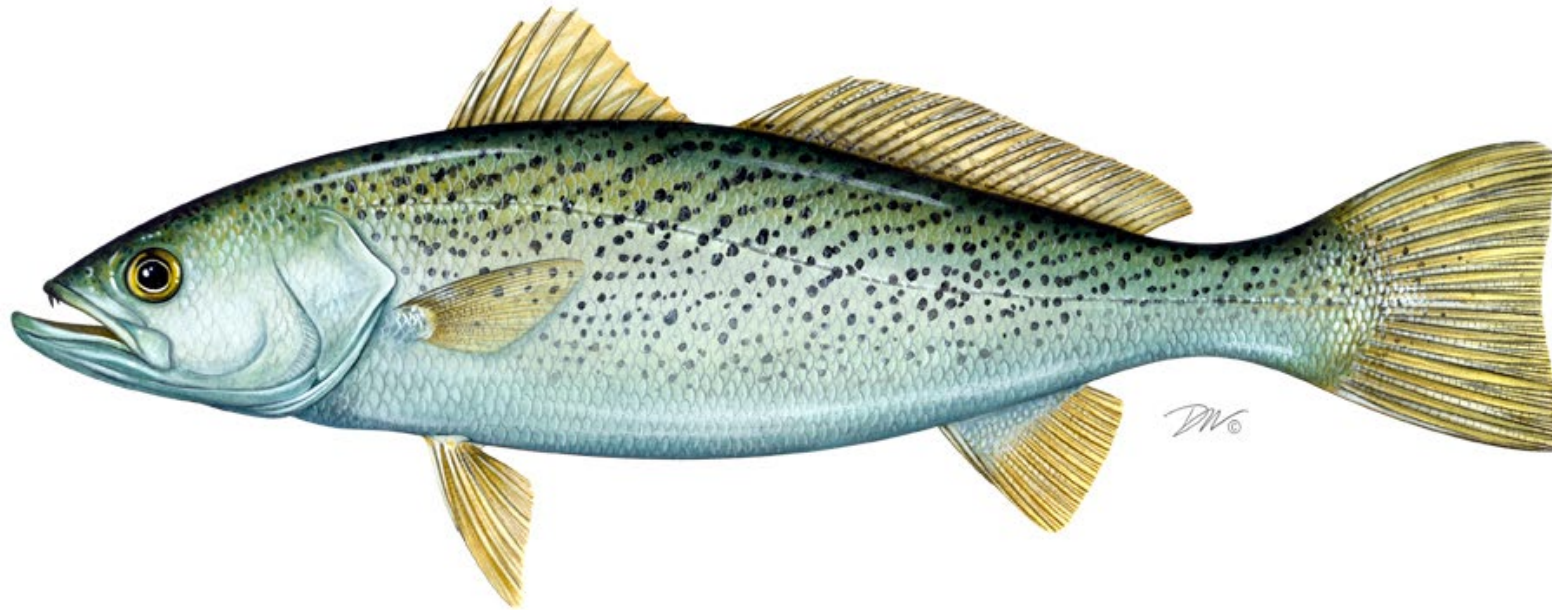


Weakfish Assessment Update



Erin Levesque

October 29, 2019

Background



- Range from MA to FL but most abundant between NY and NC
- Hybridization zone in FL
- Protracted spawning season
- Mature by Age 1
- Migration north/inshore and south/offshore



Cynoscion regalis



DATA

Data



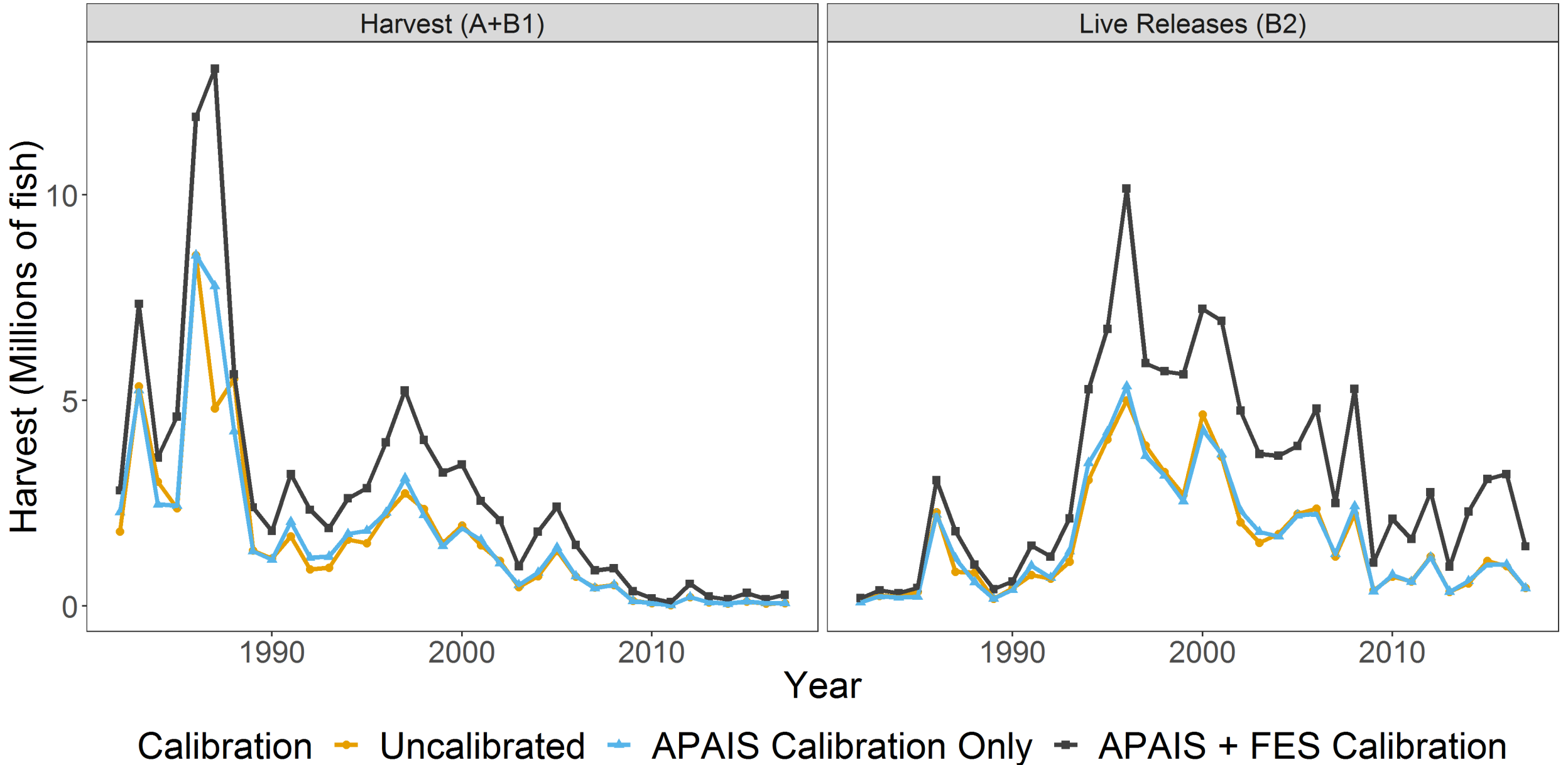
- Added 3 years of data (2015-2017)
- Sources: Fishery Dependent and Independent
 - Abundance Indices same as in 2016 Benchmark
 - Recreational data updated as a result of MRIP changes
- Updated data set was also used in Ecological Reference Point Assessment

New MRIP Estimates

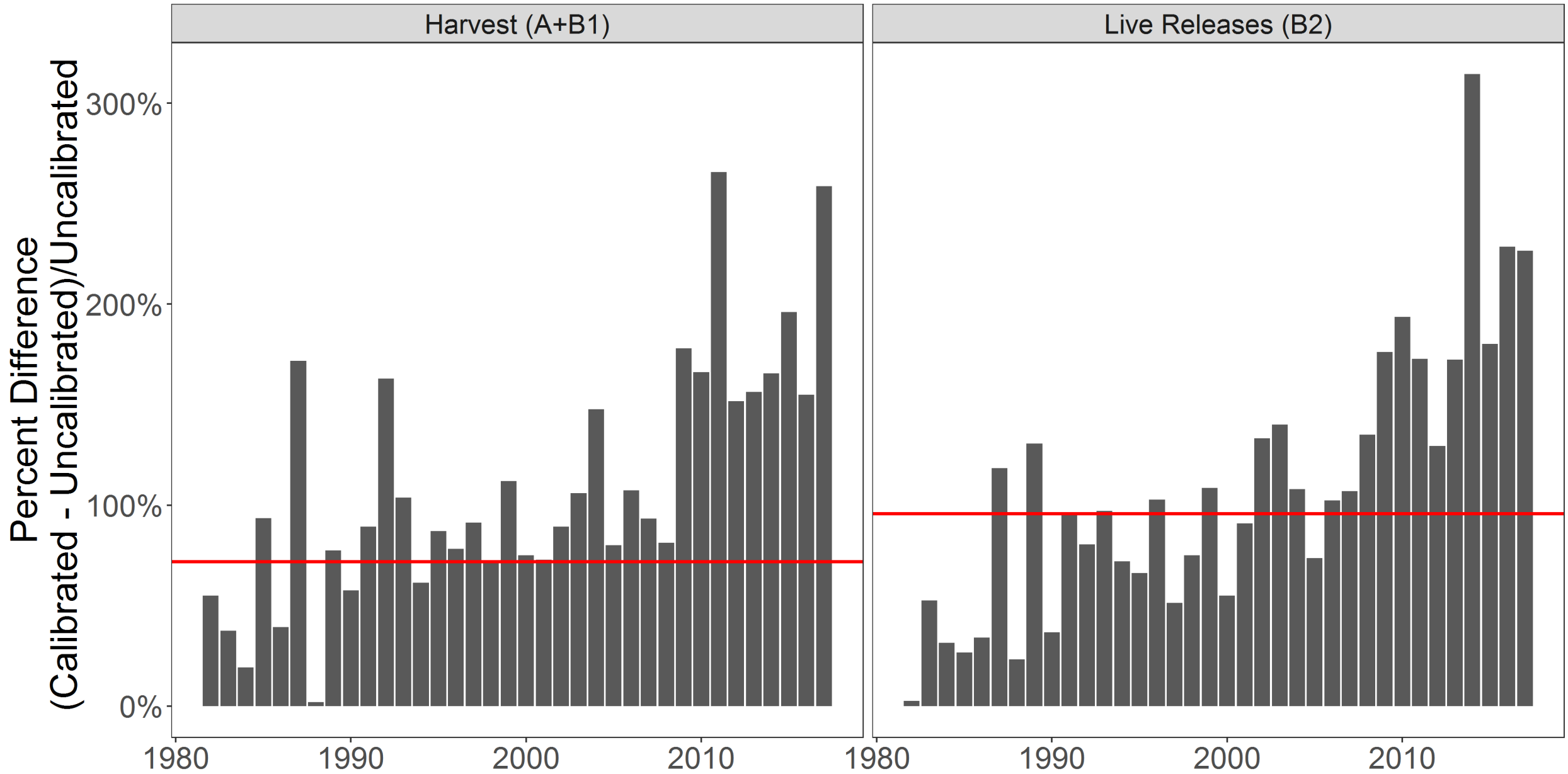


- Background: MRIP has transitioned from a phone-based effort survey to a mail-based effort survey in 2018
- Mail-based gives much higher estimates of effort → much higher estimates of catch
- 2013 improvements were made to APAIS Access-Point Angler Intercept Survey (CPUE and length)
- MRIP calibrated the historical time series of catch to match the new estimates

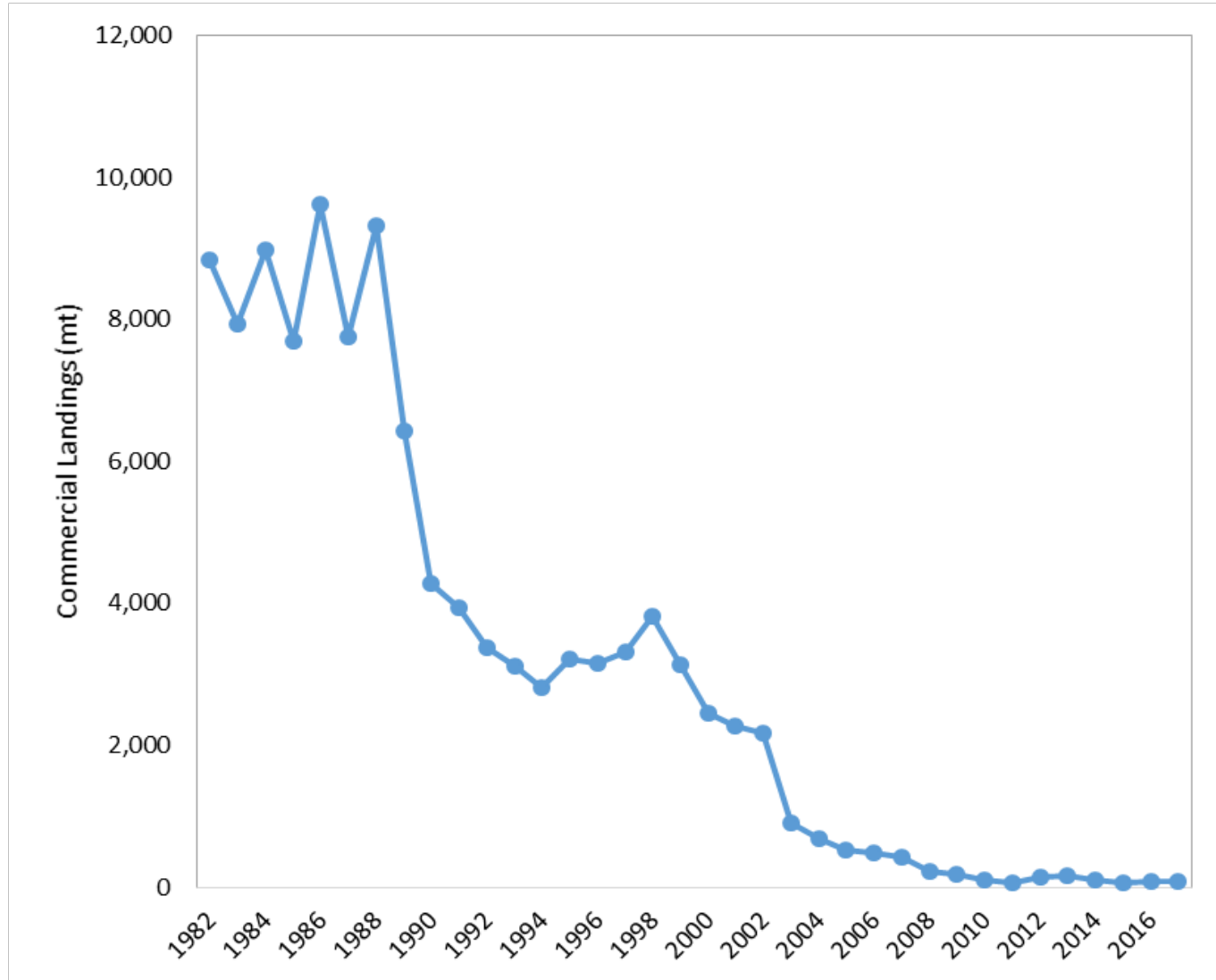
Coastwide Totals



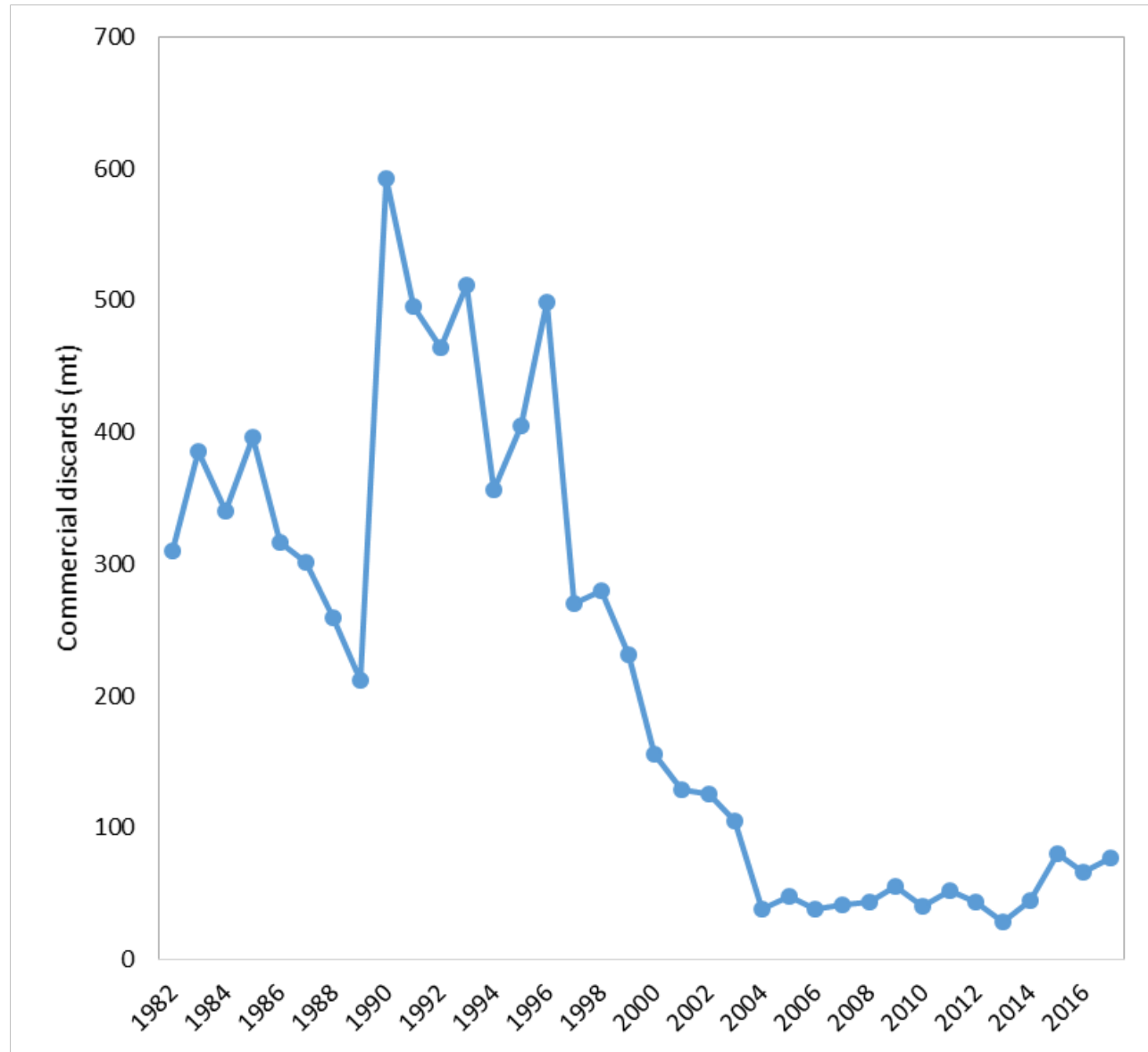
Coastwide Percent Difference



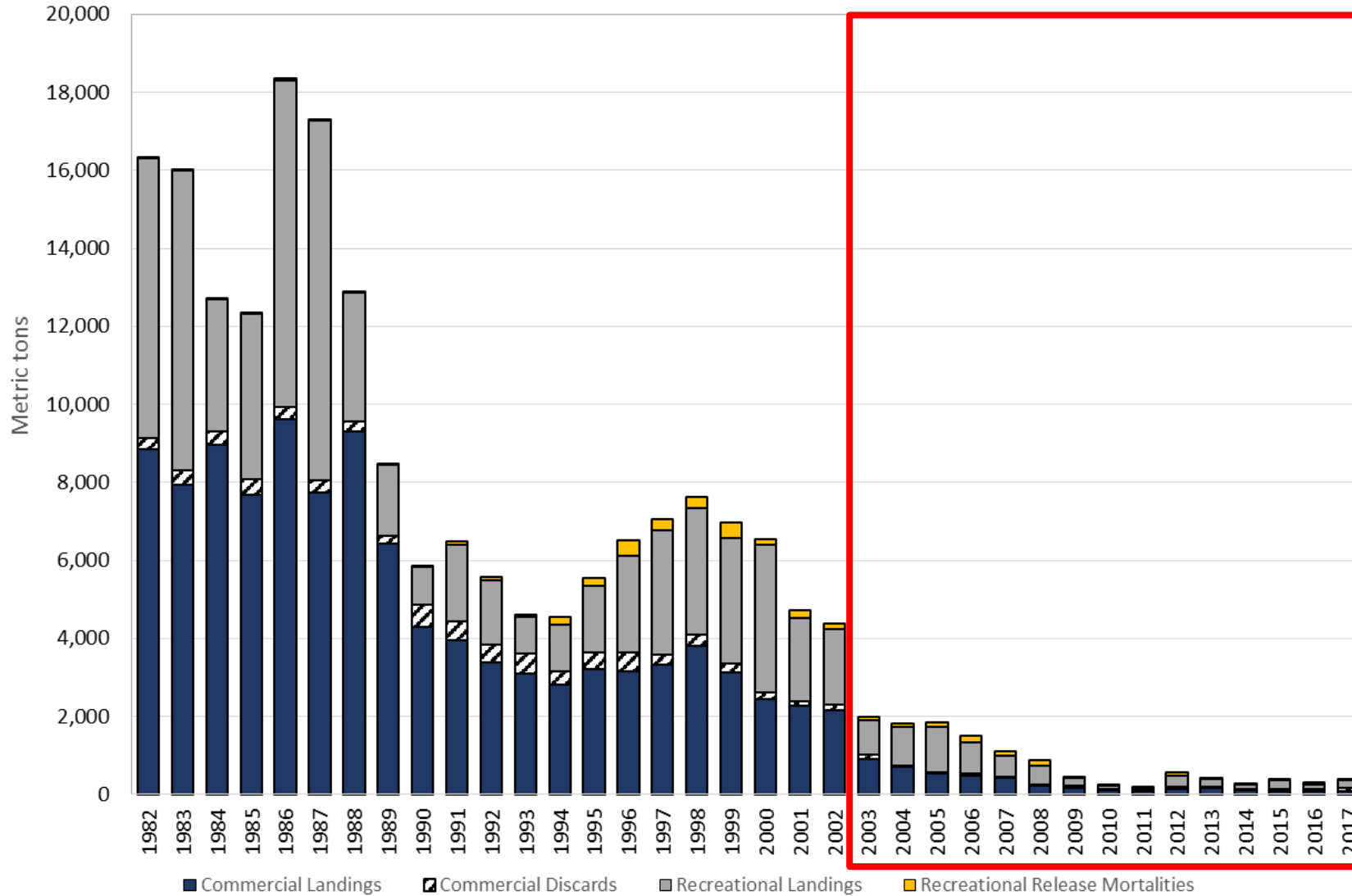
Commercial Landings



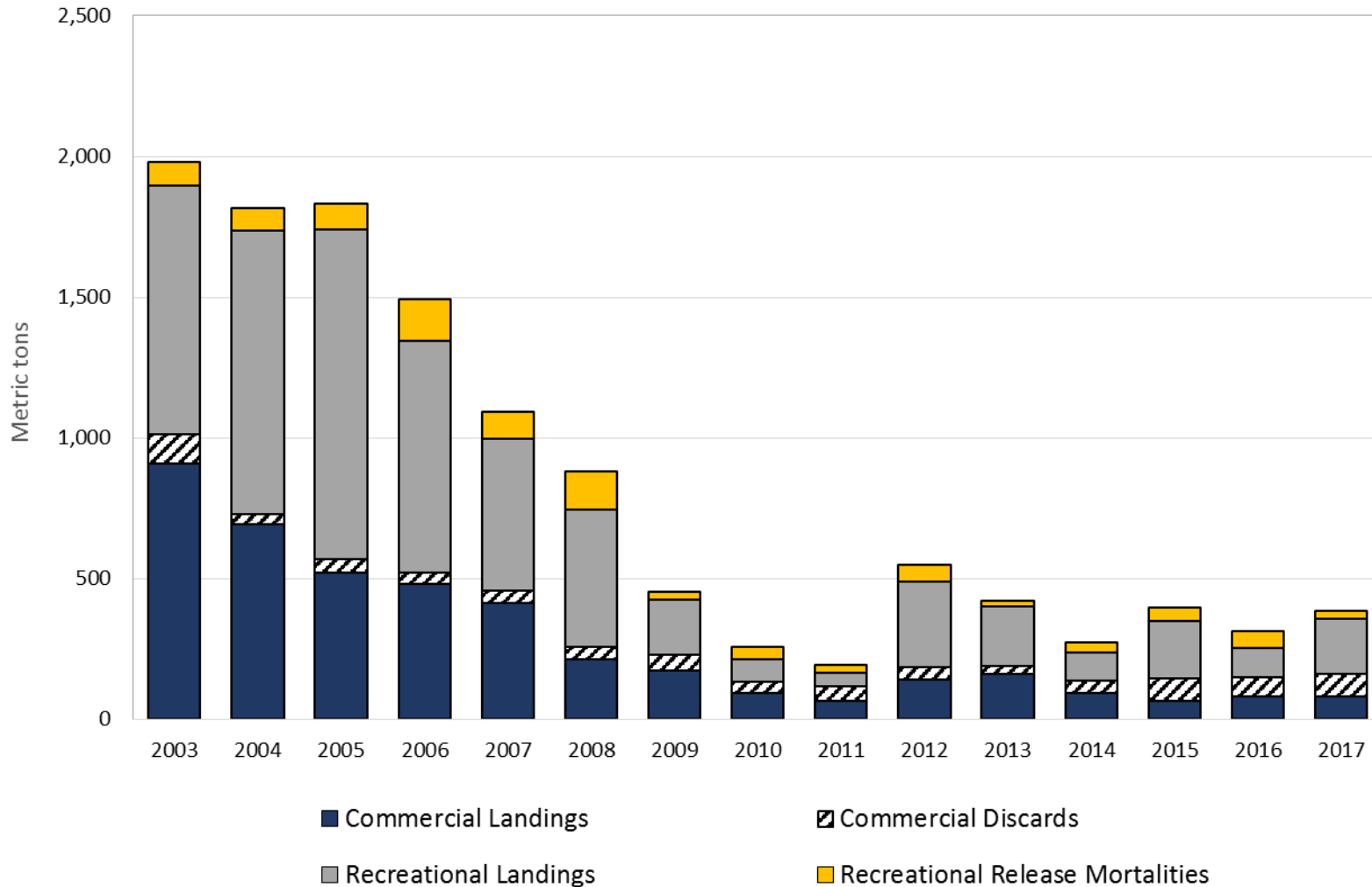
Commercial Discards



Total Removals



Total Removals (2003 – 2017)



- Total removals remain low
- Larger proportion due to discards in recent years

Catch-at-Age



- Developed age-length keys (ALKs) by:
 - Year
 - Season (Early=Jan-Jun, Late=Jul-Dec)
 - Region (South=FL-NC, North=VA-MA)
- Developed length frequencies by:
 - Year
 - Season
 - Region
 - Fishery (commercial vs. rec)
 - Disposition (landed vs. released/discarded)
- Catch-at-age calculated for each region, season, year, fishery, and disposition, and then pooled into total annual CAA by fishery



Commercial Length Frequencies



- Landings: state samples
 - South region: NC only samples
 - North sub-regions (based on commercial minimum size): MA-NY, NJ-MD, VA
- Discards: NEFOP samples



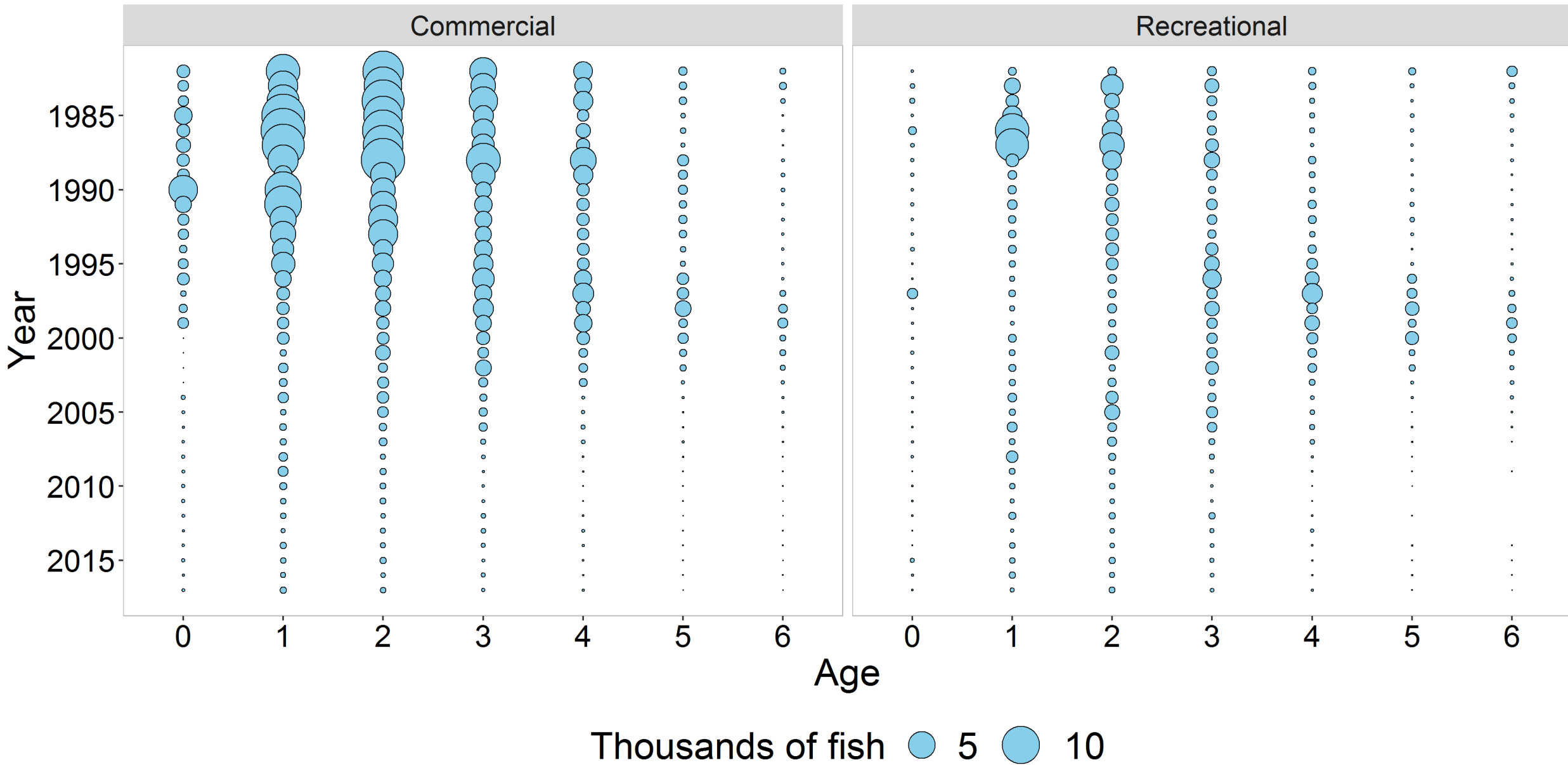
Recreational Length Frequencies



- Landings: MRIP - APAIS
- Live releases:
 - 2004 – 2017: MRIP headboat observers
 - 2000 – 2003: Pooled 2004 – 2008 MRIP headboat observers
 - 1982 – 1999: Same as harvest (assumes no regulatory discarding)



Catch-at-Age



Indices of Abundance



Age 1+ Indices

- NC Independent Gill Net Survey (NC PSIGNS)
- SEAMAP
- ChesMMAP
- DE Delaware Bay 30' Trawl Survey
- NJ Ocean Trawl
- NEFSC Bottom Trawl (through 2008)
- NEAMAP
- MRIP HPUE

YOY Indices

- NC Pamlico Sound Survey (NC P195)
- VIMS Chesapeake Bay Juvenile Fish Trawl Survey
- MD Coastal Bays Juvenile Trawl Survey
- DE Delaware Bay Juvenile Trawl Survey
- NY Peconic Bay Juvenile Trawl Survey
- CT Long Island Sound Trawl Survey (CT LISTS)
- RI Seasonal Trawl Survey
- Composite YOY



MODEL RESULTS

Stock Assessment Model



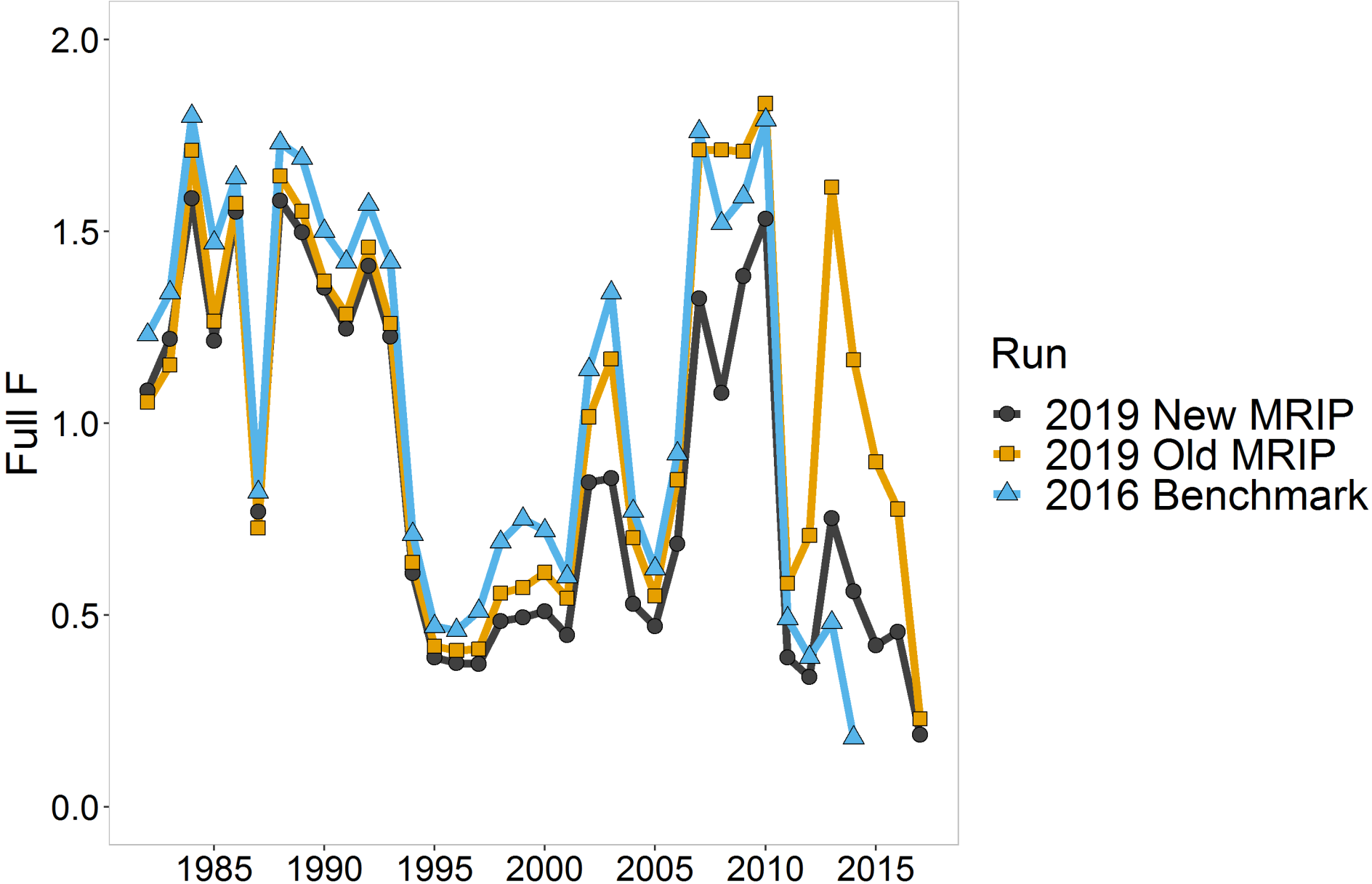
- Bayesian statistical catch-at-age model that estimates M and allows spatial heterogeneity in the indices
 - M1: Constant M , spatial homogeneity
 - M2: Time-varying M , spatial homogeneity
 - M3: Constant M , spatial heterogeneity
 - **M4: Time-varying M , spatial heterogeneity**
- Ages 1-6+
- 2 fleets: commercial and recreational

Sensitivity Runs

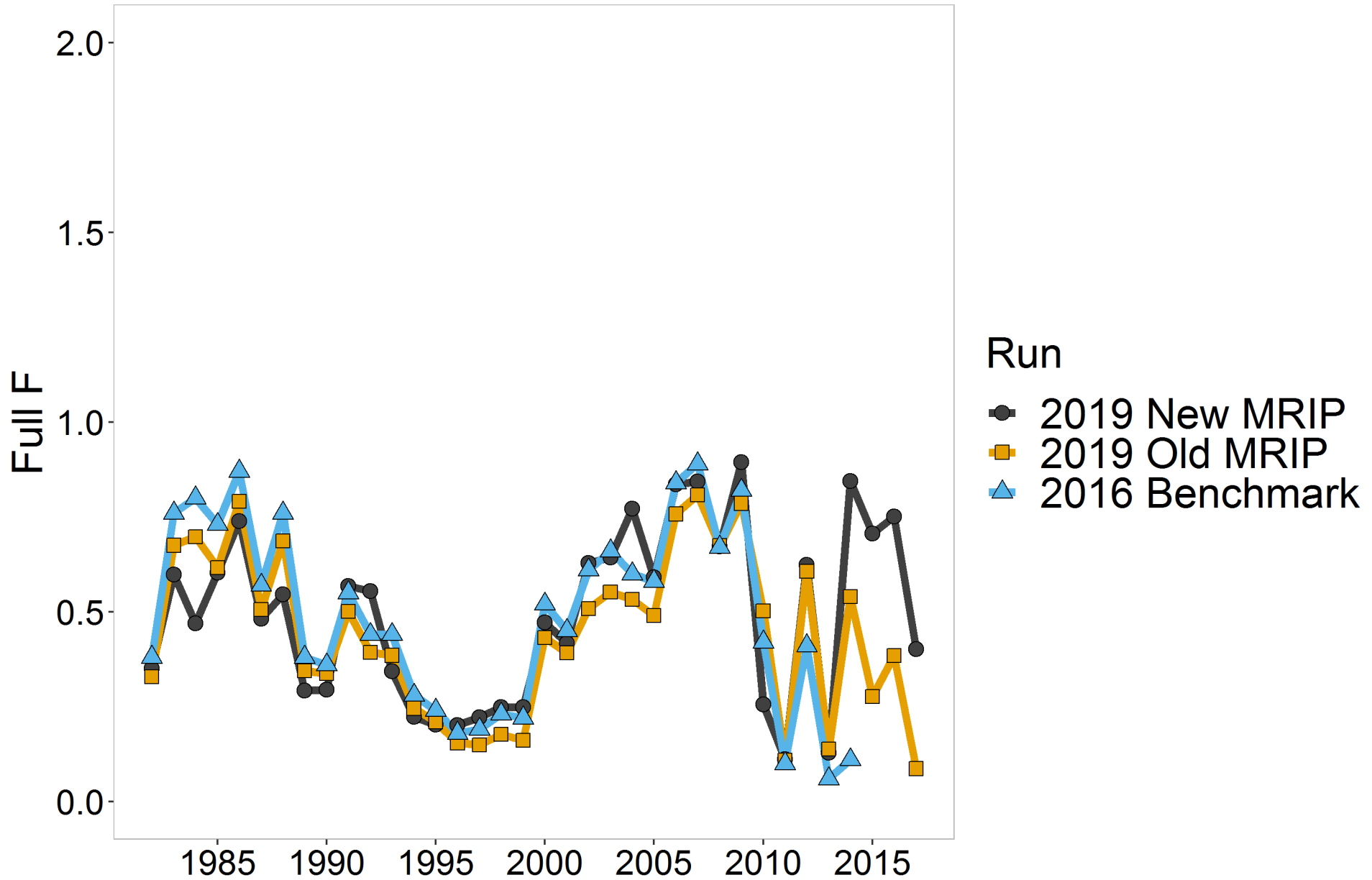


- Looked at the effect of the new MRIP data
- S1: new MRIP data (base run)
- S2: old, uncalibrated MRIP data (sensitivity run)

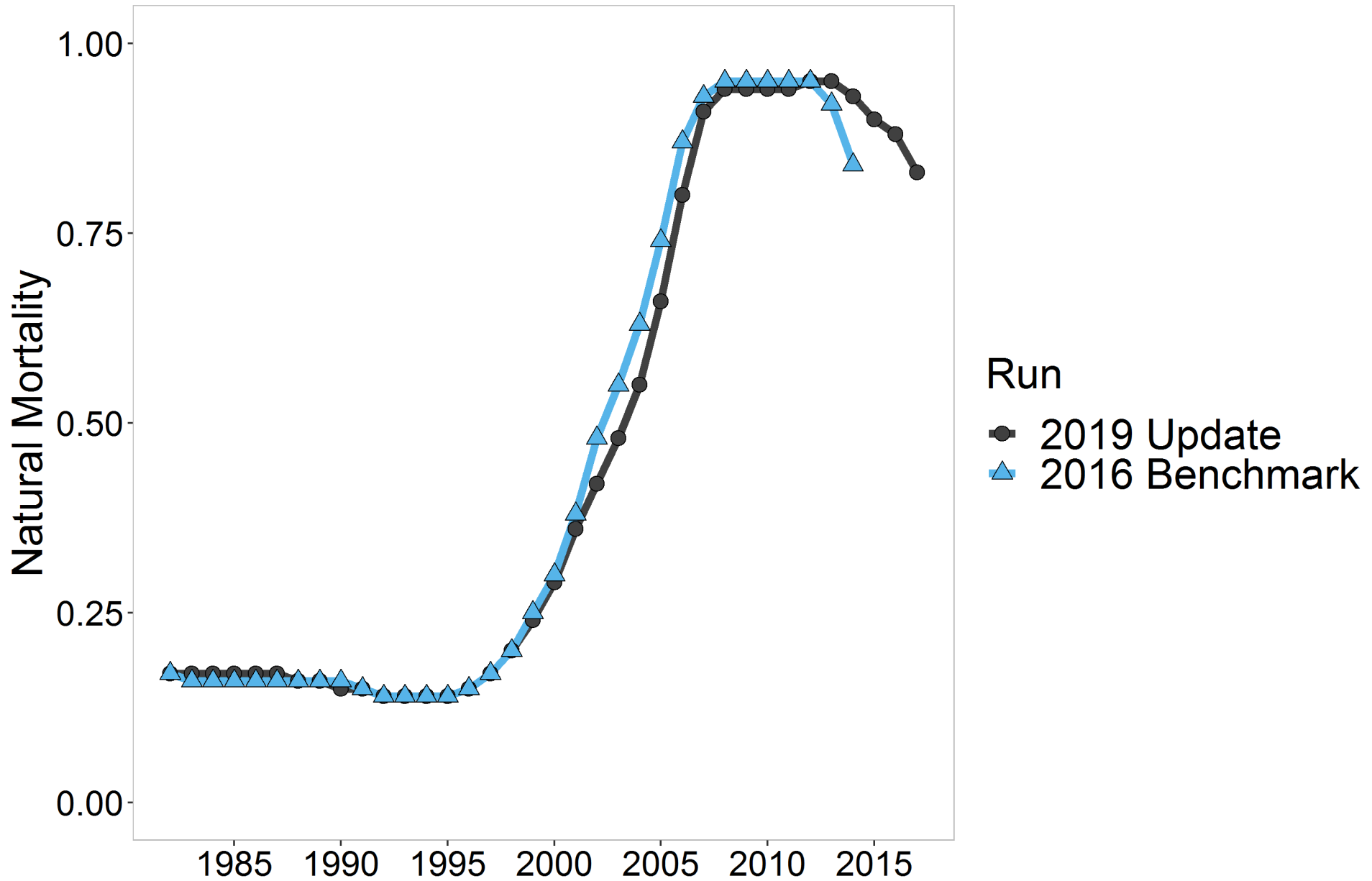
Commercial F



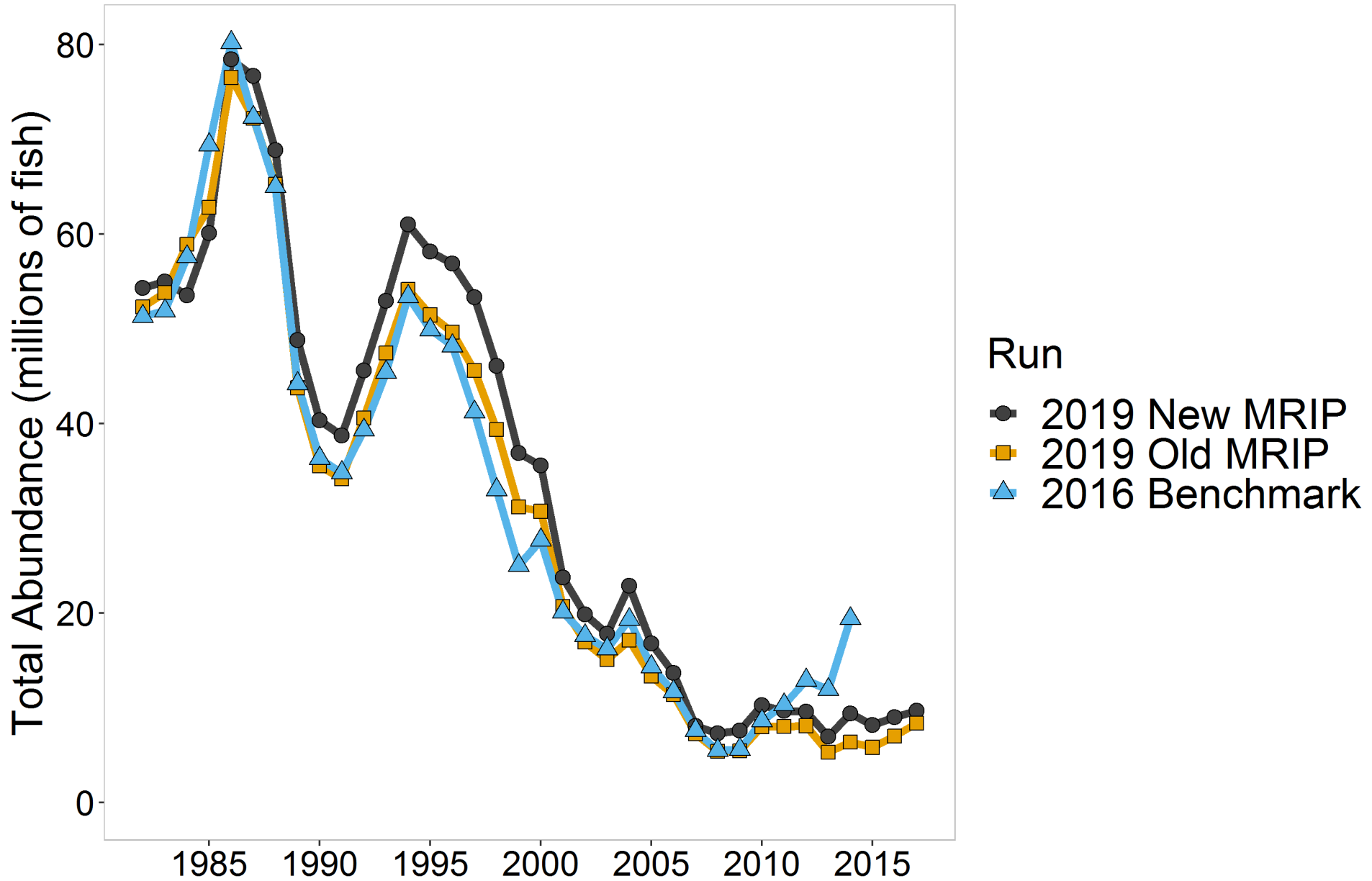
Recreational F



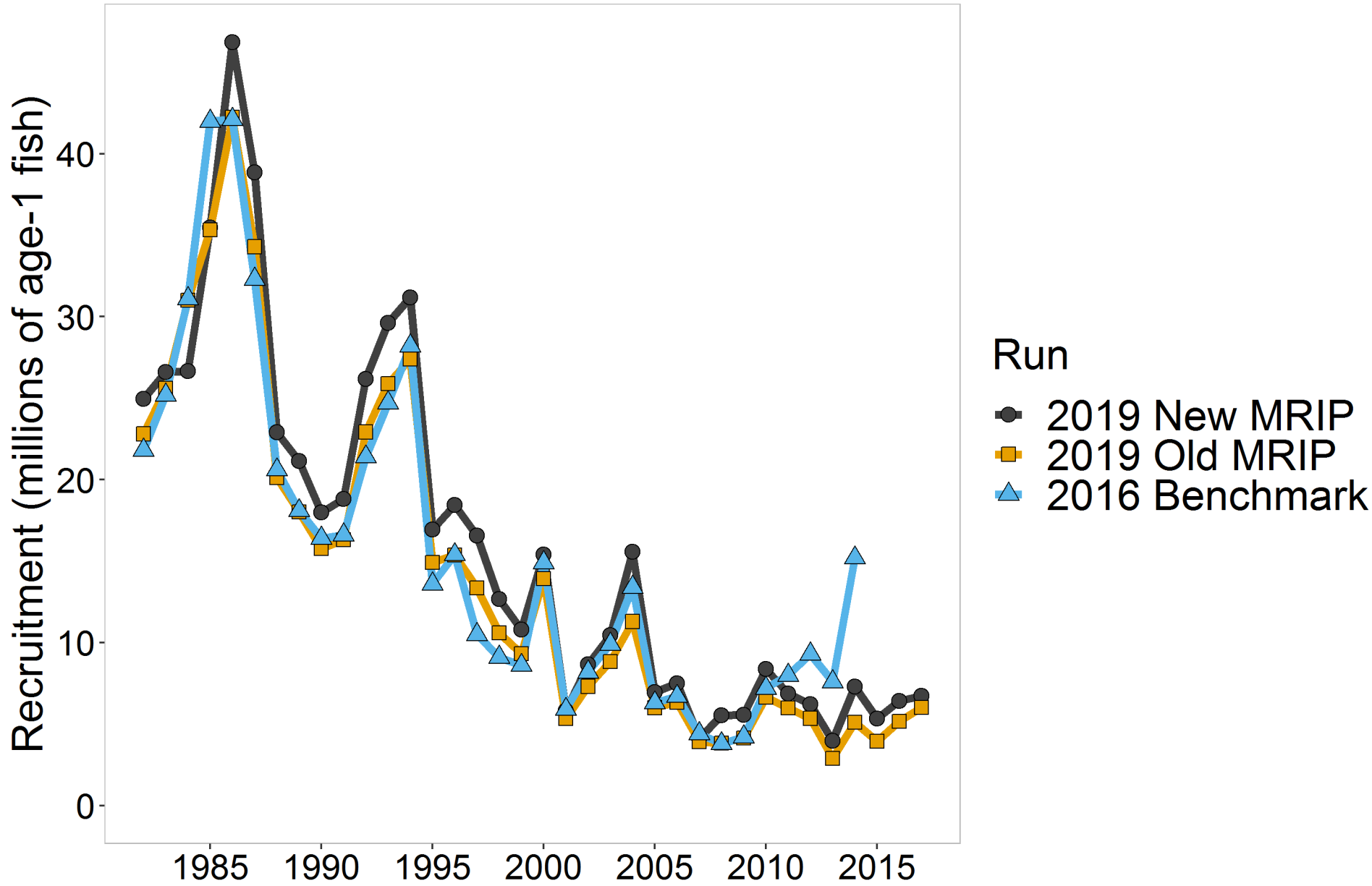
Natural Mortality



Total Abundance



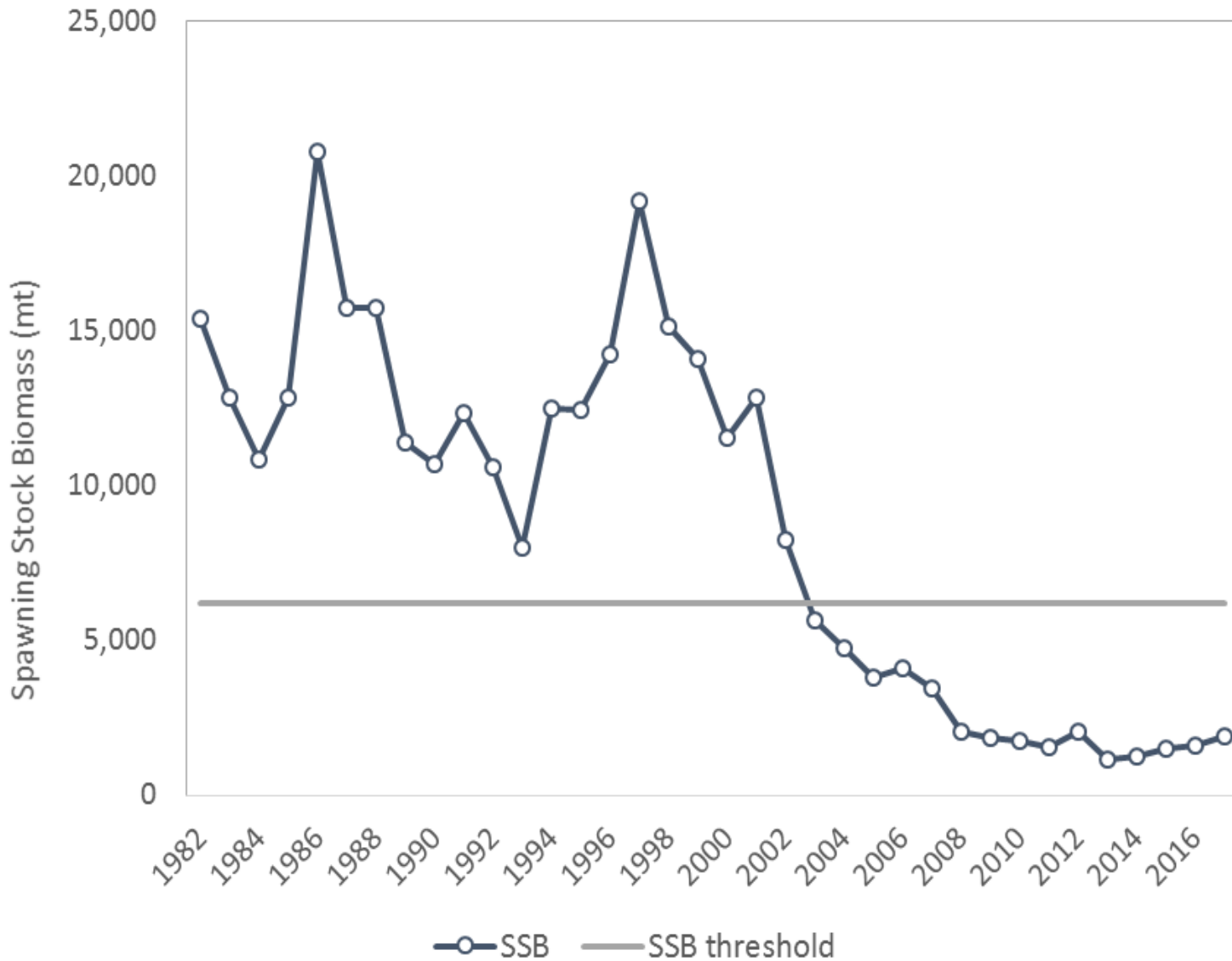
Recruitment





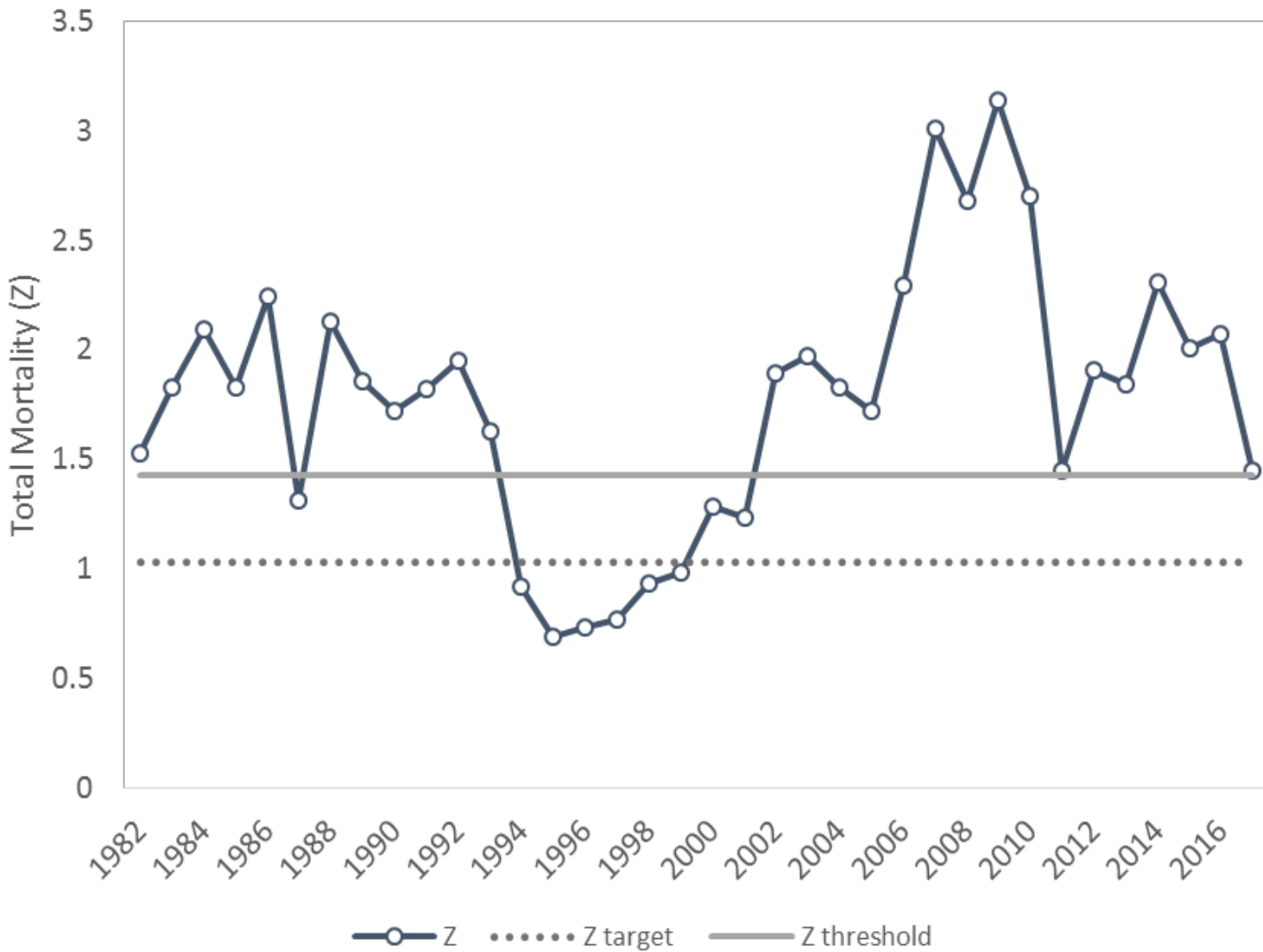
STOCK STATUS

Spawning Stock Biomass



Threshold SSB	
2016 Benchmark	2019 Update
6,880 mt	6,170 mt

Total Mortality



Threshold Z	
2016 Benchmark	2019 Update
1.36	1.43
Target Z	
2016 Benchmark	2019 Update
0.93	1.03

Stock Status



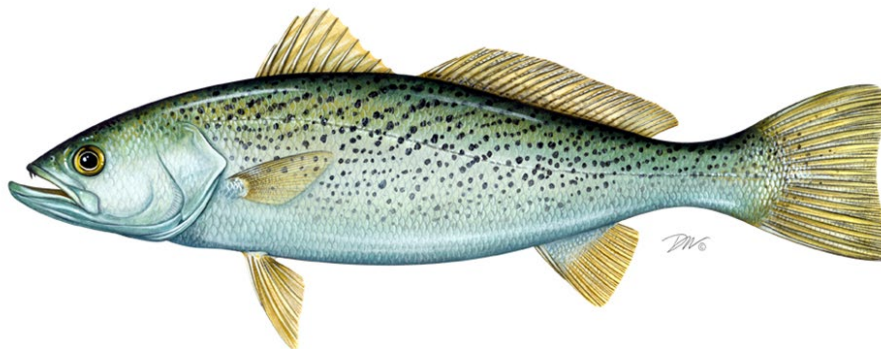
	Threshold	Target	2017 Value	Status
SSB	6,170 mt	n.a.	1,922 mt	Depleted
Z	1.43	1.03	1.45	Exceeding the Z threshold
F	0.97	0.57	0.62	n.a.

Research Recommendations



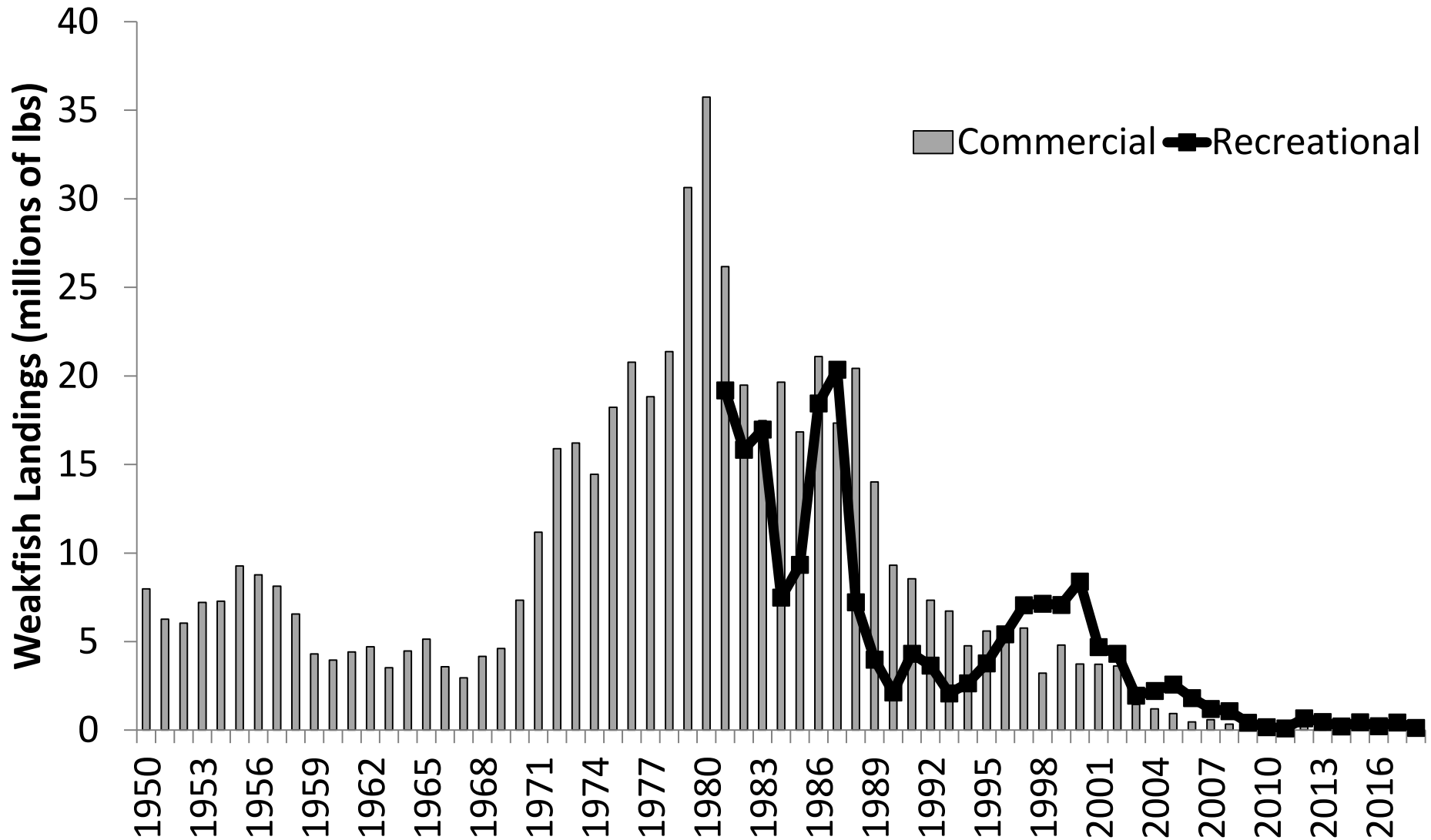
- Increase observer coverage
- Investigate models that incorporate weakfish predation, diets
- Analyze the spawner-recruit relationship and relationship between adult stock size and environmental factors on year class strength.
- Develop a coastwide tagging program
- Continue to investigate the geographical extent of weakfish hybridization.
- Explore Age and Time-Varying M
- Explore modeling Age 0 fish

Weakfish 2019 FMP Review

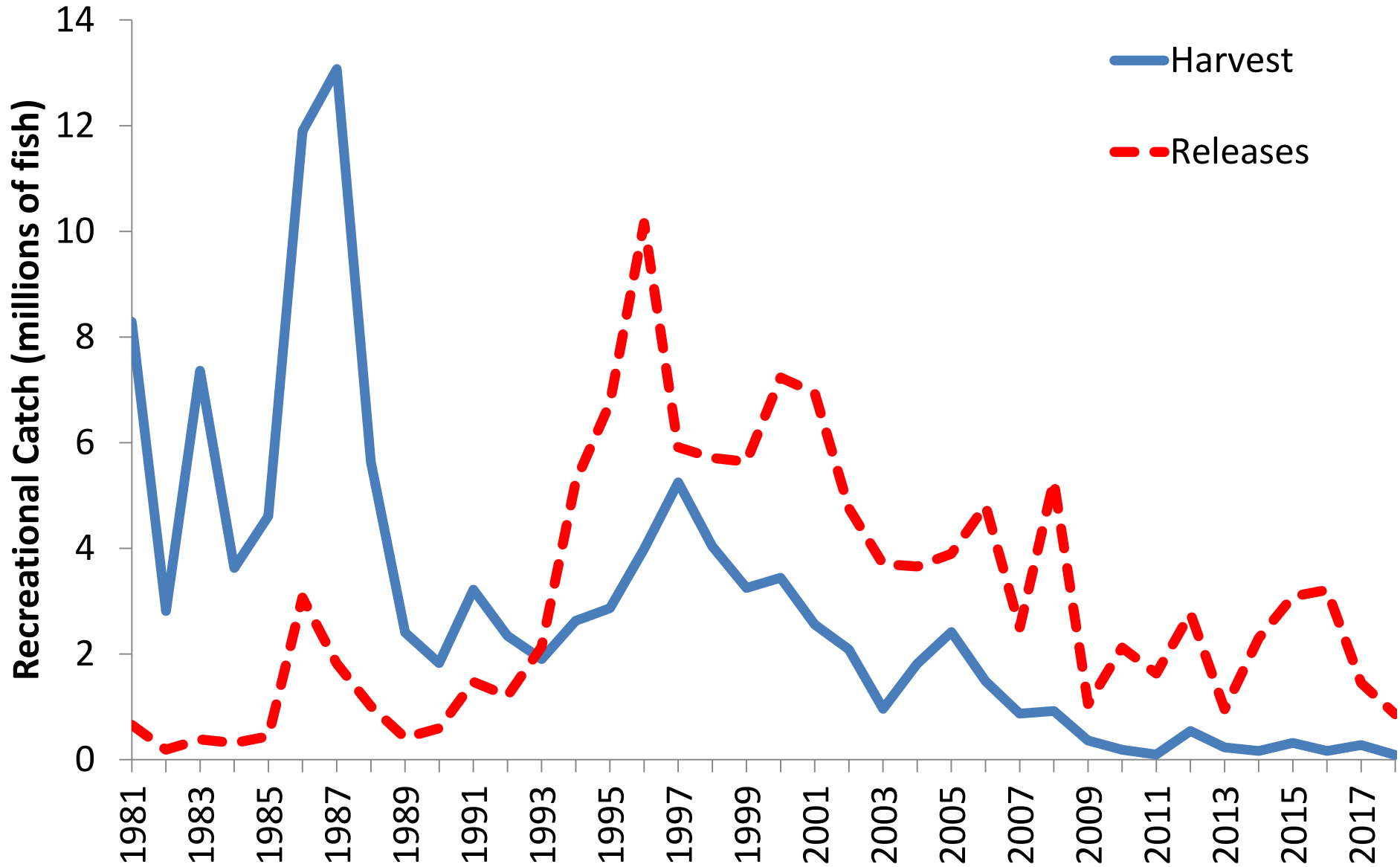


Weakfish Management Board
October, 2019

Status of the Fishery (Fig. 2)



Status of the Fishery (Fig. 3)



Biological Sampling (Table 9)



	Samples Required		Samples Completed		Fisheries Sampled
	Ages	Lengths	Ages	Lengths	
RI	23	47	38	93	commercial, RIDFW Trawl Survey
NY	78	100	50	50	commercial (GN, TR, PN, H&L)
NJ	314	16	144	144	commercial, recreational
DE	5	4	0	0	commercial (GN)
MD	9	2	15	16	commercial (PN)
PRFC	0	0	0	0	NA
VA	29	15	289	3,009	commercial (GN, PN, HS), recreational
NC	192	233	170	804	commercial (SN, GN, PN, HS, TR, H&L), recreational
SC	80	0	80	700	fishery independent (additional samples from fishery-dependent sources)
GA*	65	0	5	5	recreational

*MA, CT, and FL were *de minimis* in 2018 and have requested this status for 2019

* = *de minimis* state

Management Triggers (Table 8)



2018 Commercial Landings: 102,492 pounds

	MA	RI	CT	NY	NJ	DE	MD
2014-2018	2,015	11,992	3,869	47,828	85,878	4,079	16,951
2018	1,946	8,785	3,408	42,663	32,100	4,999	555
% change	-3%	-27%	-12%	-11%	-63%	23%	-97%
	PRFC	VA	NC	SC	GA	FL	
2014-2018	6	42,991	157,567	46,615	15,040	1,633	
2018	0	29,670	65,057	19,930	16,492	2,490	
% change	-100%	-31%	-59%	-57%	10%	53%	

Status of Management



- Amendment 4 (2002)
 - Established biological reference points
 - States required to implement rec and com management measures to achieve F target
- Addendum I (2005)
 - Biological sampling program
- Addendum II (2007)
 - 6 fish bag limit and 150 lb bycatch allowance
 - Management triggers
- Addendum III (2007)
 - Modified BRD certification language
- Addendum IV (2009)
 - 1 fish bag limit, 100 lb trip limit, 100 lb bycatch limit, 100 undersized fish per trip allowance
 - SSB30% target and SSB20% threshold

Status of the Stock



- 2016 Benchmark Stock Assessment
 - Stock is depleted
 - Overfishing is not occurring
- 2019 Stock Assessment Update
 - Stock is depleted
 - Total mortality is too high
 - Fishing mortality is above target but below threshold, so overfishing is not occurring

De Minimis & State Compliance



- *De Minimis*
 - 2 year average, combined rec and com, 1%
 - Requests: MA, CT, and FL
 - All requesting states meet criteria
- All states are in compliance with Amendment 4 and Addenda I-IV

Recommendations



The PRT recommends the Board:

- consider for management the use of biological reference points from the 2019 stock assessment update.
- consider updating management triggers established in Addendum II to Amendment 4
- consider updating age sampling requirements to reflect MRIP data update.
- approve the 2019 Weakfish FMP Review, state compliance reports, and de minimis status for MA, CT, and FL.

Biological Sampling (Table 9)



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