



## Version 1.0

### Market Based Approach (MBA) in Frenchman Bay

#### Analysis of Services and Stakeholders

At the first meeting of the Frenchman Bay MBA Work Group, the ecosystem services of Frenchman Bay were discussed. In attendance were Jane Disney from MDI Biological Laboratory, Chris Petersen from College of the Atlantic, Natalie Springuel from Maine Sea Grant, Bob DeForrest from Maine Coast Heritage Trust, Jennifer Fortier, representing the municipality of Ellsworth, Abby Barrows from the Marine Environment Research Institute, and Brian Reilly, consultant with Cardno/Entrix.

#### There are four categories of Ecosystem Services:

The value of marine ecosystems is best known for the living marine resources they supply. But there are many other services provided people from the bay.

**Provisioning Services:** for example, food, energy & fuel, minerals & materials, and water

**Regulatory Services:** for example, climate regulation, natural hazard regulation, water purification & waste treatment, erosion regulation,

**Supporting Services:** for example, nutrient cycling and primary production:

**Cultural Services:** for example, aesthetic, educational, recreational, and spiritual services.

Valuing marine ecosystem services in an emerging science; despite these values, coastal and marine ecosystems are at risk, and resources to protect, monitor, and manage them are insufficient

New revenue streams are needed to protect and restore marine ecosystems and the services that they provide. Market based approaches may be able to provide these funds.

What conditions allow for the development of markets?

- Identification of a service
- Recognition of the value of that service
- Buyers who see the logic of investment
- Sellers who influence the delivery of that service (even devoid of property rights)
- Enabling regulations and rights
- Mechanisms for verification / conditionality



## Examples of Innovative Funding Strategies

- Trust Funds, Public-Private Partnerships
- Certification (e.g., MSC)
- Green Seal/Eco-labeling (Maine's Environmental Leadership Certification)
- Biodiversity offsets
- Species banking
- Payment for Ecosystem Services

What are the conditions that allow for the development of markets? What are the Ecosystem Services that Frenchman Bay provides to people from and who visit the Frenchman Bay area?

### **The following Ecosystem Services were identified:**

- Seafood
- Shellfish products
- Providing habitat
  - Forage fish
  - Commercial fisheries
  - Education
- Recreation
  - Kayaks/paddleboards
  - Commercial vs. private recreation
- Quality of life/spiritual inspiration
- Education
- Research
- Atmospheric maintenance
- Jobs
- Building/contractors
- Sporting goods
- Scenery: driving around bay/flying around bay
- Water dependent businesses
- Rentals
- Conservation-based businesses/NGOs
- Increased tax revenue
- Food
- Seaweed harvesting
- Government jobs/DMR
- Art/inspirations



- Seaglass: collecting mementos
- Historical/research/funding
- Shell middens: archaeological interest
- Cruise ships- tourist delivery
- Ferry-tourist delivery

**These services may be broadly categorized as follows:**

- Atmospheric maintenance
- Tourism
- Food
- Housing
- Quality of life
- Jobs
- Recreation
- Municipal revenue
- Habitat
- Education
- Research

How is economic value placed on these categories of services? Knowing the values might help people recognize the importance of the services the bay provides. These numbers can be gleaned from

- Sales Receipts
- Stakeholder Interviews and Surveys
- License sales
- Marine resource landings

What categories of stakeholders derive benefit from the ecosystem services listed above.?

**The following stakeholders were identified:**

- Commercial fishermen
- Recreational fishermen
- Coastal Residents/summer and year round
- Shorefront property owners
- Rental companies
- Realtors
- Tourists
- Outfitters/guides
- Cruise industry
- Education
- Camps, local and those that come for trips
- Yachters
- Outward bound and the like



- YCC
- Regulators, gov't and municipal
- Fish processors
- Dealers
- Clam wardens
- Harbor masters
- Municipal employees
- Art programs
- Artists
- Restaurants
- Island artisans
- Farmers/markets
- Retail sales
- Ferry
- Buses
- Conservation orgs
- Park service
- Scientists
- teachers
- Built builders
- Boat yards

What categories of stakeholders benefit from the services of each of the habitats and species we have prioritized as conservation targets in our Frenchman Bay Plan?

**MATRIX ASSEMBLY:**

In creating matrices as depicted below, the relationship of between stakeholders and benefits can be visualized. Initial attempts to create a matrix for the whole of Frenchman Bay proved difficult and overly-generalized (not shown). Next, a matrix was constructed for a couple of the conservation targets (eelgrass and mudflats, Matrix I, see below). This did not prove informative when using the broad categories of services listed above. The other matrices focus on important and specific ecosystem services for each conservation target identified in our Conservation Action Plan for Frenchman Bay.

**MATRIX ANALYSIS:**

Based on Matrix II, the stakeholders who benefit the most, across the widest cross-section of ecosystem services and conservation targets are commercial fishermen. The only target directly providing water quality services is eelgrass. This habitat is not directly connected to commercial fishermen as a service, but indirectly through water quality improvements it might provide. The tourism industry, realtors, and shorefront property owners might be in the best position to support market based approaches to conservation of the four conservation targets prioritized by the Frenchman Bay Partners; the services they receive will have to be explained in more detail.

**NEXT STEPS:**

Next steps are prioritization of economic studies that will help raise awareness and commitment among particular populations of people who might be most likely or capable to support conservation in Frenchman Bay. Specific stakeholders could be included in pursuing these studies.

Matrix I. Stakeholders and Broad Categories of Services for Two Frenchman Bay Conservation Targets

| <b>Frenchman Bay SERVICES</b> | Recreation | Jobs | Municipal revenue (licenses) | Habitat | Education | Research | Oxygen | Tourism | Food | Housing | Quality of life |
|-------------------------------|------------|------|------------------------------|---------|-----------|----------|--------|---------|------|---------|-----------------|
| <b>Eelgrass as service</b>    |            |      |                              |         |           |          |        |         |      |         |                 |
| Commercial fishermen          |            | X    |                              |         |           |          |        |         |      |         |                 |
| Municipalities                |            |      | X                            |         |           |          |        |         |      |         |                 |
| Restaurants                   |            |      |                              |         |           |          |        |         | X    |         |                 |
| Shorefront property owners    |            |      |                              |         |           |          |        |         |      |         | X               |
| Realtors                      |            |      |                              |         |           |          |        |         |      | X       |                 |
| Scientists                    |            |      |                              | X       |           |          |        |         |      |         |                 |
| Residents                     |            |      |                              | X       |           |          |        |         |      |         |                 |
| Tourists                      |            |      |                              | X       |           |          |        |         |      |         |                 |
| <b>Mudflats as a service</b>  |            |      |                              |         |           |          |        |         |      |         |                 |
| Rec clambers                  | X          |      |                              |         |           |          |        |         |      |         |                 |
| Rec mussel harvesters         |            |      |                              |         |           |          |        |         |      |         |                 |
| Commercial harvester          |            | X    |                              |         |           |          |        |         |      |         |                 |
| Licenses                      |            |      | X                            |         |           |          |        |         |      |         |                 |
| Restaurant                    |            |      |                              |         |           |          |        |         | X    |         |                 |
| Shellfish dealers             |            |      |                              |         |           |          |        |         | X    |         |                 |
| Commercial harvesters         |            | X    |                              | X       |           |          |        |         |      |         |                 |
| Aquaculturists                |            | X    |                              | X       |           |          |        |         |      |         |                 |
| wormers                       |            | X    |                              | X       |           |          |        |         |      |         |                 |
| educators                     |            |      |                              |         | X         |          |        |         |      |         |                 |
| schools                       |            |      |                              |         | X         |          |        |         |      |         |                 |
| Scientists                    |            |      |                              |         |           | X        |        |         |      |         |                 |
| Students                      |            |      |                              |         |           | X        |        |         |      |         |                 |
| Shorefront prop               |            |      |                              |         |           |          |        |         |      |         | X               |



|                            |                      |                |                                |                            |          |                        |           |          |
|----------------------------|----------------------|----------------|--------------------------------|----------------------------|----------|------------------------|-----------|----------|
| <b>Eelgrass Services</b>   | Commercial fishermen | Municipalities | Restaurants & Tourism Industry | Shorefront property owners | Realtors | Scientists & educators | Residents | Tourists |
| Beneficiaries →            |                      |                |                                |                            |          |                        |           |          |
| <b>absorbing nutrients</b> | x                    | x              | x                              | x                          | x        | x                      | x         | x        |

|            |  |  |  |  |  |  |   |  |  |  |
|------------|--|--|--|--|--|--|---|--|--|--|
| owners     |  |  |  |  |  |  |   |  |  |  |
| birders    |  |  |  |  |  |  | X |  |  |  |
| outfitters |  |  |  |  |  |  | X |  |  |  |
|            |  |  |  |  |  |  |   |  |  |  |



Matrix II. Stakeholders and Specific Categories of Services for All Frenchman Bay Conservation Targets

|   |                     |                              |                             |                       |                    |                          |                       |                |                                   |                              |                                     |                                       |
|---|---------------------|------------------------------|-----------------------------|-----------------------|--------------------|--------------------------|-----------------------|----------------|-----------------------------------|------------------------------|-------------------------------------|---------------------------------------|
| <b>stabilizing sediments (clarifying water)</b>     | X                   | X                            | X                           | X                     | X                  | X                        | X                     | X              | X                                 |                              |                                     |                                       |
| <b>preventing shoreline erosion</b>                 | X                   | X                            | X                           | X                     | X                  | X                        | X                     | X              | X                                 |                              |                                     |                                       |
| <b>providing habitat</b>                            | X                   |                              |                             |                       |                    |                          | X                     |                |                                   |                              |                                     |                                       |
| <b>acting as a nursery</b>                          | X                   |                              |                             | X                     |                    |                          | X                     |                |                                   |                              |                                     |                                       |
| <b>oxygenating the water</b>                        | X                   | X                            | X                           | X                     | X                  | X                        | X                     | X              | X                                 |                              |                                     |                                       |
| <b>absorbing CO2</b>                                | X                   | X                            | X                           | X                     | X                  | X                        | X                     | X              | X                                 |                              |                                     |                                       |
| <b>Mudflat Services</b>                             |                     |                              |                             |                       |                    |                          |                       |                |                                   |                              |                                     |                                       |
| <b>Beneficiaries →</b>                              | <b>Rec clambers</b> | <b>Rec mussel harvesters</b> | <b>Commercial harvester</b> | <b>Municipalities</b> | <b>Restaurants</b> | <b>Shellfish dealers</b> | <b>Aquaculturists</b> | <b>Wormers</b> | <b>Scientists &amp; educators</b> | <b>Shorefront landowners</b> | <b>Birders/Resident and Tourist</b> | <b>Outfitters/Tourists they serve</b> |
| <b>providing habitat</b>                            | X                   | X                            | X                           |                       |                    | X                        | X                     | X              | X                                 |                              | X                                   | X                                     |
| <b>Production of commercially important species</b> |                     |                              | X                           | X                     | X                  | X                        | X                     | X              |                                   |                              |                                     |                                       |
| <b>Recreation</b>                                   | X                   | X                            |                             | X                     |                    |                          |                       |                |                                   | X                            | X                                   | X                                     |

|                        |                             |                       |                    |                                   |                        |                 |                       |                   |                  |                          |
|------------------------|-----------------------------|-----------------------|--------------------|-----------------------------------|------------------------|-----------------|-----------------------|-------------------|------------------|--------------------------|
| <b>Benthic Habitat</b> | <b>Commercial fishermen</b> | <b>Municipalities</b> | <b>Restaurants</b> | <b>Shorefront property owners</b> | <b>Seafood dealers</b> | <b>Realtors</b> | <b>Aquaculturists</b> | <b>Scientists</b> | <b>Residents</b> | <b>Tourists (divers)</b> |
| <b>Beneficiaries →</b> |                             |                       |                    |                                   |                        |                 |                       |                   |                  |                          |



|  |                      |                |             |                            |                      |          |                |            |           |          |
|--|----------------------|----------------|-------------|----------------------------|----------------------|----------|----------------|------------|-----------|----------|
| <b>providing habitat</b>                                   | x                    |                | x           |                            |                      |          | x              | x          |           | x        |
| <b>commercial harvesting (lobsters, scallops, urchins)</b> | x                    |                | x           |                            | x                    |          | x              | x          |           | x        |
| <b>Diadromous Fish</b>                                     | Commercial fishermen | Municipalities | Restaurants | Shorefront property owners | Seafood/bait Dealers | Realtors | Aquaculturists | Scientists | Residents | Tourists |
| Beneficiaries →  |                      |                |             |                            |                      |          |                |            |           |          |
| <b>Forage fish for commercially important species</b>      | x                    |                |             |                            | x                    |          |                | x          |           |          |
| <b>Contribute to Commercial livelihoods (elvers)</b>       | x                    | x              |             |                            | x                    |          | x              |            |           |          |
| <b>Provide recreational opportunities</b>                  |                      |                |             |                            |                      |          |                |            |           |          |