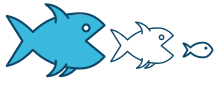
New England Fishery Management Council

EBFM Glossary of Terms

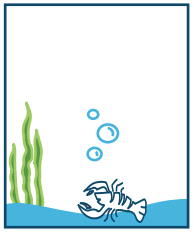
Algae
A group of simple photosynthetic organisms that are typically aquatic. Algae can range from single-celled organisms to seaweed. Also called phytoplankton.

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).



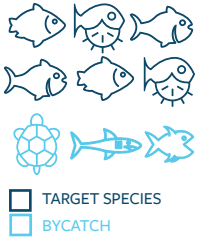
Apex Predator
Top level of the food chain. In the ocean, sharks, tunas and other billfish, whales and other marine mammals, and seabirds are often classified as an apex predator. People find abundant amounts of apex predators desirable for sport (recreational catch) and recreation (e.g. seabird and whale 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.

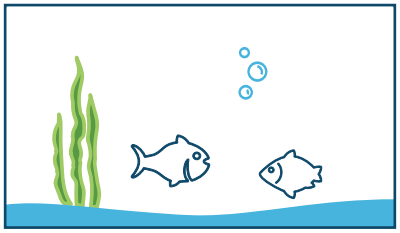


Bycatch
Fish and/or other marine creatures caught by gear in addition to the target species of that gear and discarded, either dead or alive. Bycatch is often comprised of unmarketable or illegal fish, but also includes other animals such as dolphins, whales, sea turtles, and seabirds that become hooked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

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.

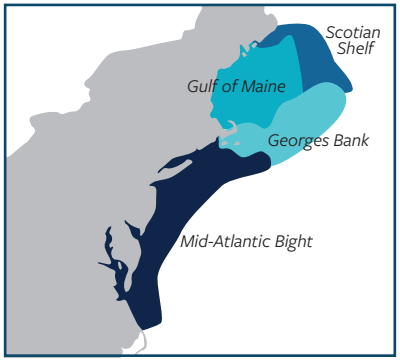
Catch
The total number of fish caught in a fishery in a given period of time. Catch is given in either weight or number of fish and may include landings, unreported landings, discards, and incidental deaths. Note that catch, harvest, and landings have different definitions.

EBFM Glossary of Terms



Demersal

Refers to species that live in close relation to and depend on the seabed. For example, cod, skate, monkfish, and flounders are demersal fish.



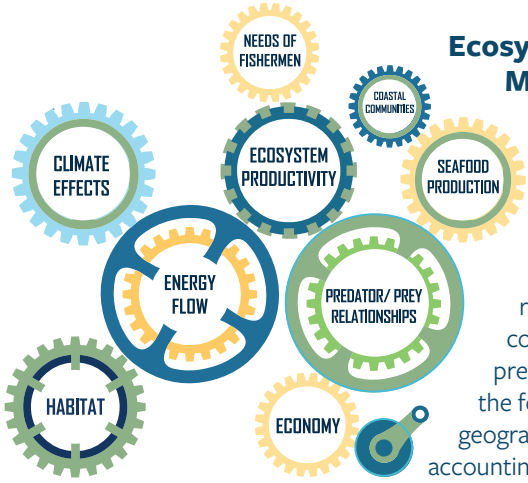
Ecological Production Unit (EPU)

Geographically specific areas on the continental shelf that have unique combinations of depths, bottom sediments, temperature, salinity, and primary production from phytoplankton.

- *Georges Bank is an example of an EPU, other EPUs in the northeast include the Scotian Shelf, Gulf of Maine, and Mid-Atlantic Bight. EPUs generally correspond with existing stock definitions.*

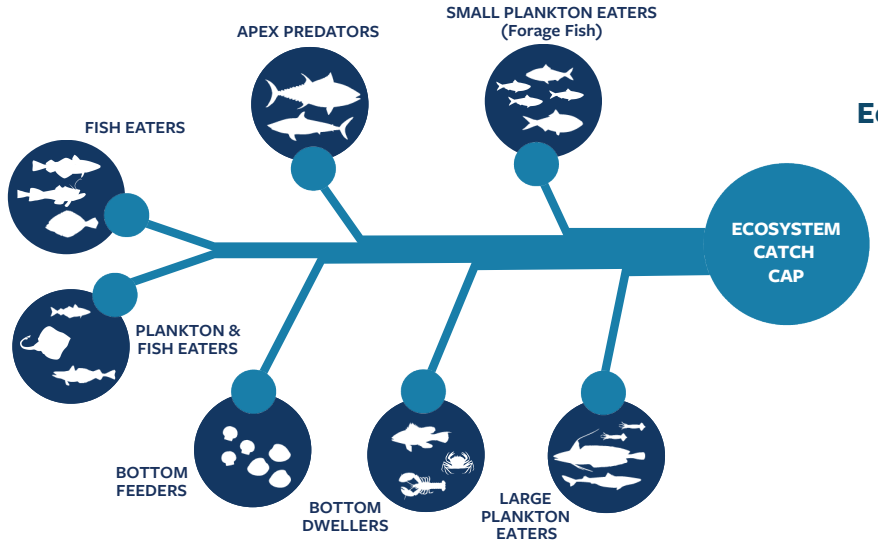
Ecosystem

A community of plants, animals, and other organisms, and the nonliving components, like soil, rocks, and water with which they live. Georges Bank, and everything that lives in it, is an example of an ecosystem.



Ecosystem-Based Fishery Management (EBFM)

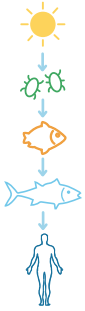
A holistic approach to fisheries management that considers the physical, economic, and social interactions between the various parts of the ecosystem related to fisheries. The process considers the diverse needs and pressures on fish, fish habitat, and the food web within a geographically specific area, while also accounting for the needs of fishermen, our communities, and the economy.



Ecosystem Catch Cap

The total amount of fish that can be sustainably removed from the ecosystem or ecological production unit (EPU). This cap includes the catch of both managed and non-managed species and varies annually because it depends on available energy within an ecosystem or EPU. Removal is limited to allow enough energy to remain and support the ecosystem or EPU. Total catch is limited to allow enough energy from primary production to remain and support the ecosystem or EPU.

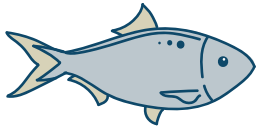
- *Estimation of catch cap. Large et al 2013, 2015 examined effects of total catch on ecosystem characteristics to suggest ways to determine possible ecosystem catch caps.*
- *Related terms: energy, primary production*



Energy

The power required to fuel motion, growth, or any other process. All living things use energy. Primary producers get their energy from the sun, and use it to assemble molecules, which store the sun's energy as chemical energy. Other organisms in the food web use that chemical energy. Energy moves through an ecosystem via the food web.

- *In a healthy ecosystem, more energy at the base of the food web means more energy to "run" the ecosystem.*
- *Related term: primary production*



Filter Feeder

An organism, such as a menhaden, that filters and consumes phytoplankton and zooplankton out of the water. Many filter feeder fish serve as forage fish for larger fish, seabirds, and marine mammals.

- *Related term: forage*

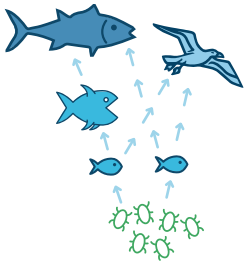
Fishery Ecosystem Plan (FEP)

A comprehensive plan that illustrates how the proposed EBFM strategy and framework is applied. An FEP can take the place and role of several FMPs in a specific area or EPU, or it could serve as an overarching policy guide to management decisions made in FMPs.

- *Related term: FMP*

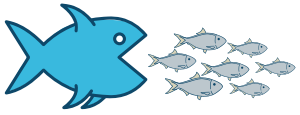
Fishery Management Plan (FMP)

A document that describes a fishery and establishes measures for conserving and managing specific fisheries and fish stocks.



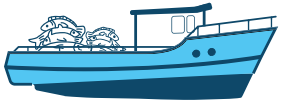
Food Web

A food web represents the feeding relationship within a community. It is a network of interconnected food chains, describing what organisms eat what.



Forage Fish

Refers to species that are used as prey by a larger predator, such as cod, for food. For example, herring and mackerel are often forage fish for other important species.

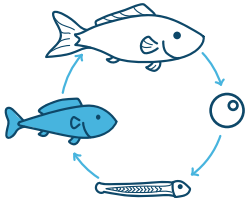


Harvest

The total number or weight of fish caught and kept from an area over a period of time. Note that harvest, catch and landings have different definitions.

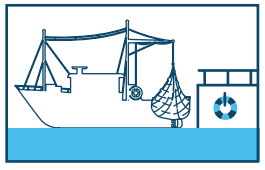
Harvest Control Rules

A defined formula to establish an annual catch limit or target fishing level that is based on the biomass and status of the stock or stock complex. This formula defines a maximum fishing and harvest level and may prescribe reductions when a stock complex biomass is low.



Juvenile Fish

The life history stage of a fish before it is considered an adult. Juveniles are considered immature as they are not yet capable of reproducing. Juvenile fish often serve as an important source of forage for fish-eating fish.



Landings

The portion of the catch (usually in weight of fish) that is harvested for personal use or sold to fish dealers. Landings are reported at the points at which fish are brought to shore or, in rare cases, by transfer at sea. Landings do not include discarded fish, which are called bycatch.

Magnuson Stevens Act (MSA)

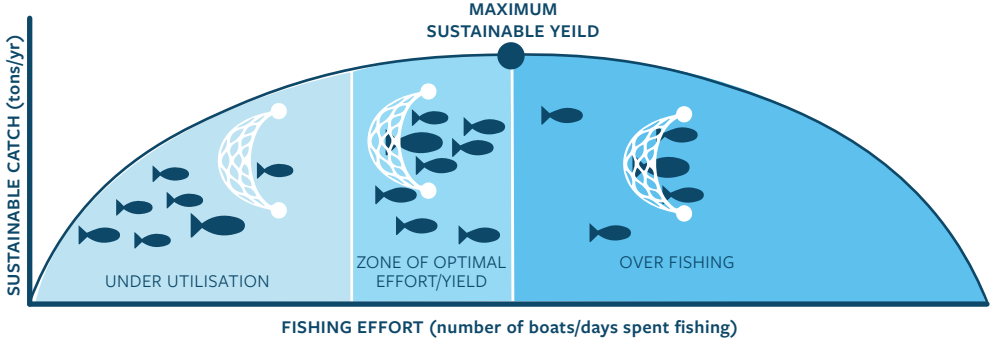
The Magnuson–Stevens Fishery Conservation and Management Act, originally enacted in 1976 and commonly referred to as the Magnuson Stevens Act (MSA), is the primary law governing marine fisheries management in U.S. federal waters. It is responsible for establishing the fishery management councils (FMCs) and the mandatory and discretionary guidelines for Federal fishery management plans (FMPs).

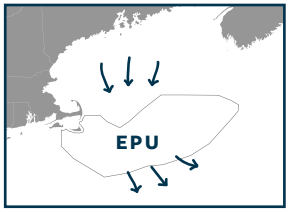
Management Strategy Evaluation (MSE)

A process which includes using computer models to simulate the workings of a fisheries system and test which potential harvest strategies are likely to perform best. An MSE will use one or more operating models, one or more assessment procedures, and a management module that describes how to manage an EPU to achieve desired objectives.

Maximum Sustainable Yield (MSY)

The maximum catch that can be sustainably taken from a fish stock.



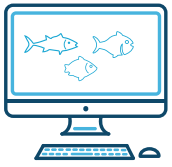


Migration

In the context of EBFM, it means the movement into (immigration) and out of (emmigration) an EPU and the potential to be caught or contribute to recruitment.

Mortality

The number of fish dying within a given time period either from fishing activities, predation, or other natural causes.



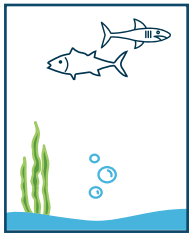
Multispecies Assessment Model

These models use data from surveys and catch to estimate biomass and reference points for multiple stocks or multiple stock complexes. An inherent quality is that they account for interactions such as predation and/or competition among the species or complexes.

Operating Models

Operating models simulate population and fishery dynamics. These models incorporate life-history processes such as recruitment, growth, migration, maturation, and mortality of the fish populations as well as fishery processes. Examples of models used to provide management advice include the Hydra and Kraken models.

These operating models form a component of Management Strategy Evaluations (MSE) to test different Harvest Control Rules under known and comparable conditions.



Pelagic

Inhabiting the water column as opposed to being associated with the seafloor. Can also describe the species that live in the open ocean - pelagic fish live in this area and usually migrate long distances. Examples of pelagic fish include herring, swordfish, tuna, and several species of sharks.

Plankton

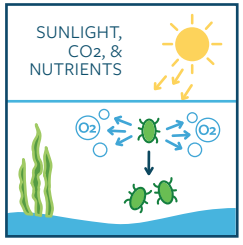
Floating, primarily microscopic organisms that form the base of the food web, providing food for larger species. This is a collective term that includes both phytoplankton (single celled floating marine plants) and zooplankton (small invertebrates and other species that serve as food).

Predator

A living thing that eats other living things. For example, a fish-eater is a predator of forage species and smaller fish. The food of a predator is called prey.

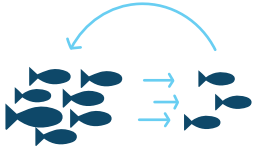
Prey

Living food of another organism, or a predator. For example, an herbivore is prey of a carnivore.



Primary Production

Phytoplankton in the ocean use energy from the sun and nutrients in the water to grow and reproduce. This is where energy enters the ecosystem and forms the base of the food web. All other organisms in the ecosystem are directly or indirectly dependent on this primary production for survival. We can measure primary production from colored images taken by satellite which are then verified with direct measurements in the ocean.



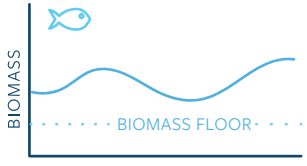
Recruitment

The number of fish added to a fishable stock each year due to spawning. Age 1 fish are often called recruits and fish less than age 1 are often called young of the year. Recruitment is often an important consideration in forecasting future catch.

- *An alternative definition that is sometime used: Fish that become vulnerable to capture by survey or fishing gears.*

Single-Species Management

Fisheries management approach that focuses on the health of one species or stock at a time. Unlike ecosystem management, biological reference points or thresholds and target catches are defined for individual stocks. In some cases, important predator/prey relationships are taken into account.



Species Biomass Floors

The total amount (biomass) of an individual fish stock below which the stock is not allowed to drop. Biomass levels below the floor would put the stock at risk and the MSA considers this stock status to be 'overfished' and in need of biomass rebuilding. Floors are designed to protect individual stocks and are determined by the best scientific evidence and Council policies.

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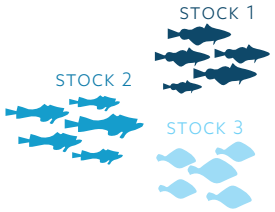
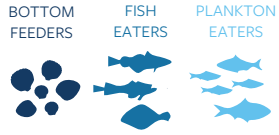


Stock

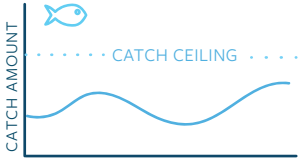
A grouping of fish usually based on genetic relationship, geographic distribution, growth, recruitment and other characteristics that distinguish it from neighboring stocks. Stock is often used as a management unit for single-species management and assessment. A region may have more than one stock of a species (for example, Gulf of Maine cod and Georges Bank cod).



Stock Complex

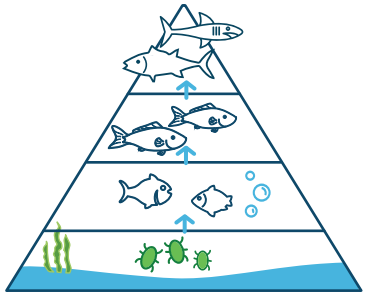
Fish that are caught together, share similar life histories, and play similar roles in the ecosystem. The purpose of a stock complex is to manage stocks as an interrelated group because they have similar productivity characteristics and are often caught together.

- *Examples of stock complexes include: bottom dwellers, bottom feeders, filter feeding fish, large plankton eaters, fish eaters, and top carnivores.*



Stock Complex Catch Ceilings

The total catch that can be sustainably removed from each of the stock complexes. The ceiling takes into account estimates of predator and prey interactions within an ecosystem. The goal of stock complex catch ceilings is to keep the ecosystem in balance - i.e. healthy numbers of predators vs prey and vice versa and produce an optimum, sustainable yield. Catch ceilings are estimated using multi-species assessments and index-based methods.



Trophic Levels

Fish and other marine organisms that share the same function in the food chain and have similar nutritional value.

Zooplankton

Very important small animals that often feed on phytoplankton and serve as food for juvenile and small fish.

- *Examples include: mysid and euphausid shrimps as well as species known as copepods.*