to be refined – because it's hard to be consistent across groups.

Shellfish could be its own category.

Mark – Are gaps real or artifacts of information we missed?

Again missed out on not contacting individual town groups.

Gaps we see are because we have lack of info at the town level

May have missed projects at a small scale. – why don't regional managers know then about small scale stuff from small organizations. Gaps: state – region – local level communication. Regional managers _ Missing manpower / hard to micro manage

Jill – How can this data be beneficial to resource managers?

Identify gaps to then go back and fill in holes and remanage.

This creates conversation between different groups and for groups to work together and find funding.

Helpful because groups will push/help each other to do the same thing they are doing. One group can answer another's questions about the project they are doing so they can start their own. Public education push

Task 2: Project Ranking Methodology

-Use italics to know what to ignore depending on who is reviewing (i.e. not all parameters are relevant for uses other than funding related)

-Consider having a line on the cover page for whether it is a protection, mitigation, enhancement, or improvement project (look up definitions on EPA website)

Cost and Relevance

maybe use "other public benefits" parameter (to include public access, beach water quality improvements, public safety, would all go under this category) but still would not really benefit SAV but public is sourcing this so public should be benefited

#4– is it better to restore a degraded site or a decent site or does that matter? – what is the impacted area – but ratio is more fair. **somehow capture the relative importance of restoration within the geographic context

project type – is the project enhancement improvement restoration protection? (EPA terms)

#9 – instead of state agency use just agency (federal/local/state)

Add – will it have partners? Support from other groups?

Legal issues? Land ownerships? # of easements that need to be obtained? Have they all been addressed.

Have all abutters been addressed yet.

Is the owner an active participant in the restoration? Obtain support letter?

Add public outreach to go hand in hand with public education but they are different. So community can be informed / get possible support

Ecosystem Function

is it a regional significant area – will it fill a gap?

Acreage restored – add LF or SF measurement, not just acres

Dam removals – what is the right answer for amount of habitat? Linear/acres? Amount restored is the amount of fish passage habitat that will now be available.

What happens to projects that are affecting/losing one habitat to restore another (i.e. beach removed to restore flow)?

Culvert Repair – you also use how much habitat is now available vs just restored.

What is the longevity of the project – beyond just maintenance?

How long will it be until reaches full function/productivity?

#6 – important good you would want to score high, but should you add a section called proximity to existing impaired habitat?

Could add more details to instruction page about proximity to impaired/degraded/functional site.

Add – what are the restoration goals and tasks? Are they clearly identified? (if the answer is no, would this cause the application to just be chucked out)

Does the project improve functionality, or increase acreage? Or both?

Technical & Scientific Merit

Thoughts on permit status – could you do a question about understanding of permits required for to do project. Are they likely to be obtained? Proponent clearly states/included what type of permits they will need to get and status of it. But hard to weigh this section so maybe don't scale it at all. So maybe use as a requirement within the RFR.

Give money out only after permits are required. We've already talked about giving out money based on tasks completed, like steps.

In guidance document, you can tell reviewers to delete a parameter(s) if it does not apply to them (i.e. if they are not using the worksheet for a funding decision).

Is the project just a feasibility studies? (if so, the permit question is irrelevant)

Add adaptive management?

Legal issues have been addressed – land ownership, construction, etc

Are rating scales appropriate for each parameter?

Develop narrative to scale section on 1st page.

Is it usable in your organization, why or why not?

it's a good template that can be adapted / modified

A few people who do rank projects said yes

Appendix I. Restoration Project Ranking Tool



Habitat Restoration Project Prioritization Tool

The attached project scoring worksheet and guidance document are intended to assist coastal resource managers, regional planners, and local communities in prioritizing and selecting coastal and estuarine restoration projects. The scoring worksheet allows reviewers to numerically rank projects based on three key aspects:

- Cost and Relevance: scoring items in this section include cost and funding of the project, relevance to the region, level of local support, and community benefits.
- Ecosystem Function: scoring items in this section include benefits to primary, secondary, and surrounding habitats, improvements to water quality and climate change resiliency, benefits to protected/important fish and wildlife, and biodiversity improvements.
- Technical and Scientific Merit: scoring items in this section include project design, timeline, logistics, and qualifications of the project proponent. Some items in this section are relevant to project selection for funding purposes and may not be applicable for all users, in which case those parameters can be ignored or replaced as needed.

The goals and priorities of restoration efforts are inherently variable due to regional preferences, funding availability, expertise, and defined habitat restoration priorities. To account for this, this worksheet contains a multiplier category that allows resource managers to assign higher scoring values to categories identified as being of a higher priority for their particular project needs. For example, if a user's priority is to ensure that projects demonstrate a high degree of restoring ecosystem function, a manager could assign a multiplier value of "2" or more for some or all of the Ecosystem Function category scores, while leaving the multiplier value as "1" for Cost and Relevance and Technical and Scientific Merit categories. Using the spreadsheet tool, the scores are automatically calculated based on the assigned multiplier values.

This tool has been designed to be flexible and allows users to modify fields to meet their needs. Parameters that can be easily changed include the habitat categories, multiplier values, maximum possible points, and scoring scales. Furthermore, parameters can be added or removed as needed if the user wishes to address particular goals when ranking projects. The guidance document defines key terms and narrates each question asked in the worksheet, in some cases providing examples and scoring guidelines. The guidance document is most helpful when reviewed line by line alongside the scoring worksheet.

Finally, this tool has not been designed to be used by a single individual for ranking multiple projects on their own. It cannot eliminate biases associated with ranking projects of varying degrees of familiarity or association by an individual reviewer. This worksheet was designed for and tested in a setting that incorporated a committee of reviewers and allowed for both categorical and final scoring results to be tabulated, averaged, and ranked. The selection of a balanced and representative committee to review and rank projects is a critical step in helping to ensure a successful outcome for project selection. It is important for project managers to establish a committee early in the selection process, and managers may wish to involve the committee in helping to establish and prioritize ranking parameters. In many cases, particularly when using public funds for restoration, the selection process itself is open to public review. A balance of individuals with regional expertise as well as "out of region" experts will provide a more transparent ranking process, and will allow for more easily defensible results in a public forum.

This tool was presented in draft form at two stakeholder workshops attended by representatives from local, state and Federal agencies, watershed groups and non-profits. Feedback regarding the layout and utility of the tool was integrated into the final version, which was then used in a case study by the MA In Lieu Fee (ILF) Program's project review committee to score and select restoration project proposals for funding. For additional information about these efforts, the Final Report for this project can be found at http://www.mass.gov/dfwele/dmf/programsandprojects/fee_mitigation.htm

For further assistance using this tool, contact Jillian.Carr@state.ma.us or Mark.Rousseau@state.ma.us.

This work was funded by the Massachusetts Bays Program as part of a project entitled Identifying and Prioritizing Restoration Opportunities for Coastal Aquatic Habitats in the Mass Bays Region.

HABITAT RESTORATION PROJECT SCORING SHEET

Please complete all portions of this project evaluation form. The scoring scales are provided in the Scoring Scale Description column. Score all parameters using a scale of 0 - 5 using whole numbers only, with "0" being the lowest possible score and "5" the highest possible score. Other optional scoring scales are provided in the tables below. *Note: multipliers used in worksheet can be removed or modified to meet the needs of the evaluation. Assign higher multiplier values for areas determined to be of greater importance to the user group.*

See sheet entitled Scoring Guidance for definition of terms and details about each parameter. Habitat types used in this scoring methodology are based on the five habitat classification categories utilized by the *Marine Fisheries* In-Lieu Fee (ILF) Program. Habitat categories can be added or removed as needed by the user.

Review Date	
Project Reviewer	
Total Score	0
Recommended for Funding (Y/N)	

Project Name	
Project Status (New/Ongoing)	
Project Type (highlight one)	Creation / Restoration / Enhancement / Design / Feasibility
Amount requested	
Proponent	
Communities (list all)	
Address or landmark	

Scoring Guidelines	
Score Scale	Value
N/A	0
Unsatisfactory	1
Satisfactory	2
Good	3
Very Good	4
Excellent	5

Other Optional Scoring Guidelines		
Low to High	Y/N	Score
None	No	0
Low		1
Low/Med		2
Medium		3
Med/High		4
High	Yes	5

Parameter	Scoring Scale Description	Score	Multiplier	Adjusted Score
Cost and Relevance	30%			
Total area restored, all habitat types and buffers	<i>(fill in; no score applied)</i>		N/A	N/A
Est. cost per acre restored	<i>(fill in; no score applied)</i>		N/A	N/A
Total project cost (including any match funds)	<i>(fill in; no score applied)</i>		N/A	N/A
Match funds?	<i>Score scale (0-5 points)</i>			0
If yes to match, ratio of match to amount requested.	<i>Score scale (0-5 points)</i>			0
Relative regional importance of resource and project	<i>Score scale (0-5 points)</i>			0
Is proposed budget reasonable based on projects stated objectives?	<i>Score scale (0-5 points)</i>			0
Project is an extension / continuation of a current or previously funded project.	<i>Score scale (0-5 points)</i>			0
Project listed as a restoration priority by a government agency, non-profit, or in a watershed management plan	<i>Score scale (0-5 points)</i>			0
Project has received support / endorsement from local, state, or federal agencies, from non-profit or other community groups, and from property owner / abutters (if applicable).	<i>Score scale (0-5 points)</i>			0
Proposed level of outreach for the general public, community, and abutters adequately provides project information (website, signage, press releases, etc.).	<i>Score scale (0-5 points)</i>			0
Project provides additional public benefits	<i>Score scale (0-5 points)</i>			0
	SECTION SCORE	0		0
	Maximum Points Possible			

Comments on Cost and Relevance Section:

Parameter	Scoring Scale Description	Score					Multiplier	Adjusted Score
Ecosystem Function	40%	Open Water	SAV	Intertidal	Stream	Salt Marsh		
Amount of habitat proposed to be restored (acres, sq.ft., or LF as appropriate (fill in all))	<i>no score applied</i>						N/A	N/A
Identified primary habitat being restored (Score only one)	<i>Score scale (0-5 points)</i>							0
Identified secondary habitats being restored (maximum of 4. Score all using 1-5 scale)	<i>Score scale (0-5 points)</i>							0
Secondary benefits to surrounding habitats or buffers	<i>Score scale (0-5 points)</i>							0
Improvements to water quality (<u>score primary habitat column only</u>)	<i>Score scale (0-5 points)</i>							0
Proximity to existing unimpaired/functional habitats (<u>score primary habitat column only</u>)	<i>Score scale (0-5 points)</i>							0
Benefit to climate change resiliency (water level management, ocean acidification, etc) (<u>score primary habitat column only</u>)	<i>Score scale (0-5 points)</i>							0
Benefit to protected species or their habitat (<u>score primary habitat column only</u>)	<i>Score scale (0-5 points)</i>							0
Benefit to comm./rec. species or their habitat (<u>score primary habitat column only</u>)	<i>Score scale (0-5 points)</i>							0
Benefit to biodiversity (management of invasive species, etc) (<u>score primary habitat column only</u>)	<i>Score scale (0-5 points)</i>							0
	SECTION SCORE	0						0
	Maximum Points Possible							

Comments on Ecosystem Function Section:

Parameter	Scoring Scale Description	Score	Multiplier	Adjusted Score
Technical and Scientific Merit	30%			
Project conforms to the objectives of the RFR	<i>Score scale (0-5 points)</i>			0
Design is adequate to achieve proposed outcome	<i>Score scale (0-5 points)</i>			0
Use of available science, technology, and BMP's	<i>Score scale (0-5 points)</i>			0
Permits secured or likely to be obtained within the proposed timeframe (if applicable)	<i>Score scale (0-5 points)</i>			0
Proposed Plan achievable within the proposed timeline	<i>Score scale (0-5 points)</i>			0
Appropriate site selection process used –evaluation of location including adjacent uses	<i>Score scale (0-5 points)</i>			0
Avoidance of conflicting uses	<i>Score scale (0-5 points)</i>			0
Long term protection (Conservation easement/ MPA/etc) strategy is proposed	<i>Score scale (0-5 points)</i>			0
Qualification of Applicant (experience (CV's) / references)	<i>Score scale (0-5 points)</i>			0
An appropriate duration for monitoring by a qualified person is proposed	<i>Score scale (0-5 points)</i>			0
There are identified quantifiable parameters that can demonstrate project success	<i>Score scale (0-5 points)</i>			0
An appropriate level of project maintenance is proposed	<i>Score scale (0-5 points)</i>			0
	SECTION SCORE	0		0
	Maximum Points Possible			
TOTAL SCORE				0

Comments on Technical and Scientific Merit Section:

Appendix J. Case Study Results: ILF Program Scoring Summary

Note: project names and details have been removed for confidentiality

ILF #		project 1	project 2	project 3	project 4	project 5	project 6	project 7	project 8	
Short Title										
City / Town		Rowley	Winthrop	Harwich	Newbury	PI Sound	Plymouth	Braintree	Taunton	
ILF Region		North	North	South	North	North	Central	North	South	
Reviewer Scores										
Reviewer	Affiliation	Score	Score	Score	Score	Score	Score	Score	Score	
reviewer1	Fed	90	87	93	88	87	96	77	85	5.667892
reviewer2	Fed	56	44	63	54	33	99	52	44	19.76243
reviewer3	State	145	117	119	153	78	130	117	144	23.73025
reviewer4	State	148	119	163	149	122	162	133	140	16.64761
reviewer5	State	167	155	157	171	158	173	171	171	7.443837
reviewer6	State	138	117	126	153	137	168	139	146	15.70259
reviewer7	Loc/nonprofit	115	94	123	114	95	130	95	111	13.71066
reviewer8	Loc/nonprofit	140	117	160	124	108	173	141	125	22.02596
Average Score		124.88	106.25	125.50	125.75	102.25	141.38	115.63	120.75	
Adjusted Average Score	scores of potential reviewer conflicts (red boxes) removed for recalculating adjusted averages and adjusted ranks	124.88	96.33	120.57	125.75	102.25	141.38	102.50	108.17	
Rank of Scores		4	7	3	2	8	1	6	5	
Adjusted Rank of Scores		3	8	4	2	7	1	6	5	

Reviewer Ranks

Reviewer	Affiliation	project 1	project 2	project 3	project 4	project 5	project 6	project 7	project 8
reviewer1	Fed	3	6	2	4	4	1	8	7
reviewer2	Fed	3	6	2	4	8	1	5	7
reviewer3	State	4	8	1	3	7	2	6	5
reviewer4	State	2	6	5	1	8	4	6	3
reviewer5	State	5	8	7	2	6	1	2	2
reviewer6	State	5	8	7	2	6	1	4	3
reviewer7	Loc/nonprofit	3	8	2	4	6	1	6	5
reviewer8	Loc/nonprofit	4	7	2	6	8	1	3	5

Highest	1
	2
	3
	4
	5
	6
	7
Lowest	8

Average Rank		3.63	7.13	3.50	3.25	6.63	1.50	5.00	4.63
Adjusted Average Rank	scores of potential reviewer conflicts (red boxes) removed for recalculating adjusted averages and adjusted ranks	3.63	6.83	3.71	3.25	6.63	1.50	5.67	5.33
Final Rank (1-8)		4	8	3	2	7	1	5	6
Final Adjusted Rank (1-8)		3	8	4	2	7	1	6	5