



## New England Fishery Management Council

50 WATER STREET | NEWBURYPORT, MASSACHUSETTS 01950 | PHONE 978 465 0492 | FAX 978 465 3116  
 E.F. "Terry" Stockwell, Chairman | Thomas A. Nies, *Executive Director*

### MEMORANDUM

**DATE:** October 9, 2015  
**TO:** Scientific and Statistical Committee (SSC)  
**FROM:** Groundfish Plan Development Team (PDT)  
**CC:** Groundfish Committee (Committee)  
**SUBJECT:** **FY 2016-FY 2018 Groundfish Acceptable Biological Catches (ABCs)**

The Groundfish Plan Development Team (PDT) discussed ABCs for all the groundfish stocks with the exception of Georges Bank (GB) yellowtail flounder (since it was the subject of the June 2015 SSC meeting). The PDT provides details on GB yellowtail flounder for informational purposes only.

#### 1. Information reviewed included:

- Draft 2015 Groundfish Assessment Reports (NEFSC, September 2015),
- Stock Assessment Update of 20 Northeast Groundfish Stocks through 2014, including the peer review reports for each stock (NEFSC, October 2015),
- Supplemental Information: Stock Assessment Support Information (SASINF),
- Most recent SSC recommendations for each stock, and
- Catch performance for all stocks.

#### 2. Overview

This memo provides information to support FY 2016 – FY 2018 ABC recommendations by the SSC for all groundfish stocks, based on the peer review results of the 2015 Groundfish Operational Assessments in September 2015. The terminal year of the assessments is 2014.

The assessment and peer review report is provided as a separate document<sup>1</sup> and the data in the assessments are not repeated within this memo. Generally these assessments update the data since the last assessment for each stock without changes to the model formulation. However, there are some exceptions, which are noted within this memo.

---

<sup>1</sup>NEFSC, 2015. Stock Assessment Update of 20 Northeast Groundfish Stocks Through 2014. US Dept Commer, Northeast Fish Sci Cent Ref Doc. 15-XXXX; 238 p. Available from: National Marine Fisheries Service, 166 Water Street, Woods Hole, MA 02543-1026, or online at <http://www.nefsc.noaa.gov/nefsc/publications>

Catch projections for FY 2016 - FY 2018:

1. For stocks needing a “bridge” year catch to run catch projections, the PDT estimated the CY 2015 catches for those groundfish stocks. This information was used in the projections within the 2015 Groundfish Operational Assessments. Detailed catch information is provided for the SSC (see Appendix V for details).
2. Projection assumptions followed those approved at the peer review meeting. In addition, the peer review requested for some stocks that specific sensitivity projections or additional information be provided by the PDT to the SSC, and those are included in this memo.
3. Following the SSC’s control rule, the PDT ran ABC projections at 75%  $F_{MSY}$  and  $F_{rebuild}$  if necessary. Several stocks would or did not rebuild by the end date of the rebuilding plan, and therefore  $F_{rebuild}$  was not used to calculate ABCs. These stocks would not rebuild by the end of their rebuilding plan, even with  $F=0$ . These stocks are discussed on a stock by stock basis within this memo. In the event that the SSC decides to develop ABCs under “Option C” of the default ABC control rule, the PDT provides a summary of recent total discards and non-groundfish fishery landings for these stocks for the purposes of discussion (see Appendix III). However, these values do not necessarily represent incidental, non-target catch of each stock under the current prevailing operating conditions of the fishery.

The SSC’s default ABC control rule (see Amendment 16):

*The ABC control rules will be used in the absence of better information that may allow a more explicit determination of scientific uncertainty for a stock or stocks. If such information is available – that is, if scientific uncertainty can be characterized in a more accurate fashion -- it can be used by the SSC to determine ABCs. These ABC control rules can be modified in a future Council action (an amendment, framework, or specification package):*

- a. *ABC should be determined as the catch associated with 75% of  $F_{MSY}$ .*
  - b. *If fishing at 75% of  $F_{MSY}$  does not achieve the mandated rebuilding requirements for overfished stocks, ABC should be determined as the catch associated with the fishing mortality that meets rebuilding requirements ( $F_{rebuild}$ ).*
  - c. *For stocks that cannot rebuild to  $BMSY$  in the specified rebuilding period, even with no fishing, the ABC should be based on incidental bycatch, including a reduction in bycatch rate (i.e., the proportion of the stock caught as bycatch).*
  - d. *Interim ABCs should be determined for stocks with unknown status according to case- by case recommendations from the SSC*
4. For comparison purposes, the PDT ran ABC projections holding the lowest value of 75%  $F_{MSY}$  for FY 2016- FY2018 projected catches constant for three years. The lowest value is usually the first year in the projection (i.e., 2016), since projections assume mortality targets are achieved which usually results in stock rebuilding within the projections. Past experience and PDT simulation testing using projections and assessments suggest catch and population rebuilding in the projections in the out years (4+ years) are overly optimistic. However, there

are two stocks (Southern New England/Mid-Atlantic (SNE/MA) winter flounder and white hake) in which catch projections decreased from 2016-2017. These decreases are due to poor year classes - and subsequent poor recruitment - at the end of the time series within the assessment. For these stocks, the PDT used the lowest projected catch (for 2016, 2017 or 2018) to provide an option that increases the uncertainty buffer. However when using this approach for stocks with the lowest catch in the third year (i.e., 2018), the uncertainty buffer will be greatest in the first year and decrease in the out years.

5. The PDT calculated corresponding OFLs under #3 and #4. OFLs for 2017 and 2018 for potential ABC recommendation using the sensitivity runs are not in the tables below. These estimates can be quickly provided depending on the final SSC's decisions with regards to using constant or the projected changes in the ABC's using the sensitivity runs. Resulting ABCs from the sensitivity runs are plotted in the catch performance figures (e.g., Figure 3).

### Catch Performance

The PDT also provides information on catch performance for each stock (e.g., Figure 1). Catch is the calendar year catches from 2005-2014 from the draft working paper for each stock. Historical ABCs are provided for each fishing year (May 1 start) since 2010. The catch performance information provides calendar year catches from the stock assessments and fishing year ABC's, and therefore do not temporally align. The catch assumption is the calendar 2015 "bridge year" estimated catch used in the assessments (see Appendix V). Catch projections for FY 2016- FY 2018 are plotted, as appropriate.

### Uncertainties

The number of groundfish stocks that used a retrospective adjustment increased from 2 to 7 (GB haddock, Cape Cod/Gulf of Maine (CC/GOM) yellowtail, GB winter flounder, redfish, plaice, witch flounder and pollock) stocks with the 2015 operational assessments. All the retrospective patterns have a tendency to overestimate the terminal year biomass and underestimate the fishing mortality. The cause of the retrospective bias remains unknown.

Projections used to set future catches and plan rebuilding strategies do not perform well (i.e., projected catch does not result in the desired fishing mortality, and stock growth does not occur as expected). In 2011, the NEFSC augmented the PDT to examine an alternative to using updated assessments for setting FY 2012 – FY 2014 ABCs. Simulation analyses showed that projections tend to be biased high – that is, they over-estimated stock growth and future catches.

### Appendices

The memo includes five appendices. An overview of the basis for the most recent SSC ABC recommendations is provided in Appendix I. A summary of rebuilding plans by stock is provided in Appendix II. Information for the purpose of SSC discussion of Option C of the default control rule for some stocks is located in Appendix III. Additional information on Atlantic halibut is provided in Appendix IV. CY 2015 catch estimates are located in Appendix V.

### 3. ABCs by Stock

#### 1. Georges Bank Cod

GB cod is overfished, but overfishing is unknown. The peer review rejected the GB cod assessment, and developed an alternative basis for setting catch advice (see pp. 31 of report<sup>1</sup>). The overfishing limit recommendation in FY2016 from the peer review is 1665 mt. Without a model to project forward and calculate  $F_{MSY}$  or  $75\%F_{MSY}$ , the PDT provided possible OFLs and ABCs for FY 2016- FY 2018 using a constant approach. As a starting point for SSC discussion of three-year catch advice, 75% of this value (1,665 mt) is 1,249 mt (Table 1).

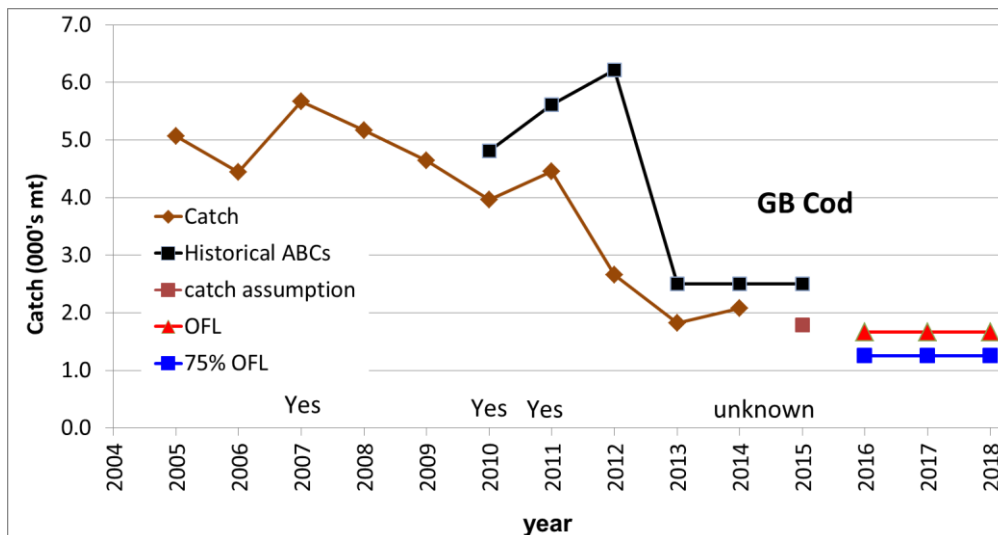
Figure 1 summarizes catch performance and changes in overfishing status for GB cod.

The peer review requested that the PDT provide an updated estimate of CY 2015 catch for GB cod to the SSC. This updated estimated value is 1,744 mt (GARFO, September 16, 2015), down from the PDT’s estimate of 1,784 mt (GARFO, August 20, 2015; see Appendix V).

**Table 1- Possible OFLs and ABCs (mt) for FY 2016- FY 2018 for Georges Bank cod, using a constant approach for three years.**

year	OFL	ABC
2016	1,665	1,249
2017	1,665	1,249
2018	1,665	1,249

**Figure 1- Catch performance for Georges Bank cod including: catches from CY 2005- CY 2014, historical ABCs since FY 2010, CY 2015 “bridge year” catch assumption, and FY 2016- FY 2008 OFL and 75%OFL. Overfishing status in the terminal year of the assessment indicated on the x-axis (Yes = overfishing, No= not overfishing, and unknown = unknown overfishing status).**



## 2. Gulf of Maine Cod

Gulf of Maine (GOM) cod is overfished and overfishing is occurring, and the stock is in a rebuilding plan with a rebuild by date of 2024 (which is possible when  $F=0$  for some scenarios). A retrospective adjustment was not applied to the terminal year of the assessment, but the  $M=0.2$  does have a retrospective pattern and the  $M=0.2$  model with the rho adjustment is provided by the PDT to the SSC as a sensitivity at the request of the peer review. Catch projections are provided for FY 2016- FY 2018 under  $F_{MSY}$  and  $75\%F_{MSY}$  for the  $M=0.2$  model (Table 2) and M-ramp model (Table 3) under all scenarios.

Figure 2 and Figure 3 summarize catch performance and changes in overfishing status for GOM cod.

Following the SSC's approach in 2014 for catch advice for this stock, model averaging results in a 667 mt OFL  $[(697+748+555)/3]$  and 500 mt ABC (75% of 667 mt). Catch under  $F_{rebuild}$  was not used for setting ABC in the SSC's approach in 2014 and are not shown in the tables below. However, the PDT did run  $F_{rebuild}$  projections which can be shown if requested by the SSC.

Further if the SSC decides to develop ABCs under "Option C" of the default ABC control rule, the PDT provides additional information for consideration in Appendix III.

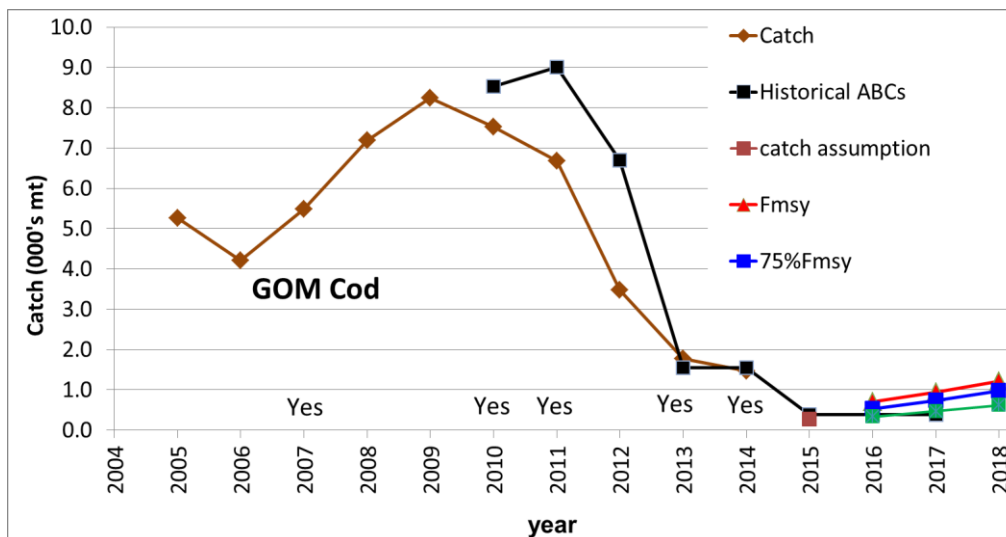
**Table 2-Projection results from the  $M=0.2$  model for Gulf of Maine cod.**

Harvest strategy	Year	Input	M=0.2 model					
			No retro adjustment			Retrospective adjustment		
			Catch (mt)	Spawning stock biomass (mt)	$F_{full}$	Catch (mt)	Spawning stock biomass (mt)	$F_{full}$
$F_{MSY}$	2014	Model result	1,471	2,225	0.956	1,471	1,443	1.390
	2015	Assumed catch	279	3,045	0.111	279	1,961	0.174
	2016	Projection	697	4,400	0.185	438	2,777	0.185
	2017	Projection	939	5,852	0.185	596	3,723	0.185
	2018	Projection	1,211	7,601	0.185	773	4,854	0.185
75% $F_{MSY}$	2014	Model result	1,471	2,225	0.956	1,471	1,443	1.390
	2015	Assumed catch	279	3,045	0.111	279	1,961	0.174
	2016	Projection	533	4,435	0.139	335	2,800	0.139
	2017	Projection	738	6,048	0.139	468	3,848	0.139
	2018	Projection	974	8,015	0.139	621	5,113	0.139

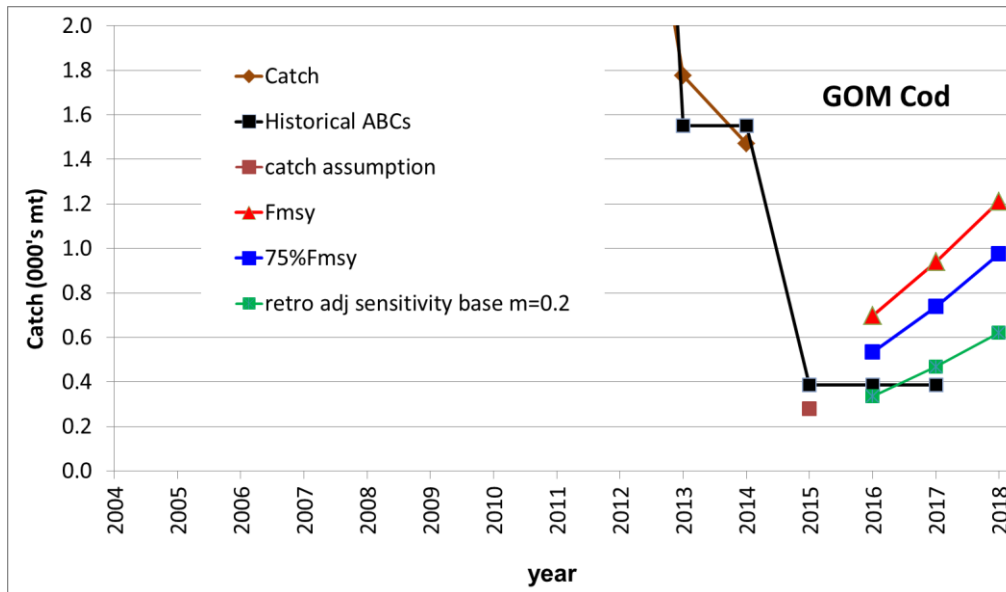
Table 3- Projection results from the M-ramp model for Gulf of Maine cod.

Harvest strategy	Year	Input	M-ramp model					
			M=0.2			M=0.4		
			Catch (mt)	Spawning stock biomass (mt)	F <sub>full</sub>	Catch (mt)	Spawning stock biomass (mt)	F <sub>full</sub>
F <sub>MSY</sub>	2014	Model result	1,471	2,536	0.932	1,471	2,536	0.932
	2015	Assumed catch	279	3,219	0.112	279	3,057	0.123
	2016	Projection	748	4,950	0.187	555	3,841	0.187
	2017	Projection	1,085	7,062	0.187	662	4,536	0.187
	2018	Projection	1,507	9,674	0.187	765	5,220	0.187
75% F <sub>MSY</sub>	2014	Model result	1,471	2,536	0.932	1,471	2,536	0.932
	2015	Assumed catch	279	3,219	0.112	279	3,057	0.123
	2016	Projection	570	4,988	0.140	423	3,871	0.140
	2017	Projection	847	7,278	0.140	517	4,672	0.140
	2018	Projection	1,201	10,141	0.140	609	5,464	0.140

Figure 2- Catch performance for Gulf of Maine cod including: catches from CY 2005- CY 2014, historical ABCs since FY 2010, CY 2015 “bridge year” catch assumption, and projections for FY 2016- FY 2018 (using the M=0.2 model) F<sub>MSY</sub>, 75%F<sub>MSY</sub>, and a sensitivity for 75%F<sub>MSY</sub> with a retrospective adjustment. Overfishing status in the terminal year of the assessment indicated on the x-axis (Yes = overfishing, No= not overfishing, and unknown = unknown overfishing status).



**Figure 3-Detail for FY 2016 – FY 2018 Gulf of Maine cod catch projections, using the M=0.2 model, for  $F_{MSY}$ ,  $75\%F_{MSY}$  and a sensitivity for  $75\%F_{MSY}$  with a retrospective adjustment.**



### 3. Georges Bank Haddock

GB haddock is not overfished and overfishing is not occurring, and the stock is rebuilt. A retrospective adjustment was applied to the terminal year of the assessment. Catch projections are provided for FY 2016- FY 2018 under  $75\%F_{MSY}$  (Table 4) and for comparison by holding the lowest value of  $75\% F_{MSY}$  for FY 2016- FY2018 projected catches constant for three years (Table 5).

Figure 4 and Figure 5 summarize catch performance and changes in overfishing status for GB haddock.

The GB haddock assessment estimates an exceptionally strong 2013 year class with considerable uncertainty. Likely reductions in growth due to density dependent effects and reductions in the 2013 year class estimate were explored with the sensitivity projections. As requested by the peer review, the PDT provides the SSC with two sensitivity projections: 1) a sensitivity of likely density dependent growth and 2) a sensitivity of likely density dependent growth with reductions in the estimated 2013 year class strength (Figure 4).

**Table 4- Possible OFLs and ABCs (mt) for FY 2016- FY 2018 for Georges Bank haddock, under  $75\%F_{MSY}$  projections. Projected F and SSB provided.**

year	OFL	ABC	F	SSB
2016	160,385	123,000	0.293	1,180,381
2017	249,732	192,075	0.293	1,276,959
2018	316,320	246,848	0.293	1,058,276

**Table 5- Comparison OFLs and ABCs (mt) for FY 2016- FY 2018 for Georges Bank haddock, holding the lowest value of 75%  $F_{MSY}$  for FY 2016- FY2018 projected catches constant for three years. Projected F and SSB provided.**

year	OFL	ABC	F	SSB
2016	160,385	123,000	0.293	1,180,009
2017	249,732	123,000	0.182	1,295,329
2018	334,494	123,000	0.129	1,158,787

**Figure 4- Catch performance for Georges Bank haddock including: catches from CY 2005- CY 2014, historical ABCs since FY 2010, CY 2015 “bridge year” catch assumption, and projections for FY 2016- FY 2018 at  $F_{MSY}$ , 75%  $F_{MSY}$ , a sensitivity of likely density dependent growth, and a sensitivity of likely density dependent growth with reductions in the estimated 2013 year class strength.**

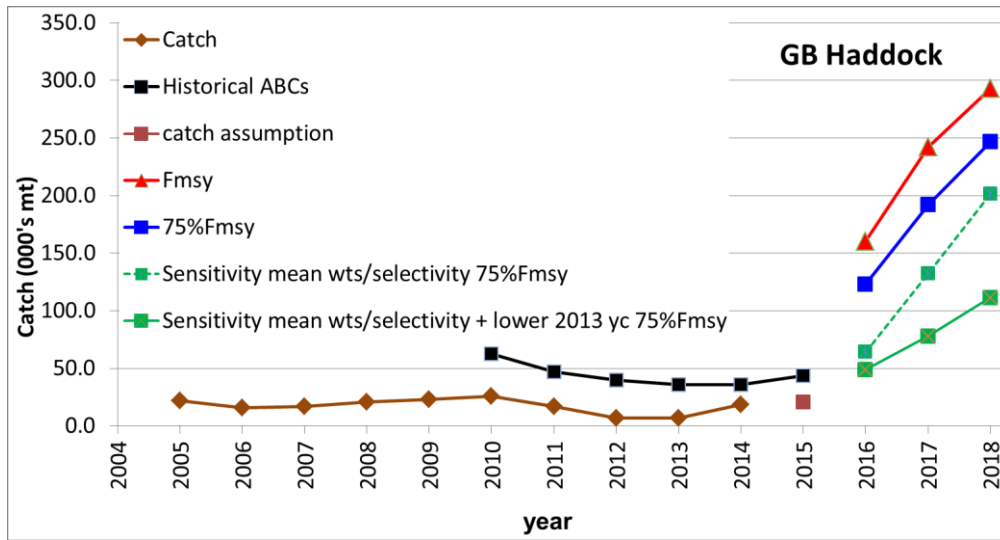
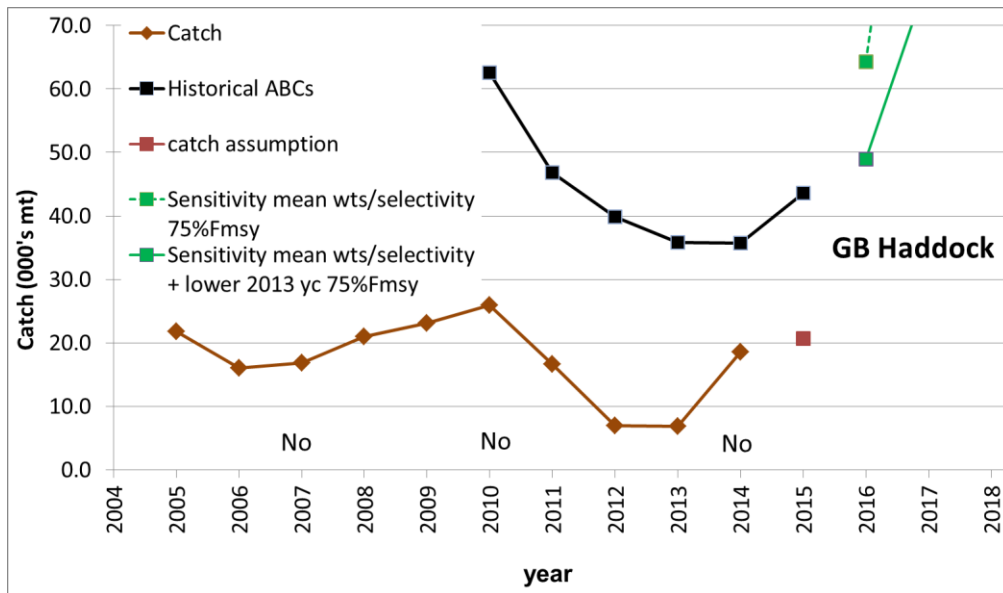




Figure 5- Detail for FY 2010 – FY 2014 Georges Bank haddock catch performance. Projections for FY 2016- FY 2018 provided as a sensitivity of likely density dependent growth and a sensitivity of likely density dependent growth with reductions in the estimated 2013 year class strength. Overfishing status in the terminal year of the assessment indicated on the x-axis (Yes = overfishing, No= not overfishing, and unknown = unknown overfishing status).



#### 4. Gulf of Maine Haddock

GOM haddock is not overfished and overfishing is not occurring, and the stock is rebuilt. Catch projections are provided for FY 2016- FY 2018 under 75%F<sub>MSY</sub> (Table 6) and for comparison by holding the lowest value of 75% F<sub>MSY</sub> for FY 2016- FY2018 projected catches constant for three years (Table 7).

Figure 6 summarizes catch performance and changes in overfishing status for GOM haddock. A sensitivity run that constrains the estimated terminal year recruitment estimate (2013 year class) is also provided for SSC consideration.

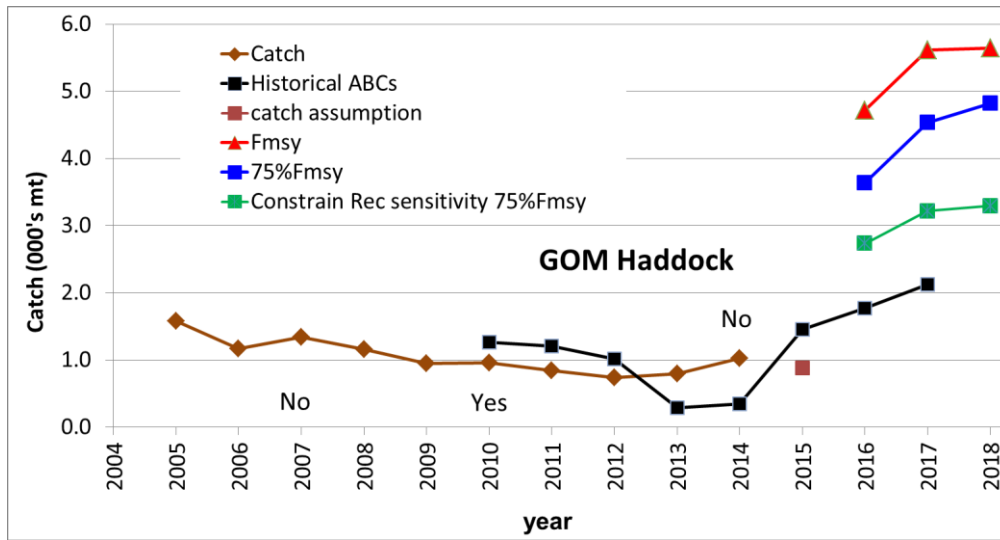
Table 6- Possible OFLs and ABCs (mt) for FY 2016- FY 2018 for Gulf of Maine haddock, under 75%F<sub>MSY</sub> projections. Projected F and SSB provided.

year	OFL	ABC	F	SSB
2016	4,717	3,630	0.351	25,635
2017	5,873	4,534	0.351	25,915
2018	6,218	4,815	0.351	22,532

**Table 7- Comparison OFLs and ABCs (mt) for FY 2016- FY 2018 for Gulf of Maine haddock, holding the lowest value of 75%  $F_{MSY}$  for FY 2016- FY2018 projected catches constant for three years. Projected F and SSB provided.**

year	OFL	ABC	F	SSB
2016	4,717	3,630	0.351	25,647
2017	5,873	3,630	0.276	26,174
2018	6,454	3,630	0.246	23,686

**Figure 6- Catch performance for Gulf of Maine haddock including: catches from CY 2005- CY 2014, historical ABCs since FY 2010, CY 2015 “bridge year” catch assumption, and projections for FY 2016- FY 2018 at  $F_{MSY}$ , 75% $F_{MSY}$ , and a sensitivity at 75% $F_{MSY}$  constraining recent recruitment. Overfishing status in the terminal year of the assessment indicated on the x-axis (Yes = overfishing, No= not overfishing, and unknown = unknown overfishing status).**



### 5. Georges Bank Yellowtail Flounder

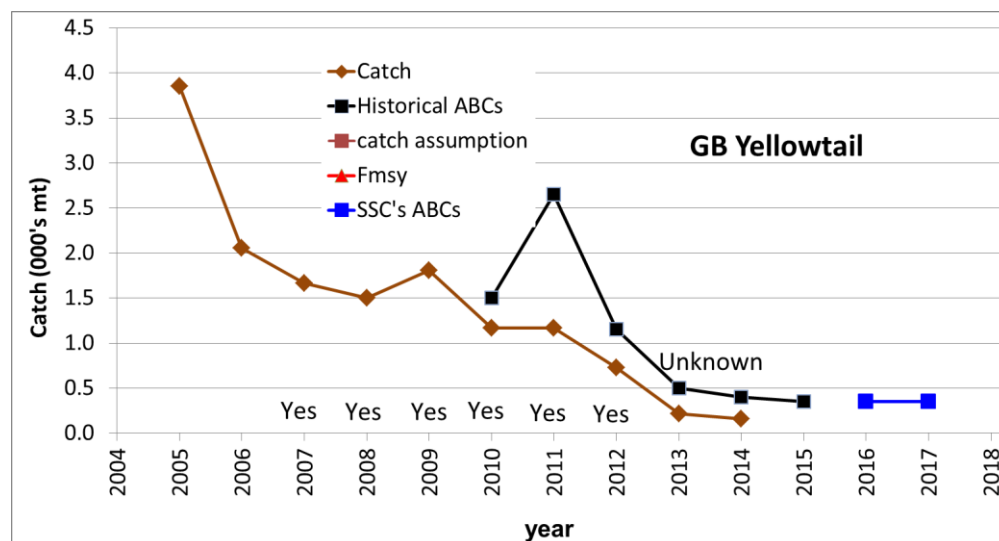
The status of GB yellowtail flounder is unknown. The SSC’s recommended FY 2016-FY 2017 OFLs and ABCs are provided for informational purposes (Table 8).

Figure 7 summarizes catch performance and changes in overfishing status for GB yellowtail flounder.

**Table 8- OFLs and ABCs (mt) for FY 2016- FY 2017 for Georges Bank yellowtail flounder, provided for informational purposes.**

year	OFL	ABC
2016	Unknown	354
2017	Unknown	354

Figure 7- Catch performance for Georges Bank yellowtail flounder including: catches from CY 2005- CY 2014, historical ABCs since FY 2010, CY 2015 “bridge year” catch assumption, and SSC’s 2016-2017 ABCs. Overfishing status in the terminal year of the assessment indicated on the x-axis (Yes = overfishing, No= not overfishing, and unknown = unknown overfishing status). Provided for informational purposes.



## 6. Southern New England/Mid-Atlantic Yellowtail Flounder

SNE/MA yellowtail flounder is overfished and overfishing is occurring. The stock is not in a rebuilding plan, because it was considered rebuilt as of 2011. In 2014, the stock was at 26% of the previous rebuilding target SSB. Catch projections are provided for FY 2016- FY 2018 under 75%F<sub>MSY</sub> (Table 9) and for comparison by holding the lowest value of 75% F<sub>MSY</sub> for FY 2016- FY2018 projected catches constant for three years (Table 10). In the absence of a rebuilding plan if the SSC decides to develop ABCs under “Option C” of the default ABC control rule, the PDT provides additional information for consideration in Appendix III.

Figure 8 summarizes catch performance and changes in overfishing status for SNE/MA yellowtail flounder.

The peer review requested that the PDT provide an updated estimate of CY 2015 catch for SNE/MA yellowtail flounder to the SSC and re-run the projections. This updated estimated value is 422 mt (GARFO, September 16, 2015), down from the PDT’s estimate of 478 mt (GARFO, August 20, 2015; see Appendix V). Catch projections are provided for using this updated “bridge year” catch for FY 2016- FY 2018 under 75%F<sub>MSY</sub> (Table 11) and for comparison by holding the lowest value of 75% F<sub>MSY</sub> for FY 2016- FY2018 projected catches constant for three years (Table 12).

Also, the peer review did not accept the rho adjustment for this stock. Model diagnostics were good (i.e., the data fit the model well) under the unadjusted model, while projections using the rho adjusted model had a high number of infeasible solutions resulting from the bridge year catch assumption.

**Table 9- Possible OFLs and ABCs (mt) for FY 2016- FY 2018 for Southern New England/Mid-Atlantic yellowtail flounder, under 75%F<sub>MSY</sub> projections, CY 2015 catch estimate of 478 mt. Projected F and SSB provided.**

year	OFL	ABC	F	SSB
2016	130	101	0.262	490
2017	170	131	0.262	682
2018	249	191	0.262	1127

**Table 10- Comparison OFLs and ABCs (mt) for FY 2016- FY 2018 for Southern New England/Mid-Atlantic yellowtail flounder, holding the lowest value of 75% F<sub>MSY</sub> for FY 2016- FY2018 projected catches constant for three years, CY 2015 catch estimate of 478 mt. Projected F and SSB provided.**

year	OFL	ABC	F	SSB
2016	130	101	0.263	491
2017	170	101	0.197	700
2018	256	101	0.129	1192

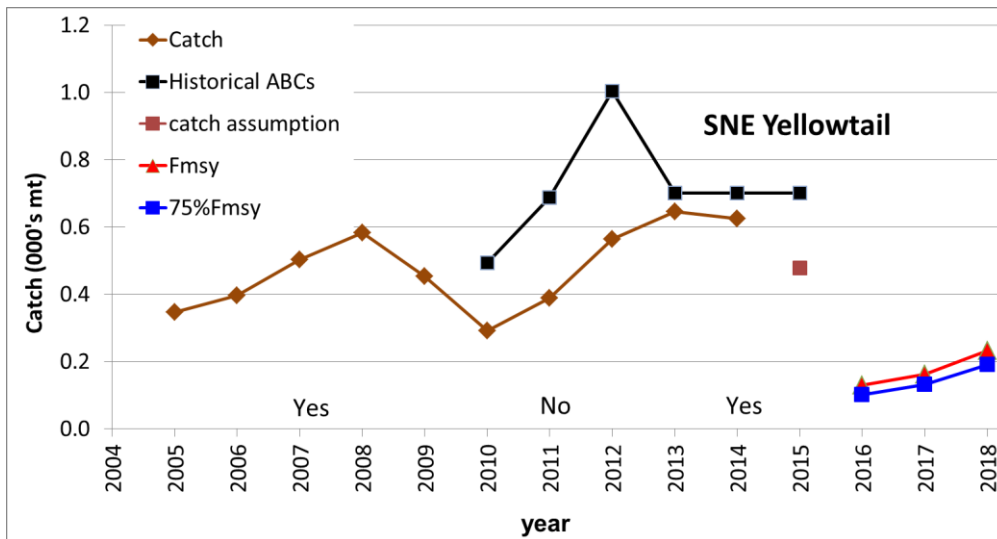
**Table 11- Possible OFLs and ABCs (mt) for FY 2016- FY 2018 for Southern New England/Mid-Atlantic yellowtail flounder, under 75%F<sub>MSY</sub> projections, CY 2015 catch estimate of 422 mt. Projected F and SSB provided.**

year	OFL	ABC	F	SSB
2016	144	111	0.262	534
2017	180	139	0.262	714
2018	256	196	0.262	1148

**Table 12- Comparison OFLs and ABCs (mt) for FY 2016- FY 2018 for Southern New England/Mid-Atlantic yellowtail flounder, holding the lowest value of 75% F<sub>MSY</sub> for FY 2016- FY2018 projected catches constant for three years, CY 2015 catch estimate of 422 mt. Projected F and SSB provided.**

year	OFL	ABC	F	SSB
2016	144	111	0.261	535
2017	180	111	0.204	732
2018	262	111	0.138	1210

Figure 8- Catch performance for Southern New England/Mid-Atlantic yellowtail flounder including: catches from CY 2005- CY 2014, historical ABCs since FY 2010, CY 2015 “bridge year” catch assumption, and projections for FY 2016- FY 2018 at  $F_{MSY}$ , and  $75\%F_{MSY}$ . Overfishing status in the terminal year of the assessment indicated on the x-axis (Yes = overfishing, No= not overfishing, and unknown = unknown overfishing status).



### 7. Cape Cod/Gulf of Maine Yellowtail Flounder

CC/GOM yellowtail flounder is overfished and overfishing is occurring, and the stock is in a rebuilding plan with a rebuild by date of 2023. A retrospective adjustment was applied to the terminal year of the assessment. Catch projections are provided for FY 2016- FY 2018 under  $75\%F_{MSY}$  (Table 13) and for comparison by holding the lowest value of  $75\% F_{MSY}$  for FY 2016- FY 2018 projected catches constant for three years (Table 14).

Figure 9 summarizes catch performance and changes in overfishing status for CC/GOM of Maine yellowtail flounder.

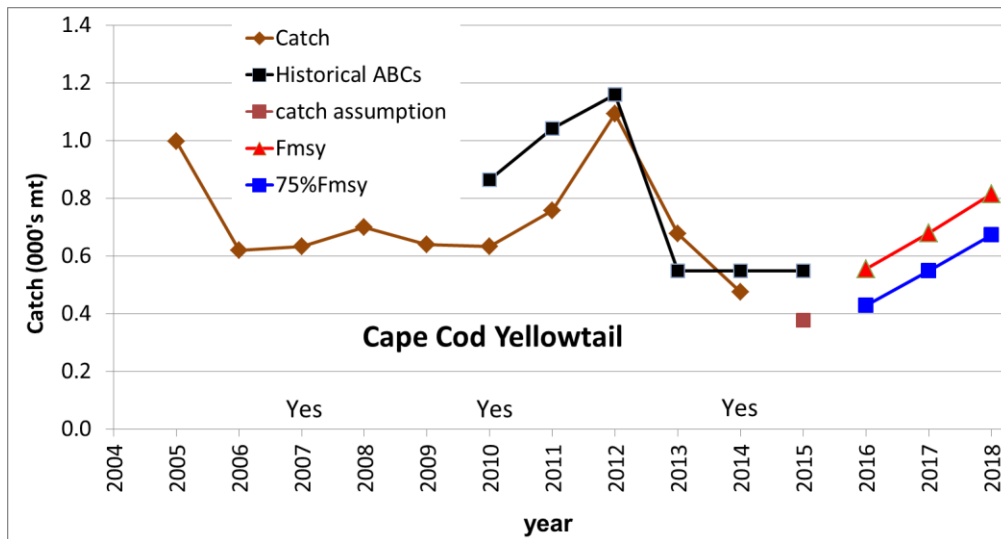
Table 13- Possible OFLs and ABCs (mt) for FY 2016- FY 2018 for Cape Cod/Gulf of Maine yellowtail flounder, under  $75\%F_{MSY}$  projections. Projected F and SSB provided.

year	OFL	ABC	F	SSB
2016	555	427	0.21	2,483
2017	707	547	0.21	3,026
2018	874	672	0.21	3,820

Table 14- Comparison OFLs and ABCs (mt) for FY 2016- FY 2018 for Cape Cod/Gulf of Maine yellowtail flounder, holding the lowest value of  $75\% F_{MSY}$  for FY 2016- FY2018 projected catches constant for three years. Projected F and SSB provided.

year	OFL	ABC	F	SSB
2016	555	427	0.21	2,485
2017	707	427	0.161	3,074
2018	900	427	0.125	4,053

Figure 9- Catch performance for Cape Cod/Gulf of Maine yellowtail flounder including: catches from CY 2005- CY 2014, historical ABCs since FY 2010, CY 2015 “bridge year” catch assumption, and projections for FY 2016- FY 2018 at  $F_{MSY}$  and  $75\%F_{MSY}$ . Overfishing status in the terminal year of the assessment indicated on the x-axis (Yes = overfishing, No= not overfishing, and unknown = unknown overfishing status).



### 8. American Plaice

American plaice is not overfished and overfishing is not occurring, and the stock is in a rebuilding plan with a rebuild by date of 2024. A retrospective adjustment was applied to the terminal year of the assessment. Catch projections are provided for FY 2016- FY 2018 under  $75\%F_{MSY}$  (Table 15) and for comparison by holding the lowest value of  $75\% F_{MSY}$  for FY 2016- FY 2018 projected catches constant for three years (Table 16).

Figure 10 summarizes catch performance and changes in overfishing status for American plaice.

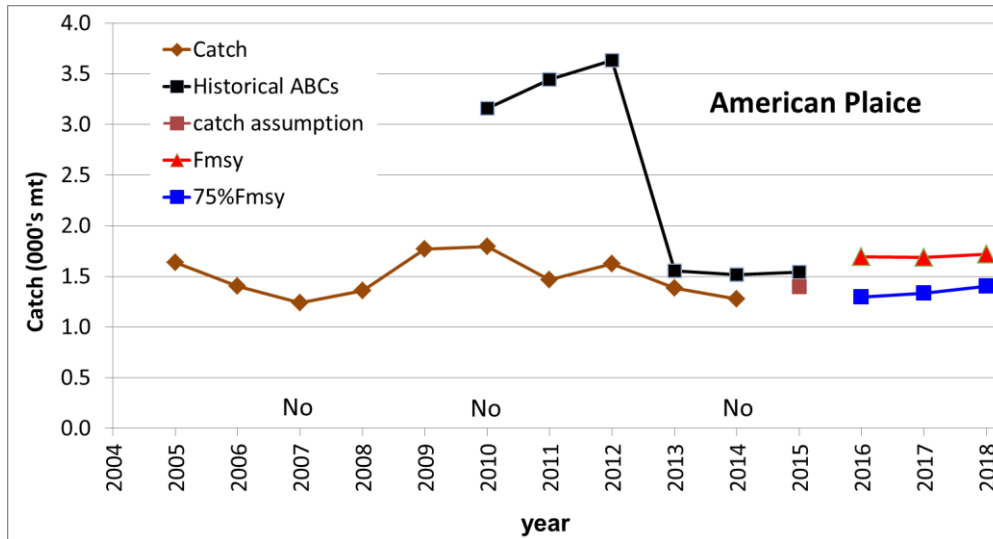
Table 15- Possible OFLs and ABCs (mt) for FY 2016- FY 2018 for American plaice, under  $75\%F_{MSY}$  projections. Projected F and SSB provided.

year	OFL	ABC	F	SSB
2016	1,695	1,297	0.147	8,743
2017	1,748	1,336	0.147	8,740
2018	1,840	1,404	0.147	9,417

Table 16- Comparison OFLs and ABCs (mt) for FY 2016- FY 2018 for American plaice, holding the lowest value of  $75\% F_{MSY}$  for FY 2016- FY2018 projected catches constant for three years. Projected F and SSB provided.

year	OFL	ABC	F	SSB
2016	1,695	1,297	0.147	8,740
2017	1,748	1,297	0.142	8,752
2018	1,846	1,297	0.134	9,484

Figure 10- Catch performance for American plaice including: catches from CY 2005- CY 2014, historical ABCs since FY 2010, CY 2015 “bridge year” catch assumption, and projections for FY 2016- FY 2018 at  $F_{MSY}$  and  $75\%F_{MSY}$ . Overfishing status in the terminal year of the assessment indicated on the x-axis (Yes = overfishing, No= not overfishing, and unknown = unknown overfishing status).



### 9. Witch Flounder

Witch flounder is overfished and overfishing is occurring, and the stock is in a rebuilding plan with a rebuild by date of 2017. A retrospective adjustment was applied to the terminal year of the assessment. Projections indicate that the stock cannot rebuild by 2017 with  $F=0$ . In 2014, the stock was at 22% of the rebuilding target SSB. Catch projections are provided for FY 2016- FY 2018 under  $75\%F_{MSY}$  (Table 17) and for comparison by holding the lowest value of  $75\% F_{MSY}$  for FY 2016- FY 2018 projected catches constant for three years (Table 18). If the SSC decides to develop ABCs under “Option C” of the default ABC control rule, the PDT provides additional information for consideration in Appendix III.

Figure 11 summarizes catch performance and changes in overfishing status for witch flounder.

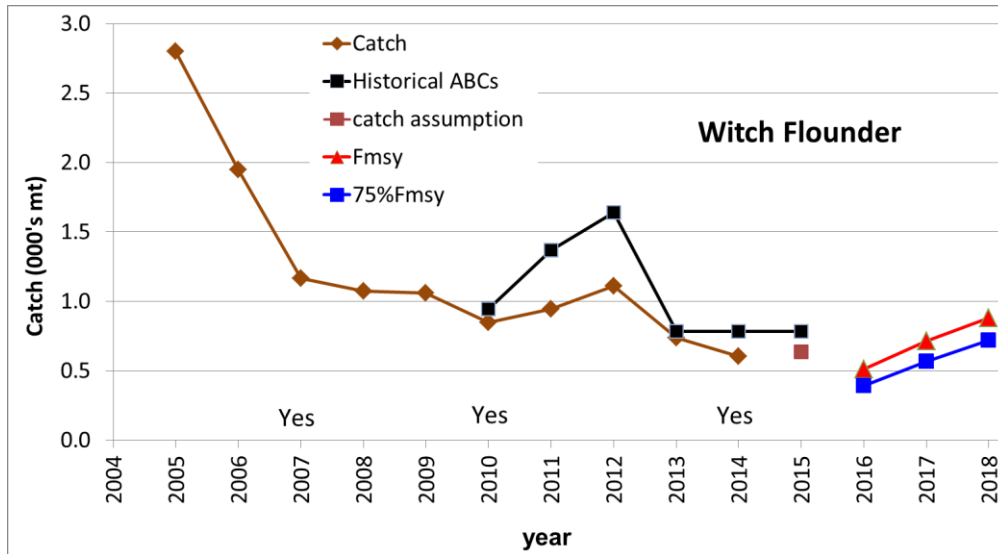
Table 17- Possible OFLs and ABCs (mt) for FY 2016- FY 2018 for witch flounder, under  $75\%F_{MSY}$  projections. Projected F and SSB provided.

year	OFL	ABC	F	SSB
2016	513	394	0.209	3,220
2017	925	567	0.209	4,278
2018	938	719	0.209	5,441

Table 18- Comparison OFLs and ABCs (mt) for FY 2016- FY 2018 for witch flounder, holding the lowest value of  $75\% F_{MSY}$  for FY 2016- FY2018 projected catches constant for three years. Projected F and SSB provided.

year	OFL	ABC	F	SSB
2016	513	394	0.209	3,220
2017	925	394	0.142	4,310
2018	974	394	0.106	5,662

Figure 11- Catch performance for witch flounder including: catches from CY 2005- CY 2014, historical ABCs since FY 2010, CY 2015 “bridge year” catch assumption, and projections for FY 2016- FY 2018 at  $F_{MSY}$  and  $75\%F_{MSY}$ . Overfishing status in the terminal year of the assessment indicated on the x-axis (Yes = overfishing, No= not overfishing, and unknown = unknown overfishing status).



### 10. Georges Bank Winter Flounder

GB winter flounder is overfished, overfishing is occurring, and the stock is in a rebuilding plan with a rebuild by date of 2017. A retrospective adjustment was applied to the terminal year of the assessment. Projections indicate that the stock cannot rebuild by 2017 with  $F=0$ . In 2014, the stock was at 43% of the rebuilding target SSB. Catch projections are provided for FY 2016- FY 2018 under  $75\%F_{MSY}$  (Table 19) and for comparison by holding the lowest value of  $75\%F_{MSY}$  for FY 2016- FY2018 projected catches constant for three years (Table 20). If the SSC decides to develop ABCs under “Option C” of the default ABC control rule, the PDT provides additional information for consideration in Appendix III.

Figure 12 summarizes catch performance and changes in overfishing status for GB winter flounder.

Table 19- Possible OFLs and ABCs (mt) for FY 2016- FY 2018 for Georges Bank winter flounder, under  $75\%F_{MSY}$  projections. Projected F and SSB provided.

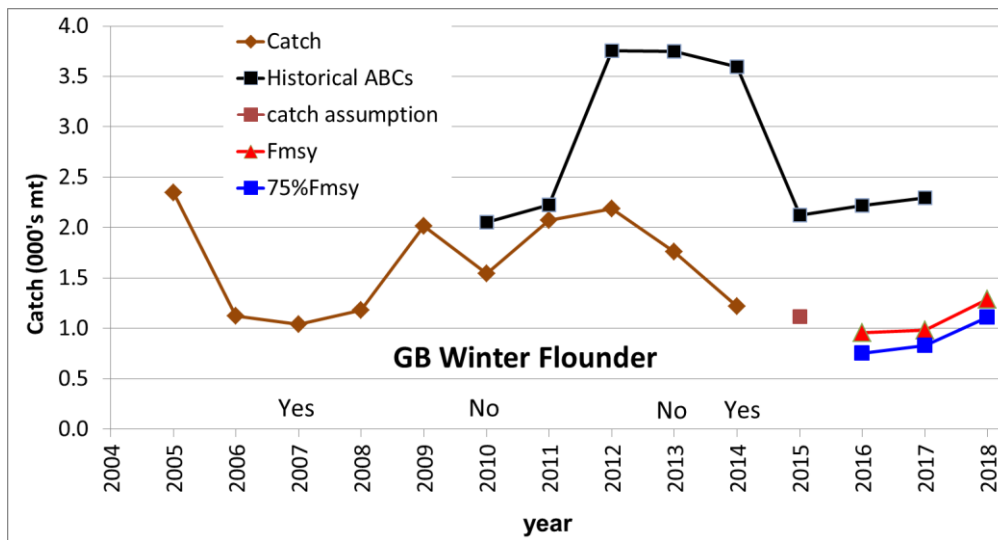
year	OFL	ABC	F	SSB
2016	957	755	0.402	2,295
2017	1,056	830	0.402	2,595
2018	1,431	1,110	0.402	3,581



**Table 20- Comparison OFLs and ABCs (mt) for FY 2016- FY 2018 for Georges Bank winter flounder, holding the lowest value of 75% FMSY for FY 2016- FY2018 projected catches constant for three years. Projected F and SSB provided.**

year	OFL	ABC	F	SSB
2016	957	755	0.402	2,293
2017	1,056	755	0.36	2,617
2018	1,459	755	0.252	3,786

**Figure 12- Catch performance for Georges Bank winter flounder including: catches from CY 2005- CY 2014, historical ABCs since FY 2010, CY 2015 “bridge year” catch assumption, and projections for FY 2016- FY 2018 at  $F_{MSY}$  and  $75\%F_{MSY}$ . Overfishing status in the terminal year of the assessment indicated on the x-axis (Yes = overfishing, No= not overfishing, and unknown = unknown overfishing status).**



### 11. Gulf of Maine Winter Flounder

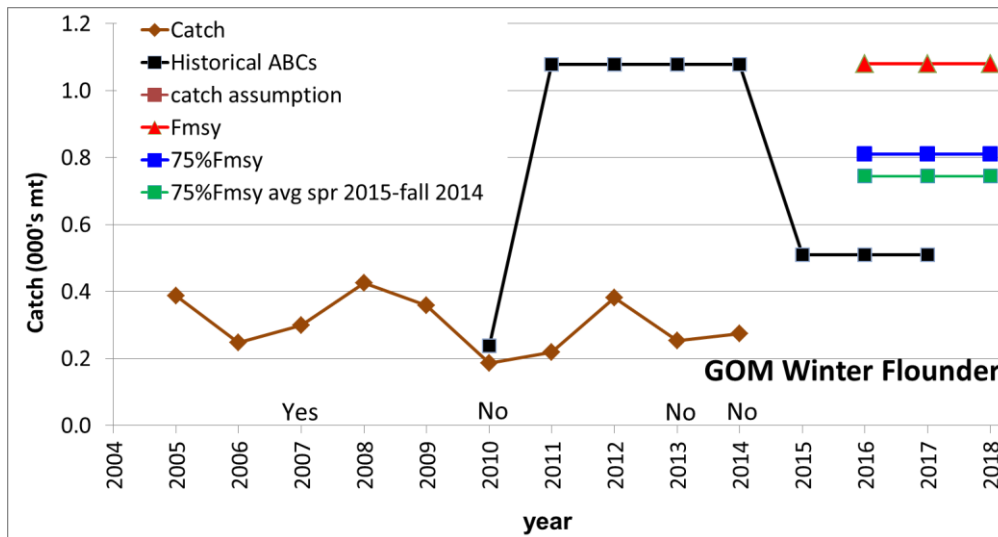
Overfishing is not occurring for GOM winter flounder, but the overfished status is unknown and the rebuilding status is also considered unknown. Catch projections are not possible for this stock; therefore, Table 21 provides possible OFLs and ABCs for FY 2016- FY 2018 using a constant approach for three years. Figure 13 summarizes catch performance and changes in overfishing status for Gulf of Maine winter flounder.

The survey area-swept biomass model relies on the fall survey data alone. A sensitivity that averages 2015 spring and 2014 fall biomass is provided for purpose of comparison. The resulting OFL is 995 and ABC is 745 for FY 2016 (Figure 13).

**Table 21- Possible OFLs and ABCs (mt) for FY 2016- FY 2018 for Gulf of Maine winter flounder, using a constant approach for three years.**

year	OFL	ABC
2016	1,080	810
2017	1,080	810
2018	1,080	810

Figure 13- Catch performance for Gulf of Maine winter flounder including: catches from CY 2005- CY 2014, historical ABCs since FY 2010, CY 2015 “bridge year” catch assumption, and projections for FY 2016- FY 2018 at  $F_{MSY}$ ,  $75\%F_{MSY}$  and a sensitivity that averages 2015 spring and 2014 fall biomass. Overfishing status in the terminal year of the assessment indicated on the x-axis (Yes = overfishing, No= not overfishing, and unknown = unknown overfishing status).



## 12. Southern New England/Mid-Atlantic Winter Flounder

SNE/MA winter flounder is overfished, but overfishing is not occurring, and the stock is in a rebuilding plan with a rebuild by date of 2023. Projections indicate that the stock can rebuild by 2023 if  $F=0$  with a 40% probability, but not a 50% probability. In 2014, the stock is at 23% of the rebuilding target SSB. Catch projections are provided for FY 2016- FY 2018 under  $75\%F_{MSY}$  (Table 22) and for comparison by holding the lowest value of  $75\% F_{MSY}$  for FY 2016- FY 2018 projected catches constant for three years (Table 23). If the SSC decides to develop ABCs under “Option C” of the default ABC control rule, the PDT provides additional information for consideration in Appendix III.

Figure 14 summarizes catch performance and changes in overfishing status for SNE/MA winter flounder. OFL/ABC projections decrease between 2016 and 2017, then increase between 2017 and 2018. This is due to poor recruitment at the end of the time series in the model. In addition, assessment results indicate that recruitment continues to trend downward.

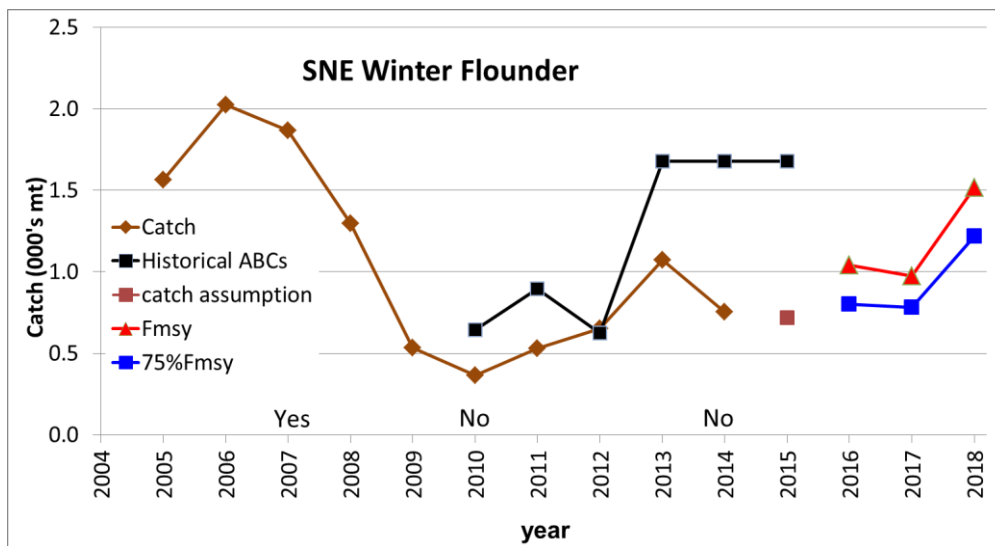
Table 22- Possible OFLs and ABCs (mt) for FY 2016- FY 2018 for Southern New England/Mid-Atlantic winter flounder, under  $75\%F_{MSY}$  projections. Projected F and SSB provided.

year	OFL	ABC	F	SSB
2016	1,041	802	0.244	4,782
2017	1,017	780	0.244	4,020
2018	1,584	1,216	0.244	4,980

**Table 23- Comparison OFLs and ABCs (mt) for FY 2016- FY 2018 for Southern New England/Mid-Atlantic, holding the lowest value of 75%  $F_{MSY}$  for FY 2016- FY2018 projected catches constant for three years. Projected F and SSB provided.**

year	OFL	ABC	F	SSB
2016	1,041	780	0.237	4,786
2017	1,021	780	0.243	4,041
2018	1,587	780	0.152	5,065

**Figure 14- Catch performance for Southern New England/Mid-Atlantic winter flounder including: catches from CY 2005- CY 2014, historical ABCs since FY 2010, CY 2015 “bridge year” catch assumption, and projections for FY 2016- FY 2018 at  $F_{MSY}$  and 75% $F_{MSY}$ . Overfishing status in the terminal year of the assessment indicated on the x-axis (Yes = overfishing, No= not overfishing, and unknown = unknown overfishing status).**



### 13. Redfish

Redfish is not overfished and overfishing is not occurring. The stock is rebuilt. A retrospective adjustment was applied to the terminal year of the assessment. Catch projections are provided for FY 2016- FY 2018 under 75% $F_{MSY}$  (Table 24) and for comparison by holding the lowest value of 75%  $F_{MSY}$  for FY 2016- FY 2018 projected catches constant for three years (Table 25).

Figure 15 summarizes catch performance and changes in overfishing status for redfish.

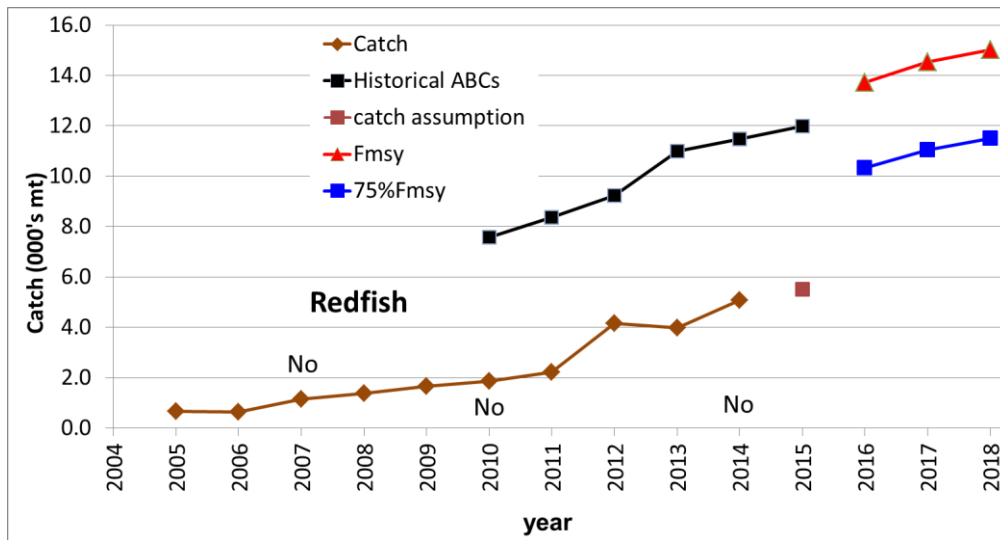
**Table 24- Possible OFLs and ABCs (mt) for FY 2016- FY 2018 for Acadian redfish, under 75% $F_{MSY}$  projections. Projected F and SSB provided.**

year	OFL	ABC	F	SSB
2016	13,723	10,338	0.028	368,571
2017	14,665	11,050	0.028	387,014
2018	15,260	11,501	0.028	401,143

**Table 25- Comparison OFLs and ABCs (mt) for FY 2016- FY 2018 for Acadian redfish, holding the lowest value of 75% FMSY for FY 2016- FY2018 projected catches constant for three years. Projected F and SSB provided.**

year	OFL	ABC	F	SSB
2016	13,723	10,338	0.028	368,574
2017	14,665	10,338	0.026	387,285
2018	15,286	10,338	0.025	402,292

**Figure 15- Catch performance for Acadian redfish including: catches from CY 2005- CY 2014, historical ABCs since FY 2010, CY 2015 “bridge year” catch assumption, and projections for FY 2016- FY 2018 at  $F_{MSY}$  and  $75\%F_{MSY}$ . Overfishing status in the terminal year of the assessment indicated on the x-axis (Yes = overfishing, No= not overfishing, and unknown = unknown overfishing status).**



#### 14. White Hake

Pollock is not overfished and overfishing is not occurring. The stock is under a rebuilding plan, did not rebuild by 2014 as planned. The stock is, however, making progress and in 2014 was at 88% of the rebuilding target SSB. Catch projections are provided for FY 2016- FY 2018 under  $75\%F_{MSY}$  (Table 26) and for comparison by holding the lowest value of  $75\% F_{MSY}$  for FY 2016- FY2018 projected catches constant for three years (Table 27). If the SSC decides to develop ABCs under “Option C” of the default ABC control rule, the PDT provides additional information for consideration in Appendix III.

Figure 16 summarizes catch performance and changes in overfishing status for white hake.

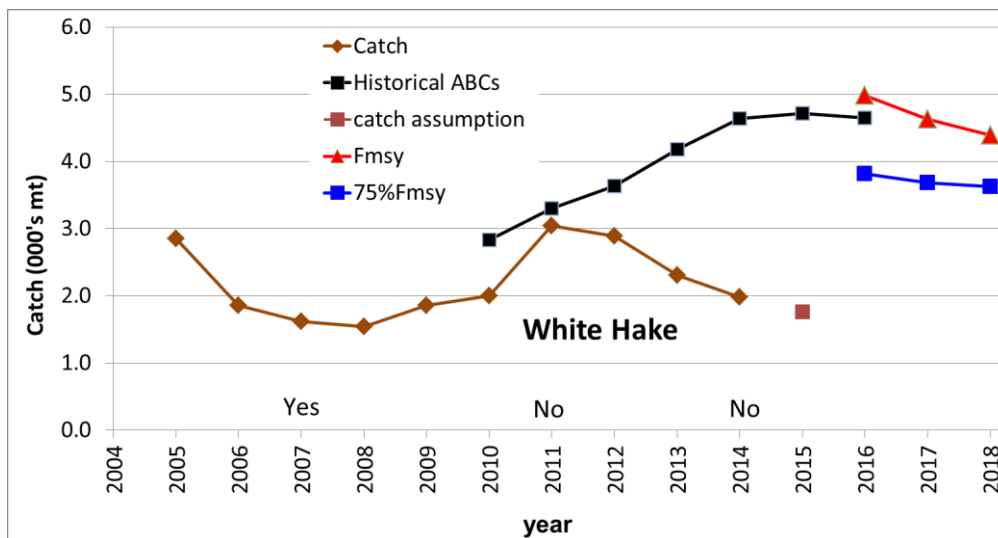
**Table 26- Possible OFLs and ABCs (mt) for FY 2016- FY 2018 for white hake, under 75%F<sub>MSY</sub> projections. Projected F and SSB provided.**

year	OFL	ABC	F	SSB
2016	4,985	3,816	0.141	29,619
2017	4,816	3,686	0.141	28,711
2018	4,733	3,622	0.141	28,355

**Table 27- Comparison OFLs and ABCs (mt) for FY 2016- FY 2018 for white hake, holding the lowest value of 75% F<sub>MSY</sub> for FY 2016- FY2018 projected catches constant for three years. Projected F and SSB provided.**

year	OFL	ABC	F	SSB
2016	4,985	3,622	0.133	29,672
2017	4,847	3,622	0.137	28,911
2018	4,775	3,622	0.14	28,608

**Figure 16- Catch performance for white hake including: catches from CY 2005- CY 2014, historical ABCs since FY 2010, CY 2015 “bridge year” catch assumption, and projections for FY 2016- FY 2018 at F<sub>MSY</sub> and 75%F<sub>MSY</sub>. Overfishing status in the terminal year of the assessment indicated on the x-axis (Yes = overfishing, No= not overfishing, and unknown = unknown overfishing status).**



### 15. Pollock

Pollock is not overfished and overfishing is not occurring. The stock is rebuilt. A retrospective adjustment was applied to the terminal year of the assessment. Catch projections are provided for FY 2016- FY 2018 under 75%F<sub>MSY</sub> (Table 28) and for comparison by holding the lowest value of 75% F<sub>MSY</sub> for FY 2016- FY 2018 projected catches constant for three years (Table 29).

Figure 17 summarizes catch performance and changes in overfishing status for pollock and includes a sensitivity projection assuming flat topped selectivity in the surveys.

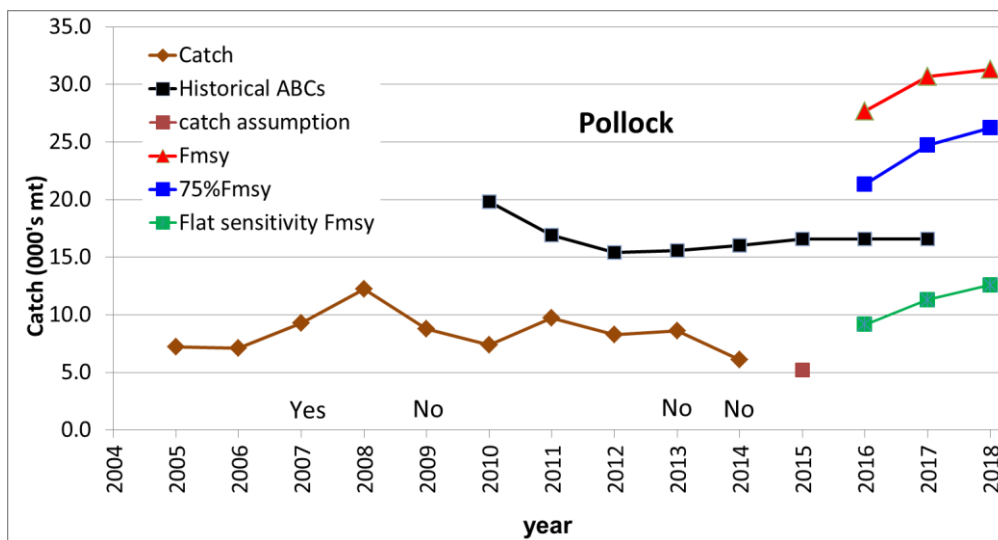
**Table 28- Possible OFLs and ABCs (mt) for FY 2016- FY 2018 for pollock, under 75%F<sub>MSY</sub> projections. Projected F and SSB provided.**

year	OFL	ABC	F	SSB
2016	27,668	21,312	0.307	178,534
2017	32,004	24,731	0.307	182,067
2018	33,966	26,252	0.307	180,603

**Table 29- Comparison OFLs and ABCs (mt) for FY 2016- FY 2018 for pollock, holding the lowest value of 75% F<sub>MSY</sub> for FY 2016- FY2018 projected catches constant for three years. Projected F and SSB provided.**

year	OFL	ABC	F	SSB
2016	27,668	21,312	0.307	178,534
2017	32,004	21,312	0.261	181,807
2018	34,745	21,312	0.0238	184,116

**Figure 17- Catch performance for pollock including: catches from CY 2005- CY 2014, historical ABCs since FY 2010, CY 2015 “bridge year” catch assumption, and projections for FY 2016- FY 2018 at F<sub>MSY</sub>, 75%F<sub>MSY</sub>, and a sensitivity of assuming flat topped selectivity in the surveys. Overfishing status in the terminal year of the assessment indicated on the x-axis (Yes = overfishing, No= not overfishing, and unknown = unknown overfishing status).**



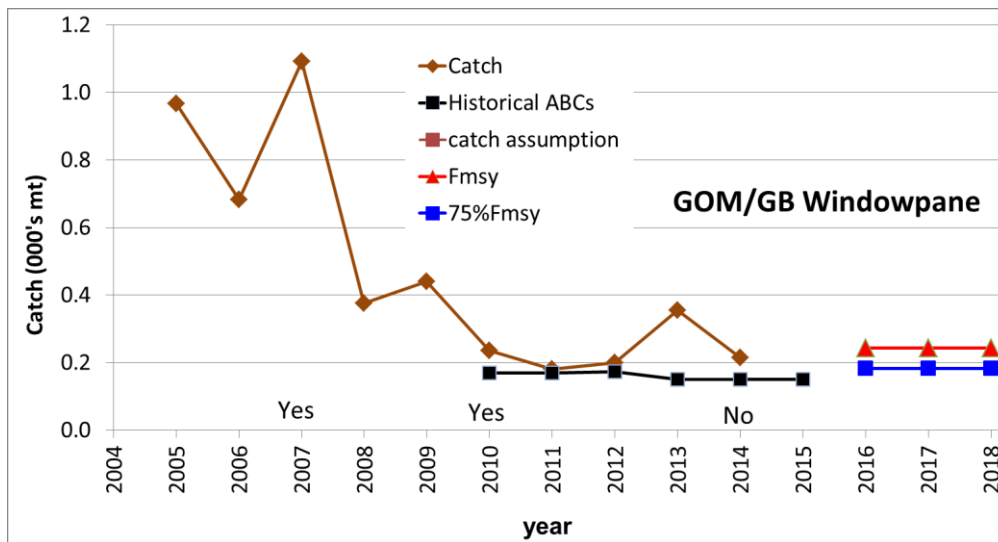
### 16. Northern Windowpane Flounder

Northern windowpane flounder is overfished but overfishing is not occurring, and the stock is in a rebuilding plan to rebuild by 2017. Catch projections are not possible for this stock; therefore, Table 30 provides possible OFLs and ABCs for FY 2016- FY 2018 using a constant approach for three years. Figure 18 summarizes catch performance and changes in overfishing status for northern windowpane flounder.

**Table 30- Possible OFLs and ABCs (mt) for FY 2016- FY 2018 for northern windowpane flounder, using a constant approach for three years.**

year	OFL	ABC
2016	243	182
2017	243	182
2018	243	182

**Figure 18- Catch performance for northern windowpane flounder including: catches from CY 2005- CY 2014, historical ABCs since FY 2010, CY 2015 “bridge year” catch assumption, and projections for FY 2016- FY 2018 at  $F_{MSY}$  and  $75\%F_{MSY}$ . Overfishing status in the terminal year of the assessment indicated on the x-axis (Yes = overfishing, No= not overfishing, and unknown = unknown overfishing status).**



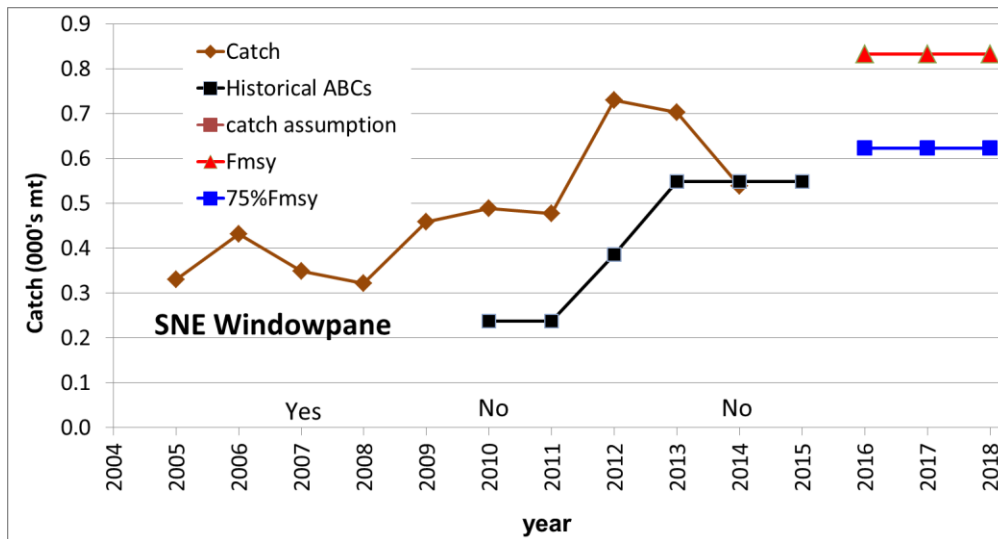
### 17. Southern Windowpane Flounder

Southern windowpane flounder is not overfished and overfishing is not occurring, and the stock is rebuilt. Catch projections are not possible for this stock; therefore, Table 31 provides possible OFLs and ABCs for FY 2016- FY 2018 using a constant approach for three years. Figure 19 summarizes catch performance and changes in overfishing status for southern windowpane flounder.

**Table 31- Possible OFLs and ABCs (mt) for FY 2016- FY 2018 for southern windowpane flounder, using a constant approach for three years.**

year	OFL	ABC
2016	833	623
2017	833	623
2018	833	623

**Figure 19- Catch performance for southern windowpane flounder including: catches from CY 2005- CY 2014, historical ABCs since FY 2010, CY 2015 “bridge year” catch assumption, and projections for FY 2016- FY 2018 at  $F_{MSY}$  and  $75\%F_{MSY}$ . Overfishing status in the terminal year of the assessment indicated on the x-axis (Yes = overfishing, No= not overfishing, and unknown = unknown overfishing status).**



### 18. Ocean Pout

Ocean pout is overfished but overfishing is not occurring, and the stock is in a rebuilding plan but did not rebuild by 2014 as planned. Catch projections are not possible for this stock; therefore, Table 32 provides possible OFLs and ABCs for FY 2016- FY 2018 using a constant approach for three years. If the SSC decides to develop ABCs under “Option C” of the default ABC control rule, the PDT provides additional information for consideration in Appendix III. The Council manages ocean pout as a non-allocated discard only stock (in such a manner since 2010); therefore, catch that does occur is considered bycatch. However, further reductions in the catch may not result in stock rebuilding since this stock does not seem to be responding to low exploitation rates.

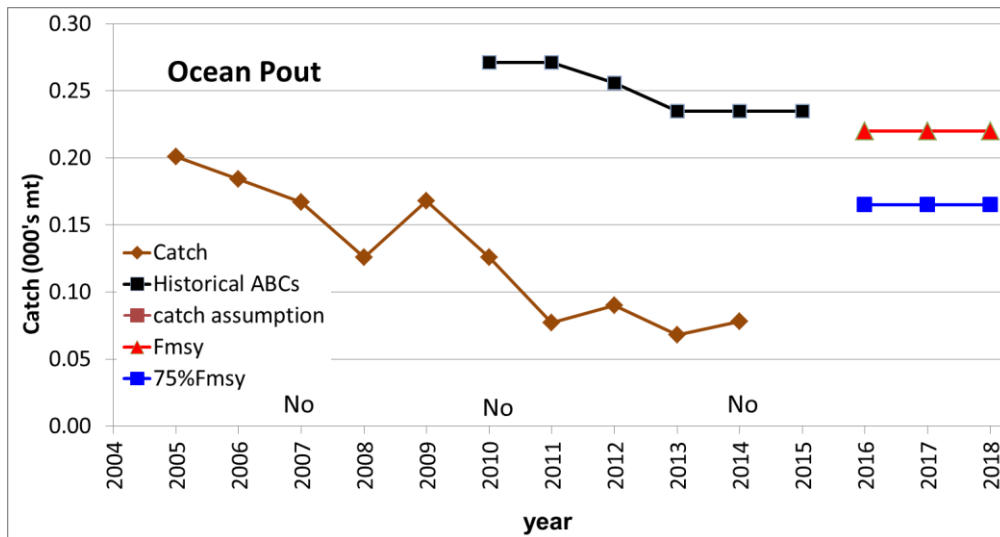
Figure 20 summarizes catch performance and changes in overfishing status for ocean pout.

**Table 32- Possible OFLs and ABCs (mt) for FY 2016- FY 2018 for ocean pout, using a constant approach for three years.**

year	OFL	ABC
2016	220	165
2017	220	165
2018	220	165



Figure 20- Catch performance for ocean pout including: catches from CY 2005- CY 2014, historical ABCs since FY 2010, CY 2015 “bridge year” catch assumption, and projections for FY 2016- FY 2018 at  $F_{MSY}$  and  $75\%F_{MSY}$ . Overfishing status in the terminal year of the assessment indicated on the x-axis (Yes = overfishing, No= not overfishing, and unknown = unknown overfishing status).



### 19. Atlantic Halibut

Atlantic halibut is overfished, but overfishing is unknown. The peer review rejected the halibut assessment, and recommended status quo quotas as a basis for setting catch advice. The FY 2015 OFL is 198 mt.

At the peer review, it was noted that previous assessments did not include Canadian catches from management area 5Y. Likewise, catches from 5Y were not used in the previous assessment to determine catch advice. The 2015 assessment does include that information in catch accounting. The peer review requested that the PDT examine how the OFL may be increased to account for this change in catch accounting.

The PDT examined CY 2001- CY 2014 Atlantic halibut catches (mt) with and without Canadian 5Y catches and the percent change as the 5Y catches divided by the total catches for each year (Figure 22). The resulting mean percent change is +6.1%. The PDT developed possible OFLs and ABCs (mt) for FY 2016- FY 2018 for Atlantic halibut, using a constant approach for three years and accounting for 5Y Canadian catches (i.e., 6% increase in FY 2015 OFL). 75% of this OFL value (210 mt) is 158 mt (Table 33).

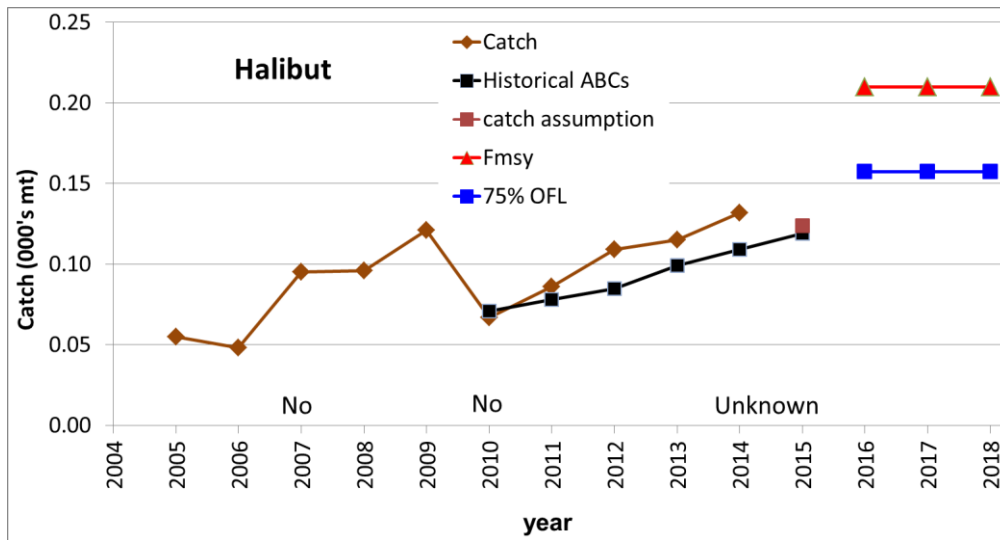
Figure 21 summarizes catch performance and changes in overfishing status for halibut.

In addition, Appendix IV provides additional information on Atlantic halibut stock structure and trends from the ME/NH trawl survey.

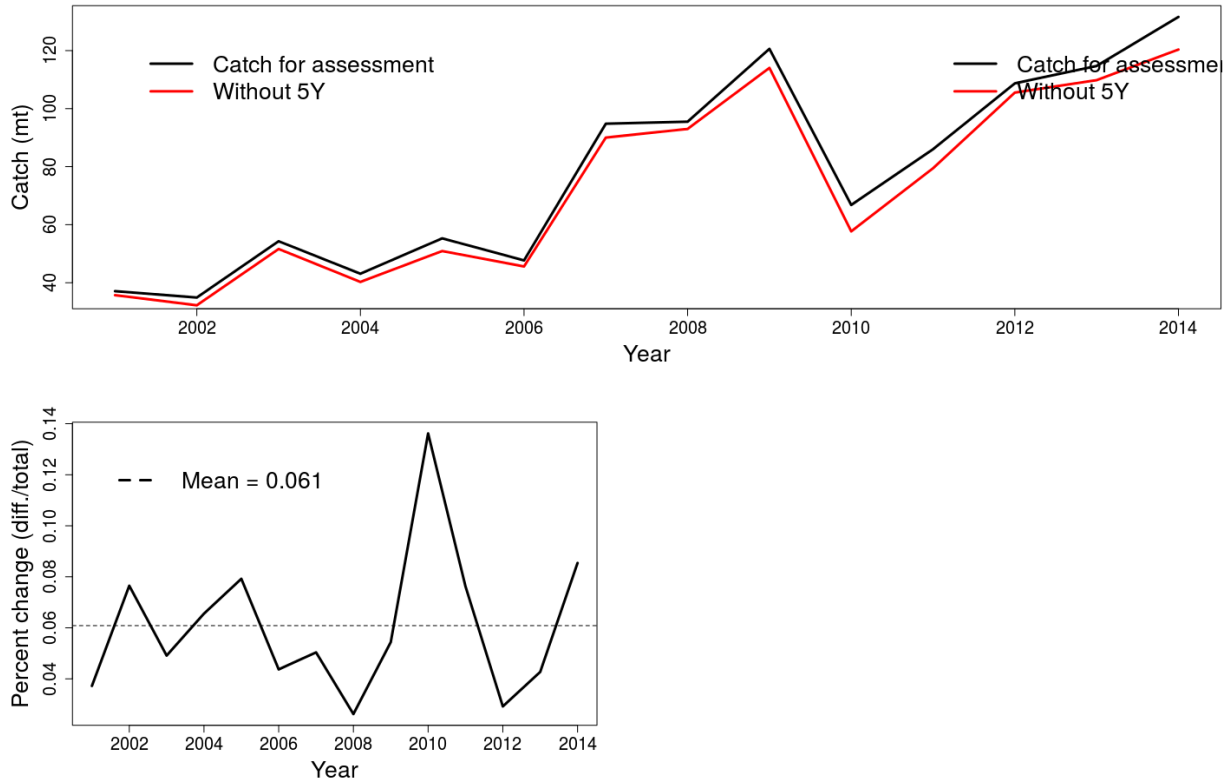
**Table 33- Possible OFLs and ABCs (mt) for FY 2016- FY 2018 for Atlantic halibut, using a constant approach for three years and accounting for Canadian catches (i.e., 6% increase in FY 2015 OFL).**

year	OFL	ABC
2016	210	158
2017	210	158
2018	210	158

**Figure 21- Catch performance for Atlantic halibut including: catches from CY 2005- CY 2014, historical ABCs since FY 2010, CY 2015 “bridge year” catch assumption, and FY 2016- FY 2008 OFL and 75%OFL. Overfishing status in the terminal year of the assessment indicated on the x-axis (Yes = overfishing, No= not overfishing, and unknown = unknown overfishing status).**



**Figure 22- CY 2001- CY 2014 Atlantic halibut catches (mt) with and without Canadian 5Y catches (top) and percent change as the 5Y catches divided by the total catches with the mean of the series indicated (bottom).**



## 20. Wolffish

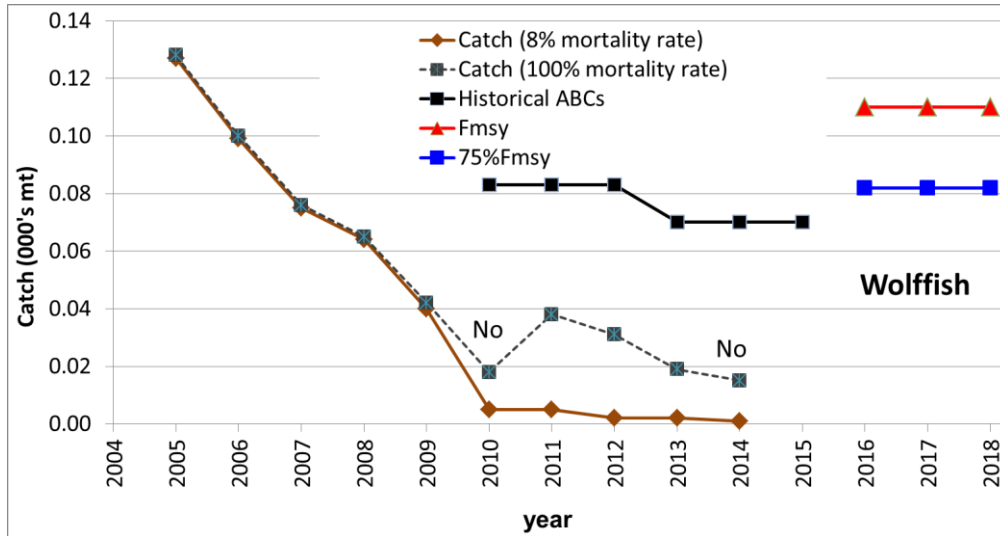
Wolffish is overfished but overfishing is not occurring. A rebuilding plan for this stock is undefined. Catch projections were not accepted for this stock at the benchmark assessment; therefore, Table 34 provides possible OFLs and ABCs for FY 2016- FY 2018 using a constant approach for three years.  $OFL = \text{exploitable terminal year biomass} \times F_{MSY}$  and  $ABC = \text{exploitable biomass} \times 75\%F_{MSY}$ . Figure 23 summarizes catch performance and changes in overfishing status for wolffish.

The 2015 assessment includes a change in the discard mortality assumption to 8% mortality (down from 100% mortality) based on recent scientific information.

**Table 34- Possible OFLs and ABCs (mt) for FY 2016- FY 2018 for wolffish, using a constant approach for three years.**

year	OFL	ABC
2016	110	82
2017	110	82
2018	110	82





Figure 23- Catch performance for wolffish including: catches from CY 2005- CY 2014 with 100% mortality and 8% mortality (since 2010 only- when the stock became a no possession stock) and, historical ABCs since FY 2010, CY 2015 “bridge year” catch assumption, and projections for FY 2016- FY 2018 at  $F_{MSY}$  and  $75\%F_{MSY}$ . Overfishing status in the terminal year of the assessment indicated on the x-axis (Yes = overfishing, No= not overfishing, and unknown = unknown overfishing status).



**Appendix 1: Overview of most recent SSC recommendations for ABCs for groundfish stocks**

Stock	Most recent control rule
GB cod	75%Fmsy constant
GOM cod	pseudo 75%Fmsy constant (3 projections)
GB Haddock	75%Fmsy
GOM Haddock	75%Fmsy
GB Yellowtail Flounder	75%Fmsy constant no projection
SNE Yellowtail Flounder	long term 75%Fmsy constant
CC/GOM Yellowtail Flounder	75%Fmsy constant
Plaice	75%Fmsy
Witch Flounder	Rebuild constant
GB Winter Flounder	Rebuild
GOM Winter Flounder	75%Fmsy constant no projection
SNE/MA Winter Flounder	long term 75%Fmsy constant, different recruitment
Redfish	75%Fmsy
White Hake	75%Fmsy
Pollock	75%Fmsy constant
Northern Windowpane Flounder	75%Fmsy constant no projection
Southern Windowpane Flounder	75%Fmsy constant no projection
Ocean Pout	75%Fmsy constant no projection
Halibut	Rebuild
Wolffish	75%Fmsy constant no projection

	7 75%Fmsy or Rebuild
	5 75%Fmsy or Rebuild and held constant
	6 75%Fmsy and held constant, no accepted projection
	2 Long term 75% Fmsy

**Appendix II: Overview of rebuilding plans for groundfish stocks, following the result of the 2015 assessments**

Rebuilding stock	Rebuild		
	End date	probability	
GB cod	2026	50%	4 overfished but no projection
GOM cod	2024	50%	5 rebuilt
GB Haddock	rebuilt		7 difficult to rebuild by end date
GOM Haddock	rebuilt		2 on schedule (not bound by Frebuild)
GB Yellowtail Flounder	2032	50%	2 unknown status
SNE Yellowtail Flounder	NA		
CC/GOM Yellowtail Flounder	2023	50%	
Plaice	2024	50%	
Witch Flounder	2017	75%	
GB Winter Flounder	2017	75%	
GOM Winter Flounder	NA		
SNE/MA Winter Flounder	2023	50%	
Redfish	rebuilt		
White Hake	2014	50%	
Pollock	rebuilt		
Northern Windowpane Flounder	2017	50%	
Southern Windowpane Flounder	rebuilt		
Ocean Pout	2014	50%	
Halibut	2056	50%	
Wolfish	undefined		

### **Appendix III: Option C under the SSC’s default ABC control rule**

#### **Option C**

For stocks that cannot rebuild to BMSY in the specified rebuilding period, even with no fishing, the default ABC control rule states that the ABC should be based on incidental bycatch, including a reduction in bycatch rate (i.e., the proportion of the stock caught as bycatch).

In 2014 at the request of the SSC, the PDT discussed, completed analyses, and reviewed work regarding incidental, non-target catch of GOM cod under the current prevailing operating conditions of the fishery. The PDT concluded that the SSC’s question regarding incidental non-target catch of GOM cod is difficult to answer, because it is conditional on multiple factors, including:

- The groundfish ACLs in a given fishing year;
- The availability of cod and exploitable stock biomass;
- The variation in definitions of a targeted cod trip (e.g., on a tow-by-tow basis rather than trip-by-trip; across gear types and vessel sizes; by the portfolio of groundfish Annual Catch Entitlement available to sectors over the course of a fishing year);
- The willingness/ability of the fishery to change fishing practices to avoid cod;
- The multispecies nature of the fishery; and
- The ability to define which components of the fishery are actively targeting cod.

(From the PDT to the SSC memo re Gulf of Maine cod incidental catch, dated October 16, 2014).

In the event that the SSC decides to develop ABCs under “Option C” of the default ABC control rule, Table 35 summarizes total discards (in all fisheries) and non-groundfish landings for the following stocks: GOM cod; SNE/MA yellowtail flounder; witch flounder; GB winter flounder; SNE/MA winter flounder; white hake; and ocean pout. However, these values do not necessarily represent incidental, non-target catch of each stock under the current prevailing operating conditions of the fishery. Total discards are taken from Table 3 in the 2012 year-end report, and Table 5 in the 2013 and 2014 year-end reports. Non-groundfish landings, or “Other Sub-Component” landings, are taken from Table 9 in the 2012 and 2013 year-end report, from Table 8 in the 2014 year-end report. Minimum sizes also changed for some stocks in FY 2013.

Table 35- Summary of total discards (in all fisheries) and non-groundfish landings for the following stocks: GOM cod; SNE/MA yellowtail flounder; witch flounder; GB winter flounder; SNE/MA winter flounder; white hake; and ocean pout, source: FY 2012 – FY 2014 year end catch reports.

	2012 (mt)			2013 (mt)			2014 (mt)			Average of totals
	Total Discards	Other landings	2012 total	Total Discards	Other landings	2013 total	Total Discards	Other landings	2014 Total	
<b>GOM Cod</b>	1,141.9	0.8	1,142.7	124.1	0.2	124.3	250.7	0.6	251.3	506
<b>SNE/MA Yellowtail Flounder</b>	157.9	7.5	165.4	89.5	5.3	94.8	91.4	8.3	99.7	120
<b>Witch Flounder</b>	227.7	2.5	230.2	115.8	2.2	118	113.4	0.3	113.7	154
<b>GB Winter Flounder</b>	125.1	5.4	130.5	45.6	0.7	46.3	46.5	0.3	46.8	75
<b>SNE/MA Winter Flounder</b>	246.8 <sup>1</sup>	13.4	260.2	172.2	29.2	201.4	71.6	19.5	91.1	184
<b>White Hake</b>	48.8	2.5	51.3	32.4	1.3	33.7	328.9	4.4	333.3	139
<b>Ocean Pout</b>	53.1	0.1	53.2	59.3	0	59.3	117.9	0	117.9	77

<sup>1</sup> Note that federal regulations prohibited the possession of SNE/MA winter flounder in FY 2012, and landings come from state waters and other sub-component catches.

**Sources:**

FY 2014 Year End Report:

[http://www.greateratlantic.fisheries.noaa.gov/ro/fso/reports/Sector\\_Monitoring/FY14\\_Mults\\_Catch\\_Estimates.pdf](http://www.greateratlantic.fisheries.noaa.gov/ro/fso/reports/Sector_Monitoring/FY14_Mults_Catch_Estimates.pdf)

FY 2013 Year End Report:

[http://www.greateratlantic.fisheries.noaa.gov/ro/fso/reports/Sector\\_Monitoring/FY13\\_Mults\\_Catch\\_Estimates.pdf](http://www.greateratlantic.fisheries.noaa.gov/ro/fso/reports/Sector_Monitoring/FY13_Mults_Catch_Estimates.pdf)

FY 2012 Year End Report:

[http://www.greateratlantic.fisheries.noaa.gov/ro/fso/reports/Sector\\_Monitoring/FY12\\_Mults\\_Catch\\_Estimates.pdf](http://www.greateratlantic.fisheries.noaa.gov/ro/fso/reports/Sector_Monitoring/FY12_Mults_Catch_Estimates.pdf)

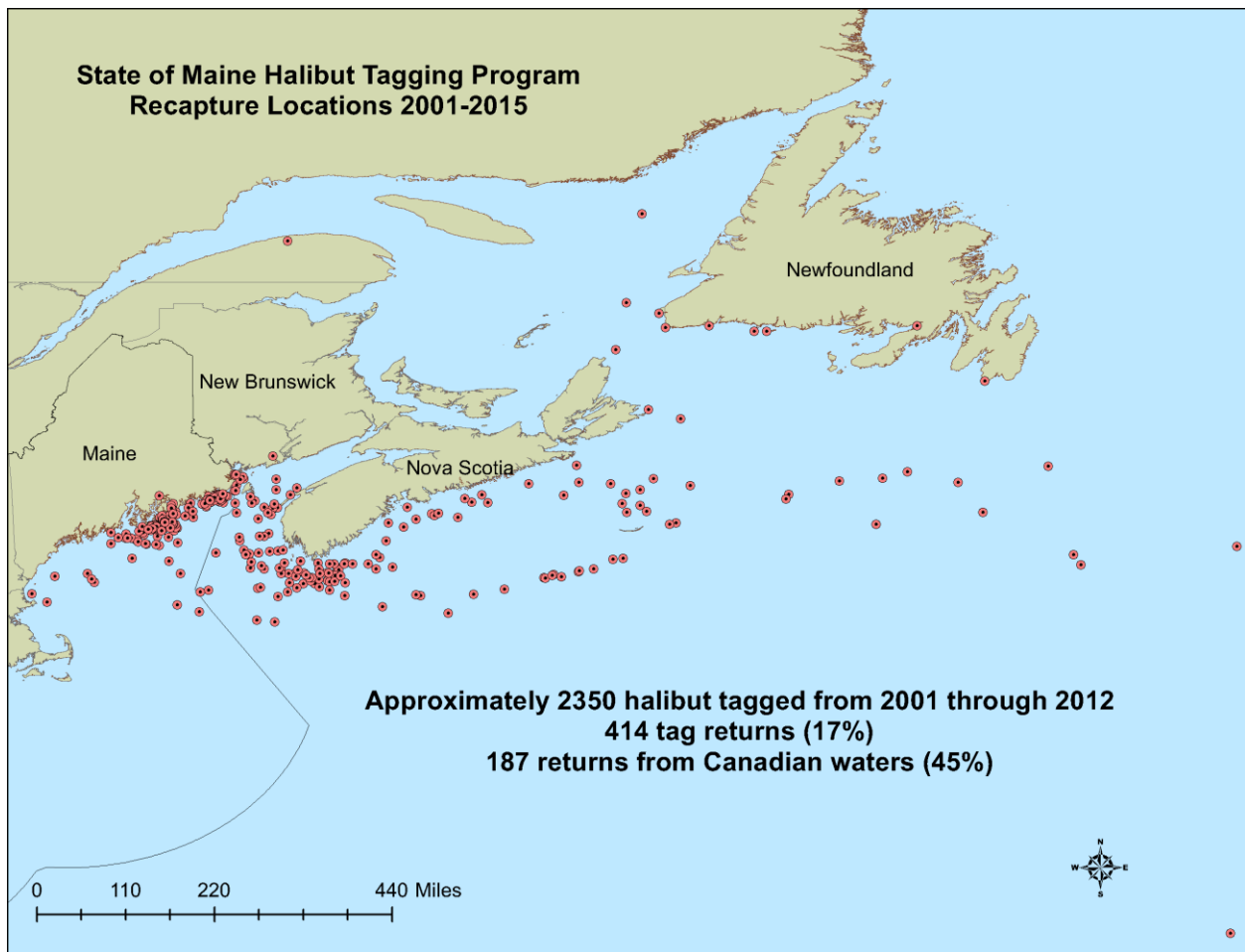


## Appendix IV: Additional information on Atlantic halibut

### Stock Structure

The State of Maine tagging program for Atlantic halibut started in 2001 and ran through 2012. The commercial long-line fishermen were required to tag sublegal halibut. The program also included directed tagging trips and tagging on some of the surveys by the State of Maine. The fishermen tagging program ended in 2012, but some fishermen continued to tag sublegal halibut with their remaining tags. The survey continued to tag some fish until 2013. Of the 2,350 halibut tagged, 414 tags were returned (17% return rate). Of the 414 returns, 45 % of those (187 tag returns) came from Canadian waters (Figure 24).

Figure 24- Map of halibut tag recaptures from the State of Maine tagging program, 2001-2015, courtesy Sally Sherman, Maine DMR.



ME/NH trawl survey indices

The PDT provides additional information from an inshore trawl survey. Figure 25 provides 2000-2014 ME/NH trawl survey fall survey indices for Atlantic halibut as number per tow and weight (kg) per tow. Figure 26 provides 2001-2015 ME/NH trawl survey spring survey indices for Atlantic halibut as number per tow and weight (kg) per tow.

**Figure 25- 2000-2014 ME/NH trawl survey fall survey indices for Atlantic halibut as number per tow and weight (kg) per tow, fixed stations not included, courtesy Sally Sherman, Maine DMR.**

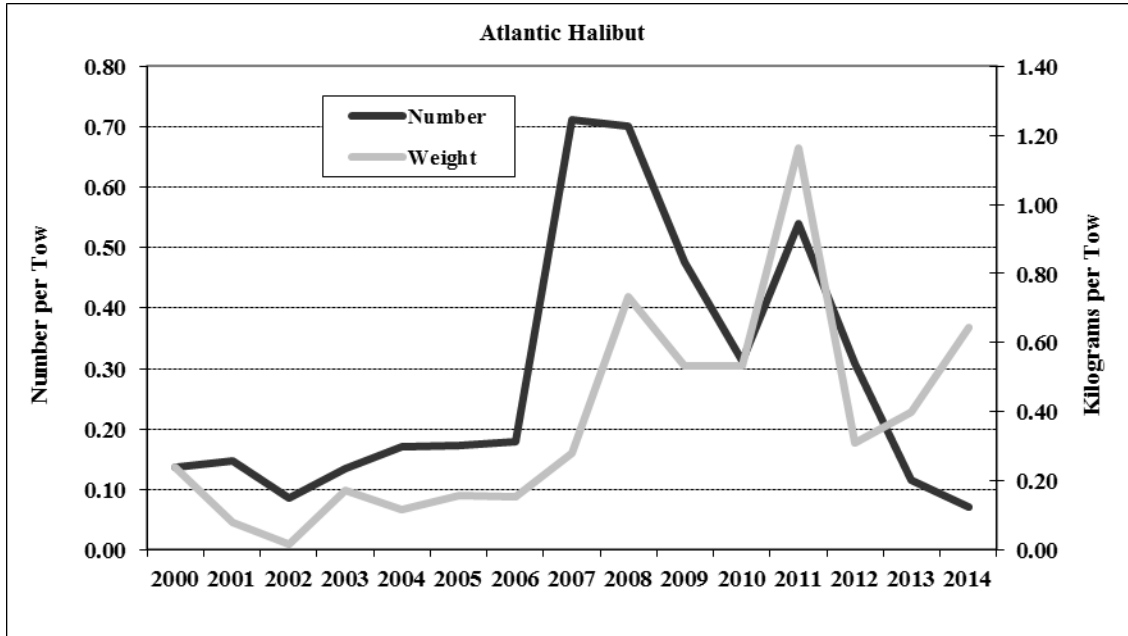
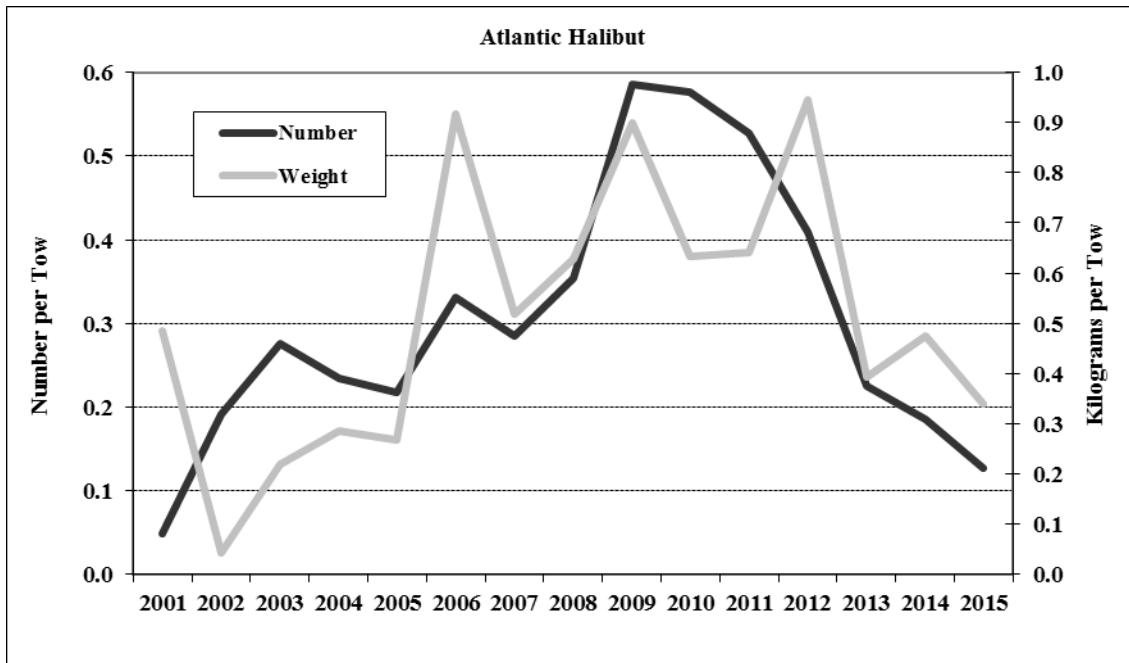


Figure 26- 2001-2015 ME/NH trawl survey spring survey indices for Atlantic halibut as number per tow and weight (kg) per tow, fixed stations not included, courtesy Sally Sherman, Maine DMR.



## Appendix V: Estimates of CY 2015 catches

### Projected CY 2015 Northeast Multispecies Total Catch (mt)

Stock	Total Catch	Groundfish Fishery	Sector	Common Pool	Recreational	Midwater Trawl Herring Fishery	Scallop Fishery	Small Mesh Fisheries	State Water	Other Subcomponent <sup>2,3</sup>
	A to H	A+B+C	A	B	C	D	E	F	G	H
GB Cod	1,783.8	1,356.3	1,333.7	22.6					4.0	423.4
GOM cod - 15% rec mortality <sup>1</sup>	279.1	266.9	226.3	3.6	37.0				9.5	2.7
GOM cod - 30% rec mortality <sup>1</sup>	316.1	303.9	226.3	3.6	73.9				9.5	2.7
GB Haddock	20,685.6	6,889.6	6,888.5	1.0		195.5			10.5	13,590.0
GOM Haddock	884.7	845.5	477.7	2.3	365.5	0.0			10.3	29.0
SNE/MA Yellowtail Flounder	478.2	420.4	324.6	95.7			27.7		0.6	29.5
CC/GOM Yellowtail Flounder	375.7	291.4	280.5	10.9					45.9	38.5
Plaice	1,395.2	1,354.3	1,337.4	16.9					17.9	23.0
Witch Flounder	637.4	530.2	524.6	5.6					38.3	69.0
GB Winter Flounder	1,150.1	1,073.5	1,073.5	0.0					0.0	76.6
SNE/MA Winter Flounder	717.2	579.5	518.1	61.4					56.7	81.0
Redfish	5,203.7	5,149.4	5,142.9	6.5					19.2	35.1
White Hake	1,696.9	1,676.7	1,667.2	9.5					1.6	18.7
Pollock	5,207.8	3,694.4	3,645.9	48.5					750.0	763.5
Halibut	124.5	63.0	61.5	1.6					26.2	35.2

<sup>1</sup>1st row is projected GOM cod catch assuming 15% recreational release mortality; 2nd row assumes 30%.

<sup>2</sup>Recreational pollock based on CY14 MRIP data using CY13 fish count to weight conversion. Canadian catches of white hake not available.

<sup>3</sup>Estimated discards from lobster pots are not included in groundfish assessments and so are not included here.

Values in metric tons of live weight

Sector and common pool include estimate of missing dealer reports

Any value for a non-allocated species may include landings of that stock or misreporting of species and/or stock area. These are northern windowpane, southern windowpane, ocean pout, halibut, and wolffish.

Source: NMFS Greater Atlantic Regional Fisheries Office

August 20, 2015, run date of June 16, 2015

These data are the best available to NOAA's National Marine Fisheries Service (NMFS). Data sources for this report include: (1) Vessels via VMS; (2) Vessels via vessel logbook reports; (3) Dealers via Dealer Electronic reporting; (4) Observers and at-sea monitors via the Northeast Fisheries Observer Program. Differences with previous reports are due to corrections made to the database.

**Projected CY 2015 Northeast Multispecies Landings (mt)**

Stock	Total Landings	Groundfish Fishery	Sector	Common Pool	Recreational	Midwater Trawl Herring Fishery	Scallop Fishery	Small Mesh Fisheries	State Water	Other Subcomponent <sup>2</sup>
	A to H	A+B+C	A	B	C	D	E	F	G	H
GB Cod	1,732.5	1,321.5	1,299.2	22.3					3.6	407.5
GOM cod - 15% rec mortality <sup>1</sup>	221.1	211.5	208.0	3.5	0.0				9.1	0.6
GOM cod - 30% rec mortality <sup>1</sup>	221.1	211.5	208.0	3.5	0.0				9.1	0.6
GB Haddock	19,034.9	6,006.6	6,005.7	0.8		195.5			0.0	12,832.9
GOM Haddock	655.2	647.9	399.3	1.7	246.9	0.0			5.5	1.8
SNE/MA Yellowtail Flounder	420.8	413.3	319.0	94.2			0.0		0.2	7.2
CC/GOM Yellowtail Flounder	311.3	265.0	254.3	10.7					45.1	1.2
Plaice	1,242.3	1,226.1	1,209.9	16.2					14.3	1.9
Witch Flounder	498.3	461.5	456.0	5.5					36.4	0.3
GB Winter Flounder	1,077.1	1,069.9	1,069.9	0.0					0.0	7.2
SNE/MA Winter Flounder	640.5	572.6	513.0	59.6					52.6	15.2
Redfish	4,793.6	4,760.0	4,756.7	3.3					1.2	32.4
White Hake	1,641.8	1,636.8	1,629.3	7.5					0.3	4.6
Pollock	3,671.0	3,465.7	3,419.7	46.1					73.3	132.0
Halibut	80.5	21.0	19.4	1.6					25.0	34.6

<sup>1</sup>1st row is projected GOM cod catch assuming 15% recreational release mortality; 2nd row assumes 30%.

<sup>2</sup>Recreational pollock based on CY14 MRIP data using CY13 fish count to weight conversion. Canadian catches of white hake not available.

Values in metric tons of live weight

Sector and common pool include estimate of missing dealer reports

Source: NMFS Greater Atlantic Regional Fisheries Office

August 20, 2015, run date of June 16, 2015

These data are the best available to NOAA's National Marine Fisheries Service (NMFS). Data sources for this report include: (1) Vessels via VMS; (2) Vessels via vessel logbook reports; (3) Dealers via Dealer Electronic reporting; (4) Observers and at-sea monitors via the Northeast Fisheries Observer Program. Differences with previous reports are due to corrections made to the database.

Any value for a non-allocated species may include landings of that stock or misreporting of species and/or stock area. These are northern windowpane, southern windowpane, ocean pout, halibut, and wolffish.

**Projected CY 2015 Northeast Multispecies Estimated Discards (mt)**

Stock	Total Discards	Groundfish Fishery	Sector	Common Pool	Recreational	Midwater Trawl Herring Fishery	Scallop Fishery	Small Mesh Fisheries	State Water	Other Subcomponent <sup>2,3</sup>
	A to H	A+B+C	A	B	C	D	E	F	G	H
GB Cod	51.2	34.8	34.5	0.3					0.4	16.0
GOM cod - 15% rec mortality <sup>1</sup>	58.0	55.4	18.4	0.1	37.0				0.5	2.1
GOM cod - 30% rec mortality <sup>1</sup>	95.0	92.4	18.4	0.1	73.9				0.5	2.1
GB Haddock	1,650.6	883.0	882.8	0.2		0.0			10.5	757.2
GOM Haddock	229.5	197.6	78.4	0.5	118.6	0.0			4.8	27.2
SNE/MA Yellowtail Flounder	57.5	7.1	5.6	1.5			27.7		0.4	22.3
CC/GOM Yellowtail Flounder	64.5	26.4	26.2	0.2					0.8	37.3
Plaice	153.0	128.2	127.5	0.7					3.7	21.1
Witch Flounder	139.2	68.7	68.6	0.2					1.8	68.6
GB Winter Flounder	73.0	3.6	3.6	0.0					0.0	69.5
SNE/MA Winter Flounder	76.8	6.8	5.1	1.8					4.1	65.8
Redfish	410.1	389.4	386.2	3.2					18.0	2.6
White Hake	55.2	39.8	37.9	1.9					1.3	14.1
Pollock	1,536.8	228.7	226.2	2.4					676.6	631.5
Halibut	43.9	42.1	42.1	0.0					1.2	0.6

<sup>1</sup>1st row is projected GOM cod catch assuming 15% recreational release mortality; 2nd row assumes 30%.

<sup>2</sup>Recreational pollock based on CY14 MRIP data using CY13 fish count to weight conversion. Canadian catches of white hake not available.

<sup>3</sup>Estimated discards from lobster pots are not included in groundfish assessments and so are not included here.

Values in metric tons of live weight

Sector and common pool include estimate of missing dealer reports

Source: NMFS Greater Atlantic Regional Fisheries Office

August 20, 2015, run date of June 16, 2015

These data are the best available to NOAA's National Marine Fisheries Service (NMFS). Data sources for this report include: (1) Vessels via VMS; (2) Vessels via vessel logbook reports; (3) Dealers via Dealer Electronic reporting; (4) Observers and at-sea monitors via the Northeast Fisheries Observer Program. Differences with previous reports are due to corrections made to the database.