

**Gulf of Maine Research Institute
Responsibly Harvested Seafood from the Gulf of Maine Region**

**Report on
Gulf of Maine – Georges Bank American Plaice (*Hippoglossoides platessoides*)**

- ☒ The fishery is managed by a competent authority and has a management plan in place that incorporates a science-based approach to ensure sustainability.
 - *American plaice is managed by NMFS and NEFMC, and regulated by the Northeast Multispecies Fishery Management Plan, which utilizes the best available science to inform the management process, and to ultimately set biological reference points and harvest restrictions.*

- ☒ If stock sizes are below management target levels, whether due to natural or man-made causes, management plans are established that enable rebuilding within a specified timeframe.
 - *According to the most recent assessment update, the American plaice spawning stock biomass is at 83% of SSB_{MSY} . The stock is not overfished and overfishing is not occurring. This stock is in a rebuilding plan with a target date of 2024.*

- ☒ Sufficient data exists to determine harvest levels.
 - *The Groundfish Assessment Review Meeting III (2012) utilized fisheries-dependent and –independent data to determine stock status and biological reference points, which are assessed through the Council process. A 2015 assessment update incorporated the most up-to-date fisheries data. Ultimately, the Council sets the harvest levels based on this data, which incorporate uncertainty. American plaice is not considered a data poor species.*

- ☒ Monitoring and compliance measures are in place to ensure acceptable harvest levels.
 - *GOM-GB American plaice catch is monitored through vessel trip reports (VTRs), observers, dealer reports, and for sectors, additional at-sea monitoring. Compliance is assessed through consistency throughout these reports as well as enforcement in the field.*

- ☒ Enforcement exists to ensure that harvesters follow regulations, and to prevent illegal practices and unreported harvest.
 - *U.S. Coast Guard, NMFS Office of Law Enforcement agents, and state marine patrol agents enforce the laws and regulations governing the harvest of GOM-GB American plaice.*

I. Definition of Gulf of Maine – Georges Bank American Plaice

American plaice (*Hippoglossoides platessoides*) is distributed along the Northwest Atlantic continental shelf extending from Labrador to Rhode Island. American plaice, also known as dab, is generally found in waters below 17°C and depths between 45m and 175m. It is a large-mouthed, “right-handed” flounder and its preferred habitat type is a substrate of sand or gravel. Most individuals reach sexual maturity at age 4, spawning in spring between March and May. It is a relatively slow grower, with 3 year-old fish normally between 22-28cm in length. The principal commercial fishing gear type used to catch American plaice is the otter trawl, accounting for more than 95% of catches; recreational and foreign catches are insignificant in the Gulf of Maine – Georges Bank fishery (NEFMC, 1998).

Off the U.S. coast, American plaice is managed as a single stock that inhabits both the Gulf of Maine and Georges Bank regions (Figure 1). The National Marine Fisheries Service (NMFS) manages this stock, which corresponds to statistical areas 511-515, 521-526, 551, 552, 561, and 562. This report covers the entire Gulf of Maine – Georges Bank American plaice stock.

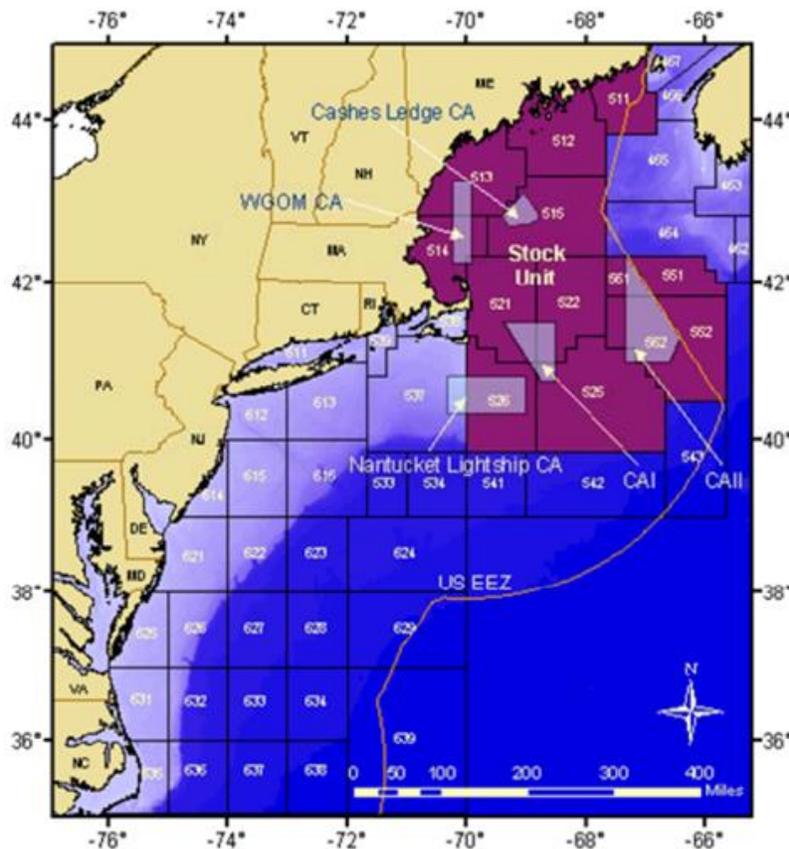


Figure 1. Statistical areas of Gulf of Maine – Georges Bank American plaice as defined by Northwest Atlantic Fisheries Organization (NAFO) are shown in red (O'Brien & Dayton, 2012).

CRITERION: The fishery is managed by a competent authority and has a management plan in place that incorporates a science-based approach to ensure sustainability.

II. Description of the Management Authority and Regulatory Process

Responsibility of Gulf of Maine – Georges Bank American plaice management lies within the [National Marine Fisheries Service \(NMFS\)](#), which is a part of the [National Oceanic and Atmospheric Administration \(NOAA\)](#). The [New England Fishery Management Council \(NEFMC\)](#) facilitates the development of Gulf of Maine – Georges Bank American plaice regulations as part of a complex of 16 species that are managed together as the Northeast Multispecies Fishery. The NEFMC consists of 18 voting members, including the Regional Administrator for NMFS, the principal marine resource management official from each New England state, and governor appointees.

For Northeast multispecies fisheries management, a sub-set of NEFMC members form an Oversight Committee. This committee is responsible for the development of the fishery management plan and regulations that are consistent with the ten national standards outlined in the Magnuson Stevens Act (MSA), which dictate that conservation and management measures shall:

1. Prevent overfishing while achieving optimum yield.
2. Be based upon the best scientific information available.
3. Manage individual stocks as a unit throughout their range, to the extent practicable; interrelated stocks shall be managed as a unit or in close coordination.
4. Not discriminate between residents of different states; any allocation of privileges must be fair and equitable.
5. Where practicable, promote efficiency, except that no such measure shall have economic allocation as its sole purpose.
6. Take into account and allow for variations among and contingencies in fisheries, fishery resources, and catches.
7. Minimize costs and avoid duplications, where practicable.
8. Take into account the importance of fishery resources to fishing communities to provide for the sustained participation of, and minimize adverse impacts to, such communities (consistent with conservation requirements).
9. Minimize bycatch or mortality from bycatch.
10. Promote safety of human life at sea.

To help the Oversight Committee meet these requirements, an Advisory Panel made up of representatives from the fishing industry, scientists, and conservation organizations provides input to management measures. The chairs of the Oversight Committee provide detailed guidance (terms of reference) to a Plan Development Team (PDT), which consists of scientists, managers and other experts on biology and/or management of American plaice. Then the PDT provides reports to the Oversight Committee in response to the terms of reference. The PDT meets regularly to provide analysis of species-related information and to develop issue papers, alternatives, and other documents as appropriate. The NEFMC is also assisted by the members of the Scientific and Statistical

Committee (SSC); SSC members review and participate in stock assessment updates, and develop acceptable biological catch (ABC) recommendations that inform management decisions. Figure 2 provides a visual of the entire process.

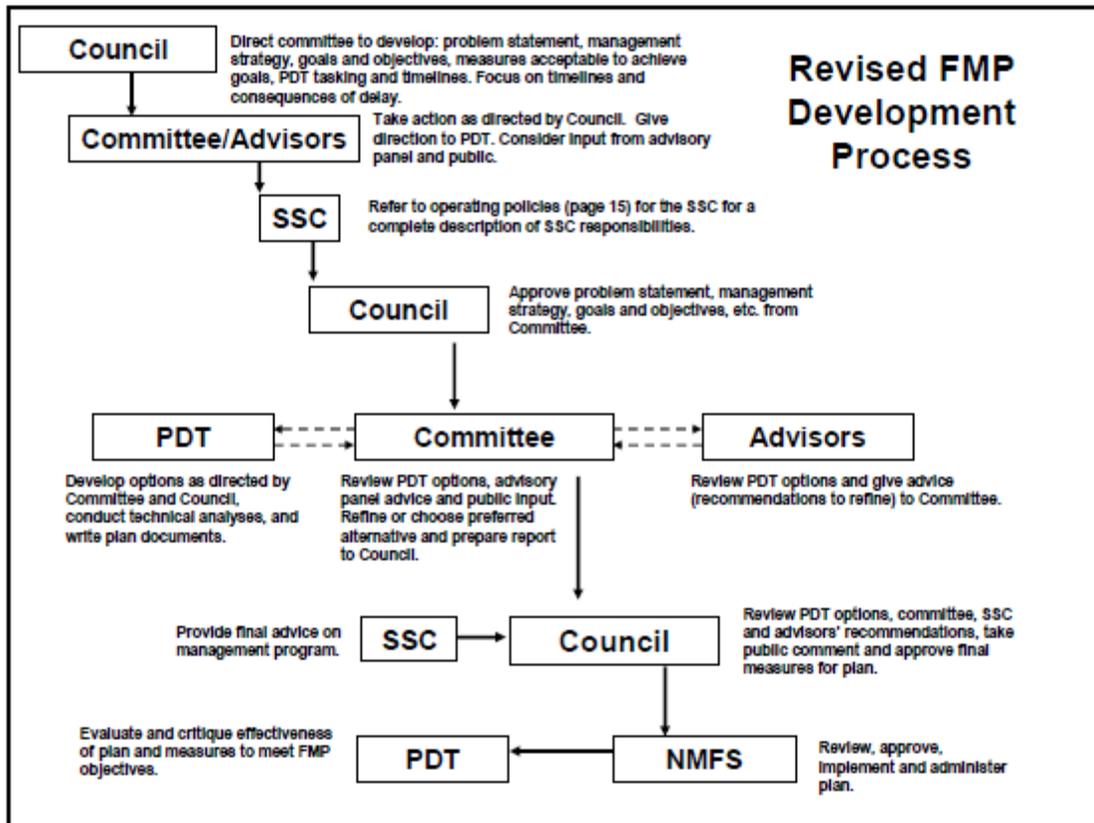


Figure 2. Fishery Management Plan Process (Fiorelli 2008)

III. Northeast Multispecies Fisheries Management Plan

The Northeast Multispecies Fishery Management Plan (FMP) was implemented in 1986 to reduce fishing mortality of heavily fished groundfish stocks and to promote rebuilding to sustainable biomass levels. Sixteen species are managed under Amendment 16 to the Northeast Multispecies FMP. Thirteen large-mesh species are managed together based on fish size and type of gear used to harvest the fish: Atlantic cod, haddock, pollock, yellowtail flounder, witch flounder, winter flounder, windowpane flounder, American plaice, Atlantic halibut, redfish, ocean pout, white hake, and wolffish. Because several large-mesh species are managed as two or more separate stocks, e.g., Gulf of Maine haddock and Georges Bank haddock, there are a total of 20 separate stocks of groundfish managed under the FMP. The other three species (silver hake [or whiting], red hake, and offshore hake) are managed under a separate small-mesh multispecies program pursuant to Amendment 12 of the Northeast Multispecies FMP.

During the 1990s and until April 2009, the groundfish complex was primarily managed under the Days-At-Sea (DAS) system: by seasonal and year-round area closures (i.e., no fishing in certain areas), gear restrictions (i.e., specified mesh size, number of nets/hooks, etc.), minimum fish size limits, trip limits (i.e., limiting fishermen to a certain poundage

of fish per trip), limited access (i.e., limiting the number of participants in the fishery) and restrictions on the number of days a vessel is allowed to fish for groundfish each year (i.e., days-at-sea) (NEFMC 2009). In May 2004, Amendment 13 to the FMP implemented formal rebuilding plans for groundfish stocks, including American plaice, based on revised biomass and fishing mortality targets derived by the Working Group on Re-evaluation of Biological Reference Points (BRPs) for New England Groundfish. Amendment 13 also marked the development of the first sector in New England (the Georges Bank Hook sector on Cape Cod). The overall goal of these actions was to reduce fishing mortality to rebuild depleted groundfish stocks to target biomasses.

In May 2010, Amendment 16 authorized the formation of individual fishing organizations, which shifted the management regime from the DAS system to this output-controlled system, referred to as sectors. In addition to general regulations for the fishery, Amendment 16 also implemented species- and stock-specific regulations for vessels in the common pool and in sectors. Beginning in FY 2010, commercial harvesters of groundfish have been managed in two self-selecting categories: common pool and sectors. From the start in 2010, the vast majority of the Northeast groundfish fishery has been enrolled in sectors.

The current regulations setting the catch levels for each of the 20 groundfish stocks, which were implemented by FW 48 to Amendment 16 in 2013, and revised in FW 50 in 2013, implement new requirements under the Magnuson-Stevens Reauthorization Act (MSRA) of 2006. The MSRA requires the NEFMC to determine Annual Catch Limits (ACLs) and Accountability Measures (AMs) that enable rebuilding within specified time frames for all managed stocks. This action implements a process for calculating an ACL in addition to the overfishing level (OFL) and acceptable biological catch (ABC) for each stock. Recommendations for these figures are developed by the PDT. The Science and Statistical Committee (SSC) recommends ABC levels, and the NEFMC approves final ACLs, but cannot exceed the SSC's recommended levels. ACLs may be broken into subcomponents for different segments of the fishery, including state waters, commercial, recreational, sectors, and the common pool. Accountability measures can be implemented in-season as management actions to prevent reaching or exceeding the ACL, or they can be corrective post-season management actions that address overages of an ACL. Although the following stocks have ACLs, possession is prohibited: northern and southern windowpane flounder, ocean pout, and wolffish. In addition, Atlantic halibut catch is limited to one fish per trip. Northeast Multispecies permit holders are eligible to receive an allocation for the remaining groundfish stocks.

Common Pool: Members in the common pool are managed by an effort control system that regulates the number of days a harvester may fish. In addition to a limited number of days a harvester may fish, controls include 24-hour DAS counting, trip limits on other groundfish stocks, gear restrictions, minimum mesh size restrictions, gillnet restrictions, hook limits, seasonal and year-round closures, minimum fish size restrictions, and special access programs. Specific effort control measures are described in the final rule for Amendment 16 (NMFS 2010).

Starting in 2012, a trimester hard TAC (total allowable catch) has been used as a primary accountability measure, and the fishery is suspended once 90% of the trimester TAC is reached (NMFS 2014).

Sectors: Sectors are self-selecting and largely self-regulating groups of fishermen who collaboratively manage an allocation of fish. Sectors must draft and submit formation proposals, operations plans, and sector monitoring plans, revised enforcement provisions, and clarification of the interaction of sectors with Special Management Programs, such as U.S./Canada management areas. NMFS prepares an environmental assessment (EA) annually to assess the impacts of the individual and cumulative sector operations as proposed in their operations plans.

In exchange for fishing under an ACL for each allocated species in the management plan, sectors are exempt from most common pool effort control measures, such as limited number of days at sea and trip limits. These are referred to as universal exemptions. A sector's allocation of an ACL for a particular stock is called the Annual Catch Entitlement (ACE), and is a sub-ACL of the overall fishery ACL. At-sea catch monitoring ensures that sector ACEs are not exceeded. For each permit that is eligible to join a sector, the permit's potential sector contribution (PSC) is calculated based on the permit's catch history. The ACE that is allocated to a sector is based on the sum of the PSCs for the permits that join the sector. Sector participants are not allowed to discard legal sized fish, and all fish caught count toward their sector allocations.

Regulations Shared by Common Pool and Sector Vessels: The following regulations exist for Gulf of Maine – Georges Bank American plaice (GARFO 2015):

- All commercial vessels participating in the Northeast Multispecies Fishery are required to use a Vessel Monitoring System (VMS) to report fishing activities, as well as a vessel trip report (VTR).
- Minimum size for American plaice is 14 inches.
- Sector vessels participating in Special Access Programs must only use gear approved under those programs.
- Fish fillets must have at least 2 square inches of skin while possessed on board the vessel at the time of landing.

CRITERION: If stock sizes are below management target levels, whether due to natural or man-made causes, management plans are established that enable rebuilding within a specified timeframe.

IV. Gulf of Maine – Georges Bank American Plaice Data

Stock Status:

Landings and survey data are used in determining biological reference points (BRPs) for Gulf of Maine – Georges Bank American plaice. The most recent benchmark assessment of American plaice is the Groundfish Assessment Review Meeting (GARM) III analysis, which utilized a virtual population analysis (VPA) including estimates for recreational landings and commercial discards (NEFSC 2008). Prior to GARM III, the Gulf of Maine – Georges Bank American plaice stock assessment was updated as part of GARM II. GARM II included landings and discards through 2004 and abundance indices through 2005, and also employed a VPA model. In 2012, groundfish assessment updates were

made to the GARM III analysis using data through fishing year 2011. In 2015, the Northeast Fisheries Science Center released an operational assessment update to the 2012 benchmark assessment. The operational assessment updated commercial catch data, survey indices of abundance, the VPA assessment model, and reference points through 2014 (NEFSC 2015).

Biological reference points have been updated based on the GARM III assessment and the 2015 assessment update, using stock weight, catch weight, spawning stock biomass (SSB), and maturity based on an average of the last seven assessed fishing years, 2008 – 2014. The most recent BRP estimates are an equilibrium SSB at maximum sustainable yield (SSB_{MSY}) of 13,288 mt, and a fishing mortality at maximum sustainable yield (F_{MSY}) of 0.196 (NEFSC 2015).

Spawning stock biomass (SSB) in 2014 was estimated at 14,543 mt, 109% of the target biomass for this stock (SSB_{MSY}). When the 2015 assessment update was adjusted for a retrospective bias, SSB in 2014 was estimated to be 10,977 mt, or 83% of the target SSB_{MSY} (see *Figure 3*). The 2014 selected fishing mortality was estimated to be 0.08, which is 41% of the overfishing threshold proxy (F_{MSY}). After adjustment for the retrospective bias, F in 2014 was estimated to be 0.116, or 59% of the overfishing threshold. The fishing mortality has been below the target F_{MSY} since 2009 (*Figure 4*), thus, overfishing is not occurring. As biomass levels are still significantly greater than half B_{MSY} , the stock is not overfished according to NEFSC metrics (NEFSC 2015) and is currently in a rebuilding phase. This stock has a rebuilding plan that was revised in 2014 and now has a target date of 2024, with a control rule that catch limits be set based on 75% F_{MSY} . The stock has recovered markedly since 2004, when it was overfished (NEFMC 2015).

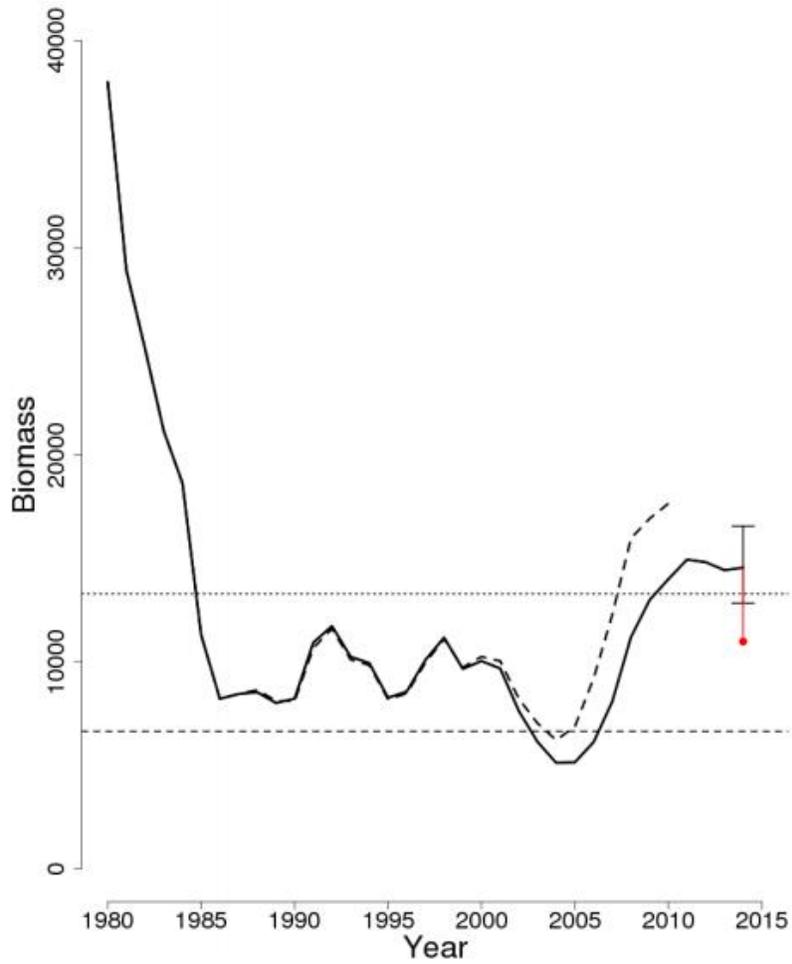


Figure 3. Trends in spawning stock biomass of Gulf of Maine – Georges Bank American plaice shown in solid (2015 update) and dashed line (previous assessment). The SSB overfishing threshold ($1/2 SSB_{MSY}$) is the horizontal dashed line and the SSB target (SSB_{MSY}) is the horizontal dotted line. Biomass was adjusted for a retrospective pattern to account for variability in the VPA analysis, shown in red (NEFSC 2015).

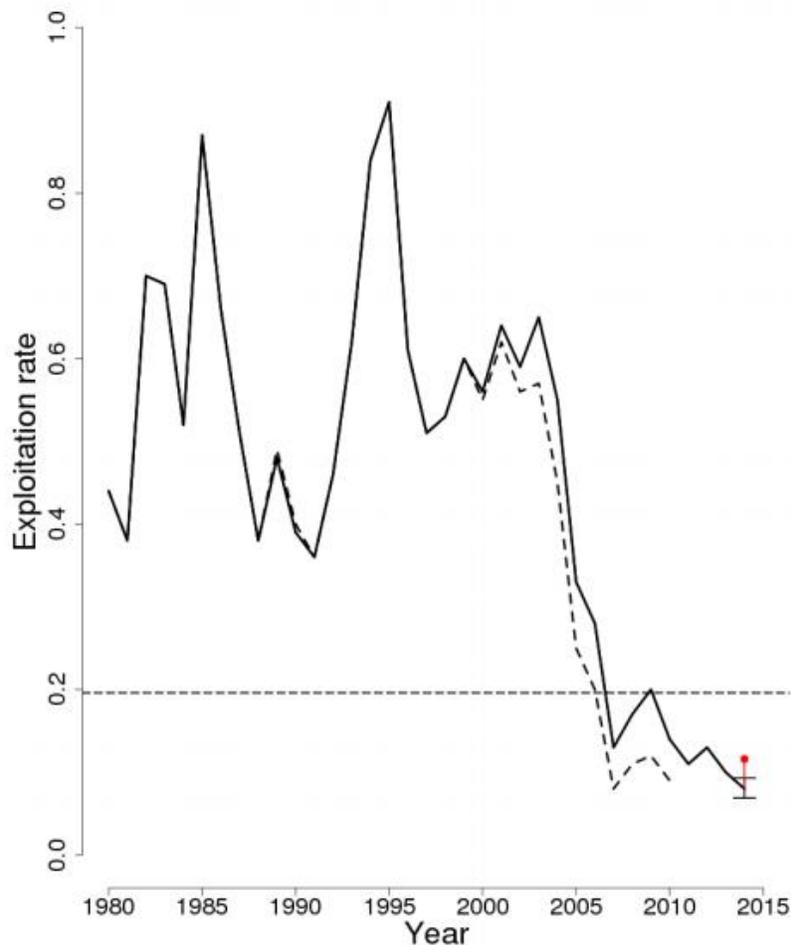


Figure 4. Trends in the fully selected fishing mortality of Gulf of Maine – Georges Bank American plaice shown in solid (2015 update) and dashed line (previous assessment). The corresponding overfishing threshold ($F_{Threshold}$) is the horizontal dashed line. Biomass was adjusted for a retrospective pattern to account for variability in the VPA analysis, shown in red (NEFSC 2015).

Stock History:

The fishery for American plaice developed in the mid-1970s as other flounder stocks became less abundant in the region, and fisheries became more regulated. In 1982, commercial landings of American plaice increased to a record high of nearly 15,000 mt, and then declined drastically to less than 3,000 mt in 1989 as the spawning stock biomass plummeted. Landings increased again in 1992 as a large 1987 year-class entered the fishery, but gradually declined until 2007 (O'Brien & Dayton, 2012). American plaice landings have stabilized between 1,200 mt and 1,800 mt since 2007 as shown in Figure 5 (NEFSC 2015).

It should be noted that the Annual Catch Limit (ACL) for American plaice was nearly cut in half in fishing year (FY) 2013 based on the 2012 GARM III assessment. In the 5 years previous, roughly half of the ACL or TAC for American plaice was being utilized.

Managers determined that while landings at the time allowed for the stock to remain above the target biomass threshold, if fishing pressure were to increase to full utilization following poor recruitment between 2008 and 2010, it could undo plaice’s rebuilt status. Despite this major cut in 2013, commercial landings have not exceeded quota entitlements and landings have been relatively stable over the last decade, as shown in Figure 6 (NOAA 2015, NERO 2009).

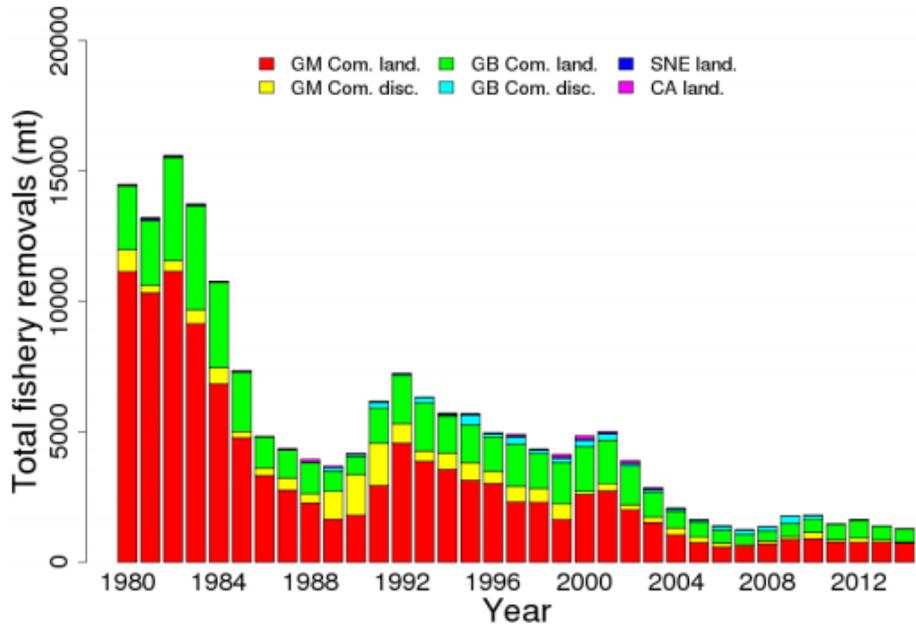


Figure 5. Total catch of Gulf of Maine – Georges Bank American plaice since 1980 by fleet (Gulf of Maine, Georges Bank, Southern New England, and Canadian) and by disposition (landings and discards)(NEFSC 2015).

Commercial Landings vs. Catch Limit

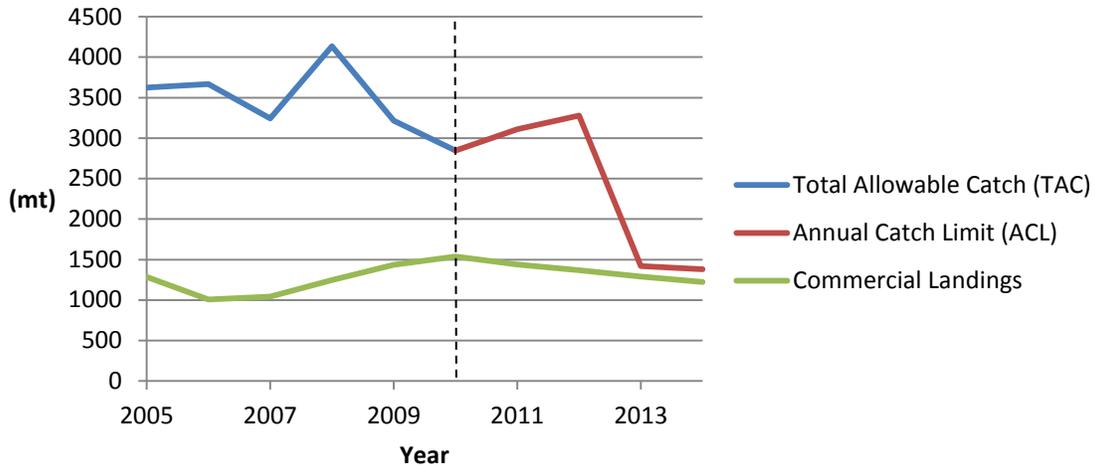


Figure 6. Trend in commercial landings vs. total allowable catch (pre-sectors) or annual catch limits (post-sectors). The dashed line represents when the current sector management system (using ACLs) was implemented in 2010. Prior to 2010, the groundfish fishery was primarily regulated by effort control (i.e. days at sea, trip limits) and there were catch targets, referred to as Total Allowable Catch (TAC), used by the management system in determining regulations (NOAA 2015, NERO 2009).

CRITERION: Sufficient data exist to determine harvest levels.

Harvest Levels:

Sufficient data exist to determine acceptable harvest levels for current and future fishing years. In the 2015 operational update, short term projections of biomass and catch were derived using the VPA model results. The annual fishery selectivity, stock age distribution, and mean weights at age were used to make projections through 2018 (see Table 1). The projections start from the bias-adjusted biomass estimates, although they do not account for the likely retrospective bias in the projected years. Projected catches in fishing years 2016-2018 are based on an assumed fishing mortality at the F_{MSY} proxy. The corresponding SSB projections are conservative, given that the F_{MSY} proxy is higher than the recent fishing mortality rate. Under these scenarios, the SSB is projected to remain well above $\frac{1}{2} SSB_{MSY}$, projecting that the stock will likely not be overfished in the next four years (NEFSC 2015).

Table 1.

Fishing Year	Projected Catch (mt)	Projected SSB (mt)	Assumed F_{MSY}
2015	1,395	8,947	0.156
2016	1,695	8,645	0.196
2017	1,686	8,324	0.196
2018	1,722	8,710	0.196

As of May 2016, Overfishing Limits (OFLs), Acceptable Biological Catch (ABC), and Annual Catch Limits (ACLs) for FY 2016 – 2018 that were recommended by the Science and Statistical Committee of the NEFMC were approved by NOAA through Framework 55 to the Northeast Multispecies Fishery Management Plan. The current OFLs, ABCs, and ACLs are outlined in Table 2 below (NMFS 2016).

Table 2.

Fishing Year	Overfishing Level (OFL) (metric tons)	Acceptable Biological Catch (ABC) (mt)	Annual Catch Limit (ACL) (mt)
2016	1,695	1,297	1,183
2017	1,748	1,336	1,218
2018	1,840	1,404	1,280

Sources of Uncertainty:

The retrospective biases in spawning stock biomass and fishing mortality are major sources of uncertainty, since the sources of the biases have yet to be identified. Two other sources of uncertainty for this stock noted in the 2015 operational assessment update are the estimates of historical landings at age prior to 1984, and the magnitude of historical discards prior to 1989. Both of these factors affect the scale of the biomass and fishing mortality estimates in these years and thereby slightly influence reference point estimates to date. The 2008 GARM III benchmark assessment pointed out that small mesh fishery discards were not included in catch at age estimates for American plaice, which may have skewed the previous estimates for fishing mortality and stock age distribution. This uncertainty was addressed in the 2012 GARM III assessment, which included biomass estimates from the small mesh otter trawl, gillnet, and scallop fisheries as part of the discard at age analysis. Another potential area of uncertainty is that Georges Bank landings are not as well sampled as Gulf of Maine landings, but the vast majority of catch occurs in the Gulf of Maine and therefore the effect is likely minimal.

CRITERION: Monitoring and compliance measures are in place to ensure acceptable harvest levels.

V. Monitoring

The monitoring programs in place for the Northeast multispecies fishery provide information to scientists and managers about when, where, and how fish are caught. In addition to information about fish that are landed, the monitoring programs can provide information about species that are not landed. For example, in support of the Marine Mammal Protection Act (MMPA) and the Endangered Species Act (ESA), observers record interactions with protected and endangered species.

Monitoring of the common pool is carried out through several different programs. When fishing in certain areas, such as the Eastern U.S./Canada Area, vessels are required to submit daily vessel trip reports (VTRs), which provide details on type of gear fished, area

fished, species caught and discarded, dealer information, and port of landing information, in addition to other details. The Northeast Fisheries Observer Program (NEFOP) employs at-sea observer coverage and biological sampling for the groundfish fleet. Separate from NEFOP, there are also shore-side port samplers who take biological samples from landed catch to help inform stock assessments and other fisheries research.

The final rule for Standardized Bycatch Reporting Methodology (SBRM) states that the Regional Administrator and the Science and Research Director will allocate at-sea observer coverage to the applicable fisheries of the Northeast Region sufficient to achieve a level of precision (measured as the coefficient of variation [CV]) no greater than 30% for each fishery (73 FR 4736; January 28, 2008). Eight percent of all common pool trips to fish for Gulf of Maine – Georges Bank American plaice need at-sea observers on board as required by NEFOP regulations. The Pre-Trip Notification System (PTNS) ensures fair and adequate coverage of vessels across the multispecies fishery. Vessels enter information into PTNS prior to a trip, and an algorithm randomly selects trips for coverage in order to achieve the targeted observer and at-sea monitor coverage across sectors, areas, and gear types.

Sectors have additional monitoring requirements. Sector operations plans specify how a sector will monitor its catch to assure that sector catch does not exceed the sector allocation. Industry funding of at-sea monitoring (ASM) was recently implemented in March 2016, which was a transition from the federal government covering the costs of ASM. For FY 2016, NOAA adjusted the target coverage level to 14% of sector trips. This includes NEFOP coverage, which has been roughly 4% recently. Thus, sector members will pay for coverage on approximately 10% of trips in FY 2016. Previously, sector required at-sea monitoring coverage was typically between 17% and 22%. While this 14% coverage level is lower than in previous years (prior to industry-funded ASM), additional factors were accounted for in determining the target so as to ensure compliance with the 30% CV requirement, including: removing ASM coverage for a subset of sector trips, using more years of discard data to predict coverage levels, and basing the target on predictions for stocks that are at a higher risk for error in the discard estimate (NMFS 2016). All sector vessels are still required to submit weekly VTRs in accordance with Amendment 16 to the Northeast Multispecies FMP.

Shore-side, there is 100% electronic dealer reporting on a weekly basis, which includes, but is not limited to, unique trip identifier, quantity of species landed, price per unit by species, and port and state landed.

Based on the data collected through monitoring, the Northeast multispecies complex is routinely evaluated and necessary changes to management measures are made through biennial Framework Adjustments.

CRITERION: Enforcement exists to ensure that harvesters follow regulations, and to prevent illegal practices and unreported harvest.

VI. Enforcement

In general, enforcement of the Northeast Multispecies FMP is coordinated through NOAA's Office of Law Enforcement (OLE). OLE Special Agents and Enforcement conduct complex criminal and civil investigations, board vessels fishing at sea, inspect fish processing plants, and conduct patrols on land, in the air and at sea. In addition to this enforcement work, the OLE administers the Cooperative Enforcement Program (CEP), which authorizes certain coastal state and territorial marine conservation law enforcement agencies to enforce federal laws and regulations in the Exclusive Economic Zone (EEZ). OLE also partners with the U.S. Coast Guard (USCG) and various other federal agencies, fishery management councils, and non-governmental organizations. In the common pool, enforcement is focused on compliance with DAS regulations, seasonal closures, closed areas, gear restrictions, and trip limits, to name a few measures. Enforcement for sector vessels primarily relies on monitoring harvest levels through sector reporting and VTRs (in addition to some of the measures described above for which sectors are not universally exempt); however individual sectors are also responsible for self-enforcement. Dealer reporting is a requirement of dealers who receive the fish.

It is the responsibility of each sector to enforce any provisions adopted through procedures established in the operations plan and agreed to through the sector contract. Sectors may be held jointly liable for violations of the following sector operations plan requirements: ACE overages, discarding of legal-sized fish, and misreporting of catch (landings or discards).

NOAA's Office of General Counsel reports on any enforcement actions taken, by region, on a semi-annual basis, and also outlines regional enforcement priorities on an annual basis. American plaice is not identified as a species of concern under OLE's enforcement priorities.

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