Green Fin Studio

EBFM Communications Update

October 1, 2020

Project Review

Tasks Completed

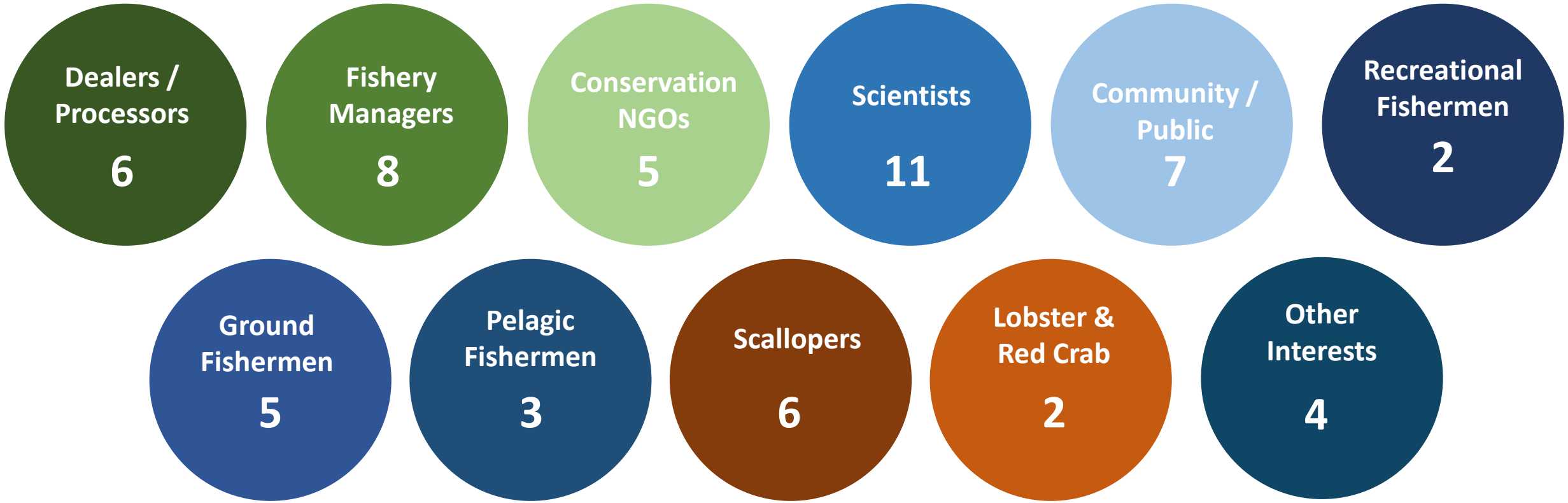
- Stakeholder interviews (154 contacted, 59 interviews)
- Identification of barriers & benefits
- 2 infographics
- 3 presentations
- 5 brochures

Tasks In Progress

- 1 presentation
- 1 information video

11 Stakeholder Groups Interviewed

Stakeholder categories and the number of individuals interviewed per category are shown below



Common Themes

- Hard for many to understand how EBFM would impact their work, competition among fishermen, permit structures, jurisdictional and ecosystem boundaries, or legal implications with MSA.
- Stakeholders want to collaborate on management decisions, but fear having their voice minimized or lost in new process
- Questions over how choke species will be handled and multiple gear impacts to ecosystem
- Across the spectrum, stakeholders asked for a “playbook” to develop a common understanding of terms and establish an EBFM 101 guide
- Interest in understanding how data baselines will be established and the continued support of collaborative research
- Questions on how impacts from climate change and offshore developments will be accounted for

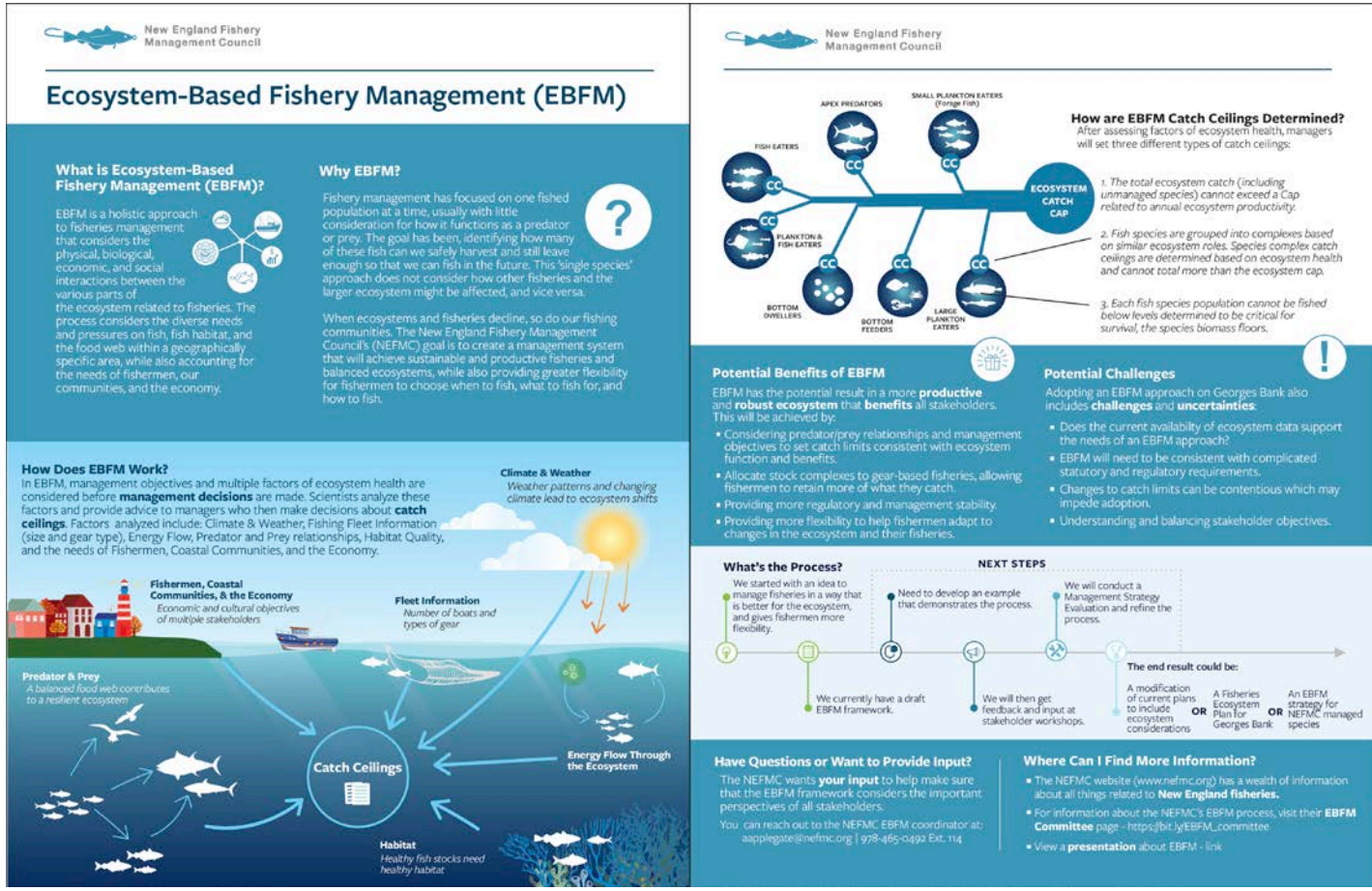
Presentations

- Introduction to EBFM
- Catch ceilings and how they are determined
- Science supporting EBFM
- *To do: review for consistency with later products*

Infographic 1 –

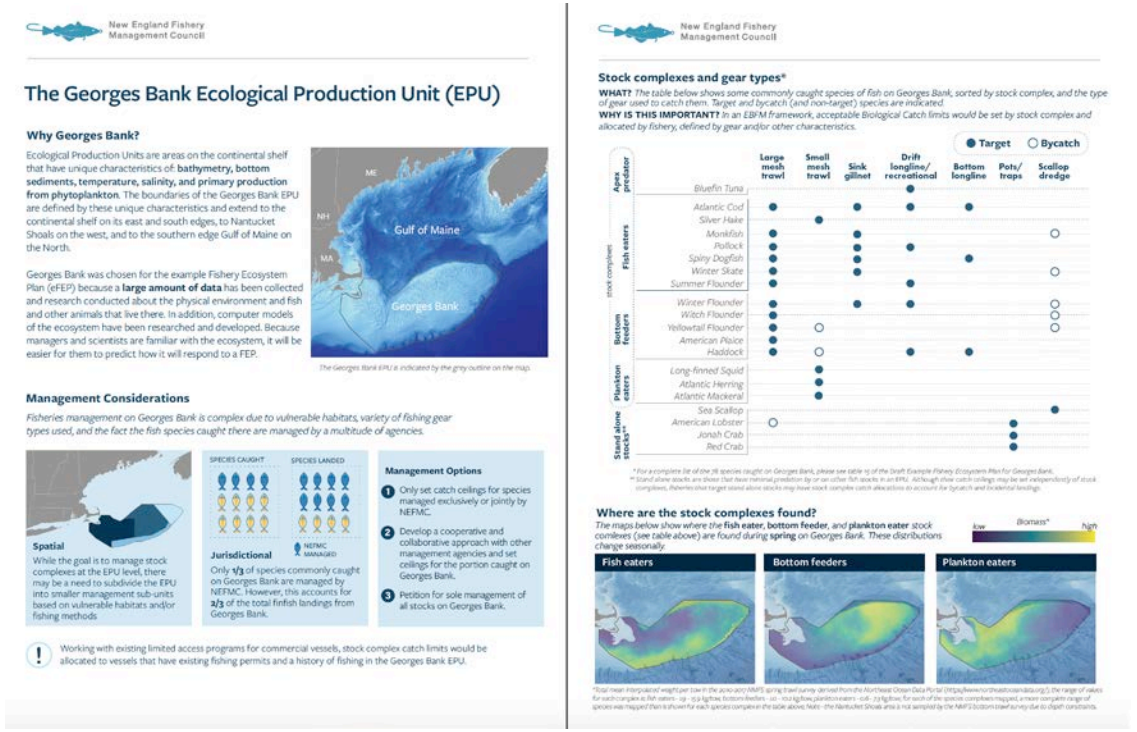
the Georges Bank EPU

- Defines EBFM and why it is being explored.
- Explains the main components of EBFM.
- Provides potential benefits and challenges.
- Timeline for the process.
- *To do: review for consistency with later products and update the "more information section"*



Infographic 2 –
the Georges Bank EPU

- Defines the boundaries of the EPU and why it was chosen for the eFEP.
- Management considerations
- What is being fished, how, and where?
- What are the physical, chemical, and biological characteristics of the ecosystem?
- *To do: update the more information section.*


New England Fishery Management Council

The Georges Bank Ecological Production Unit (EPU)

Why Georges Bank?

Ecological Production Units are areas on the continental shelf that have unique characteristics of: **bathymetry, bottom sediments, temperature, salinity, and primary production from phytoplankton**. The boundaries of the Georges Bank EPU are defined by these unique characteristics and extend to the continental shelf on its east and south edges, to Nantucket Shoals on the west, and to the southern edge Gulf of Maine on the North.

Georges Bank was chosen for the example Fishery Ecosystem Plan (eFEP) because a **large amount of data** has been collected and research conducted about the physical environment and fish and other animals that live there. In addition, computer models of the ecosystem have been researched and developed. Because managers and scientists are familiar with the ecosystem, it will be easier for them to predict how it will respond to a FEP.

ME
NH
MA
Gulf of Maine
Georges Bank

The Georges Bank EPU is indicated by the grey outline on the map.

Management Considerations

Fisheries management on Georges Bank is complex due to vulnerable habitats, variety of fishing gear types used, and the fact the fish species caught there are managed by a multitude of agencies.

Spatial

While the goal is to manage stock complexes at the EPU level, there may be a need to subdivide the EPU into smaller management sub-units based on vulnerable habitats and/or fishing methods

SPECIES CAUGHT
SPECIES LANDED
NEFMC MANAGED

Jurisdictional

Only **1/3** of species commonly caught on Georges Bank are managed by NEFMC. However, this accounts for **2/3** of the total finfish landings from Georges Bank.

Management Options

1. Only set catch ceilings for species managed exclusively or jointly by NEFMC.
2. Develop a cooperative and collaborative approach with other management agencies and set ceilings for the portion caught on Georges Bank.
3. Petition for sole management of all stocks on Georges Bank.

Working with existing limited access programs for commercial vessels, stock complex catch limits would be allocated to vessels that have existing fishing permits and a history of fishing in the Georges Bank EPU.

New England Fishery Management Council

Stock complexes and gear types*

WHAT? *The table below shows some commonly caught species of fish on Georges Bank, sorted by stock complex, and the type of gear used to catch them. Target and bycatch (and non-target) species are indicated.*

WHY IS THIS IMPORTANT? *In an EBFM framework, acceptable Biological Catch limits would be set by stock complex and allocated by fishery, defined by gear and/or other characteristics.*

Target ○ Bycatch

	Large mesh trawl	Small mesh trawl	Sink gillnet	Drift longline/ recreational	Bottom longline	Pots/ traps	Scallop dredge
Apex predator: Bluefin Tuna				●			
Fish eaters: Atlantic Cod	●		●	●	●		
Silver Hake		●					
Monkfish	●		●				○
Pollock	●		●	●			
Spiny Dogfish	●		●		●		
Winter Skate	●		●				○
Summer Flounder	●			●			
Bottom feeders: Winter Flounder	●		●	●			○
Witch Flounder	●						○
Yellowtail Flounder	●	○					○
American Plaice	●						
Haddock	●	○		●	●		
Plankton eaters: Long-finned Squid		●					
Atlantic Herring		●					
Atlantic Mackeral		●					
Stand alone stocks**: Sea Scallop							●
American Lobster	○					●	
Jonah Crab						●	
Red Crab						●	

stock complex

* For a complete list of the 76 species caught on Georges Bank, please see table 15 of the Draft Example Fishery Ecosystem Plan for Georges Bank.

** Stand alone stocks are shown that have minimal predation by or on other fish stocks in an EPU. Although show catch ceilings may be set independently of stock complexes, fisheries that target stand alone stocks may have stock complex catch allocations to account for bycatch and incidental landings.

Where are the stock complexes found?

The maps below show where the **fish eater**, **bottom feeder**, *and* **plankton eater** *stock complexes (see table above) are found during* **spring** *on Georges Bank. These distributions change seasonally.*

Biomass* low high

Fish eaters | Bottom feeders | Plankton eaters

*Total mean interpolated weight per tow in the 2010-2017 NMFS spring trawl survey derived from the Northeast Ocean Data Portal (http://www.northeastoceandata.org/). The range of values for each complex is fish eaters - 19 - 13 kg/tow, bottom feeders - 10 - 102 kg/tow, plankton eaters - 0.6 - 73 kg/tow. For each of the species complexes mapped, a more complete range of species was mapped than is shown for each species complex in the table above. Note - the Nantucket Shoals area is not sampled by the NMFS bottom trawl survey due to depth constraints.


New England Fishery Management Council

The Georges Bank Ecosystem

Currents

LABRADOR CURRENT
GULF STREAM

Fish-Eating Sea-Birds

Abundance
low high

What? Fish-eating sea-birds are found in high abundance in the north-eastern portion of Georges Bank and on Nantucket Shoals to the west.

Why is this important? The productivity of Georges Bank make it an important feeding area for not only birds but also marine mammals and large fish species.

What?
Georges Bank is strongly influenced by two major ocean currents - the Labrador Current from the north and the Gulf Stream from the south. These currents combined tidal currents create a clockwise circulation pattern on Georges Bank which helps retain water and fish larvae on the Bank.

Why is this important?
Water, and the nutrients and plankton in it, tends to stay on the Bank for two to five months depending on season. This combined with shallow water depths contribute to the area being very productive.

Dominant Sediment Type

Sand Pebble Cobble Boulder

What? The bottom of Georges Bank is made up of areas of gravel, sand, and boulders.

Why is this important? The gravel areas are important habitat for young cod and haddock. Both gravel and boulders provide important habitat structure for bottom dwelling fish.

What does this all mean?

The physical environment of Georges Bank contributes to it being ecologically different from the surrounding areas. This manifests itself in a diverse and complex fishery that can be both productive and difficult to manage. EBFM offers the potential to handle this complexity while maintaining productivity.

Where Can I Find More Information?

The NEFMC website (www.nefmc.org) has a wealth of information about all things related to New England fisheries.

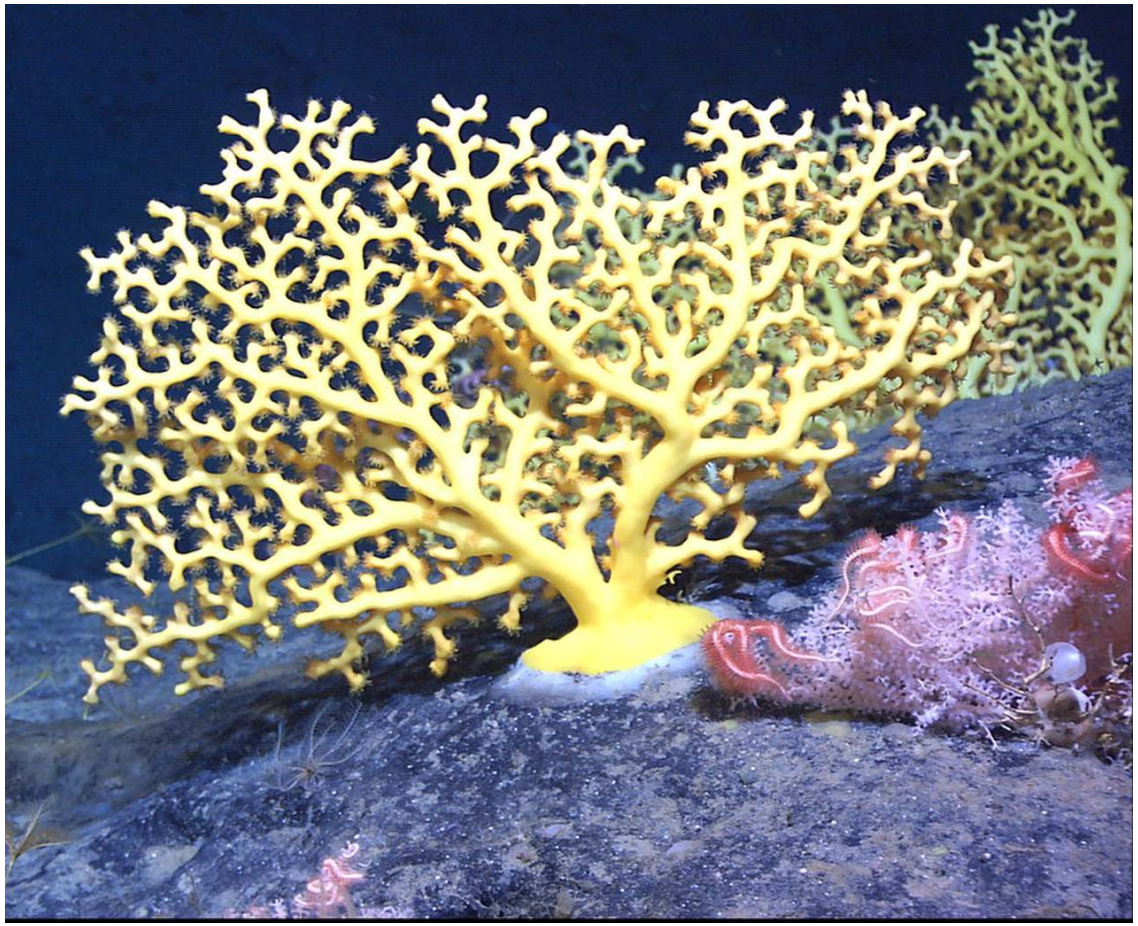
For information about the NEFMC's EBFM process, visit their EBFM Committee page - https://bit.ly/EBFM_committee

View a **presentation** about EBFM - link

Brochures

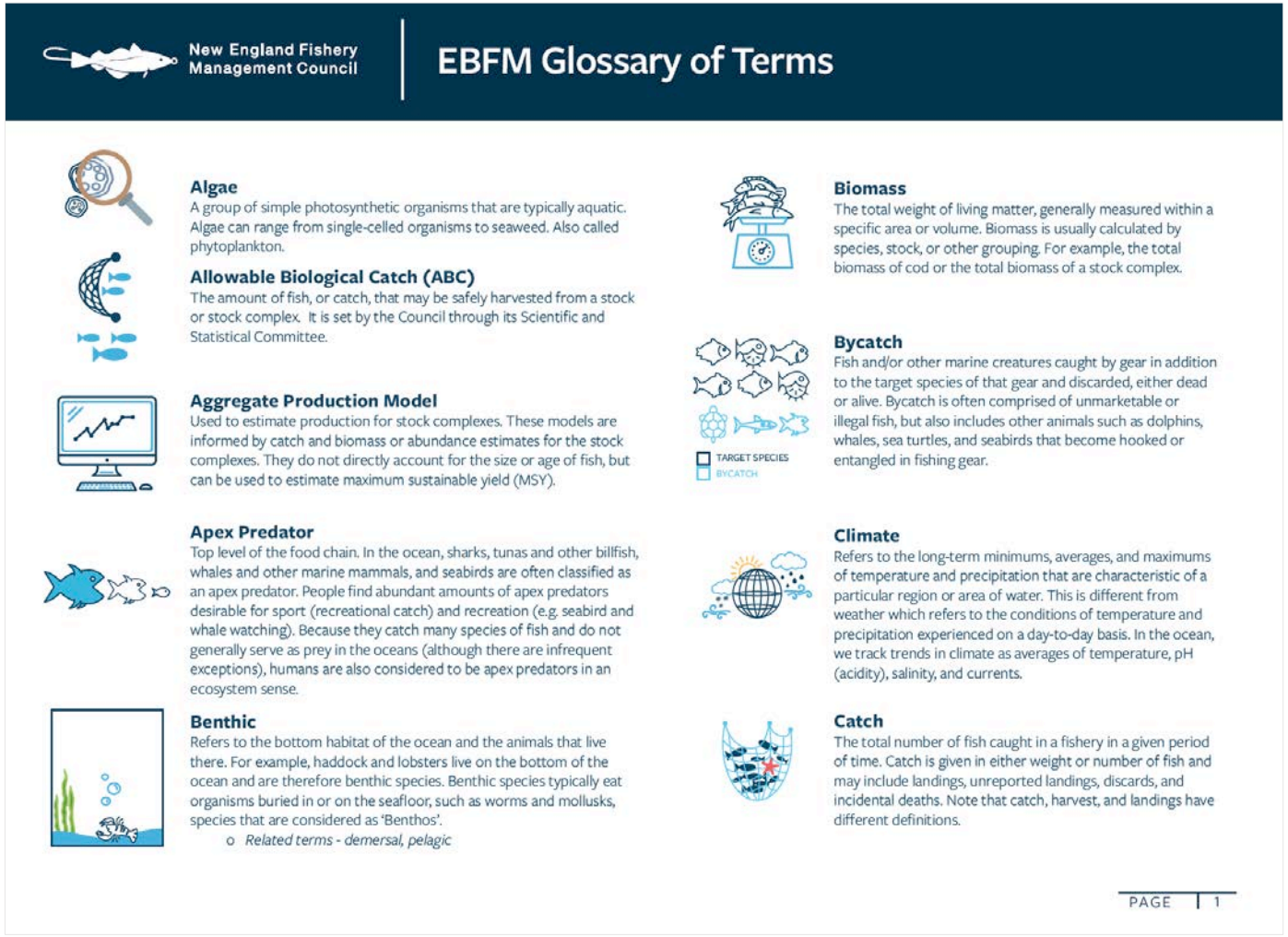
Five brochures have been developed:

- A glossary of EBFM and general fisheries management terms and phrases.
- An introduction to the EBFM process brochure with three different versions.
- A reader’s guide to the eFEP.



Brochure–
Glossary

- Six pages with 44 terms and phrases.
- Intended for a broad audience.
- Highly visual



New England Fishery Management Council

EBFM Glossary of Terms

Algae
A group of simple photosynthetic organisms that are typically aquatic. Algae can range from single-celled organisms to seaweed. Also called phytoplankton.

Allowable Biological Catch (ABC)
The amount of fish, or catch, that may be safely harvested from a stock or stock complex. It is set by the Council through its Scientific and Statistical Committee.

Aggregate Production Model
Used to estimate production for stock complexes. These models are informed by catch and biomass or abundance estimates for the stock complexes. They do not directly account for the size or age of fish, but can be used to estimate maximum sustainable yield (MSY).

Apex Predator
Top level of the food chain. In the ocean, sharks, tunas and other billfish, whales and other marine mammals, and seabirds are often classified as an apex predator. People find abundant amounts of apex predators desirable for sport (recreational catch) and recreation (e.g. seabird and whale watching). Because they catch many species of fish and do not generally serve as prey in the oceans (although there are infrequent exceptions), humans are also considered to be apex predators in an ecosystem sense.

Benthic
Refers to the bottom habitat of the ocean and the animals that live there. For example, haddock and lobsters live on the bottom of the ocean and are therefore benthic species. Benthic species typically eat organisms buried in or on the seafloor, such as worms and mollusks, species that are considered as 'Benthos'.
- *Related terms - demersal, pelagic*

Biomass
The total weight of living matter, generally measured within a specific area or volume. Biomass is usually calculated by species, stock, or other grouping. For example, the total biomass of cod or the total biomass of a stock complex.

Bycatch
Fish and/or other marine creatures caught by gear in addition to the target species of that gear and discarded, either dead or alive. Bycatch is often comprised of unmarketable or illegal fish, but also includes other animals such as dolphins, whales, sea turtles, and seabirds that become hooked or entangled in fishing gear.

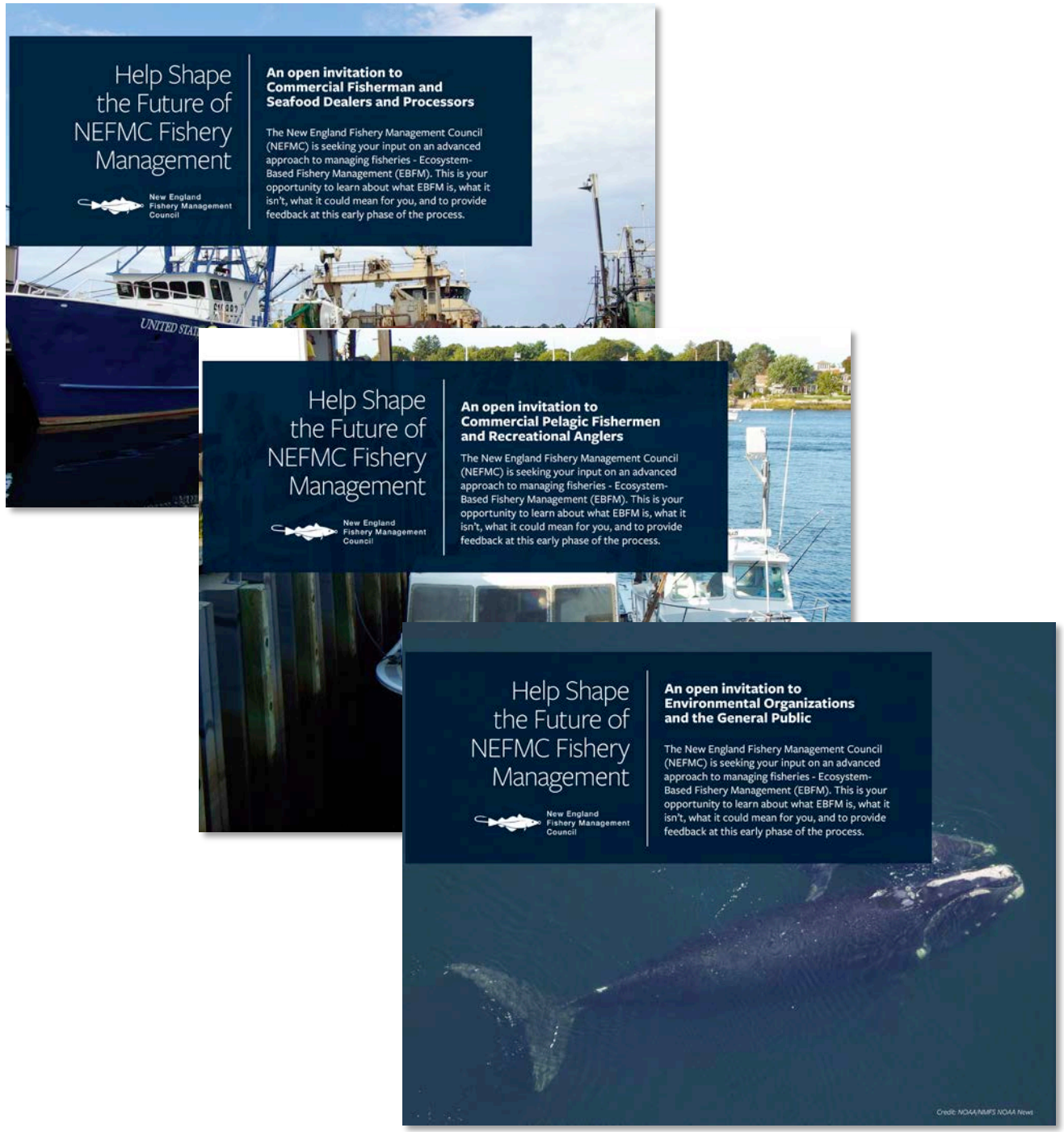
TARGET SPECIES
BYCATCH

Climate
Refers to the long-term minimums, averages, and maximums of temperature and precipitation that are characteristic of a particular region or area of water. This is different from weather which refers to the conditions of temperature and precipitation experienced on a day-to-day basis. In the ocean, we track trends in climate as averages of temperature, pH (acidity), salinity, and currents.

Catch
The total number of fish caught in a fishery in a given period of time. Catch is given in either weight or number of fish and may include landings, unreported landings, discards, and incidental deaths. Note that catch, harvest, and landings have different definitions.

Brochure–
EBFM Process

- Written as an invitation to participate in the process.
- Three different versions:
  - **Fishermen and Seafood Dealers & Processors**
  - **Commercial Pelagic Fishermen & Recreational Anglers**
  - **Conservation NGOs & the Public**
- Differences based on a “What does it mean for me?” section.
  - **Potential benefits and concerns**
  - **Introduction to the other stakeholders.**
- *To do: update the more information section*



Brochure - EBFM Process

What Does It Mean For You?

EBFM presents a new and innovative approach to fisheries management. It has the potential to improve the health and function of New England's fisheries. However, because it is new, it also presents uncertainties to the stakeholders who have an interest in New England fisheries.

We describe below some of the potential benefits that EBFM may offer for Commercial Fishermen and Seafood Dealers and Processors as well as some of the concerns that these groups have with EBFM. **We will address and discuss potential solutions for these concerns in our outreach workshops and through the Management Strategy Evaluation (MSE) process that follows.**

Potential Stakeholder Benefits

EBFM offers the potential for more regulatory stability to the industry and a healthy ecosystem
By accounting for biological factors and system productivity, EBFM can offer a more robust system of management and a healthier ecosystem. This could form a system that is more stable over time and also accounts for trends caused by climate change and other factors.

EBFM will allow us to be more resilient to climate change impacts
The ecosystem reference points and catch ceilings in the proposed EBFM framework are meant to be more adaptive and recognize the effect of climate change impacts. Fish species will likely migrate out of and into the ecosystem over time, changing the

composition of the stock complexes. However, the stock complexes themselves will remain as the ecosystem roles of these complexes are maintained.

EBFM offers more transparency in the management decision making process
A core component of the proposed EBFM framework will be Management Strategy Evaluation (MSE). MSE is a process to examine how various management strategies perform and will be conducted prior to development of a formal Fishery Ecosystem Plan as well as on an ongoing basis thereafter as a way of evaluating the success of EBFM and informing managers of any adjustments needed.

EBFM seafood is inherently marketable
Seafood that is harvested in a way that is seen as environmentally responsible and sustainable has broad appeal and helps establish acceptance of a wider variety of New England seafoods.

Less costly and more efficient regulations
Current 'technical interactions' result in increased fishing costs, discards, or other inefficient ways of fishing. By managing stock complexes we can potentially reduce these costly problems.

Stakeholder Concerns

Management using a new catch framework
As described above, under EBFM, fish are managed at the stock complex level. Harvest would be limited at the ecosystem and stock complex levels and individual species would not be allowed to decrease below threshold levels. The potential effect this framework could have on individual fishermen and others in the seafood industry will be evaluated via the MSE process.

Is EBFM legal?
Is the proposed stock complex catch framework legal under the Magnuson-Stevens Act (MSA)? In certain circumstances, National Standards 1 of the MSA provides for the management of Stock Complexes as well as components of the ecosystem.

Choke Stocks
Choke stocks are those that prevent harvest of other species due to regulations that curtail fishing. While EBFM is intended as a more holistic and flexible form of management, Councils are still obligated to prevent stocks from becoming overfished and rebuild those that become so. This requirement will not go away with EBFM, but we expect to develop a more robust management approach that will make choke stocks less likely.

Data collection and monitoring
Because three separate thresholds are assessed in EBFM, fishermen are understandably concerned as to how the data used to make these assessments is collected. EBFM offers more opportunities for fishermen to become part of the monitoring process to provide more information about the environment that influences stock availability and productivity.

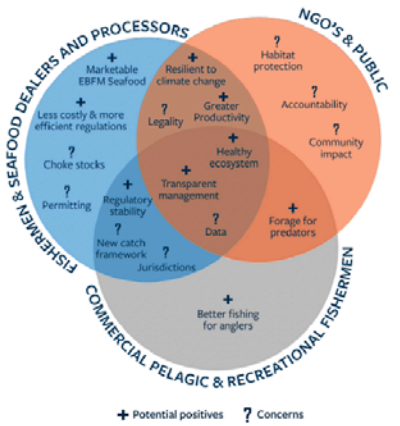
Permitting and limited access
Fishermen have made significant financial investments in their current portfolio of permits and are understandably concerned as to the validity of these permits under a new management framework. The intent is not to disrupt or further limit existing fishery access to fish stocks on Georges Bank. Details can be found in the eFEP (*page 84 of the Draft Example Fishery Ecosystem Plan for Georges Bank*).

Jurisdictional issues
Under EBFM, the Georges Bank EPU will be managed separately from other areas. However, many of the fish caught are managed by organizations other than the New England Fisheries Management Council. Possible solutions include developing a cooperative and collaborative approach with other management agencies or the Council could manage Georges Bank fishing activity only for stocks that it is authorized to manage, but still account for predation by stocks managed by other agencies.

Who Are the Stakeholders?

The community interested in the New England fishery is made up of a broad spectrum of stakeholders. They range from fishermen to seafood markets and consumers to coastal communities, conservation groups to the general public. All of these groups have concerns about EBFM and are interested in its potential benefits.

In the graphic above, we have grouped some of these stakeholders based on their common concerns as well as some of the potential benefits that these groups are looking for EBFM to provide. This graphic indicates that these seemingly different groups have common perceptions about EBFM.



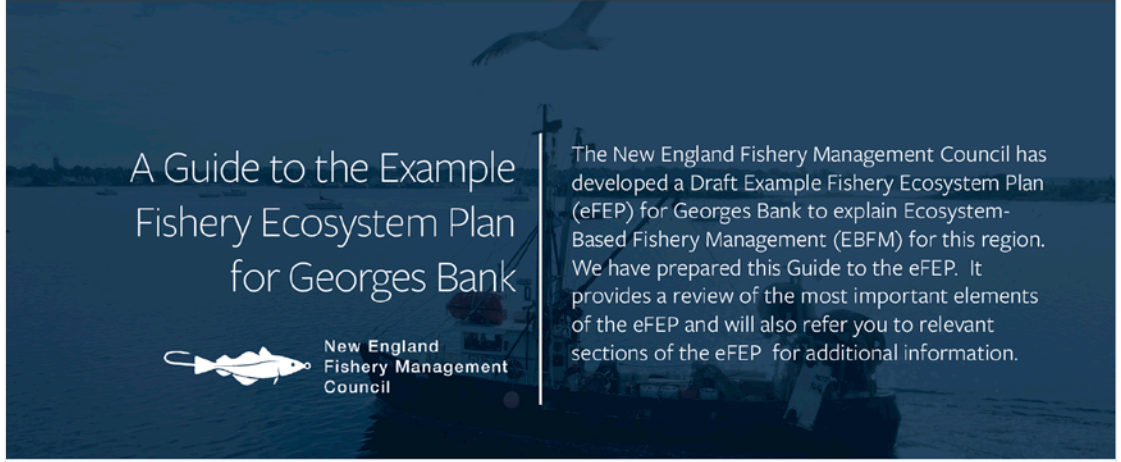
The graphic above depicts the primary positive benefits and concerns of three fishery stakeholder groups. The graphic is intended to display where these concerns and benefits overlap among the three groups.

Learn More and Provide Feedback
The NEFMC will be holding a series of workshops to introduce interested stakeholders to various aspects of the proposed EBFM management framework. These workshops will be your opportunity to learn more, ask questions, and provide feedback. Your participation in these workshops is important because the information you provide NEFMC will help shape the final EBFM framework. It will also provide you with a knowledge base about EBFM to provide constructive input on the MSE.

Brochure–

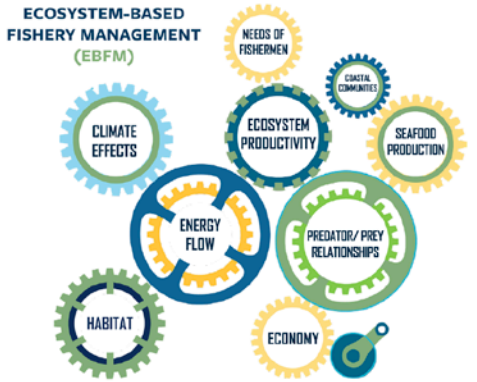
Guide to the eFEP

- A description of the important parts of the eFEP
  - Why the eFEP was developed
  - Goals and objectives
  - Boundaries of the EPU
  - Harvest Management
  - How it comes together
    - Setting ceilings
    - Special priority management
    - Incentive-based measures
    - Fishing impacts and spatial management
    - Jurisdictional and limited access issues
  - Data
  - The MSE process



Why was the eFEP developed?

Scientists, managers, fishermen and stakeholders have long realized the problems associated with single species management, where harvest control rules are specified for a stock often ignoring the role of that stock as a predator or prey. Often the focus of management is to achieve Maximum Sustainable Yield as an attainable goal for a stock and simultaneously for all other stocks in the region. This approach may not be optimizing the non-fishing benefits to be achieved from the ecosystem or take into account how energy moves through the ecosystem in terms of impacts to the food web.



The process takes into account the diverse needs and pressures on fish, fish habitat, and the food web within a geographically specific area, while also considering the needs of fishermen, our communities, and the economy.

Why Georges Bank?

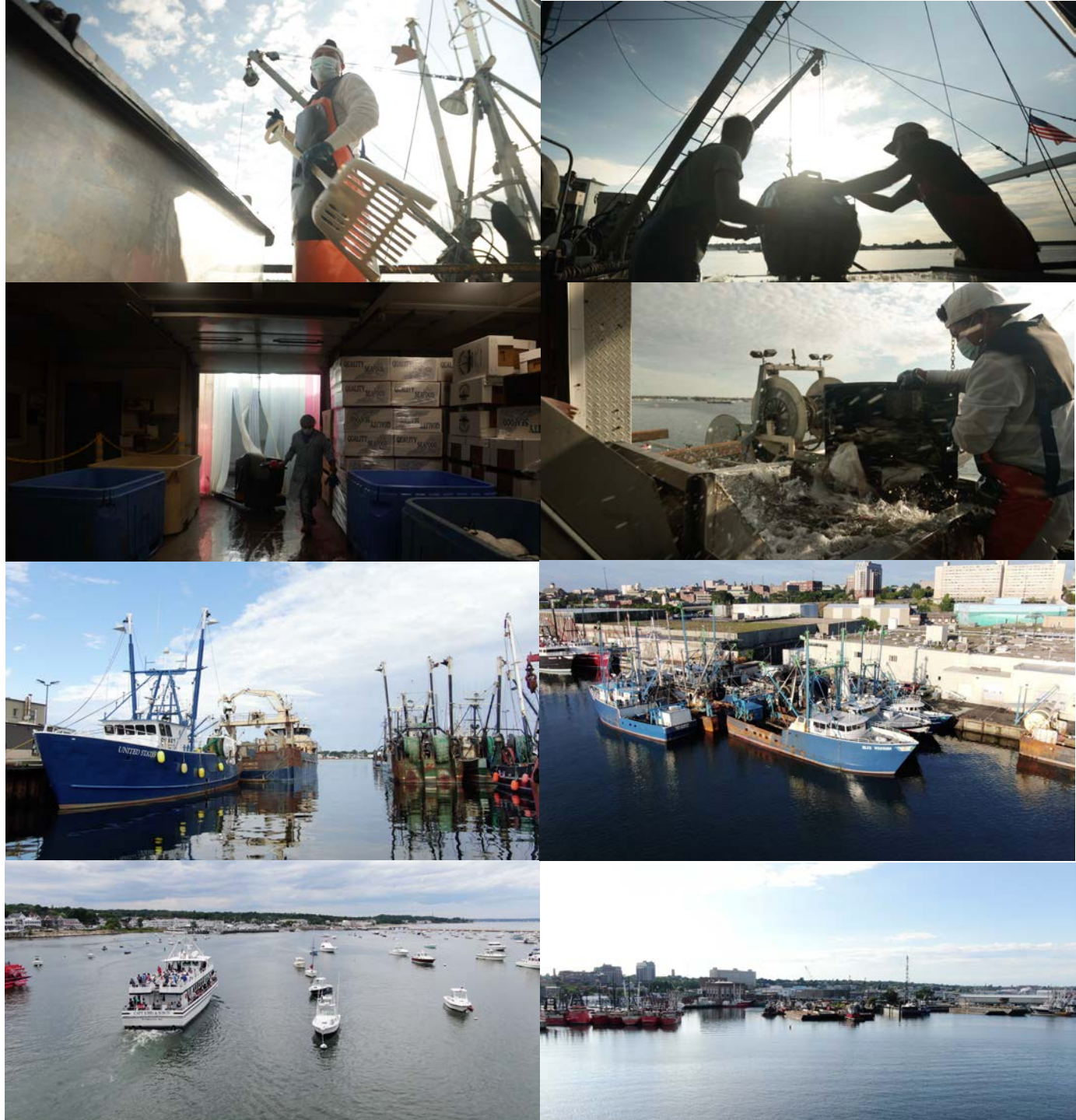
Georges Bank was chosen because a considerable amount of ecological science and modeling has focused on this distinct area. Scientists already know a lot about the Georges Bank ecosystem and fisheries and therefore have much of the information they need to understand how the system will respond to EBFM.

The New England Fishery Management Council is exploring the development and application of a new type of management for Georges Bank, commonly known as Ecosystem-Based Fishery Management, or EBFM. It is intended to be a more inclusive approach than standard fishery management. One that considers a variety of goals while taking into account factors including the physical, biological, economic, and social interactions between the various parts of the ecosystem that are related to managed fisheries.

Because EBFM is a new concept, the Council has chosen to start in a specific area where we have a lot of data and existing ecosystem models. The eFEP is therefore focused specifically on Georges Bank. The intent of the eFEP is to identify viable management approaches to achieve a range of goals and objectives. We will then work through a Management Strategy Evaluation (MSE) process with the goal of these management approaches becoming an approved Fishery Ecosystem Plan (FEP) for Georges Bank. If successful, similar FEPs could be developed elsewhere by the Council.

Video

- Have conducted and recorded seven Zoom/GoToMeeting interviews
- Spent a day and a half in New Bedford capturing b-roll footage
- Currently editing hours of interviews into a ~5 minute video



Presentation #4

- An introduction to the eFEP
  - Shared content with the brochure.
- A walk-through of the worked example.