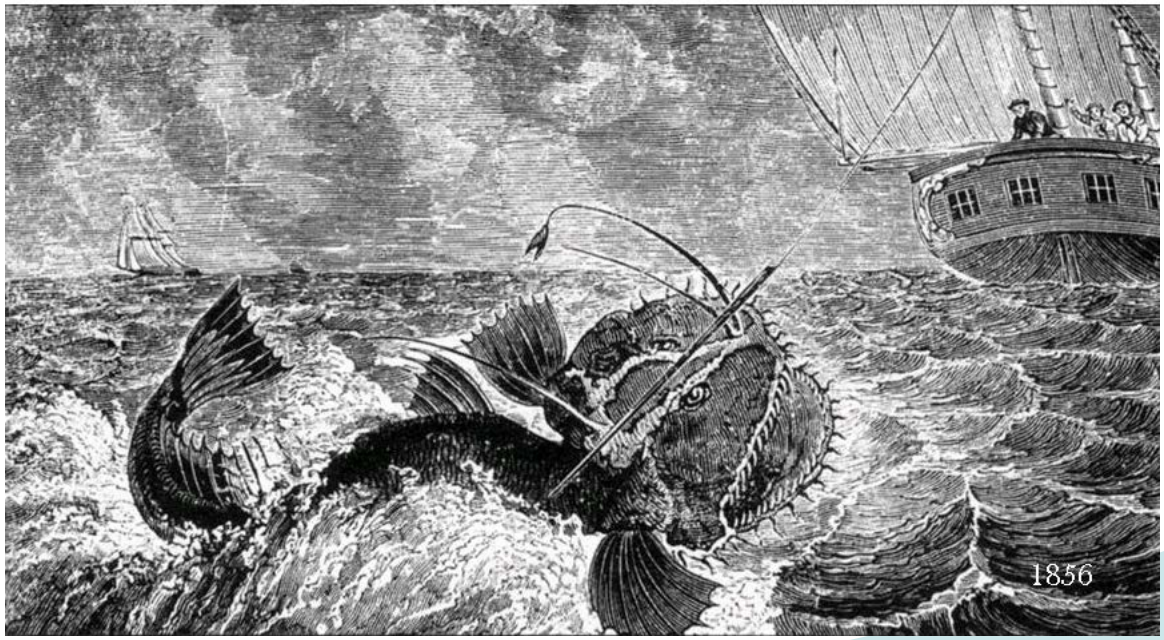
Monkfish Assessment Update 2019

NEFMC SSC

August 21, 2019

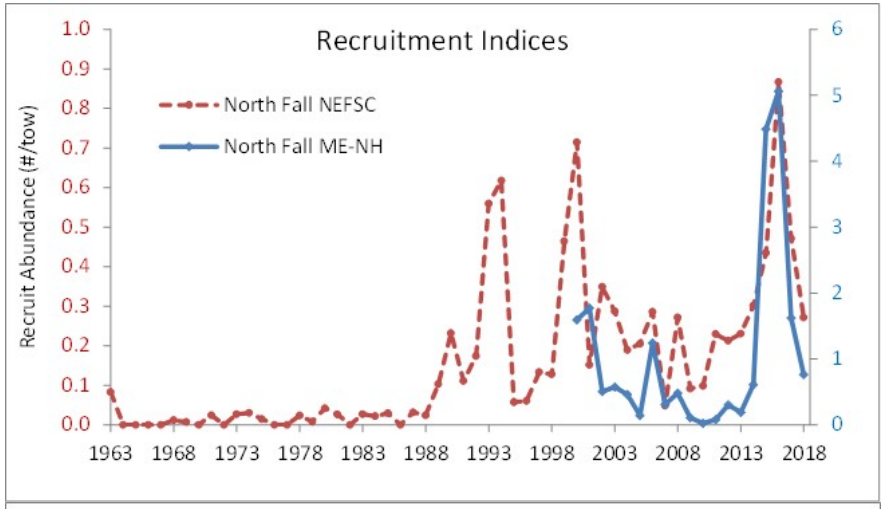


Terms of Reference (TOR)

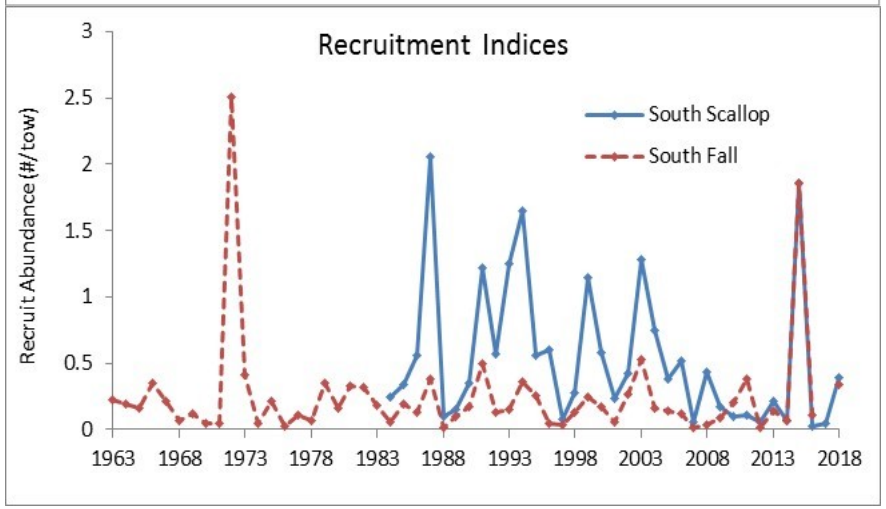
- TOR 1: Update fishery-dependent and independent data
- TOR 2: Prepare an approach to providing scientific advice in absence of model
- TOR 3: Update BRPs
- TOR 4: Describe stock status/indicators
- TOR 5: Provide short-term projections
- TOR 6: Comment on research/data improvements for future assessments

TOR 1. Survey indices - recruitment

North

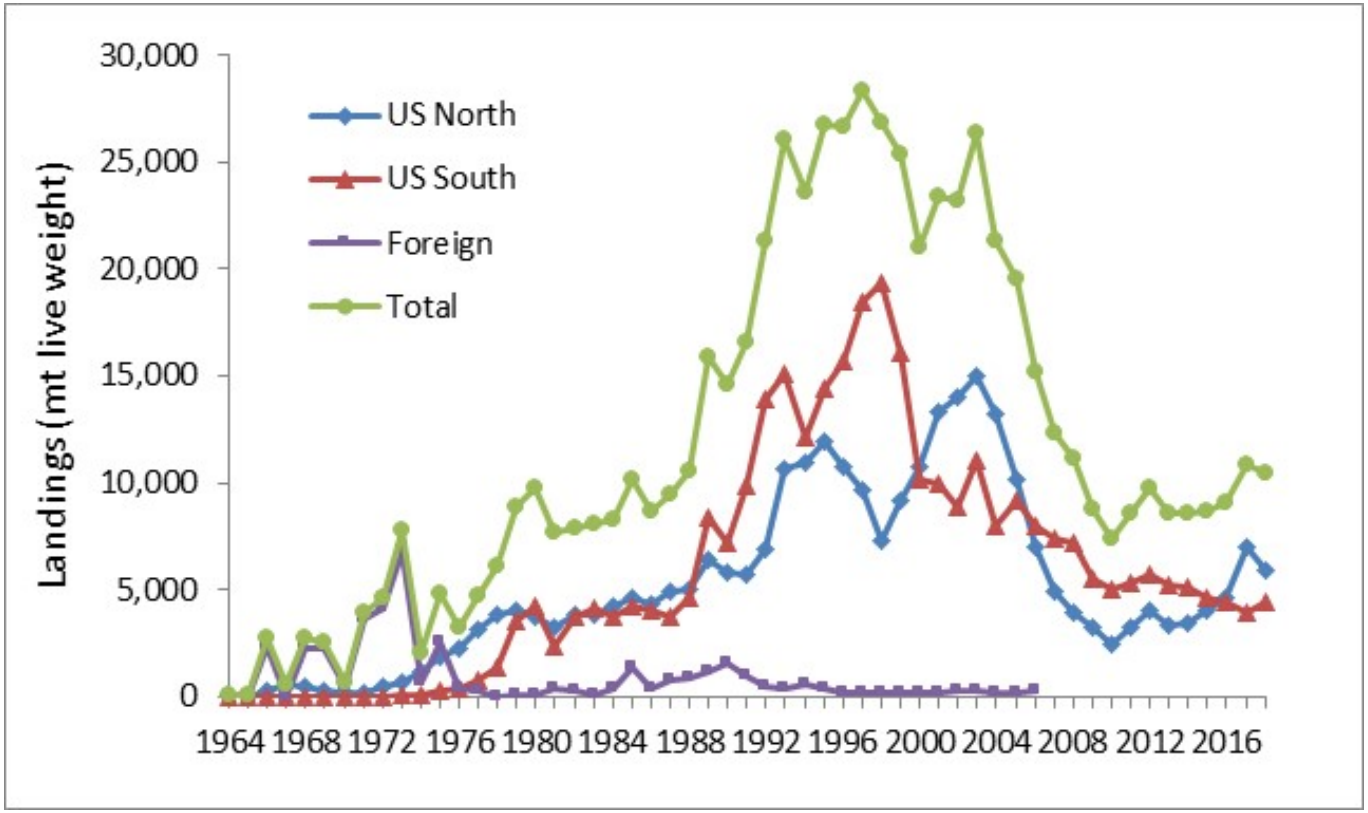


South



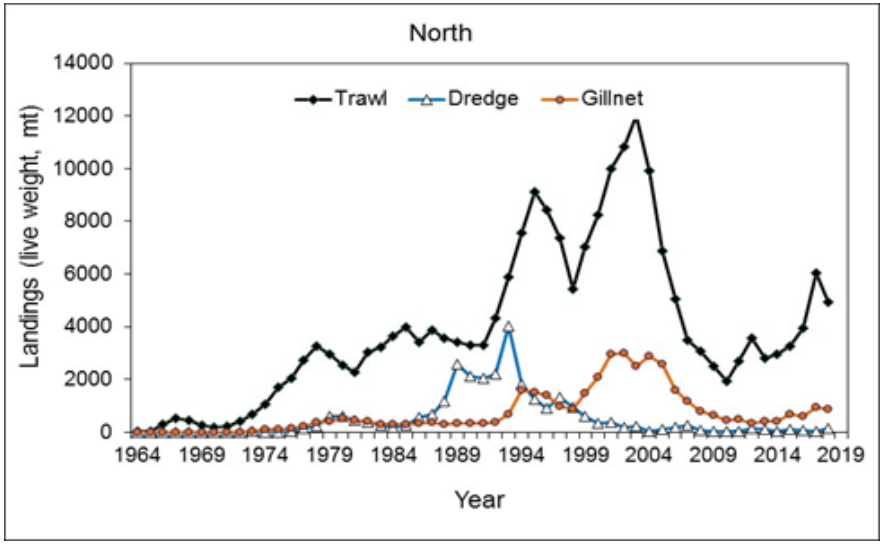
TOR 1: Update data

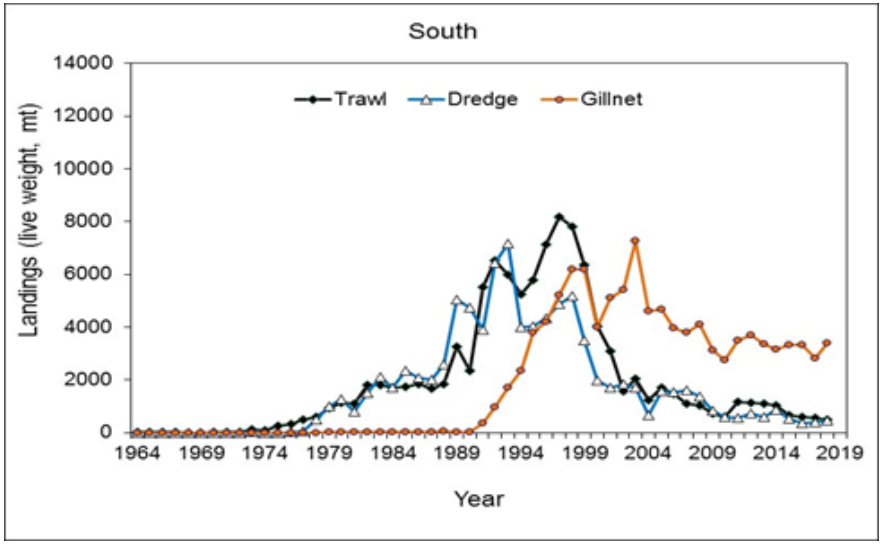
- Commercial landings



TOR 1. Update data – landings by gear

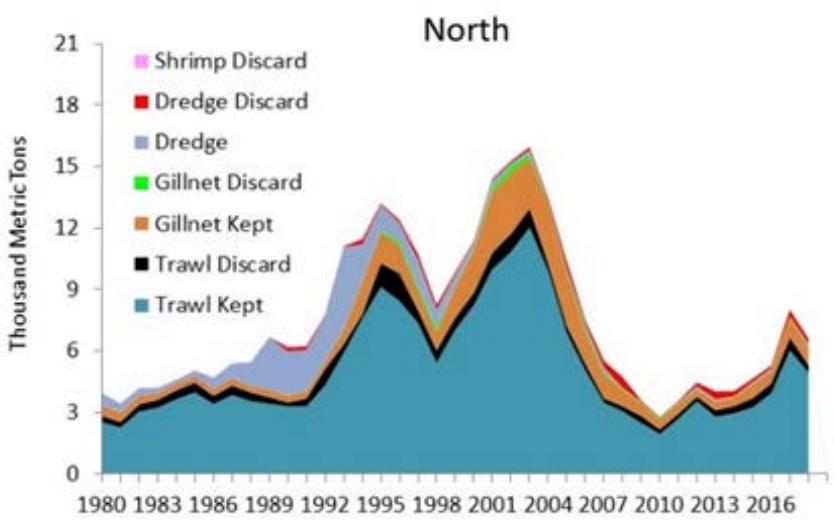
- North landings – trawls South landings – gillnets

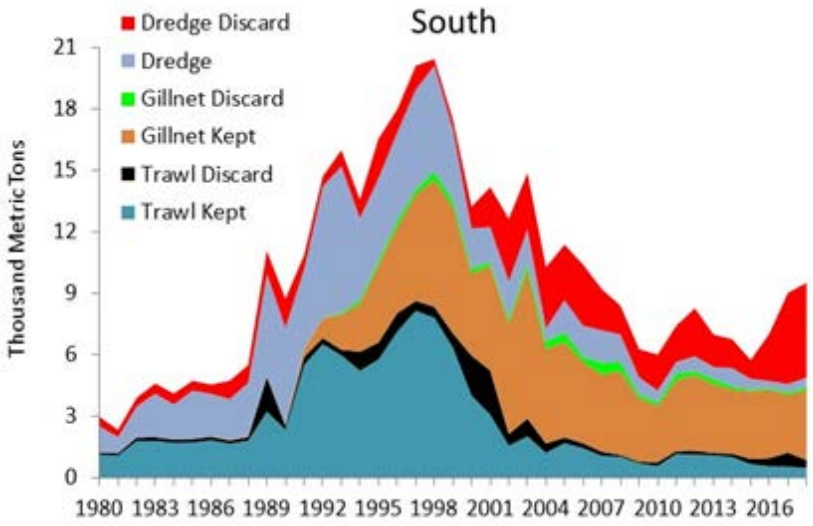




TOR 1. Update data – discards

- By gear type
- Significant discarding of 2015 YC, especially dredge

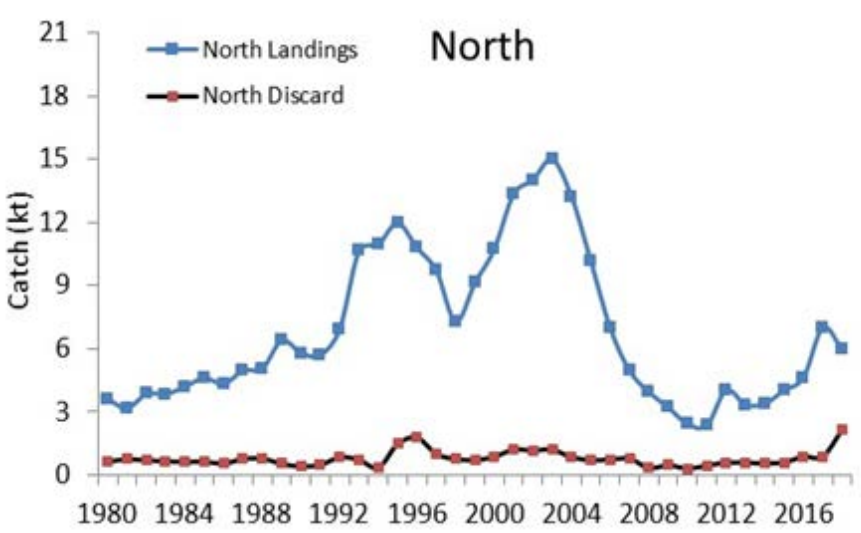


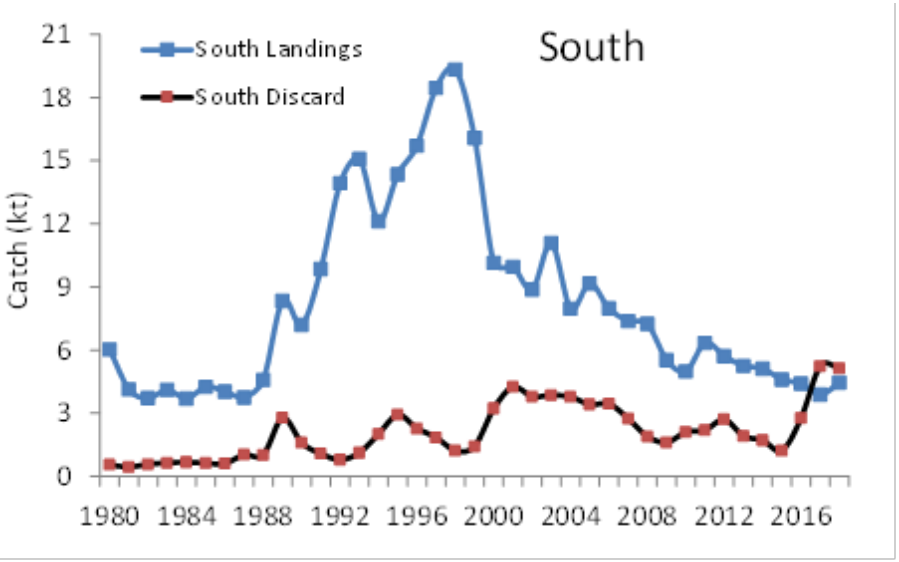


TOR 1. Update data - discards

- Significant discarding of 2015 YC
- D/(D+K) 2016-2018:
- North 18%

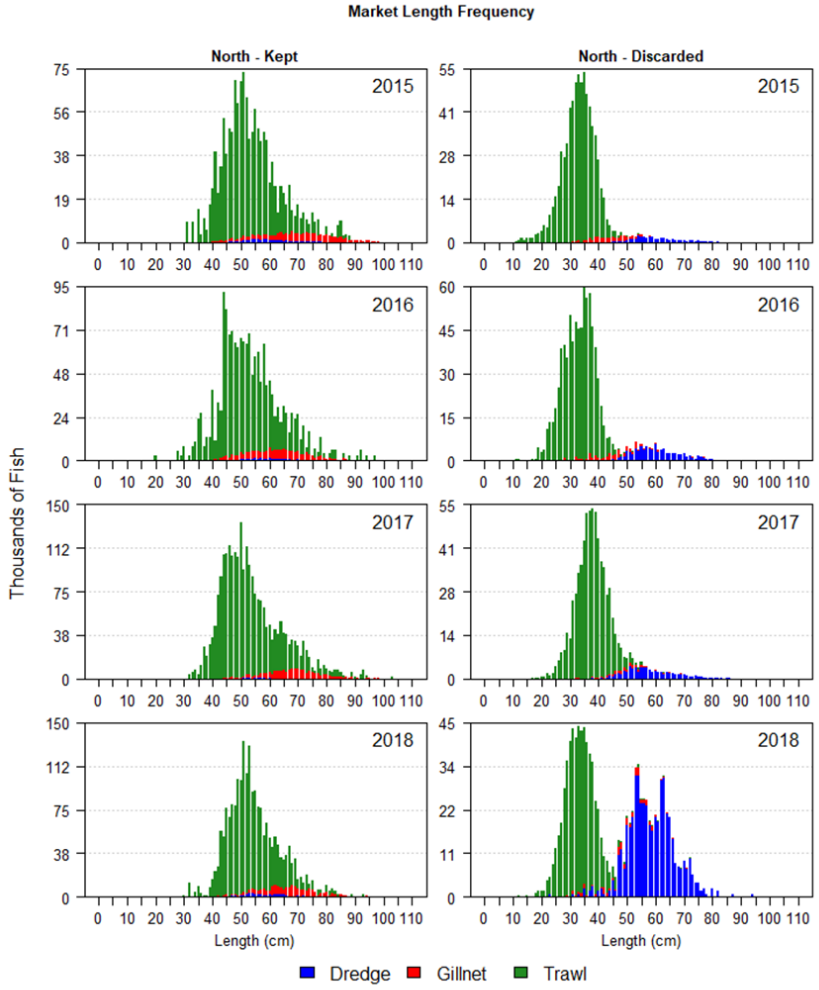
South 51%





TOR 1. Catch length composition - North

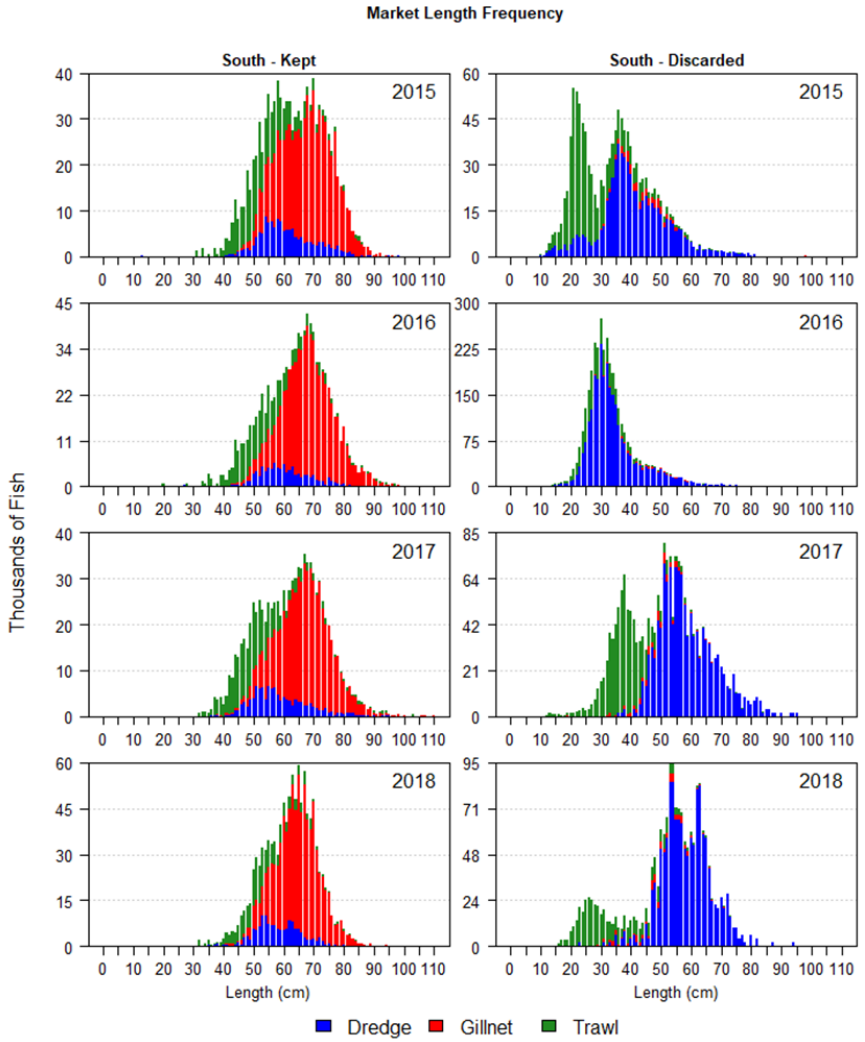
Kept



Discarded

TOR 1. Catch length composition - South

Kept

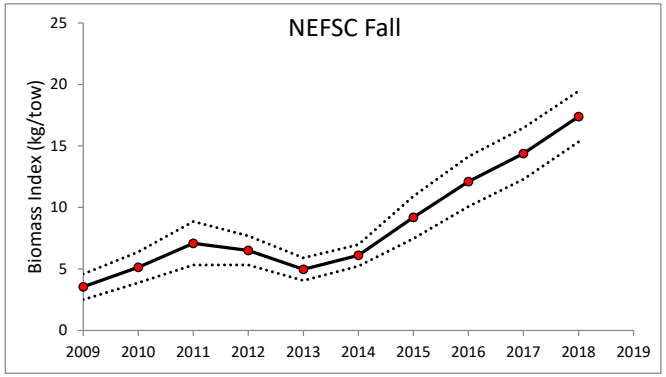


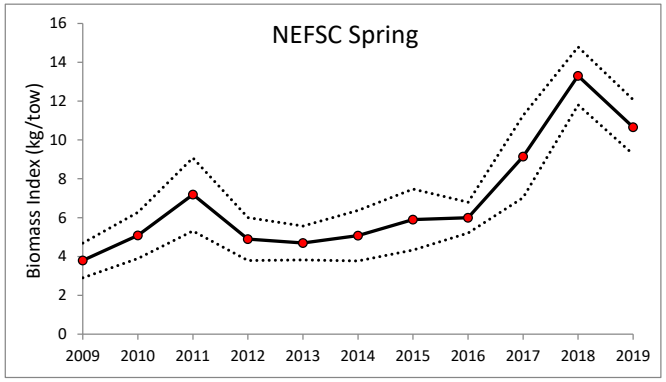
Discarded

TOR 1. Survey indices - North

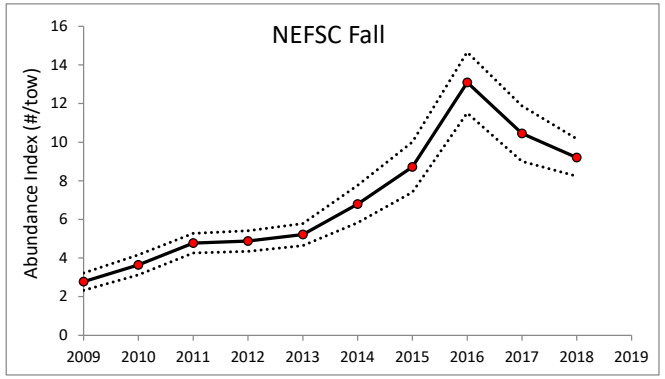
- FSV Bigelow series

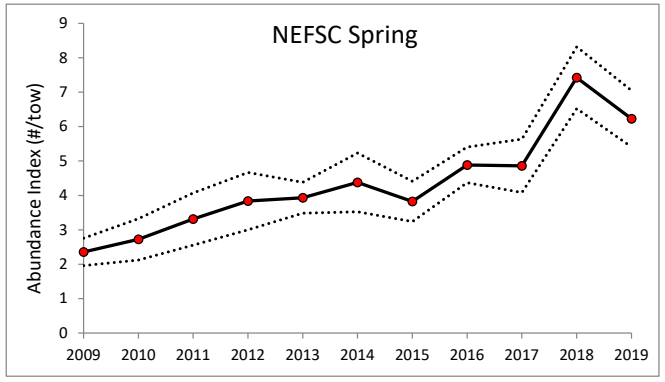
Biomass





Abundance

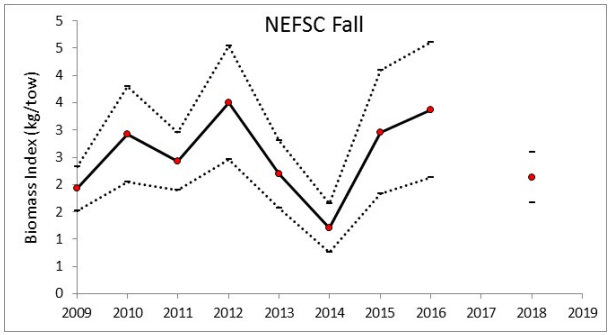


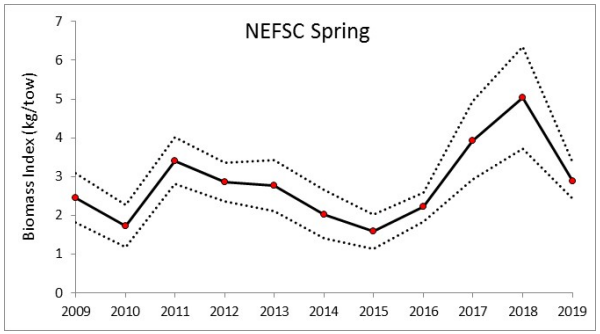


TOR 1. Survey indices - South

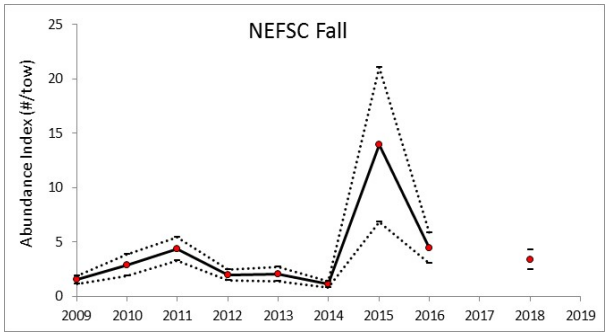
- FSV Bigelow series

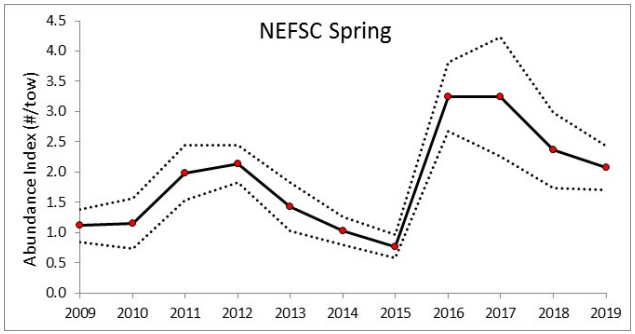
Biomass





Abundance



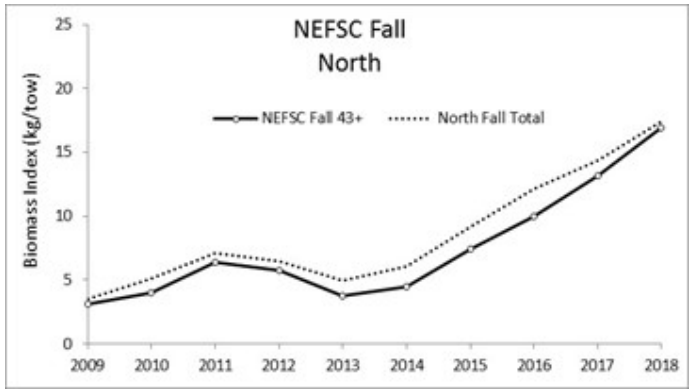


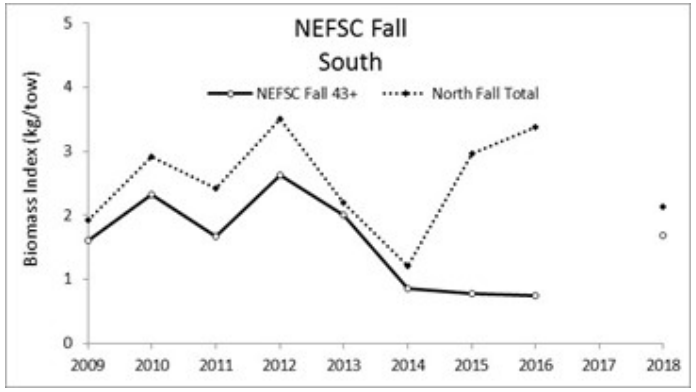
TOR 1. Exploitable stock indices - 43+ cm

North-fall

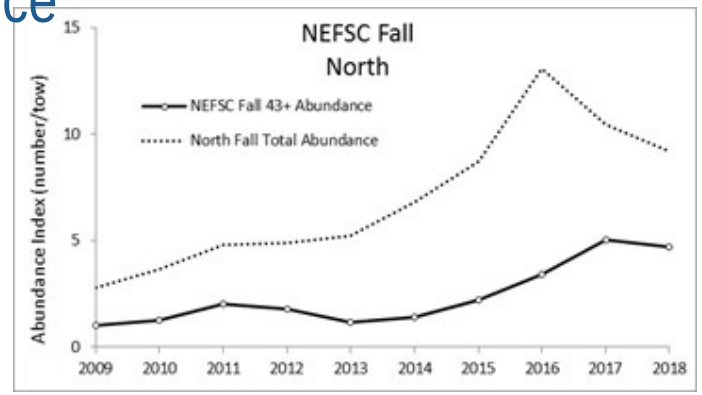
South-fall

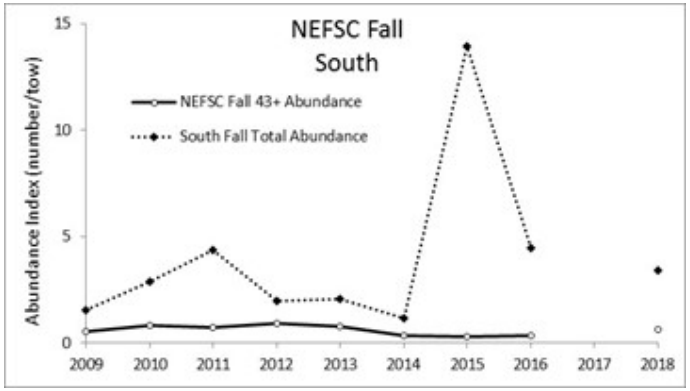
Biomass





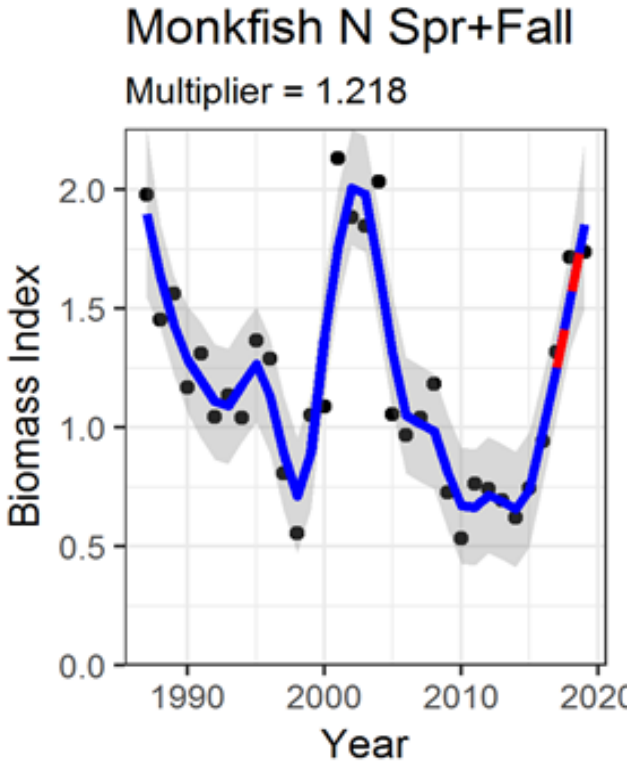
Abundance

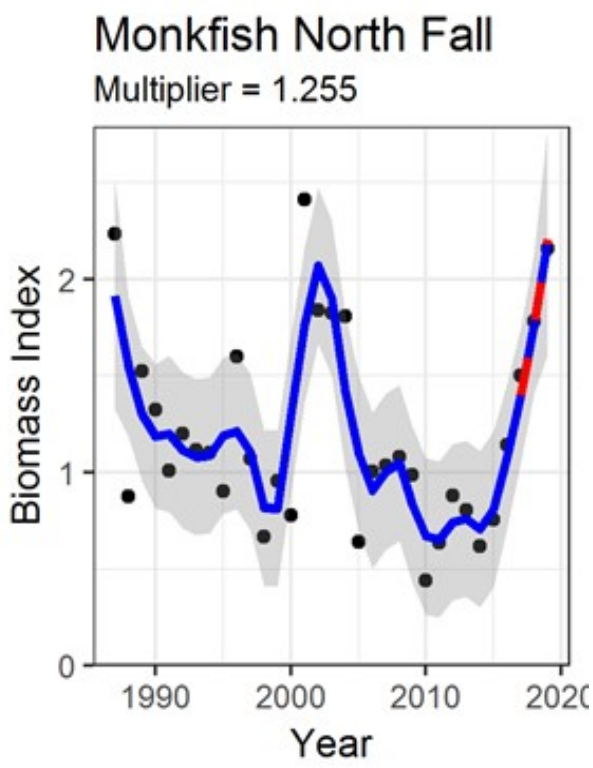




TOR 3. Scientific advice in absence of model

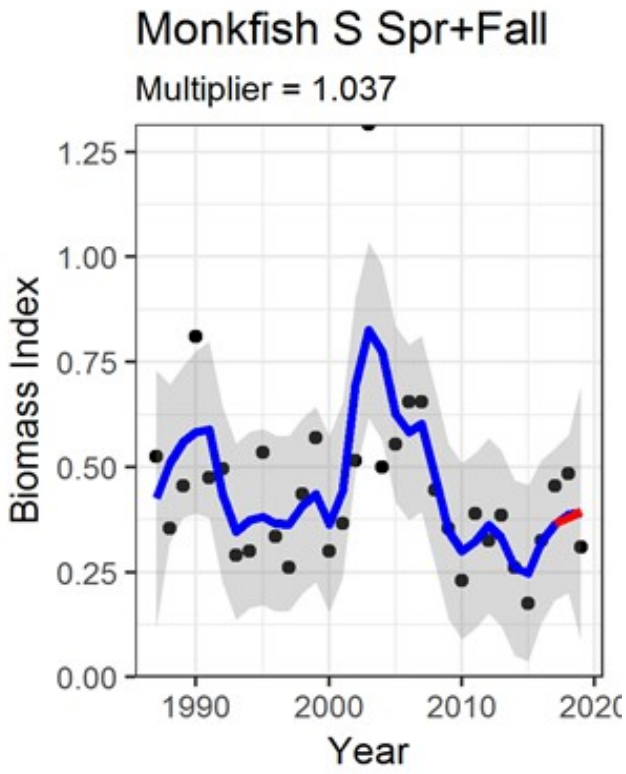
- North

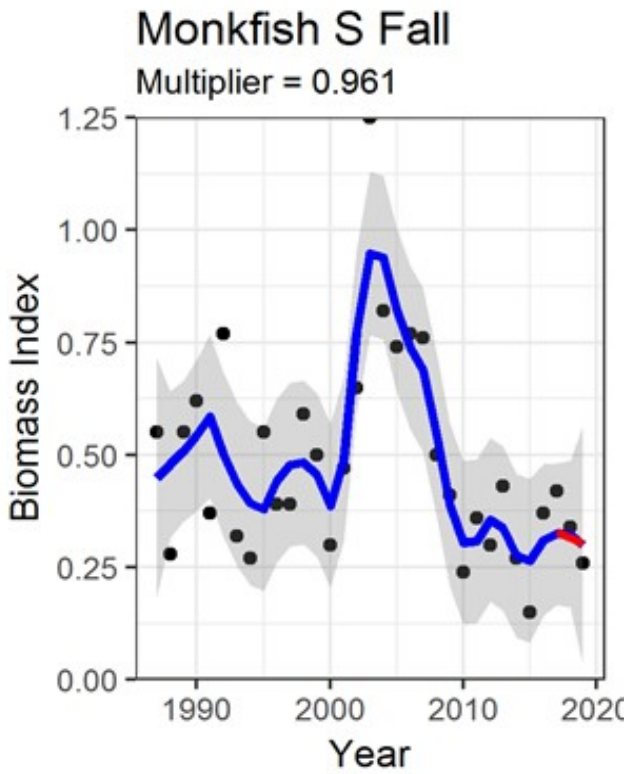




TOR 3. Scientific advice in absence of model

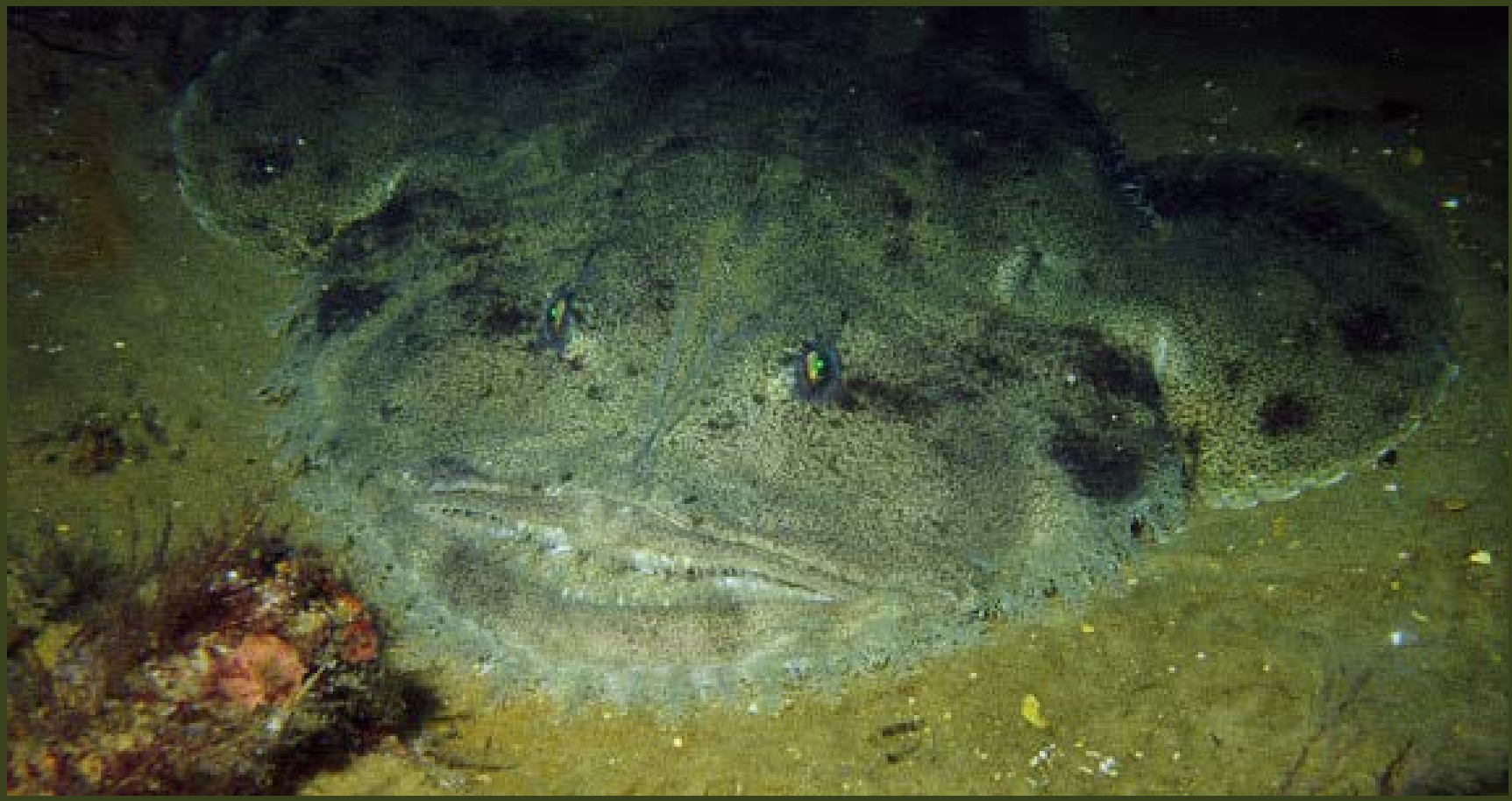
- South
  - Missing index for fall 2017; fall 2016 and 2018 averaged





TOR 4. Qualitative descriptions of stock status

- Status improving (North) or steady (South) past 3 yr
- 2015 recruitment event major influence
  - Biomass increasing due to individual growth in 2015 YC, but 2015 YC abundance declining
  - 2015 YC now in exploitable size range
  - Recruitment indices have returned to average levels
  - Patterns of change in biomass may be influenced by movement between management areas

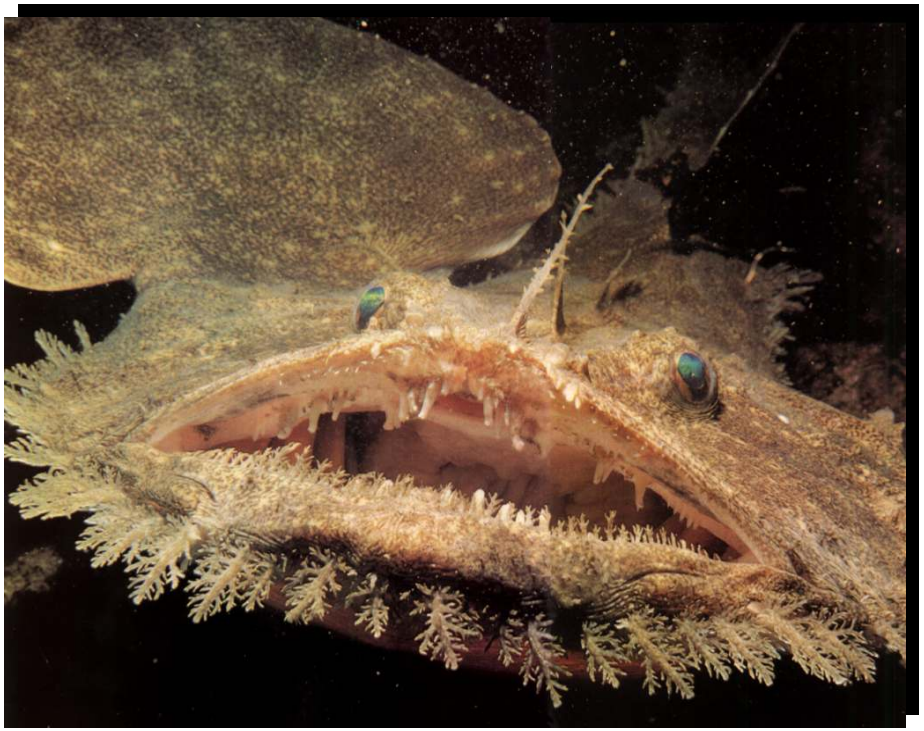


Percent Change Estimates

		2016 assessment		2019 assessment update		
		Spring+Fall	Fall only	Spring+Fall	Fall only	
North	Total B			1.22	1.26	fall lagged so terminal point is avg of fall 2018 and spring 2018
	Exploitable B					fall lagged so terminal point is avg of fall 2018 and spring 2019
	Exploitable B	1.06	1.02	1.38	1.34	fall not lagged so terminal point is avg of fall and spring 2018
	Total Abundance			1.03	0.94	fall lagged so terminal point is avg of fall 2018 and spring 2018
South*	Total B			1.04	0.96	fall lagged so terminal point is avg of fall 2018 and spring 2018
	Exploitable B					fall lagged so terminal point is avg of fall 2018 and spring 2019
	Exploitable B	0.87	0.80	1.58	1.42	fall not lagged so terminal point is avg of fall and spring 2018
	Total Abundance			0.73	0.51	
*2016-2018 averaged to interpolate for missing 2017 fall index in south						

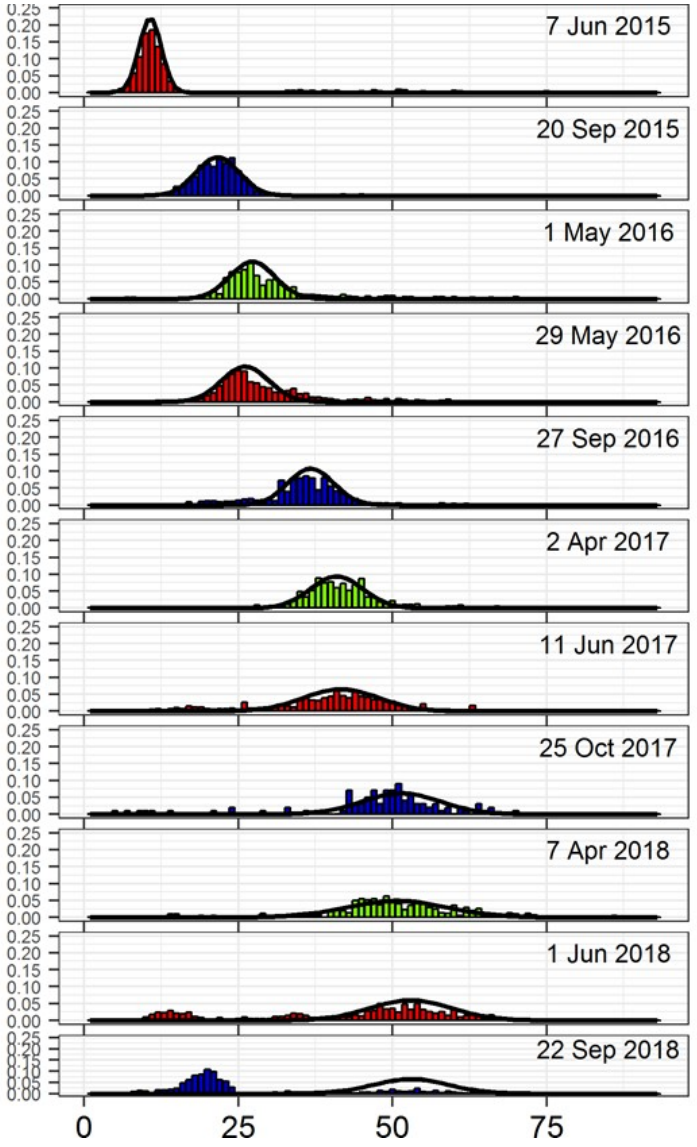
TOR 6. Research areas / data issues

- Age and growth
- Stock structure and movements
- Cannibalism?

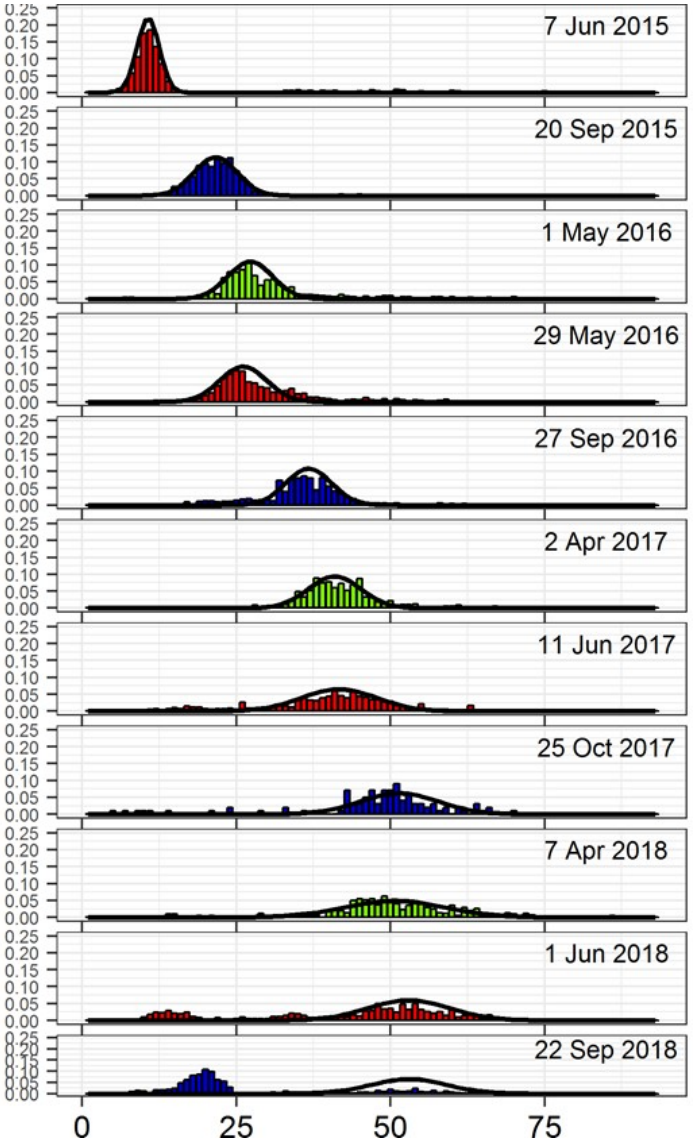


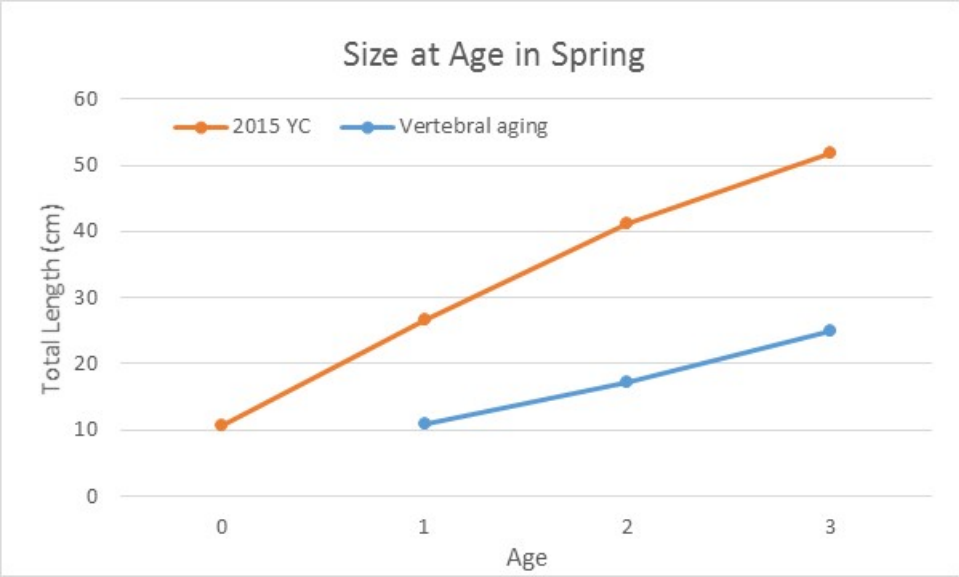
A&G research

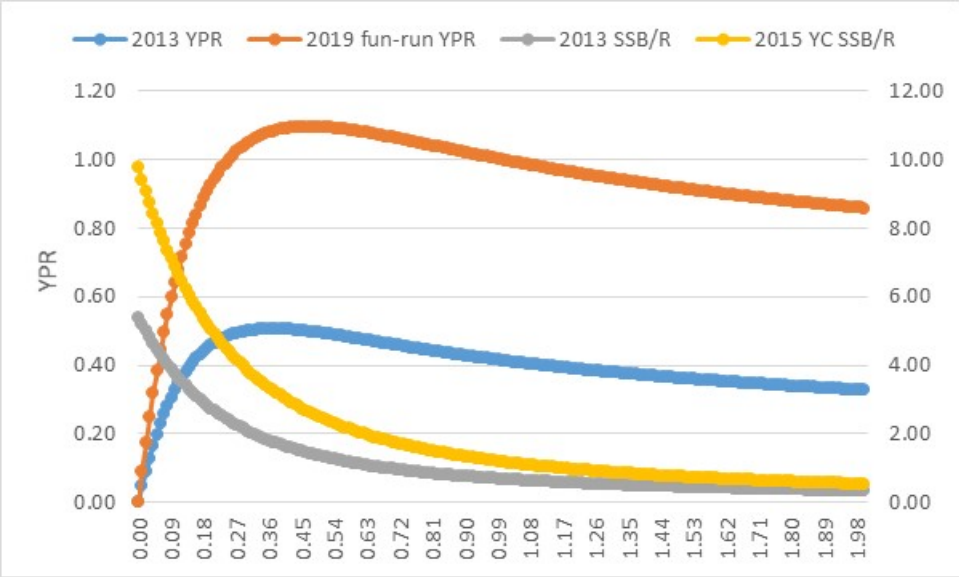
- 2015 YC
  - Sampled over time within size mode
  - Aged ‘known’ age fish using verts and illicia
  - 0% agreement with ‘known’ age, all ages overestimated
  - Current work: hardpart microconstituents, correlate (or not) with optical zonation (Secor lab, U MD, CBL)



- 2015 YC


7 Jun 2015
20 Sep 2015
1 May 2016
29 May 2016
27 Sep 2016
2 Apr 2017
11 Jun 2017
25 Oct 2017
7 Apr 2018
1 Jun 2018
22 Sep 2018
0.25
0.20
0.15
0.10
0.05
0.00
0
25
50
75


Size at Age in Spring
2015 YC
Vertebral aging
Total Length (cm)
60
50
40
30
20
10
0
0
1
2
3
Age


2013 YPR
2019 fun-run YPR
2013 SSB/R
2015 YC SSB/R
YPR
1.20
1.00
0.80
0.60
0.40
0.20
0.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
0.00
0.09
0.18
0.27
0.36
0.45
0.54
0.63
0.72
0.81
0.90
0.99
1.08
1.17
1.26
1.35
1.44
1.53
1.62
1.71
1.80
1.89
1.98

TOR 3. Scientific advice for management:“Plan B”

- Used for GB cod 2015 and monkfish 2016; updated version used in 2019 (PlanBSmooth.R)
  - Average NEFSC fall and spring surveys, total biomass
  - Smooth indices (Loess, α=0.30)
  - Log-linear regression to estimate slope over last 3 years
  - Percent change =exp(slope)
  - Apply percent change to average catch for previous 3 years to estimate new TAC