FY 2016 – FY 2018 Witch Flounder OFLs/ABCs

Northeast Multispecies (Groundfish) Fishery Management Plan

Jamie M. Cournane, PhD
Groundfish PDT Chair

SSC Meeting
January 20, 2016

New England Fishery Management Council

December 2015 Council Motion

That the Council recommends a preliminary ABC for witch flounder of 394 mt (with associated ACL and sub-ACLs) described in Table 10, Option 2 (revised ACLs)/Section 4.1 (Annual Catch Limits). Request that the SSC develop an additional alternative for the 2016 ABC for witch flounder without being constrained by 75% $F_{MSY.}$ The Council will accept the temporary risk level associated with an ABC up to the OFL for FY 2016. To expedite Framework 55 include a range for the witch flounder ABC of 394 to 513 mt in Section 4.1.1.4.

The motion carried (12/4/1).

SSC's Terms of Reference

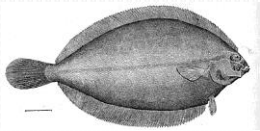
1) Characterize the range of risks and benefits of setting a 2016 ABC for witch flounder that is between the ABC calculated at 75% of F_{MSY} and the OFL. This discussion should, to the extent possible, identify the biological, economic, social impacts of the ABC.
2) Based on the analyses in TOR 1, consider identifying an ABC for witch flounder that is not bound by 75% of F_{MSY}. Provide a clear rationale that identifies the risks and benefits of such an ABC.
3) If an ABC that exceeds 75% of F_{MSY} is identified as considered by TOR 2, recommend any necessary adjustments to the OFLs and ABCs for FY 2017 and 2018.

PDT Work to Date

A sub-group of the PDT met with industry via webinar on January 6 to discuss if industry had information to bring forward for review by the PDT.

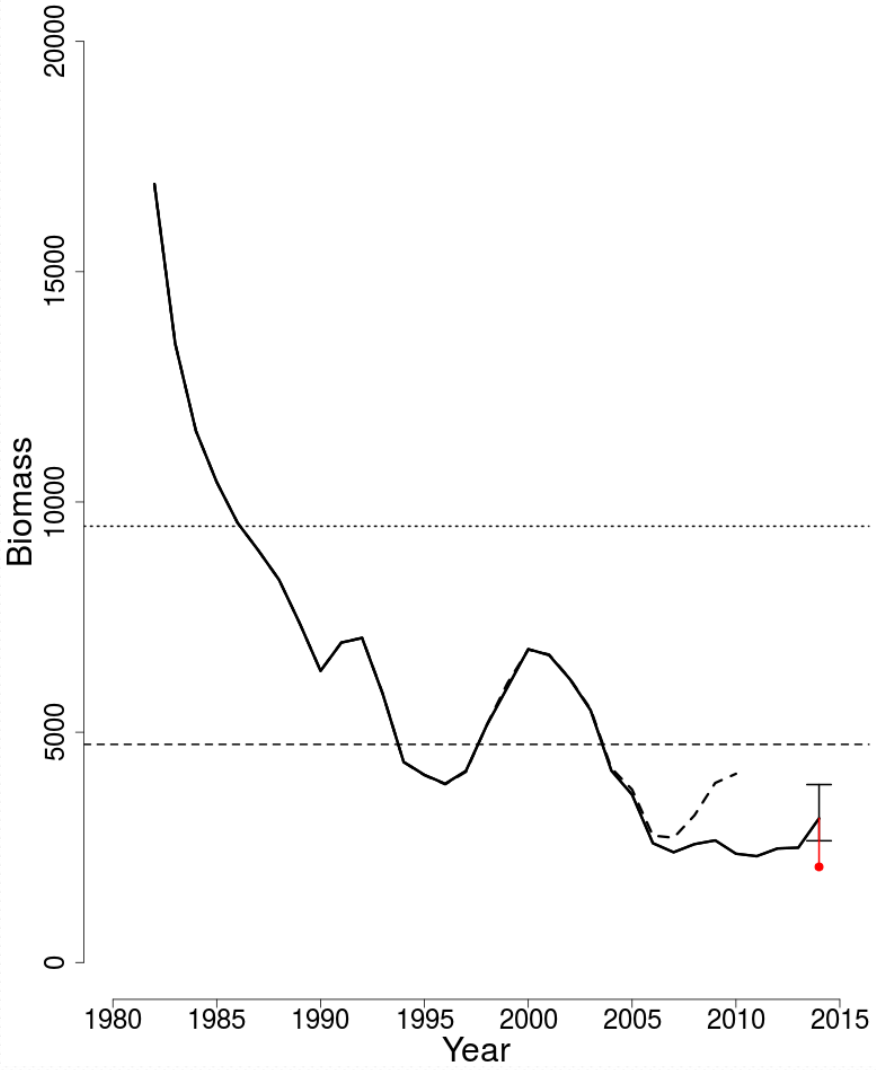
The PDT three times by webinar on January 7, 13, and 15 to discuss witch flounder. The PDT considered industry information during the webinars.

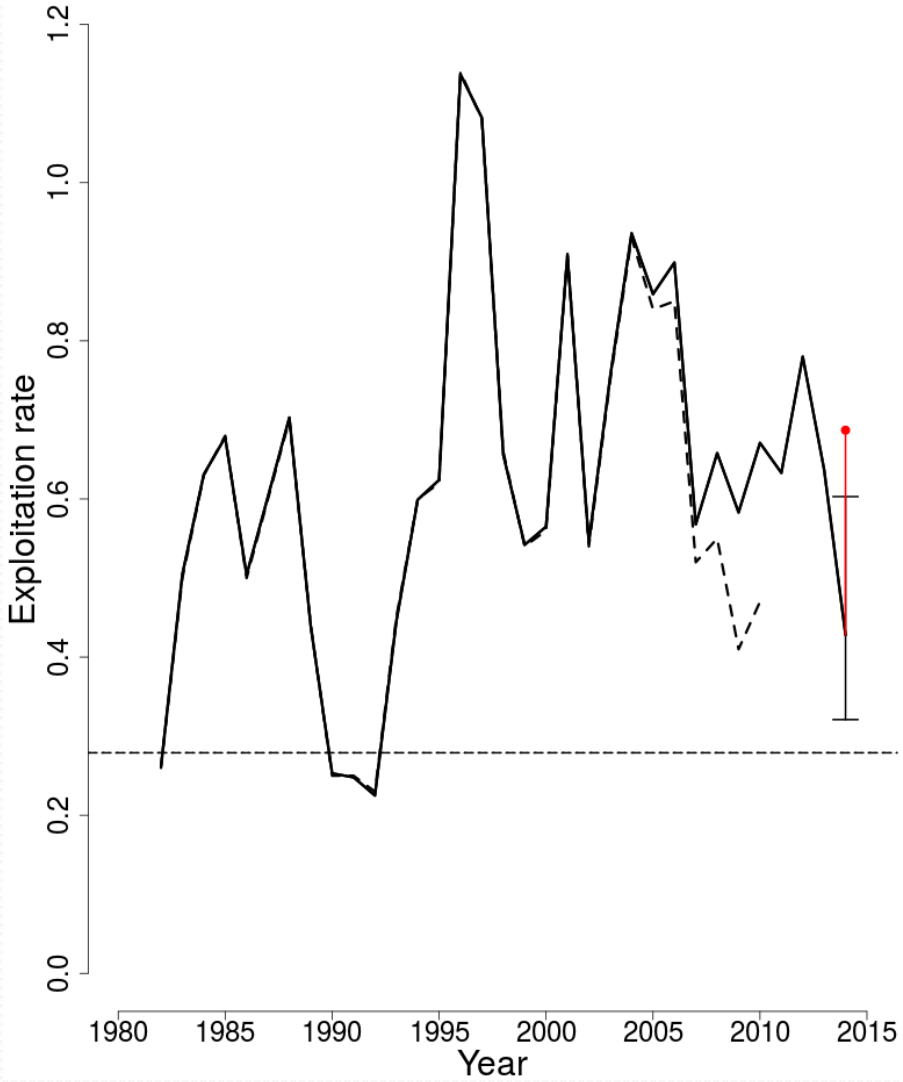
PDT webinars included opportunities for presentations by industry and for questions from the public.

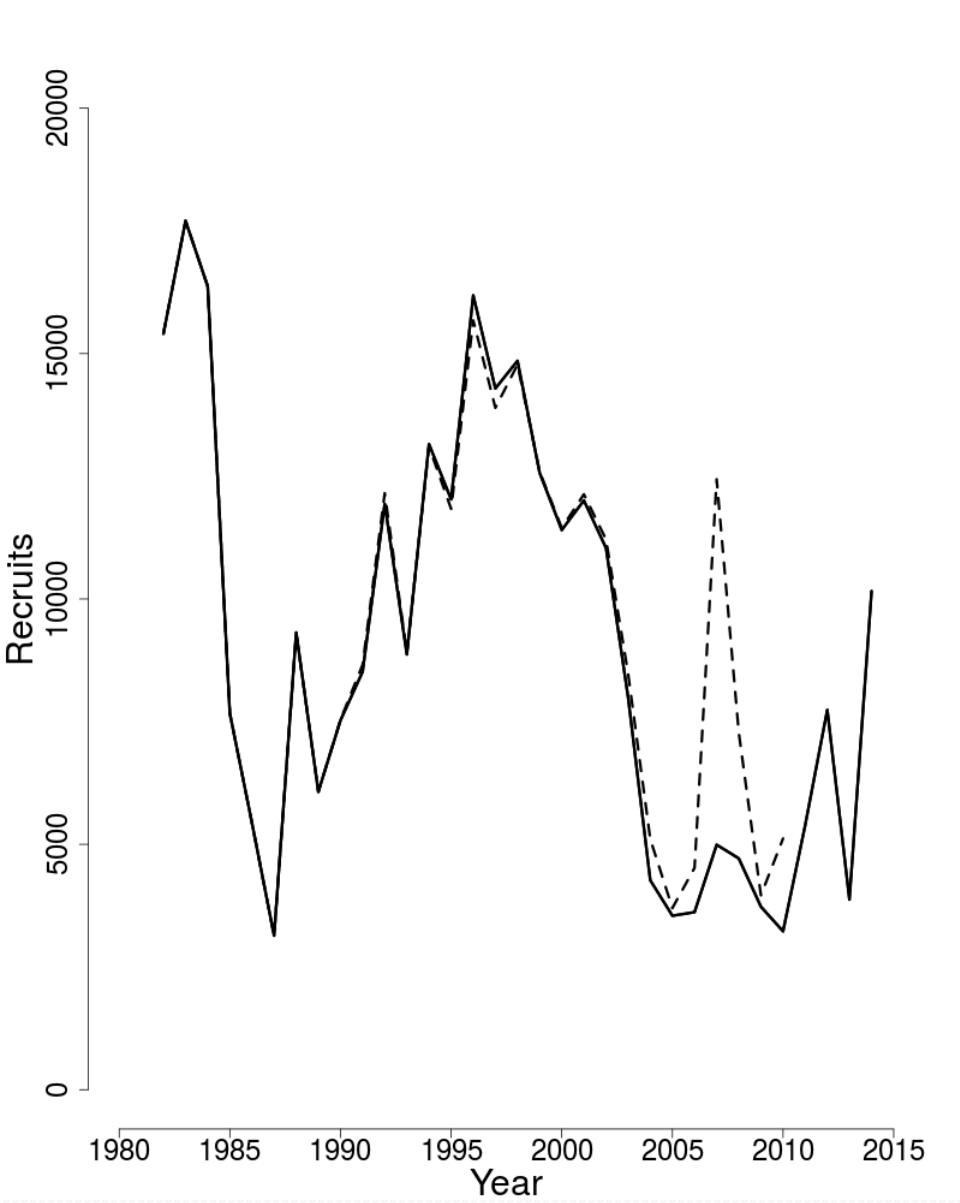


MODEL	VPA
STOCK STATUS	Overfished & Overfishing is occurring
REBUILDING	2017 (Cannot rebuild)
RETROSPECTIVE ADJUSTMENT	Yes
UNCERTAINTIES	A major source of uncertainty is the retrospective pattern.
REVIEWER COMMENTS	Compared to the 2012 assessment, the magnitude of the retrospective pattern has increased slightly for F and decreased slightly for SSB.

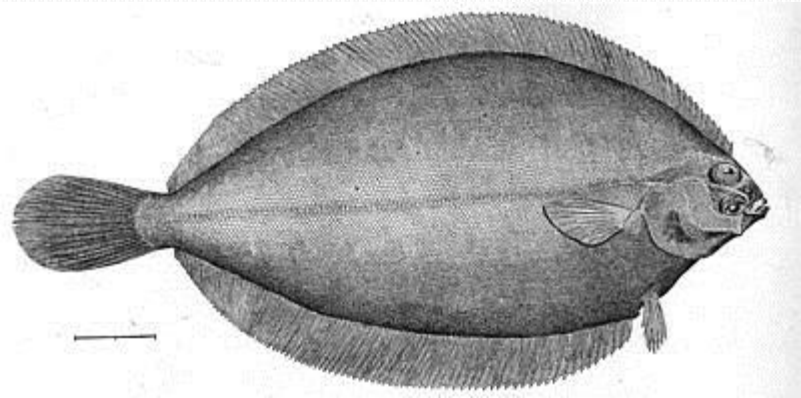
In 2014, the stock was estimated to be at 22% of the rebuilding target SSB and 246% of its target F.


Biomass
0
5000
10000
15000
20000
1980
1985
1990
1995
2000
2005
2010
2015
Year


Exploitation rate
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1980
1985
1990
1995
2000
2005
2010
2015
Year


Recruits
0
5000
10000
15000
20000
1980
1985
1990
1995
2000
2005
2010
2015
Year

	2012	Current
F_{MSY}	0.27	0.279
SSB_{MSY} (mt)	10,051	9,473
MSY (mt)	2,075	1,957
Median Recruits Age 3 (000s)	9,301	8,517
Overfishing	Yes	Yes
Overfished	Yes	Yes



PDT's previous projections, 2015

$75\%F_{MSY}$ Projection

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

$75\%F_{MSY}$ First Year Constant Projection

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

PDT's Revised CY 2015 Estimate of Catches

- The PDT updated the estimated CY 2015 catches for witch flounder, using data through November 2015 .
- The result is a revised catch estimate of 601 mt (reduced from the previous estimate of 637 mt).
- The PDT used the revised catch estimate for CY 2015 as the "bridge" year for catch projections.
- The revised catch assumption had relatively little effect on the $75\%F_{MSY}$ and F_{MSY} estimate in 2016.
  - *The $75\%F_{MSY}$ estimate increased from 394 mt to 399 mt and the F_{MSY} estimate increased from 513 mt to 521 mt in 2016.*

PDT's Revised CY 2015 Estimate of Catches

Estimated CY 2015 NE Multispecies Witch Flounder Catch (mt)

	ACLs and sub-ACLs; (with accountability measures (AMs))							sub-components: No AMs	
Stock	**Total Groundfish**	Groundfish*	Commercial Landings	Commercial Discard	Recreational	Herring Fishery	Scallop Fishery	State Water	Other
	A to G	A+B+C	A	B	C	D	E	F	G
Witch Flounder									
CY 2015	600.6	493.4	450.0	43.4				38.3	69.0

Values in live weight

*Includes estimate of missing dealer reports

Source: NMFS Greater Atlantic Regional Office

Janury 4, 2016: Data Dates: December 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. Differences with previous reports are due to corrections made to the database

Commercial	January - November, 2015 - Actual data used from Data Matching and Imputation System December 2015 - projected based on FY14 to FY15 to date proportional change in landings and discard from December 2014
State Water and Other Subcomponent	See August 20, 2015 CY15 projections

Rebuilding Projections

- The plan is a 7 year plan set to rebuild by 2017 with a 75% probability.
- Projections indicate that the stock cannot rebuild by 2017 with F=0.
- At F=0 the stock is projected to rebuild in 2020 with a 75% probability.
- At 75%FMSY=0.209 the stock is projected to rebuild in 2025 with a 76% probability and 2023 at a 61% probability.

Catch Projections

- The PDT developed four new catch projections at:
  - 75%F_{MSY}
  - 75% F_{MSY} constant with the value for 2016 (399 mt)
  - Middle constant (between 75% F_{MSY} and F_{MSY}) with the value for 2016 (460 mt)
  - F_{MSY} constant with the value for 2016 (521 mt)

- The constant candidate ABC projections cover the range from a low using the updated 75%F_{MSY} (399 mt) to the F_{MSY} estimate (OFL = 521 mt) in 2016.
- The range of constant projections all meet the requirement that projected F in 2017 is below 75%F_{MSY} = 0.209.

Catch Projection Results

CY 2015 catch = 601 mt; FY 2013- FY 2015 ABC 783 mt

Table 2: Candidate 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	521	399	0.209	3,253
2017	745	572	0.209	4,309
2018	945	724	0.209	5,466

Table 3: Candidate 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 (i.e., 75%F_{MSY} constant 2016). Projected F and SSB provided.

year	OFL	ABC	F	SSB
2016	521	399	0.209	3,253
2017	745	399	0.142	4,342
2018	982	399	0.107	5,688

Catch Projection Results

CY 2015 catch = 601 mt; FY 2013- FY 2015 ABC 783 mt

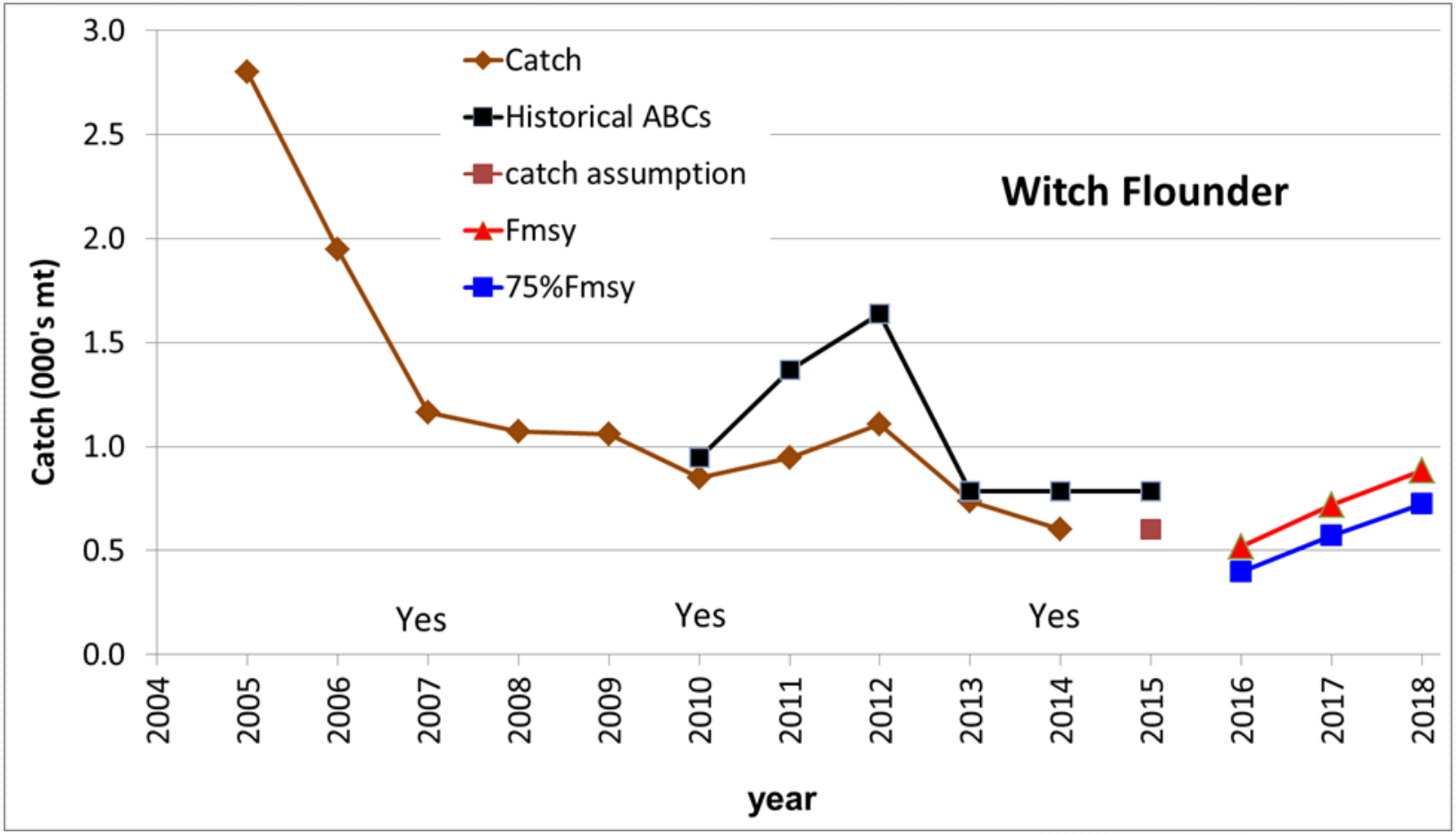
Table 4: Candidate OFLs and ABCs (mt) for FY 2016- FY 2018 for witch flounder, holding the middle value for 75% F_{MSY} and F_{MSY} for 2016 projected catches constant for three years (i.e., 460 mt). Projected F and SSB provided.

year	OFL	ABC	F	SSB
2016	521	460	0.244	3,244
2017	732	460	0.169	4,276
2018	954	460	0.128	5,562

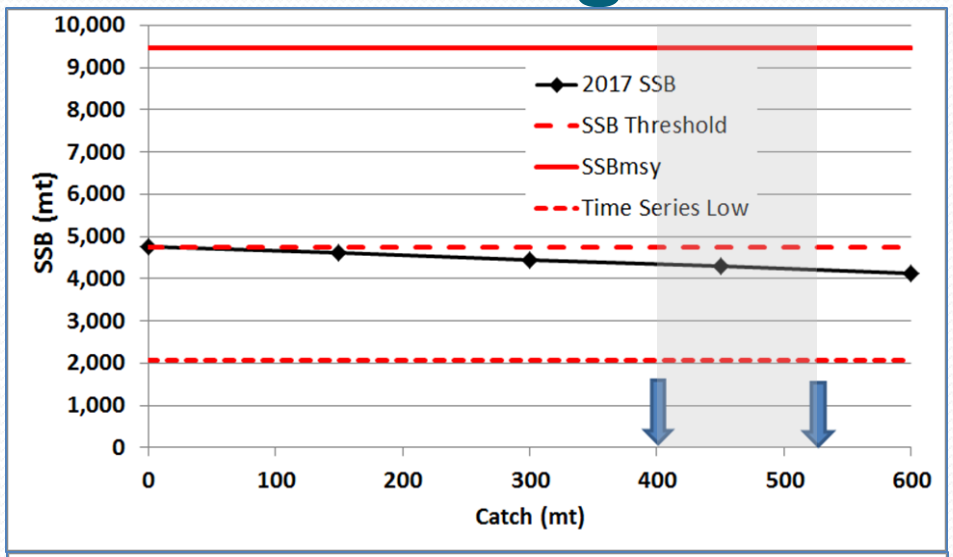
Table 5: Candidate OFLs and ABCs (mt) for FY 2016- FY 2018 for witch flounder, holding the 2016 F_{MSY} value constant for three years (i.e., 75%F_{MSY} for 2016). Projected F and SSB provided.

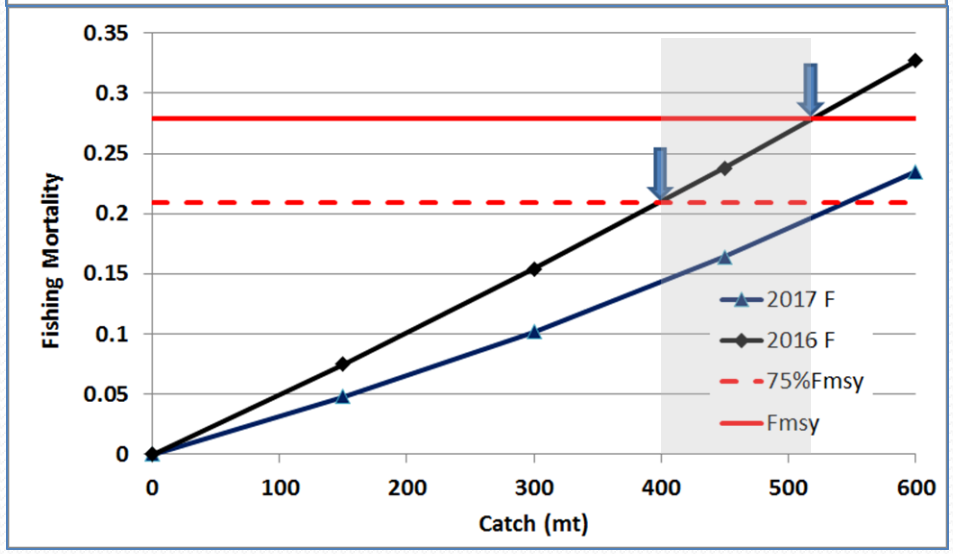
year	OFL	ABC	F	SSB
2016	521	521	0.279	3,234
2017	719	521	0.197	4,210
2018	927	521	0.150	5,437

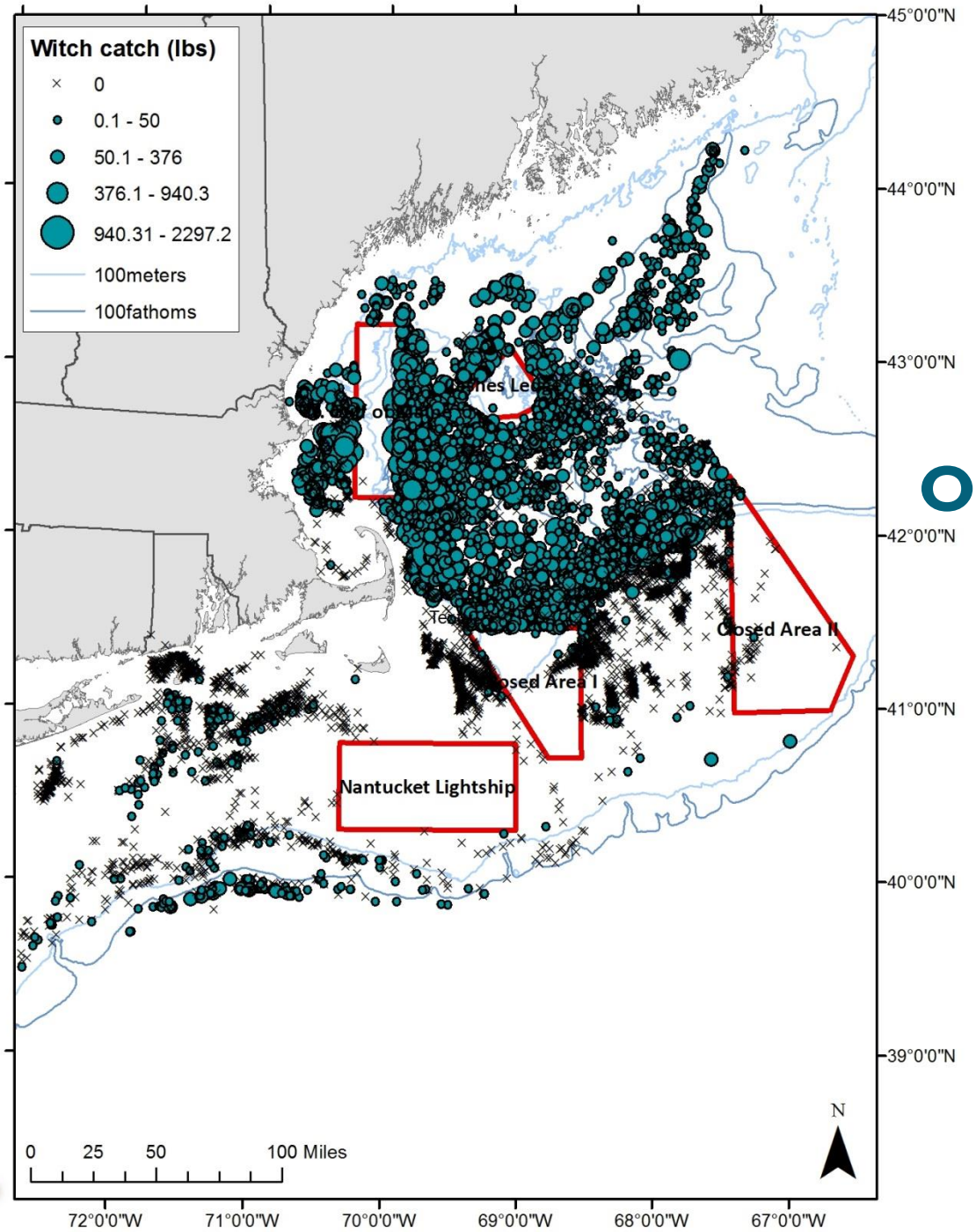
Catch Performance



Comparison Projections: Relative Biological Risk

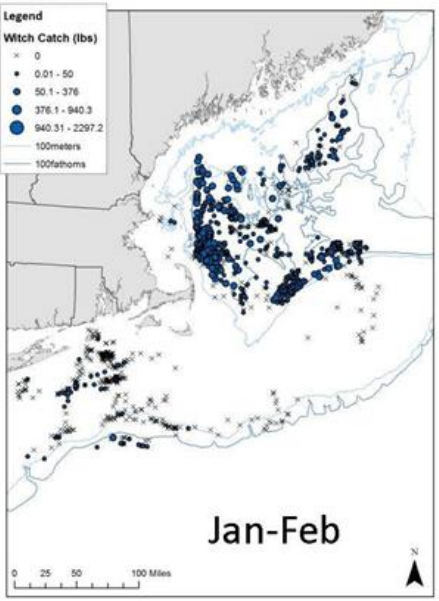


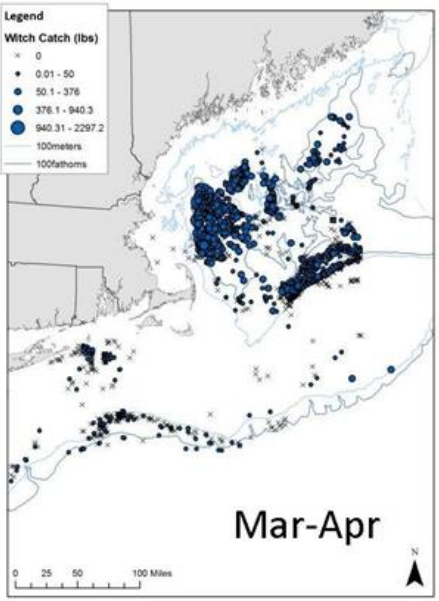


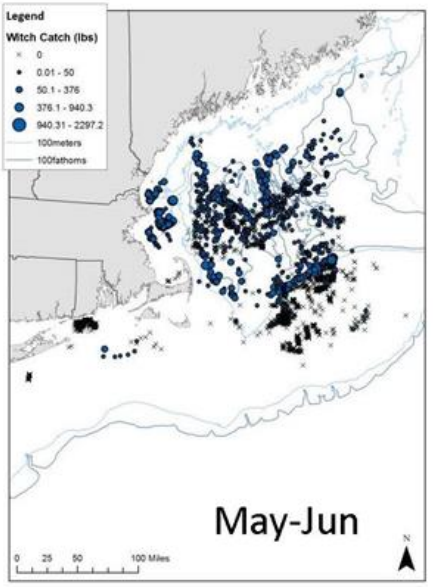


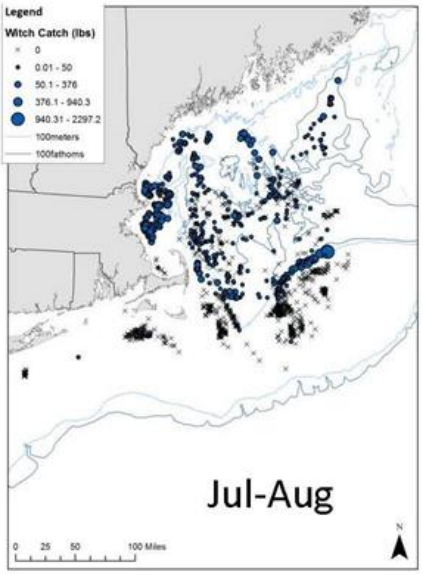
Observed Hauls Sector Trips: CY 2014

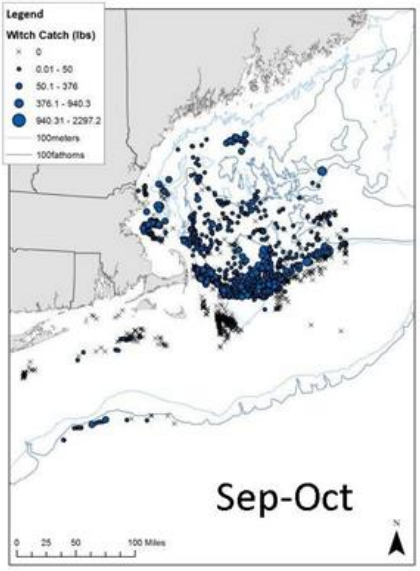
CY2014

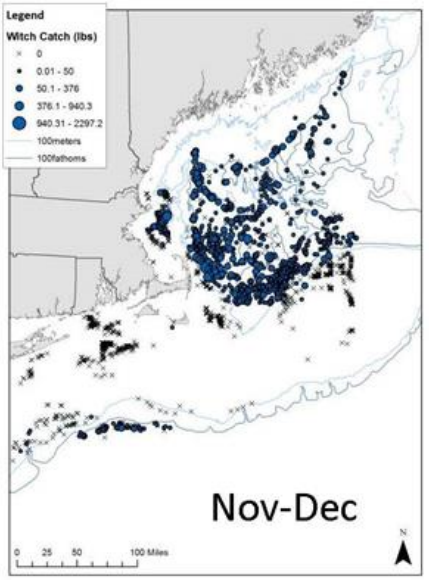

Legend
Witch Catch (lbs)
0
0.01 - 50
50.1 - 376
376.1 - 940.3
940.31 - 2297.2
100meters
100fathoms
Jan-Feb
0 25 50 100 Miles
N


Legend
Witch Catch (lbs)
0
0.01 - 50
50.1 - 376
376.1 - 940.3
940.31 - 2297.2
100meters
100fathoms
Mar-Apr
0 25 50 100 Miles
N

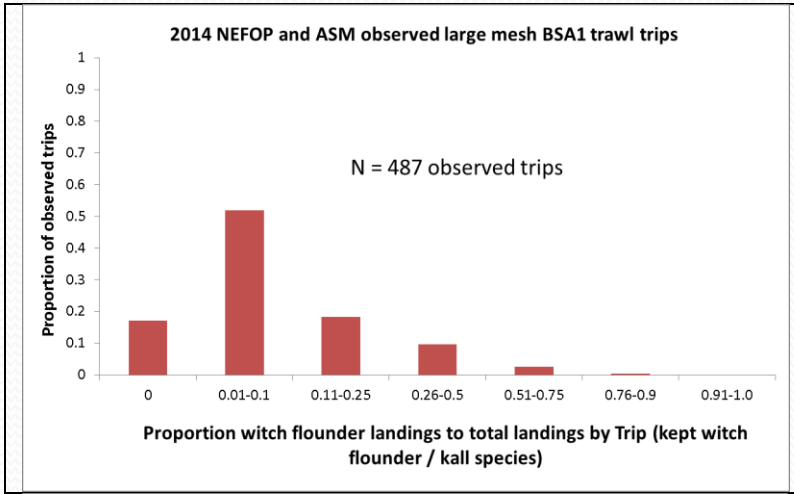

Legend
Witch Catch (lbs)
0
0.01 - 50
50.1 - 376
376.1 - 940.3
940.31 - 2297.2
100meters
100fathoms
May-Jun
0 25 50 100 Miles
N

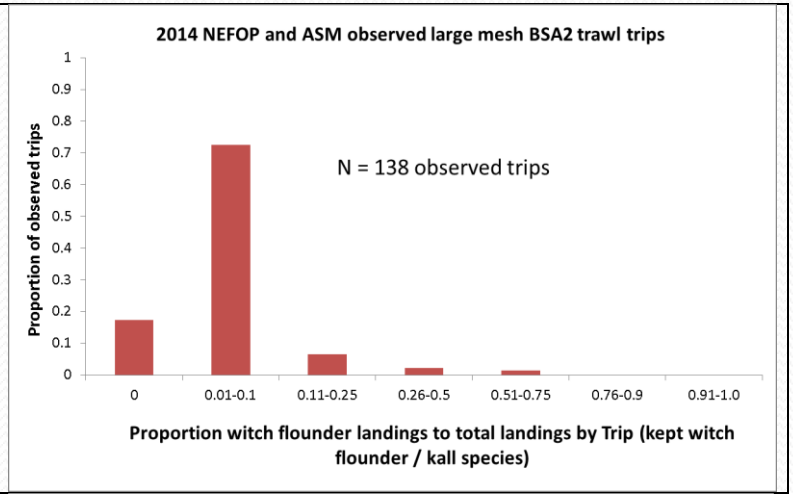

Legend
Witch Catch (lbs)
0
0.01 - 50
50.1 - 376
376.1 - 940.3
940.31 - 2297.2
100meters
100fathoms
Jul-Aug
0 25 50 100 Miles
N

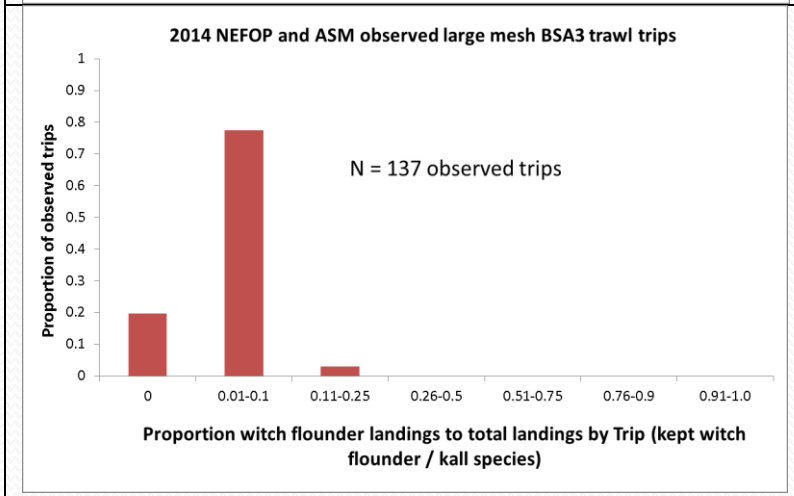

Legend
Witch Catch (lbs)
0
0.01 - 50
50.1 - 376
376.1 - 940.3
940.31 - 2297.2
100meters
100fathoms
Sep-Oct
0 25 50 100 Miles
N

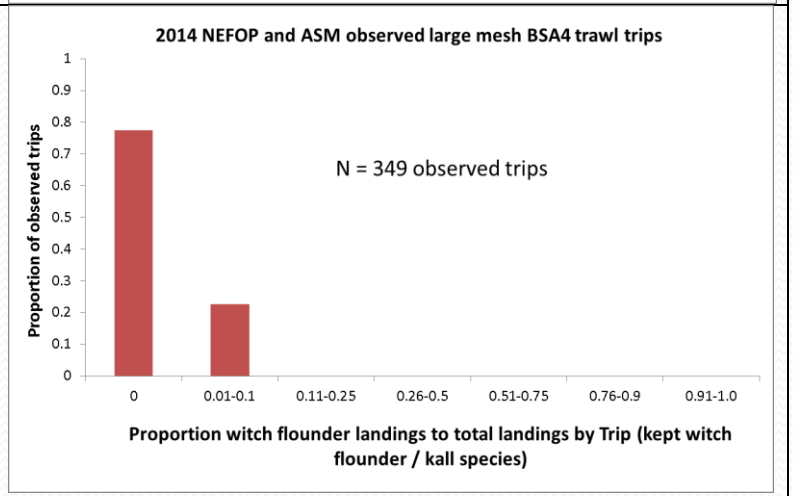

Legend
Witch Catch (lbs)
0
0.01 - 50
50.1 - 376
376.1 - 940.3
940.31 - 2297.2
100meters
100fathoms
Nov-Dec
0 25 50 100 Miles
N

Kept Catch Ratios – for trips

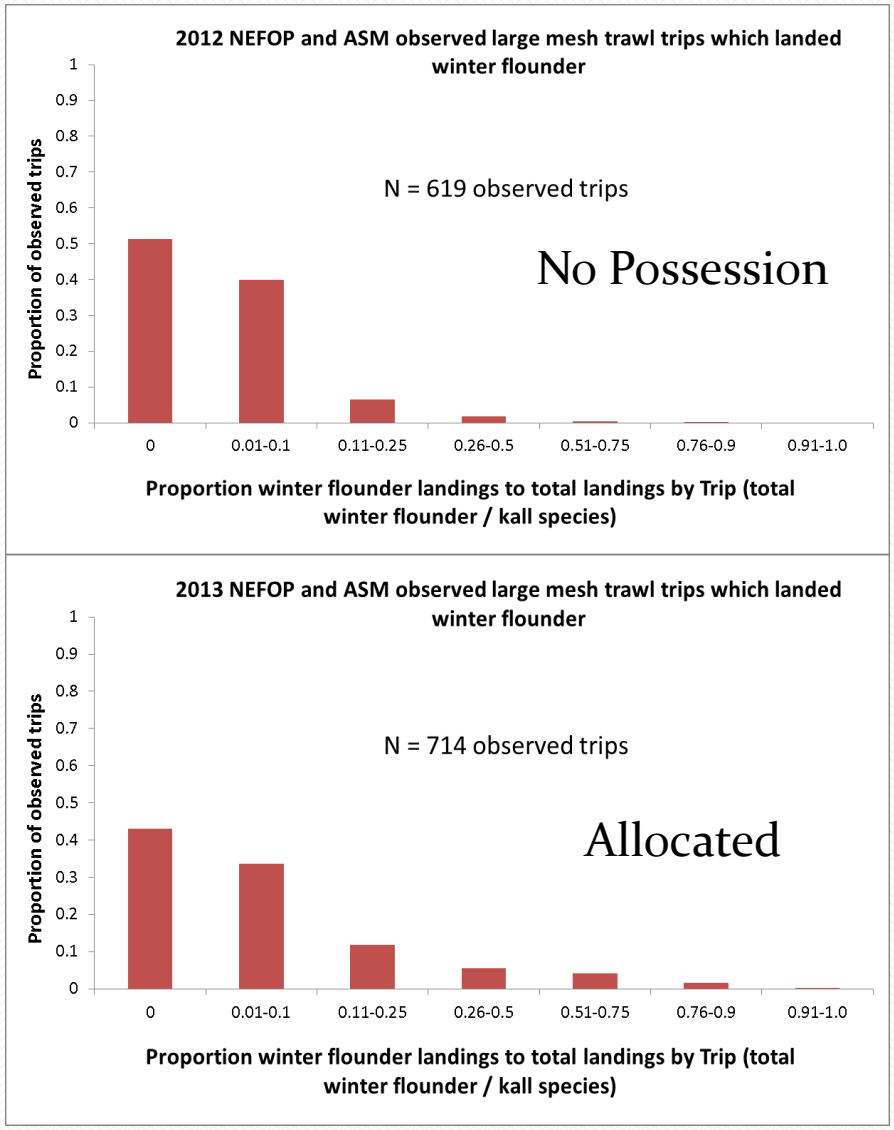




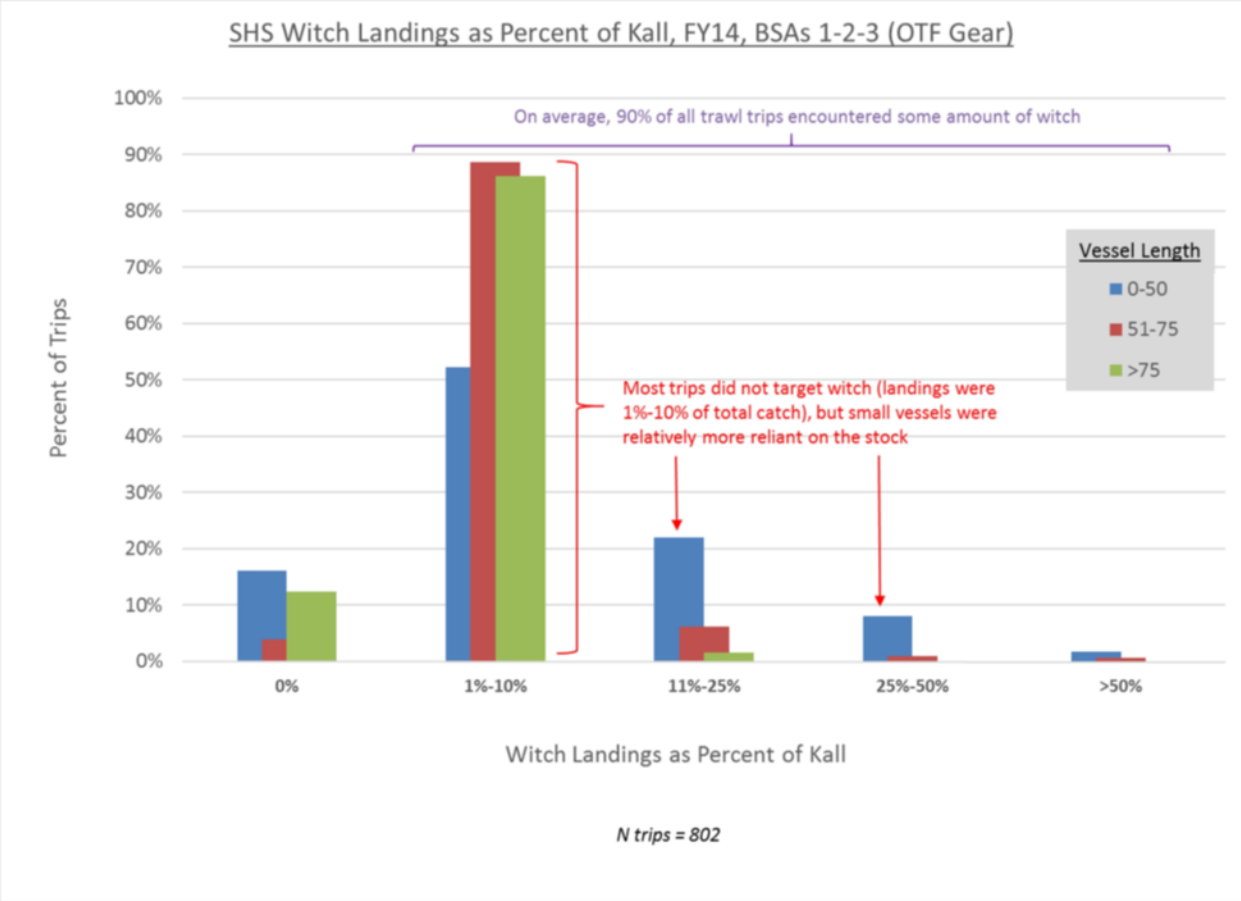




Catch Ratios- SNE Winter Flounder

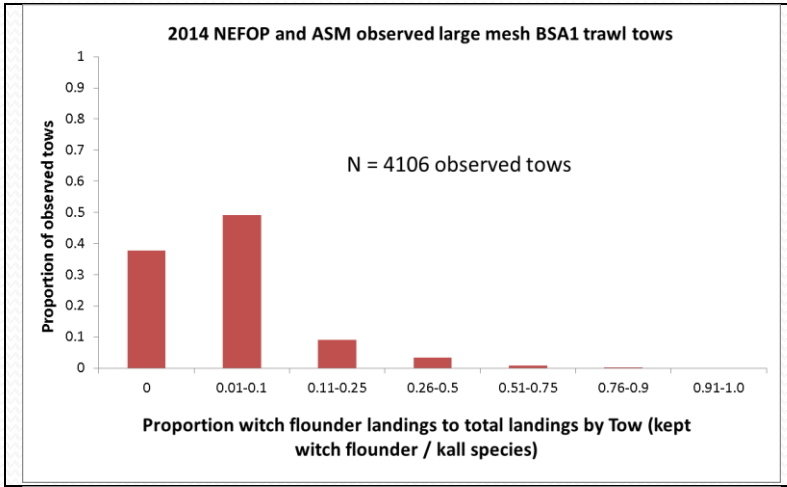


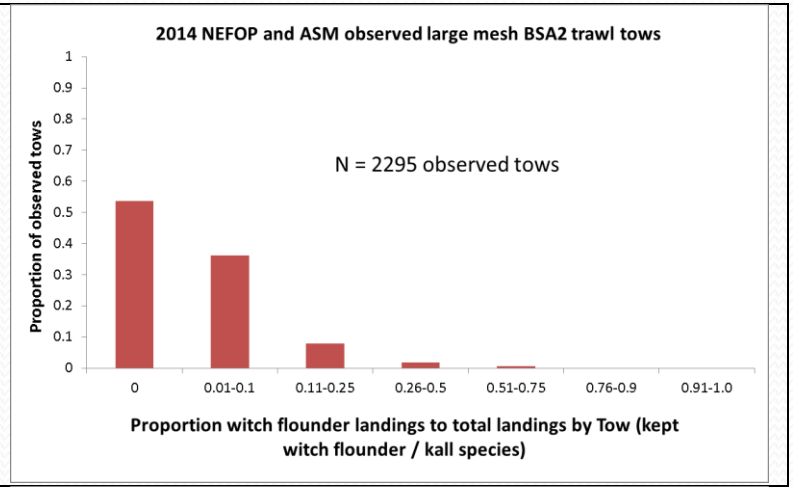
Kept Catch Ratios
(courtesy of Hank Soule)

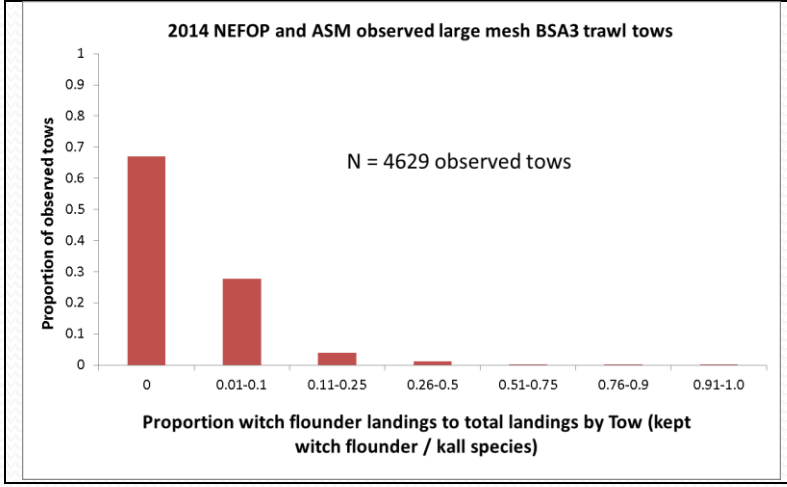


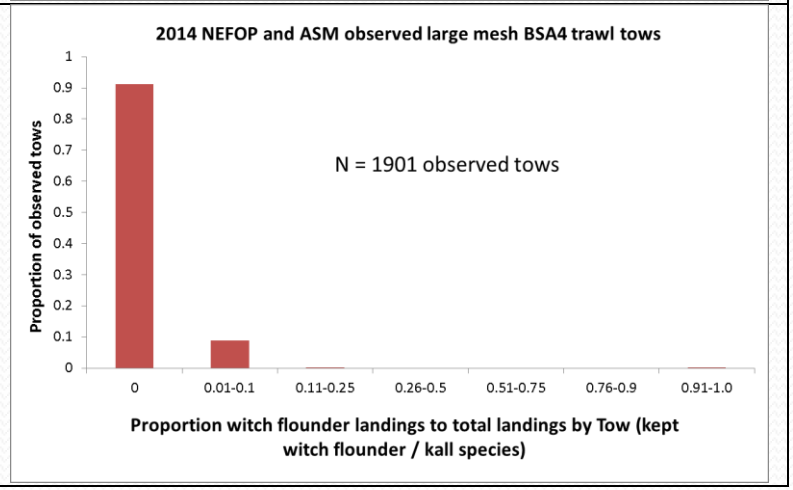
Witch Landings Per Trip in Pounds		
Length	Median	Mean
0-51	235	318
51-75	410	664
>75	341	524

Kept Catch Ratios- for tows

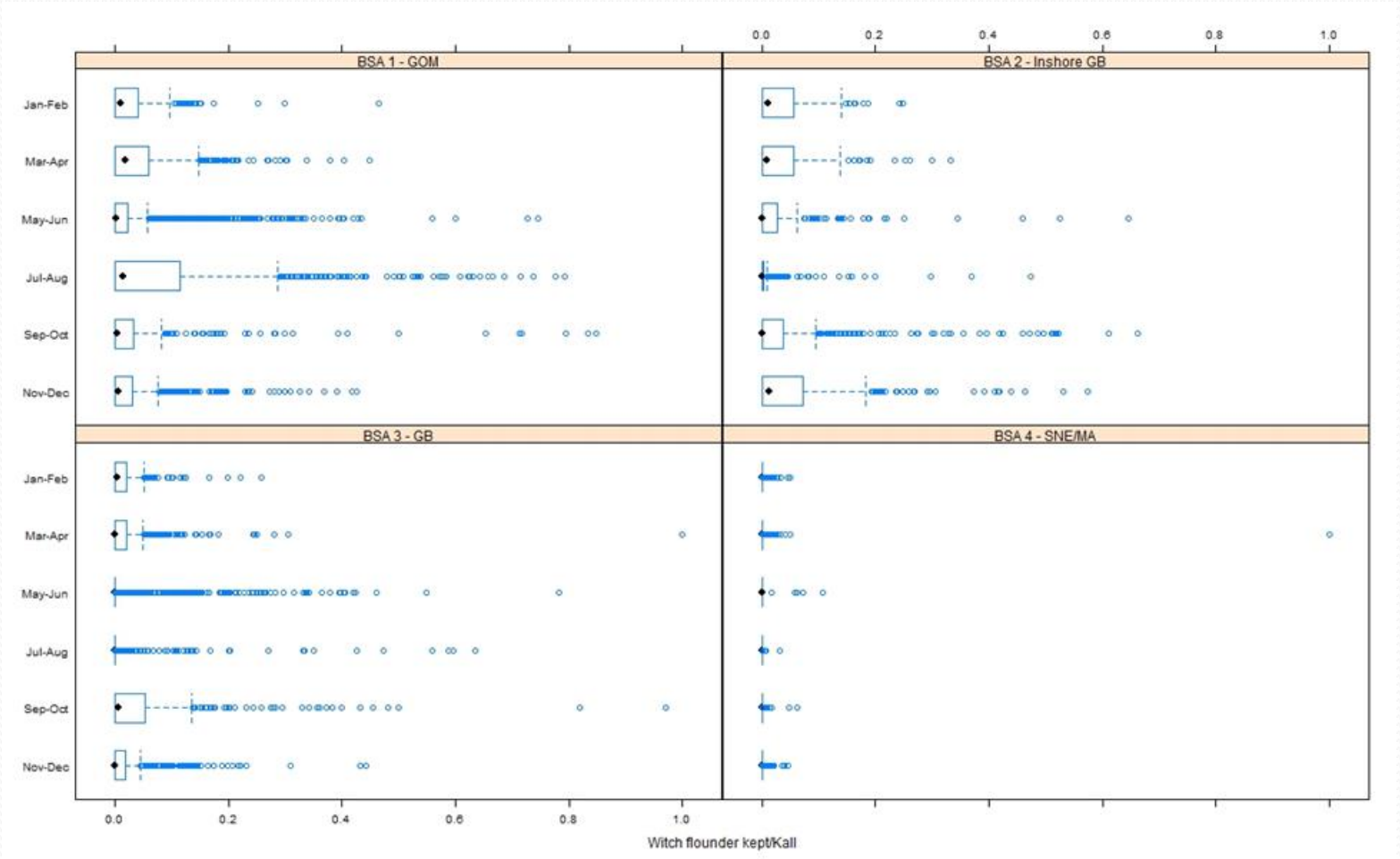








Kept Catch Ratios- for tows



Economic Tradeoffs of Setting a 2016 ABC Greater than 75% FMSY and up to FMSY

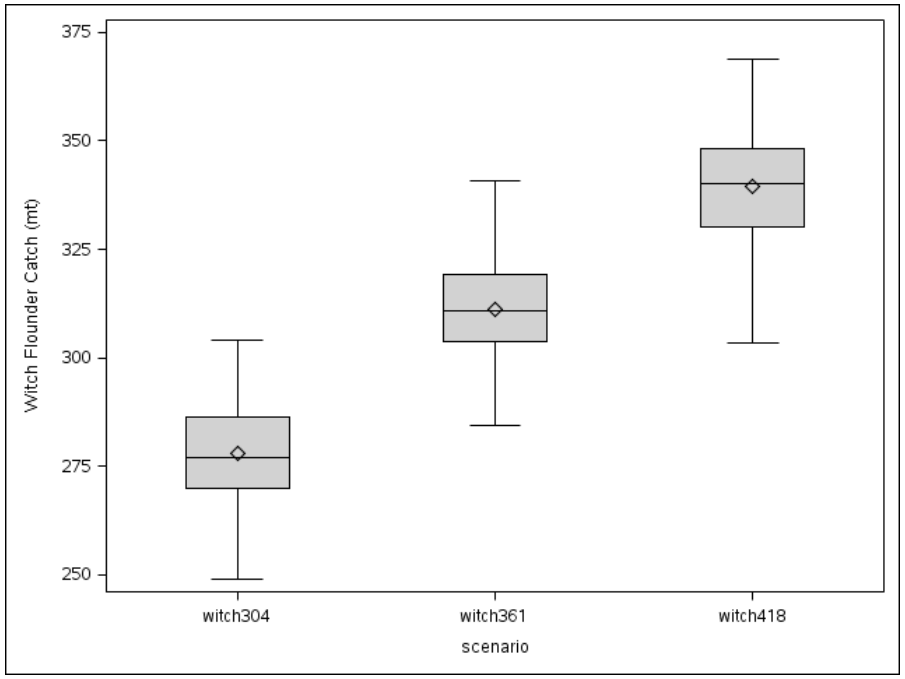
Objective

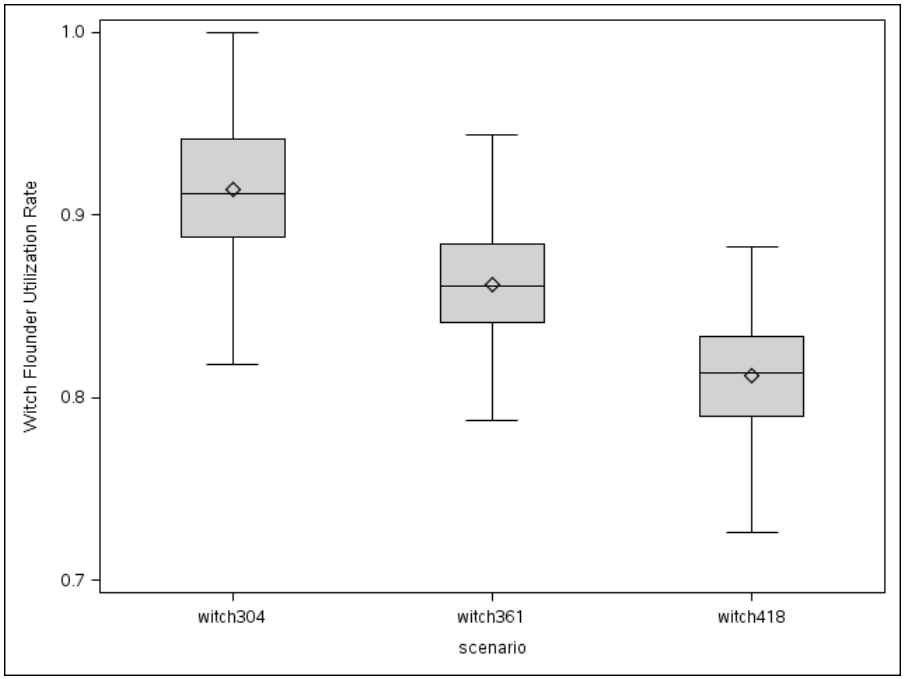
- Evaluate the effect of higher witch flounder sub-ACLs on catch (witch flounder and other related stocks).
- Witch flounder sector sub-ACLs used:
  - 304 mt, 361 mt, 418 mt

Used the Quota Change Model (QCM)

- Monte Carlo simulation
- Trips are selected from pool of FY2014/15 trips
- FW55 ACLs as total constraint on fleet
- Selection criteria:
  - Ace efficiency = net revenue / groundfish catch (trips with higher ratios more likely to be selected)
  - Net revenue = trip revenue – variable cost
    - Variable cost = trip cost + sector cost + quota cost + ASM cost
- Assumptions: sector level ACLs not considered, ACE flows freely

QCM Model Results for Witch Flounder





- Witch flounder catch increases, utilization rate declines.
- This suggests that other stocks are constraining.

QCM Model Revenue Results

Witch Sub-ACL	Groundfish Revenue (mil)	P5 Revenue (mil)	P95 Revenue (mil)
304 mt	$52.4	$50.2	$54.8
361 mt	$52.2	$49.7	$54.5
418 mt	$51.4	$48.9	$53.7

Witch Sub-ACL	All Species Revenue (mil)	P5 Revenue (mil)	P95 Revenue (mil)
304 mt	$68.8	$65.9	$72.0
361 mt	$68.8	$65.9	$71.5
418 mt	$67.8	$64.5	$70.7

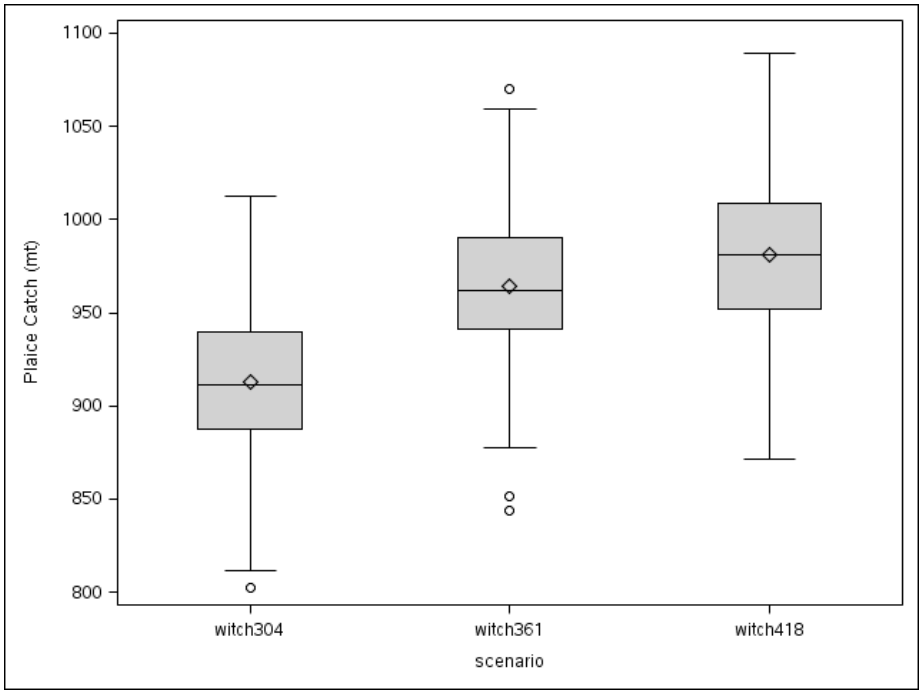
- Overall revenue changes are essentially unchanged (within confidence intervals)

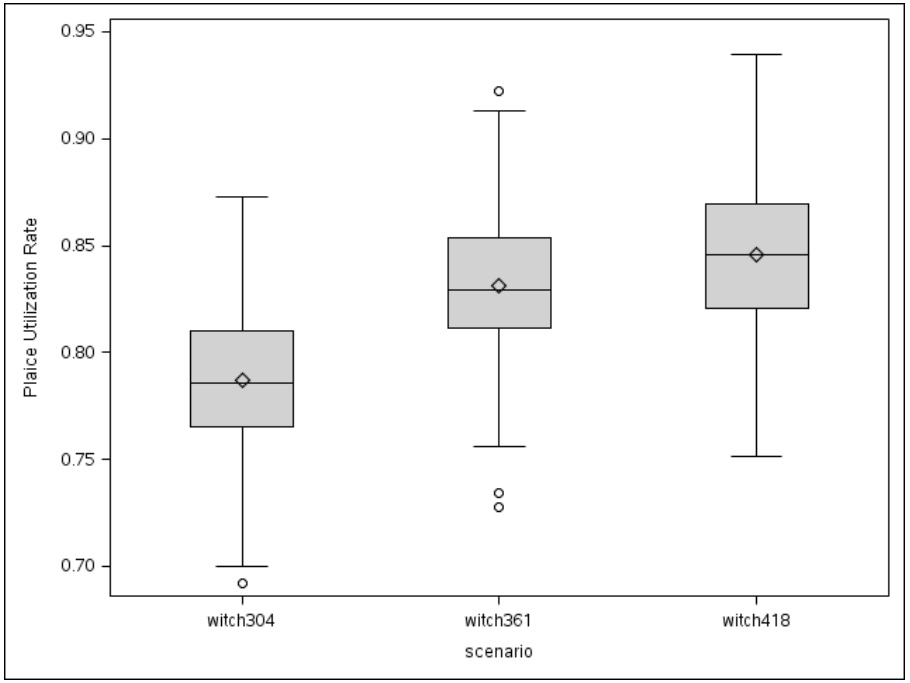
QCM Model Results for Other Groundfish Stocks

- Stocks with high utilization rates:
  - Cod, GB West: ~100%
  - Cod, GOM: ~98%
  - YT, SNE: ~95%
  - Winter fl, GB: ~87%
- Catch and utilization rates did not change among different Witch flounder sub-ACLs

American Plaice

- Catch and utilization rates increased with higher witch flounder sub-ACL





Distributional Impacts

- Shift of groundfish revenue from larger (75’+) to smaller vessels (30’-<50’).
- Shift of groundfish revenue from northerly to southerly ports.

Conclusions

- No evidence of increase in overall revenue from increasing witch flounder sub-ACL.
- Changes shown are most likely due to random noise in the QCM.
- Benefits could be realized from increasing sub-ACL. QCM might not be predicting these benefits due to limiting assumptions (free flow of ACE and not a sector level analysis)

PDT Recommendation

The **PDT does not recommend setting the 2016 witch flounder ABC equal to OFL** for the following reasons:

- The stock is overfished and overfishing is occurring.
- The rebuilding target is not projected to be met in 2017.
- The biological risk is high, and overfishing is likely to continue based on the current model configuration and past experience with the projections and subsequent assessment findings.
- Setting an ABC equal to OFL assumes little if any uncertainty in the stock assessment.
  - It is unrealistic that scientific uncertainty for this stock is zero.
  - The stock is long-lived and slow growing.
  - Recent recruitment is relatively low, and potentially optimistic (i.e., recent recruitment tends to get adjusted downward in future assessments for example the 2004 and 2008 YC's in the 2012 versus 2015 assessments).
- Should stock condition decline or remain stagnant, the short-term economic gain of a higher ACL may not outweigh the long-term economic costs.

PDT Recommendation (cont.)

Recognizing the issues raised by industry and by the PDT in its analyses

(i.e., stock is difficult to avoid,

exceeding the quota of a unit stock could potential close the entire groundfish fishery in-season,

small vessels may be more economically impacted,

the ability of the fishery to operate and achieve quotas for other groundfish stocks (e.g., plaice) and non-groundfish stocks (e.g., monkfish) may be reduced),

and in consideration of the above, **at a minimum some buffer should be considered between OFL and ABC**.

PDT Recommendation (cont.)

The PDT did not make a recommendation on this percentage but does offer the **following summary of trade-offs of setting a 2016 ABC greater than 75%F_{MSY} and up to F_{MSY}**:

- **Biological**: Results indicate that with increasing quota there is increased risk of overfishing, less projected stock growth, and increased projected fishing mortality. Past experience indicates that ABCs based on 75% F_{MSY} did not provide a sufficient scientific uncertainty buffer to end overfishing for many groundfish stocks. This conclusion led to the increased use of constant ABCs which tend to increase the uncertainty buffer in the out years.

- **Economic**: Results indicate that with an increasing quota there is no overall change in predicted revenue among the range of quotas examined for groundfish and non-groundfish revenues based on QCM results. The QCM has limitations, and although not detected by the QCM, more quota in the short-term is likely to be beneficial.

- **Social**: Results from the QCM indicate that with an increasing witch flounder quota vessels in the 30-50 ft. size class acquire some revenue gains of $100k to $200k, while larger vessels show a decrease of the same amount.

Additional Slides

GOM Cod ACE Prices

(courtesy of Hank Soule)