

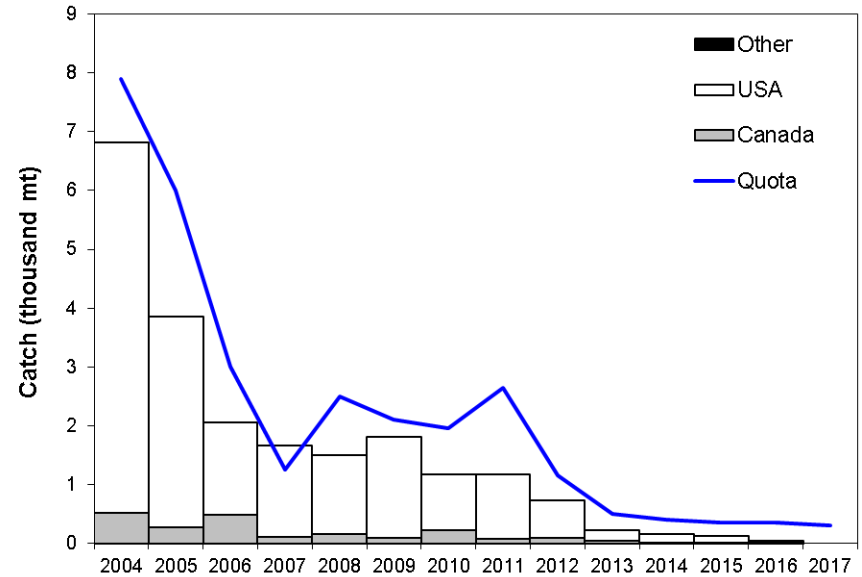
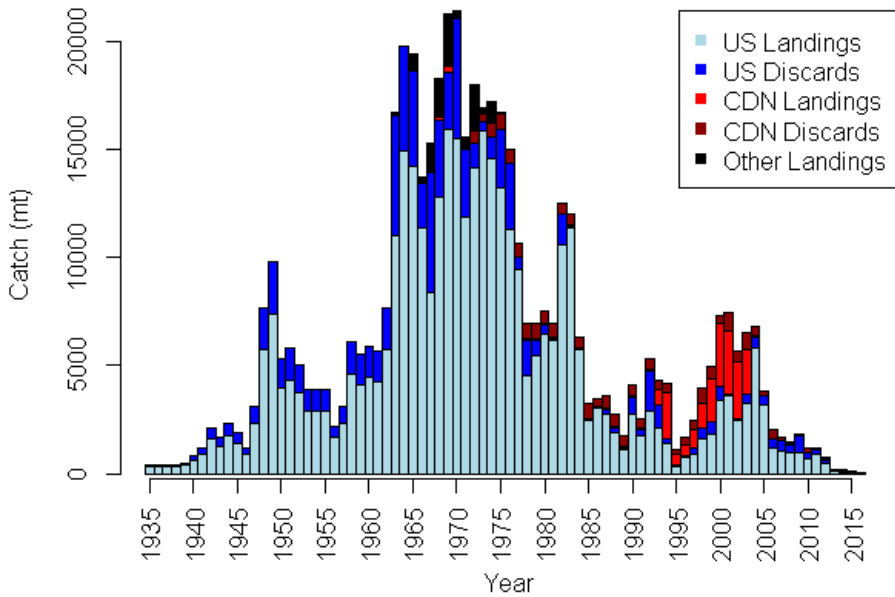
# Georges Bank Yellowtail Flounder Stock Assessment for 2017

TRAC 11-14 July 2017  
St Andrews, NB, Canada

# TRAC Process Changes

- Independent chair for meeting
- Science advice from external reviewers and scientists
- Broader perspective by other participants

# Catch

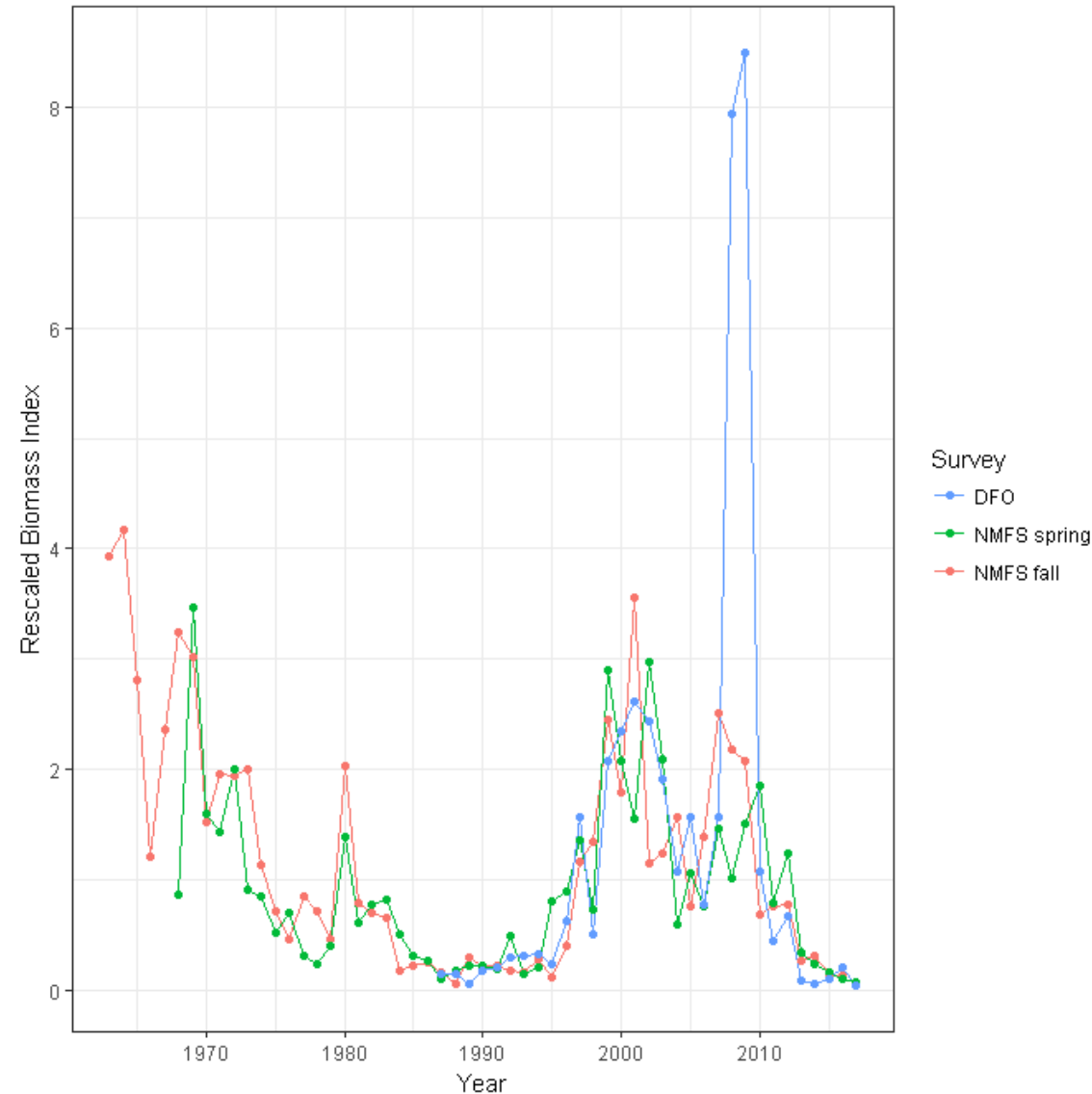


	metric tons				metric tons		
	Landings	Discards	Catch		Landings	Discards	Catch
US	26	7	33	US	60%	16%	77%
Canada	1	10	10	Canada	1%	22%	23%
Sum	27	17	44	Sum	61%	39%	100%

2016 record low for both countries and total

Fig 2a-b Table 1

# Surveys



All three surveys track well, with exception of 2008 and 2009 DFO surveys (large tow effects)

# Survey Time Series

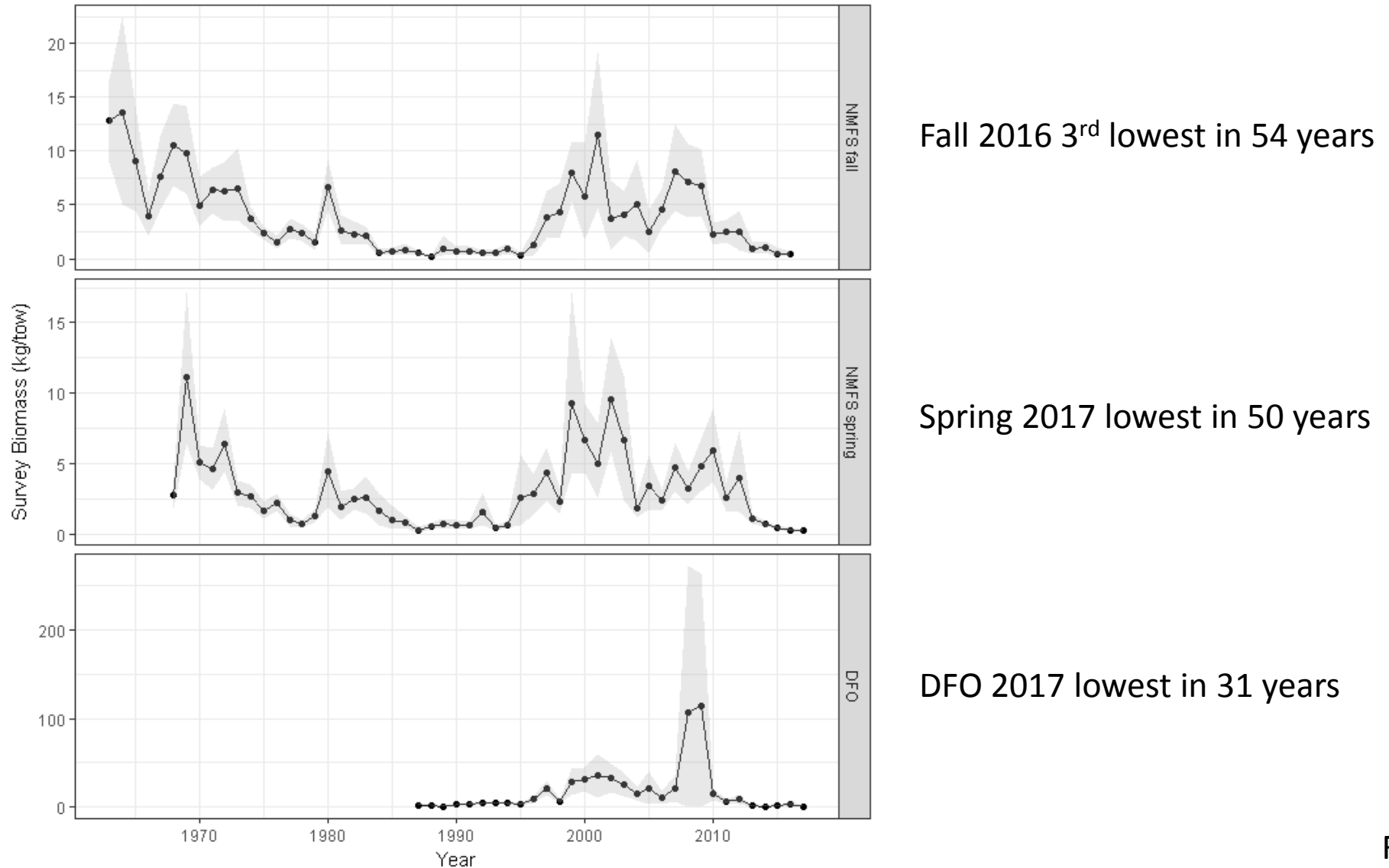
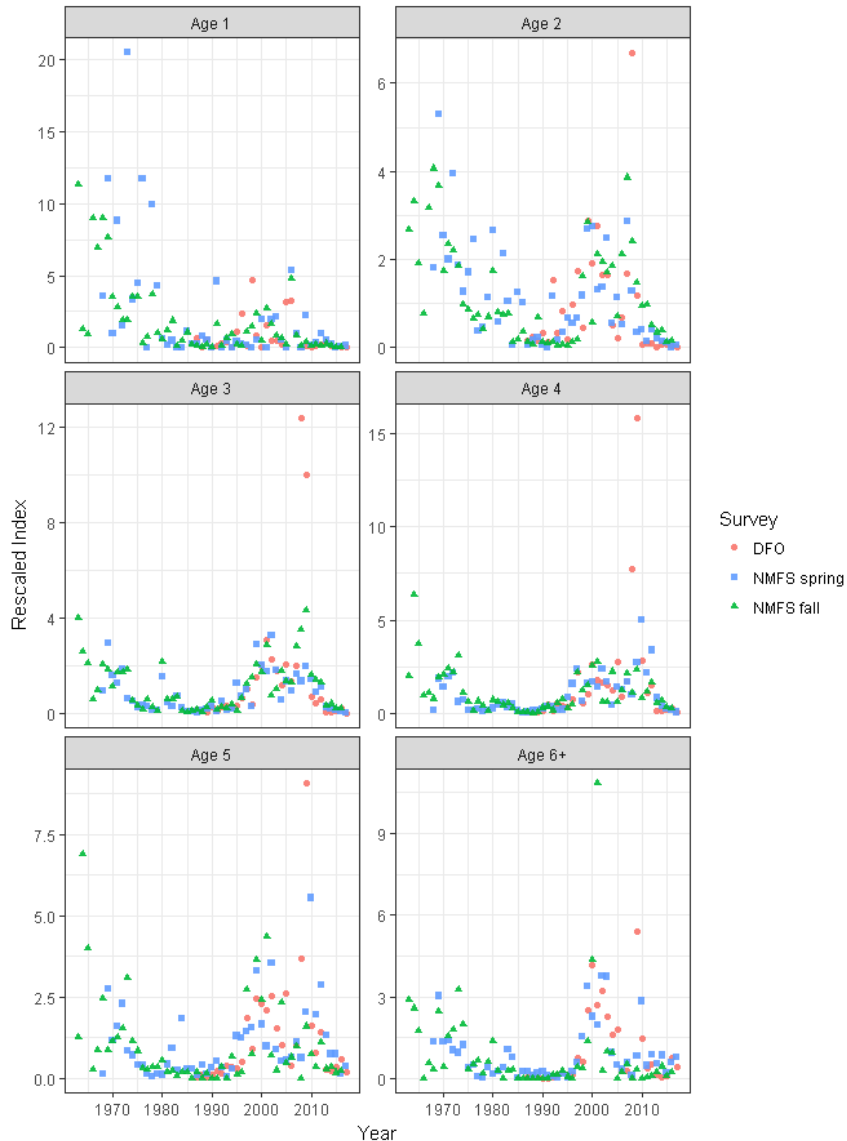


Fig 7

# Surveys at Age



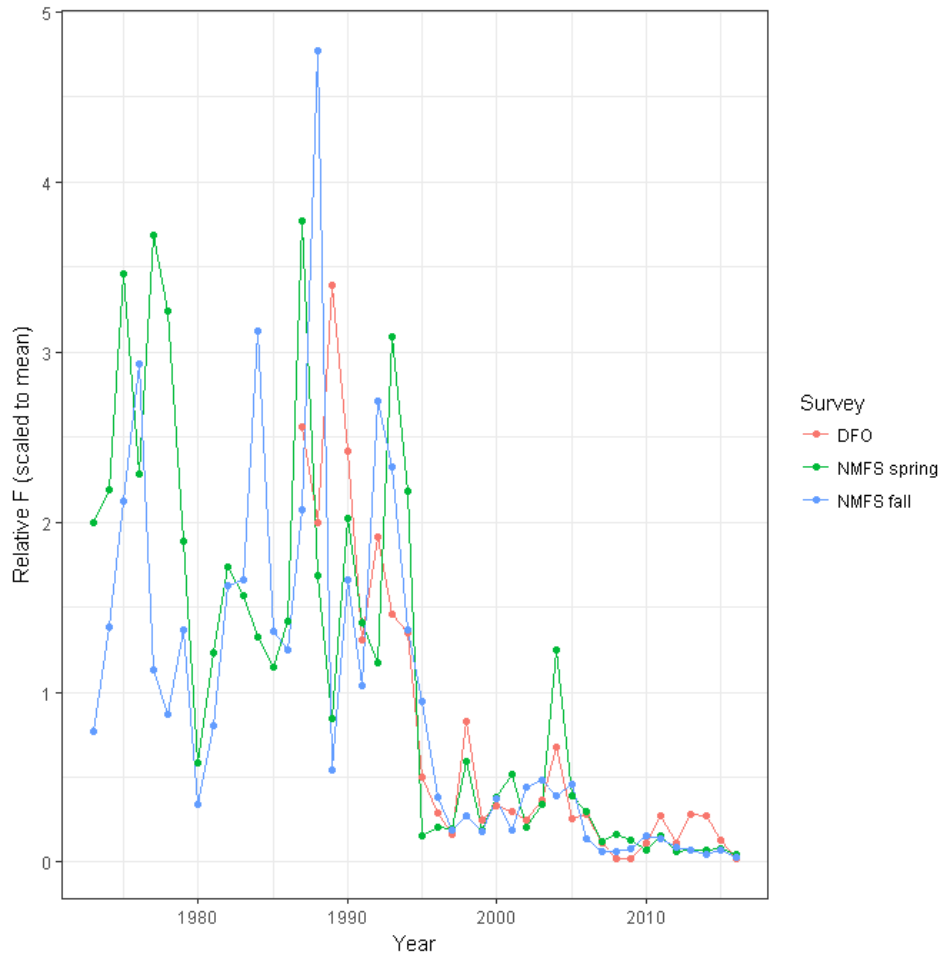
Low values recently at all ages  
No indication of incoming recruitment  
Does age 6+ show rebuilding?

Fig 12

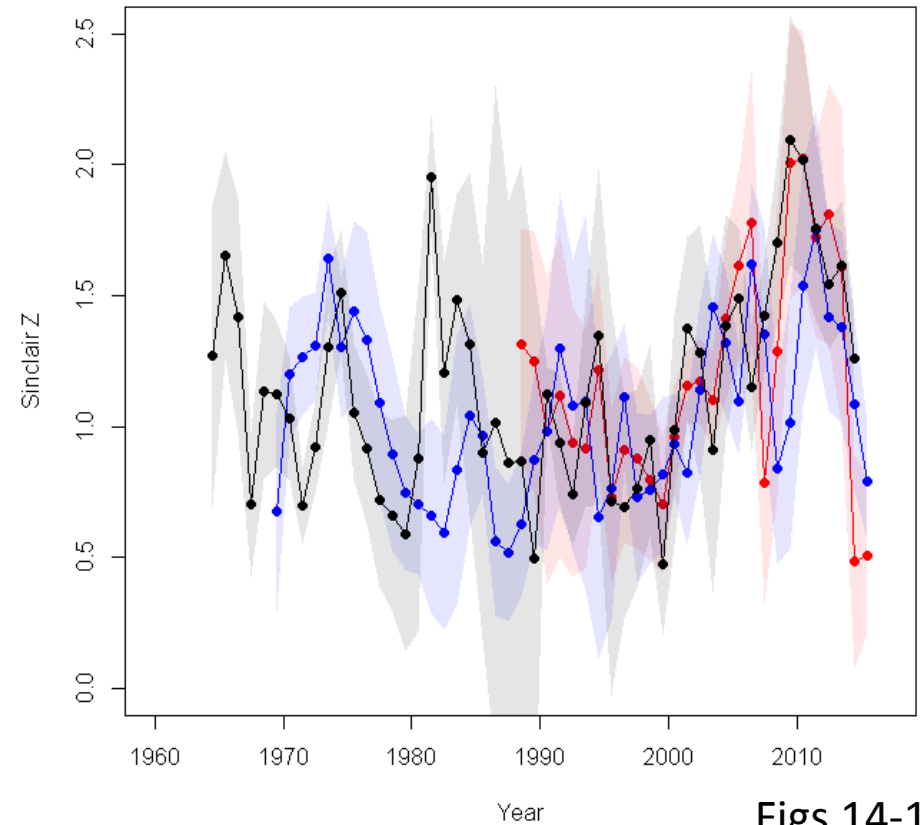
# Relative F and Survey Z

Fishing does not appear to be a major driver of stock status currently

Relative F = catch / survey



Survey Z



# 2017 Intersessional on Survey q

- 26 June 2017 conference call to discuss 3 WP
- 2 WP estimated survey q from twin-trawl experiment
- 1 WP examined herding from bridle experiment
- Consensus
  - Use survey q = 0.31
  - Use wing width for area of tow (no herding)
  - Apply these decisions to all three surveys
- Overall effect is approx 3 fold increase in average biomass and thus catch advice for a given exploitation rate

$$B = I * (A / a) / q$$



# Empirical Approach

Quota split for 2018

USA 71%

Canada 29%

Year	Biomass (mt)				mu =	0.02	0.06
	DFO	Spring	Fall (year-1)	Average		Catch	Advice (mt)
2010	29,452	68,752	83,490	60,565		1,211	3,634
2011	12,344	29,621	27,821	23,262		465	1,396
2012	18,113	46,209	30,354	31,559		631	1,894
2013	2,249	12,766	31,199	15,404		308	924
2014	1,654	8,564	10,828	7,015		140	421
2015	2,650	5,861	12,682	7,064		141	424
2016	5,569	3,610	5,811	4,997		100	300
2017	1,104	2,819	5,432	3,118		62	187

There are no indications in the data that support increasing the quota

# Empirical Approach (cont.)

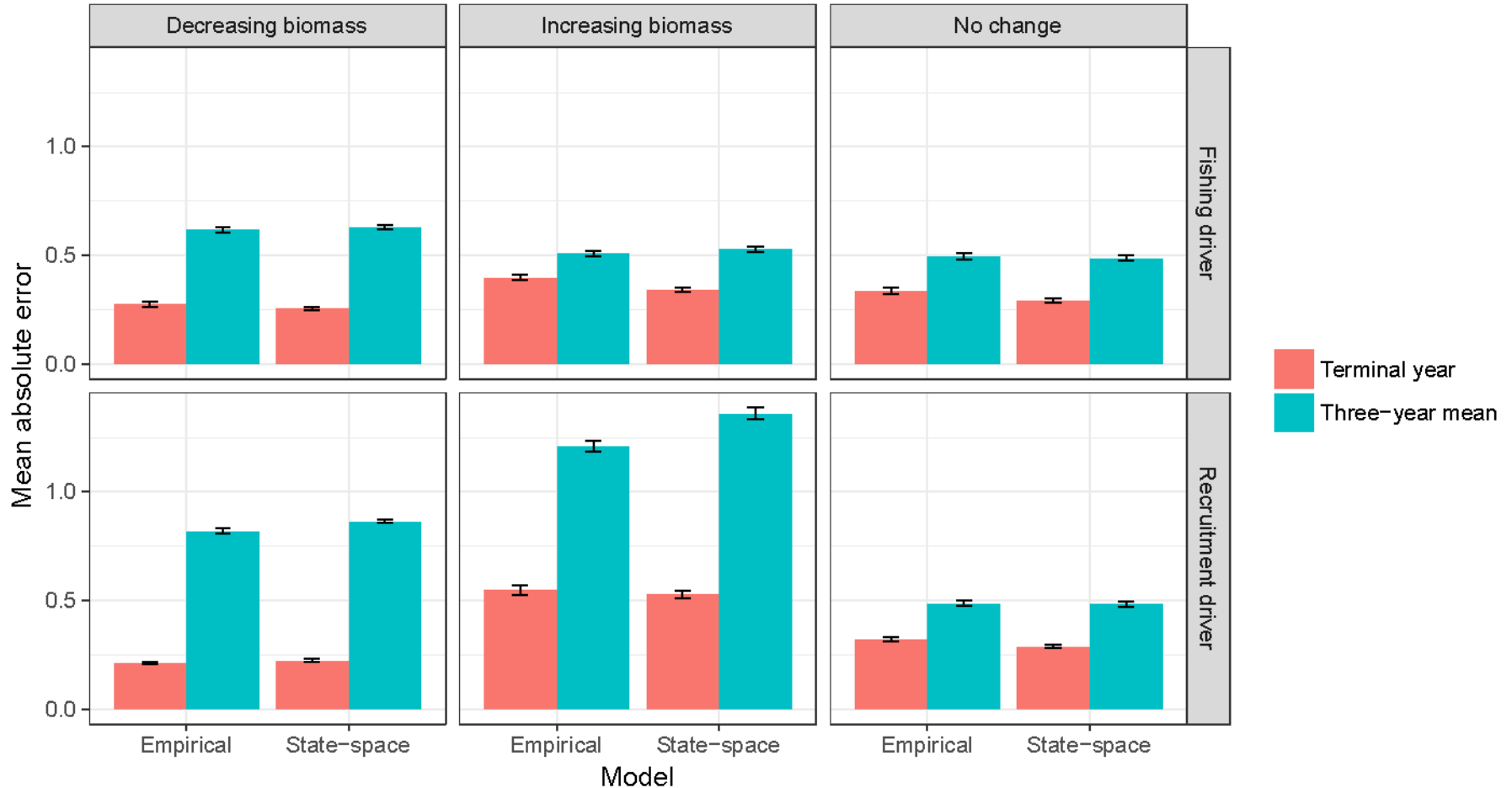
Year	Quota (mt)	Catch (mt)	Quota/Avg	Catch/Avg	Model Type
2010	1,956	1,170	3%	2%	VPA
2011	2,650	1,171	11%	5%	VPA
2012	1,150	725	4%	2%	VPA
2013	500	218	3%	1%	VPA
2014	400	159	6%	2%	VPA
2015	354	118	5%	2%	Empirical
2016	354	44	7%	1%	Empirical
2017	300		10%		Empirical
mean	958	515	6%	2%	

# TRAC Broader Perspective

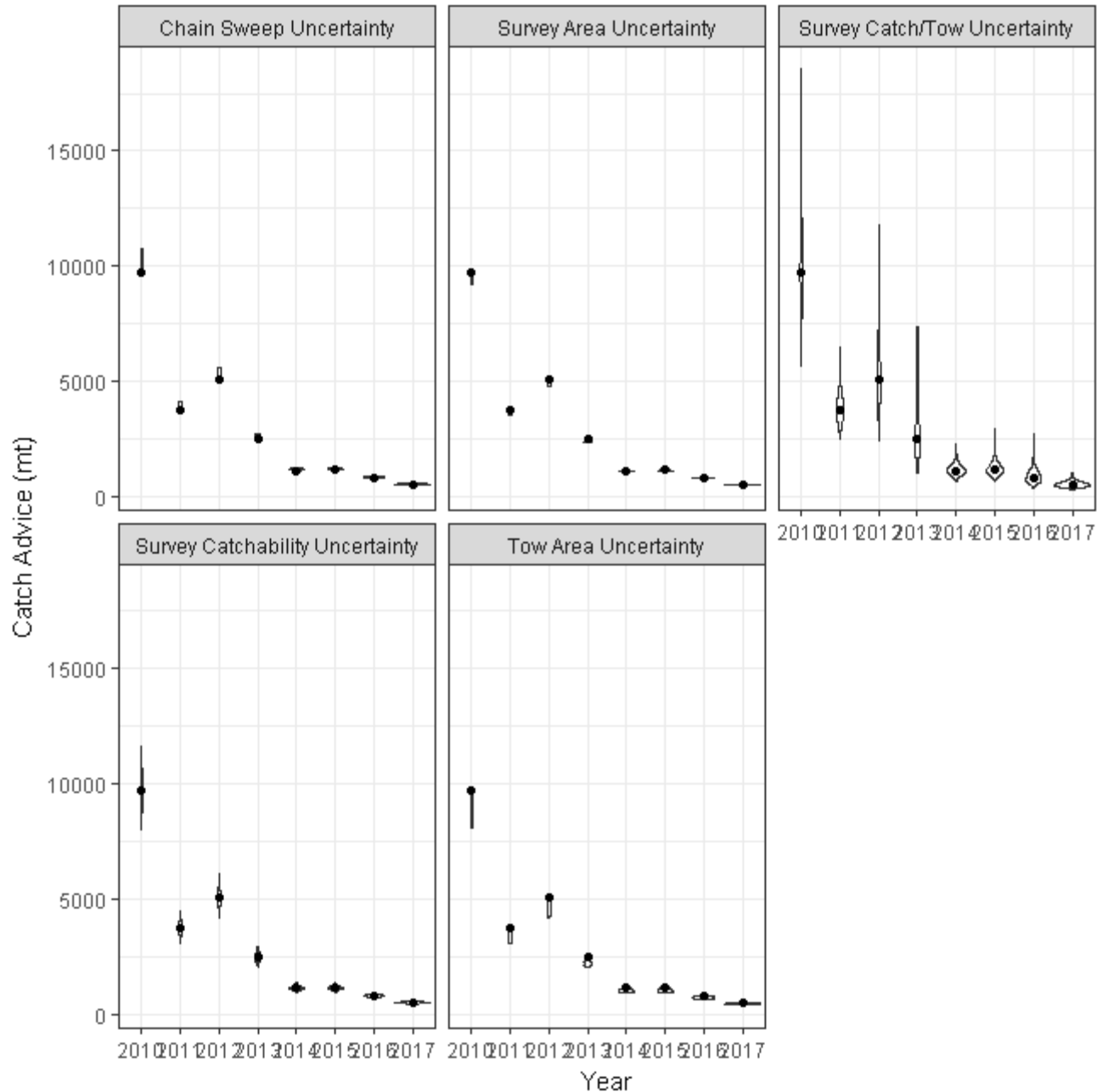
Exploitation Rate	Catch Advice (mt)
2%	62
4%	125
6%	187
8%	249
10%	312
12%	374
14%	437
16%	499

The broader TRAC agreed there were no indications in the data that support increasing the catch advice for 2018 from the 300 mt quota for 2017, but feel the possibility of low catch advice for yellowtail flounder limiting the catch of other species such as sea scallops and groundfish should be considered as well.

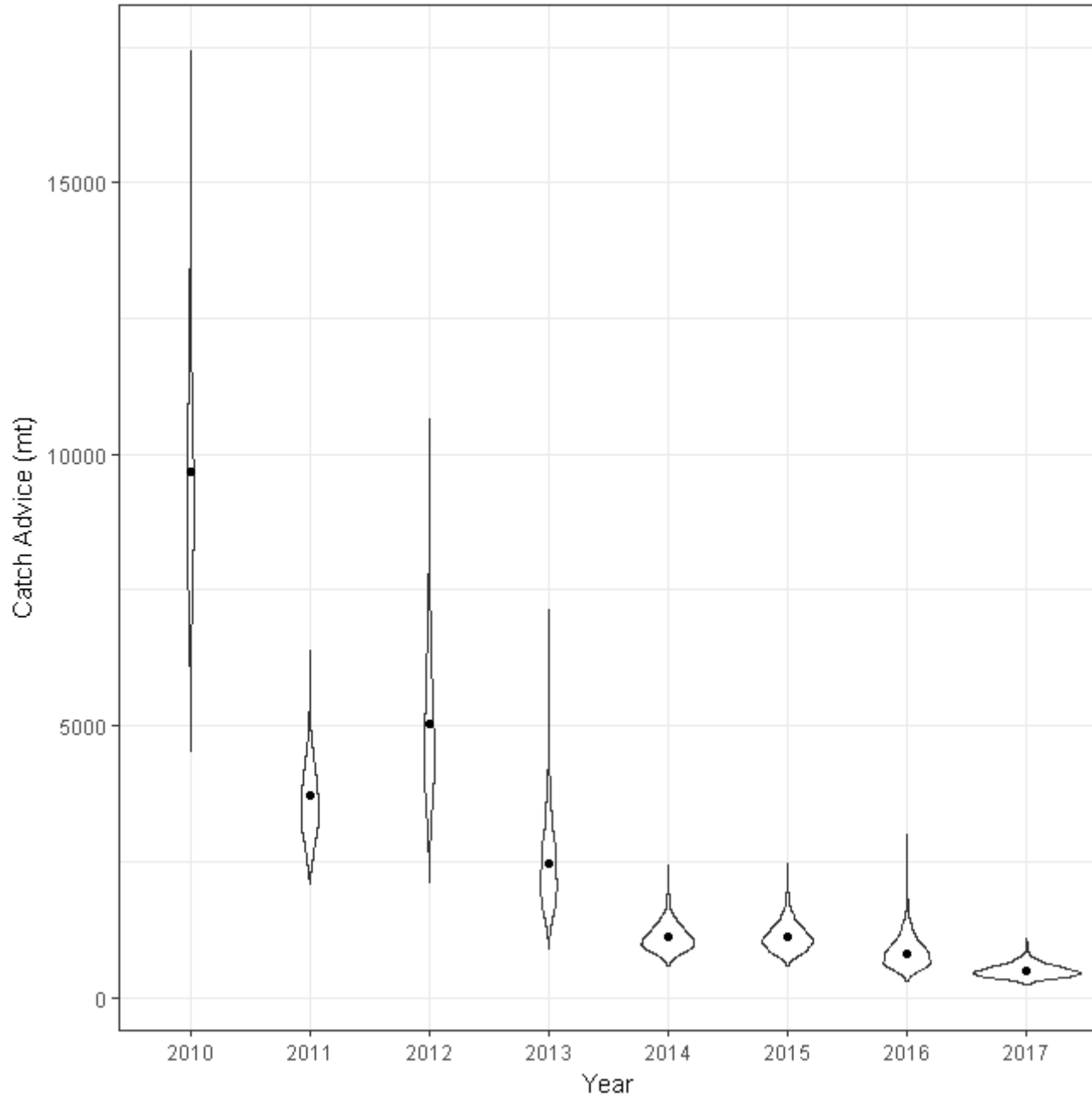
# Perretti et al. Working Paper



# Monte Carlo Simulation



# Monte Carlo Simulation



# Summary

- 2016 catch lowest in time series
- State of resource poor
- Relative  $F$  low and survey  $Z$  high
- TRAC advice 62 to 187 mt for 2018
- No basis to increase quota above 2017 value of 300 mt