



**NOAA
FISHERIES**

SEFSC

SEDAR 70: US Gulf of Mexico Greater Amberjack

Operational Assessment

GMFMC SSC Presentation

January 2021

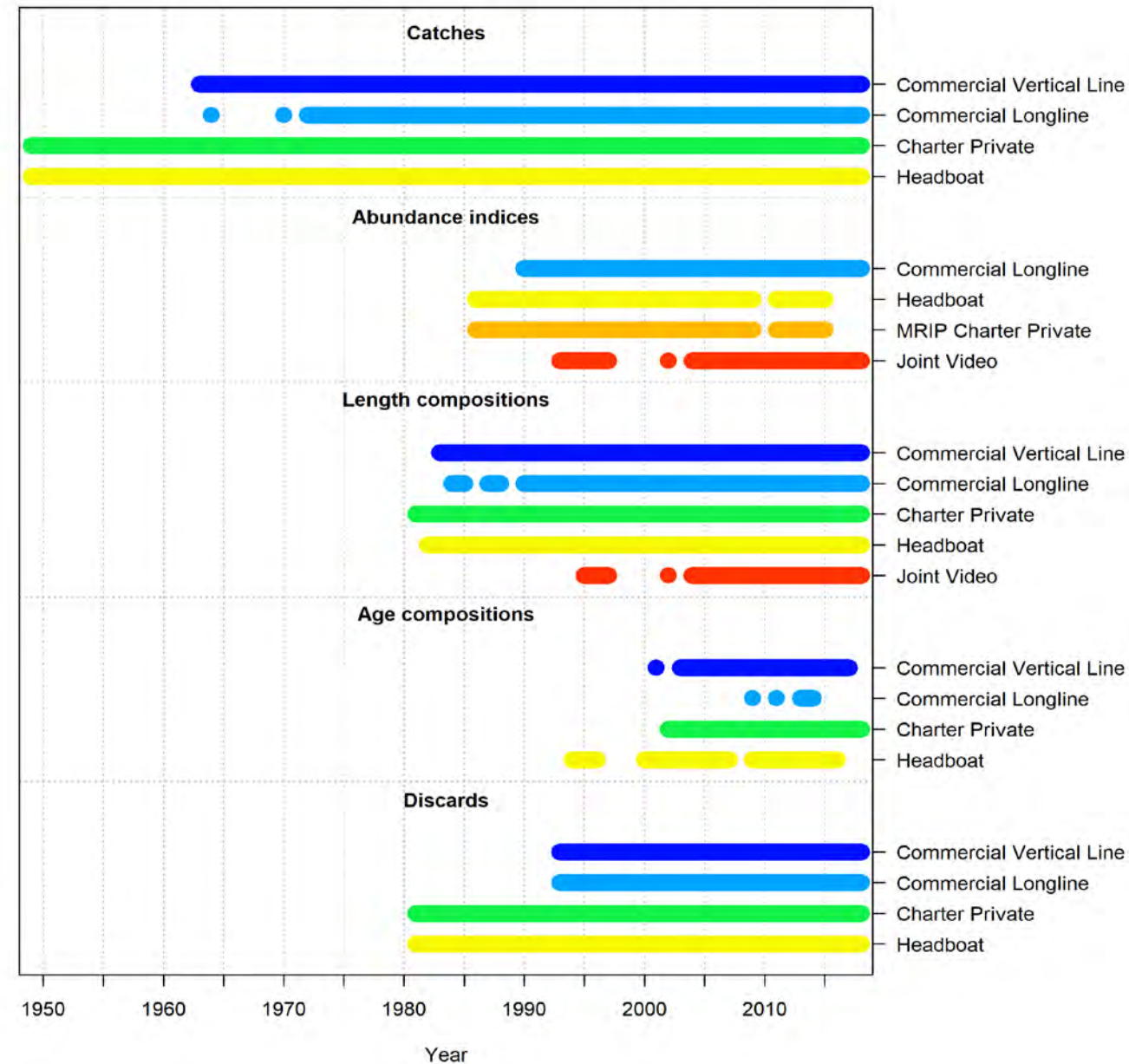
NOAA Fisheries, Southeast Fisheries Science Center,
Sustainable Fisheries Division (SFD)



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Data – Overview (TOR 1, 2)

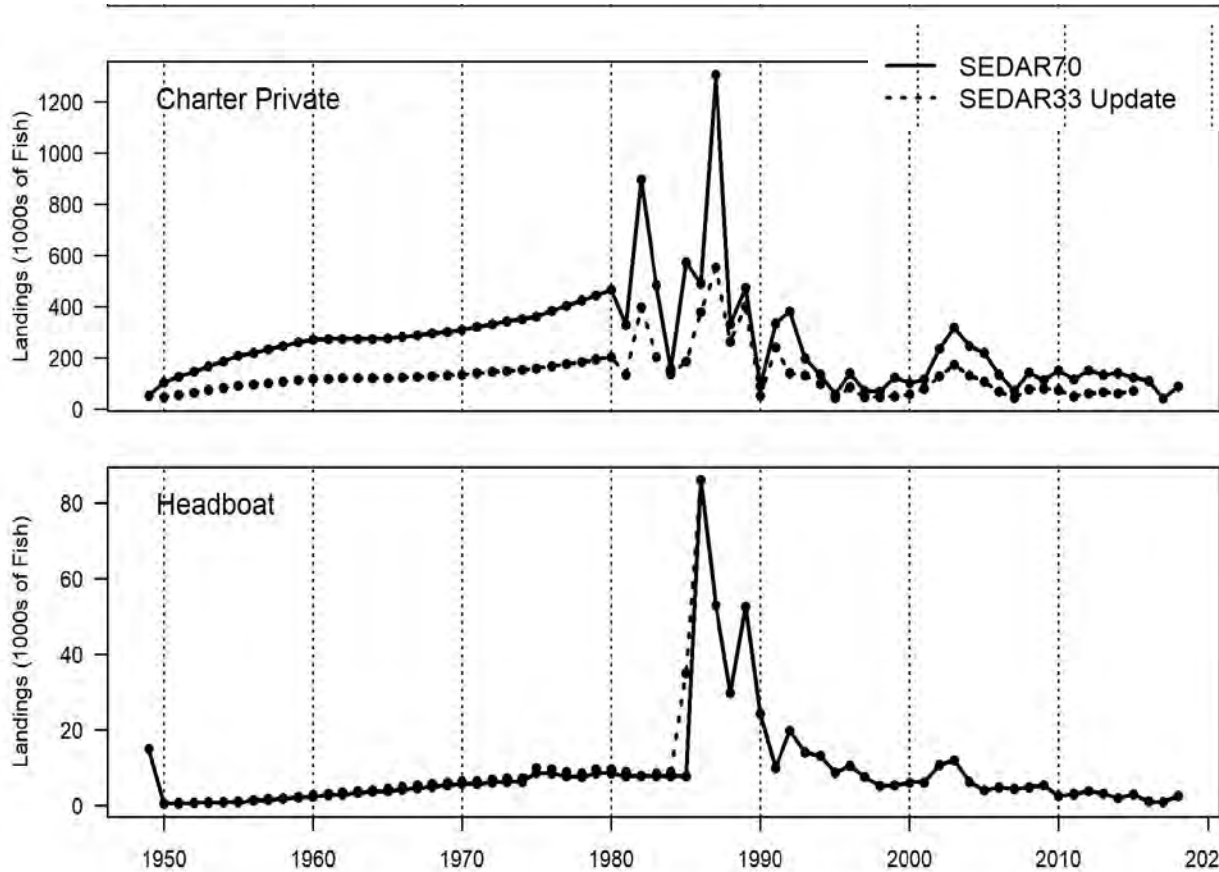
- Fishery-Dependent and Independent Data
- Recreational Landings and Discards
- Commercial Landings and Discards
- Recreational CPUE: MRIP and Headboat
- Commercial Length Compositions
- Recreational Length Compositions
- Age Compositions
- Joint Video Survey Indices and Length Compositions



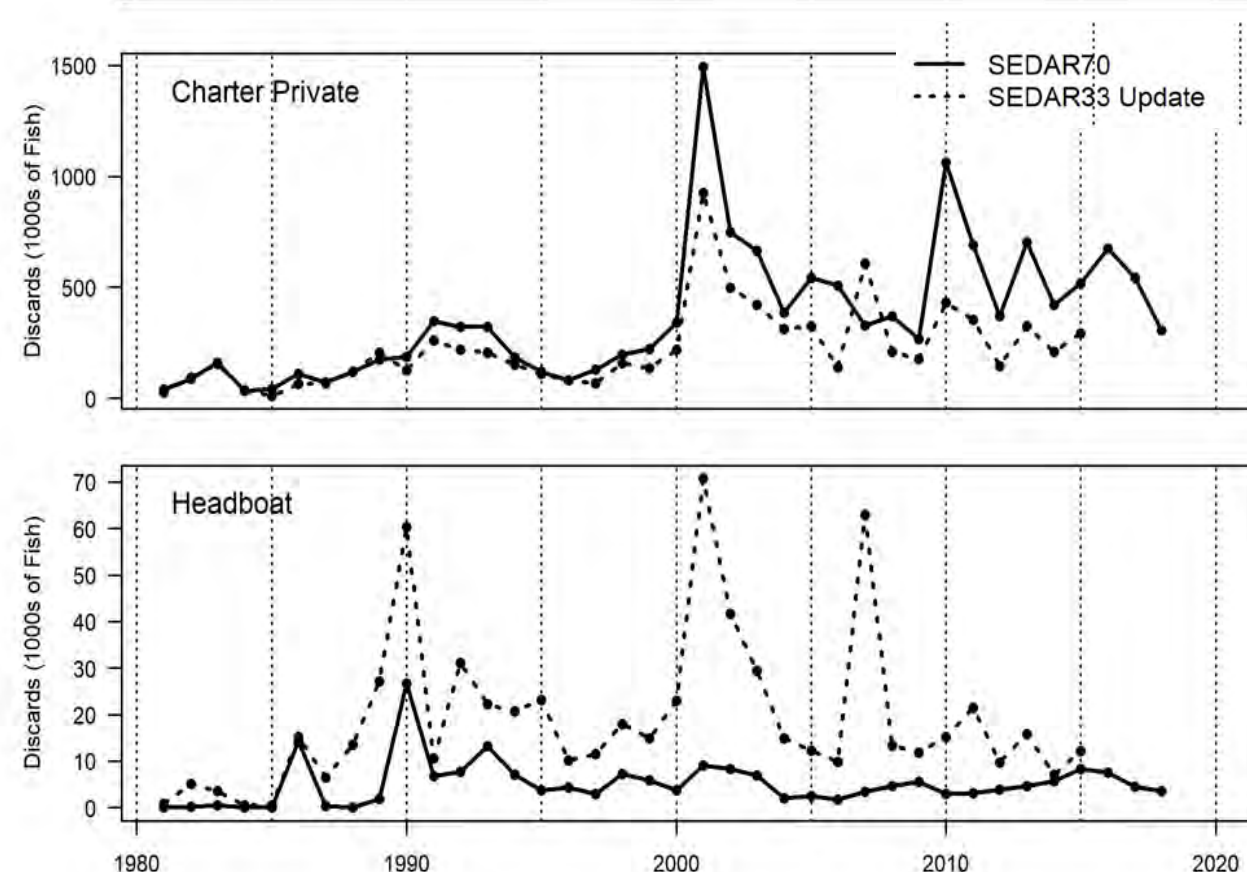
Data – Recreational Landings and Discards

Data Component	Decision
Recreational Landings	Use new MRIP-Fishing Effort Survey [FES]-adjusted WP-02
Recreational Discards	Use new MRIP-Fishing Effort Survey [FES]-adjusted WP-02

Landings



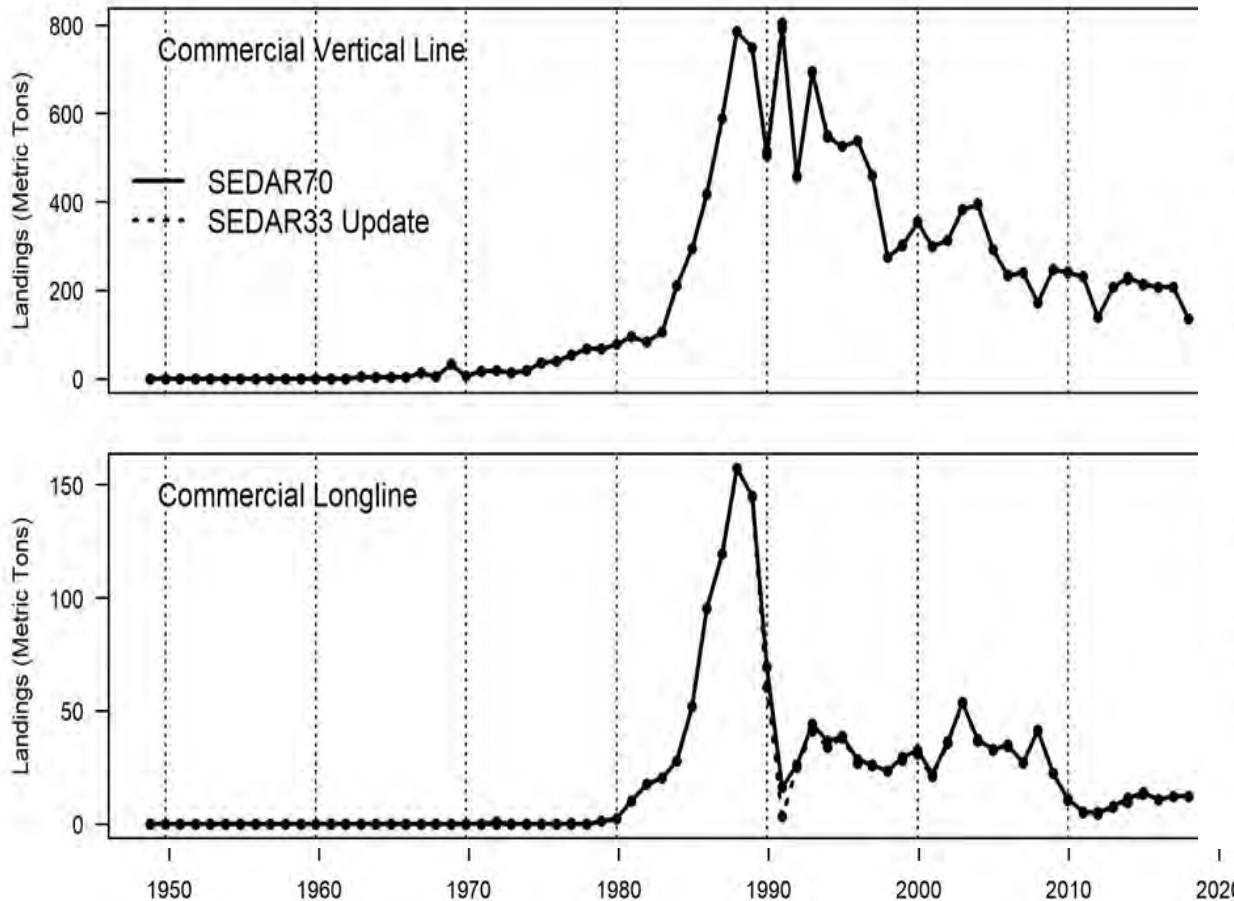
Discards



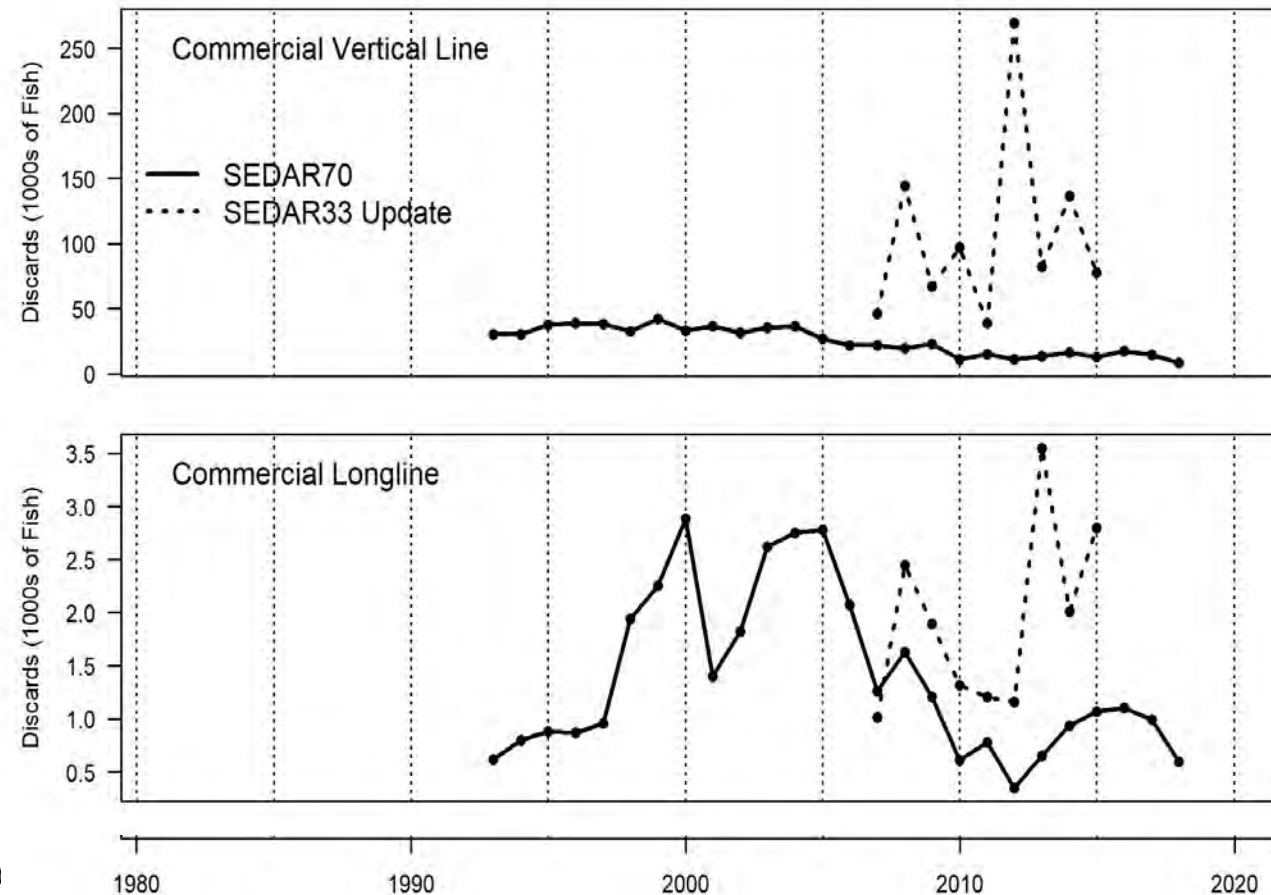
Data – Commercial Landings and Discards

Data Component	Decision
Commercial Landings	Unchanged
Commercial Discards	CPUE expansion using coastal observer program in conjunction with total fishing effort from the commercial reef fish logbook program (used consistently in recent reef fish assessments)

Landings

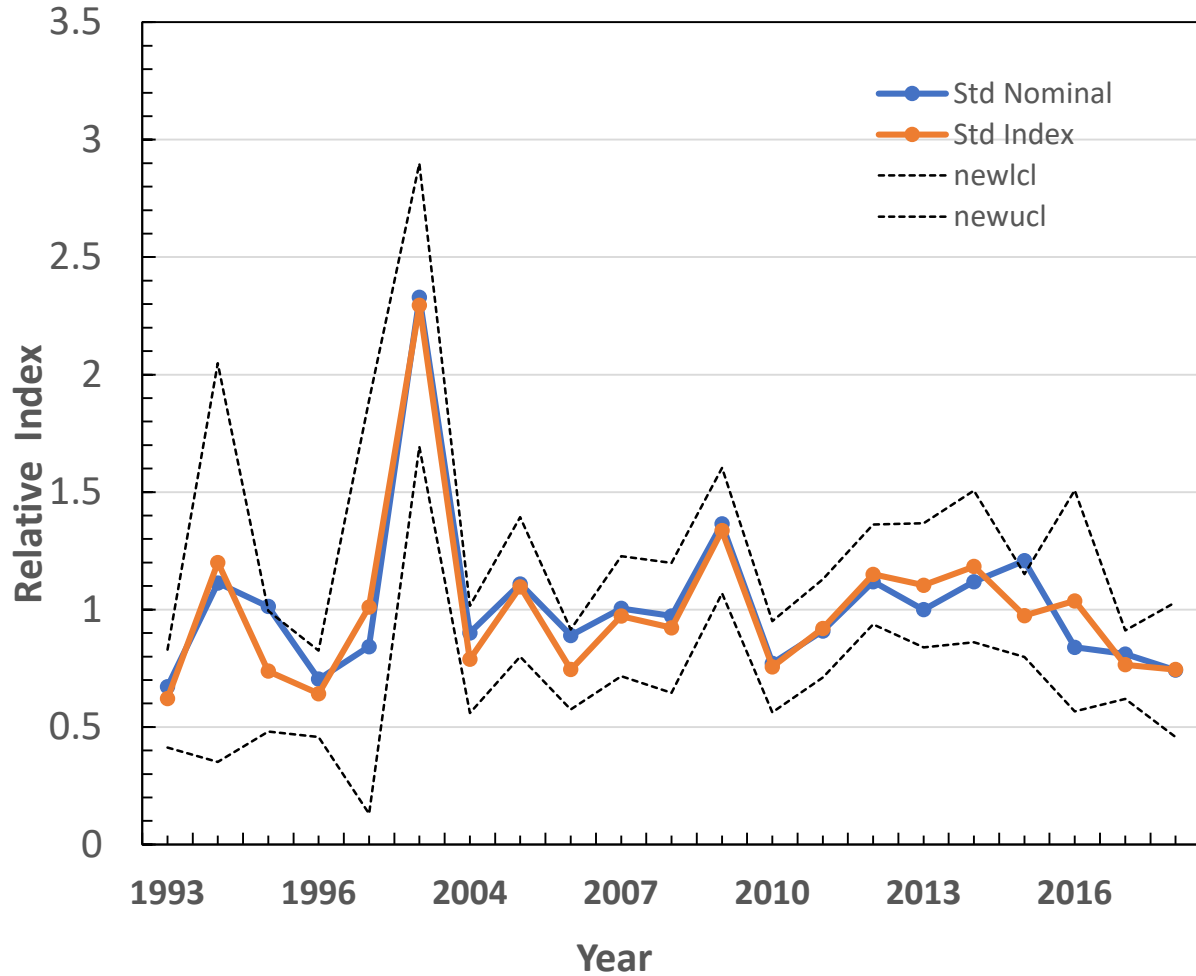


Discards

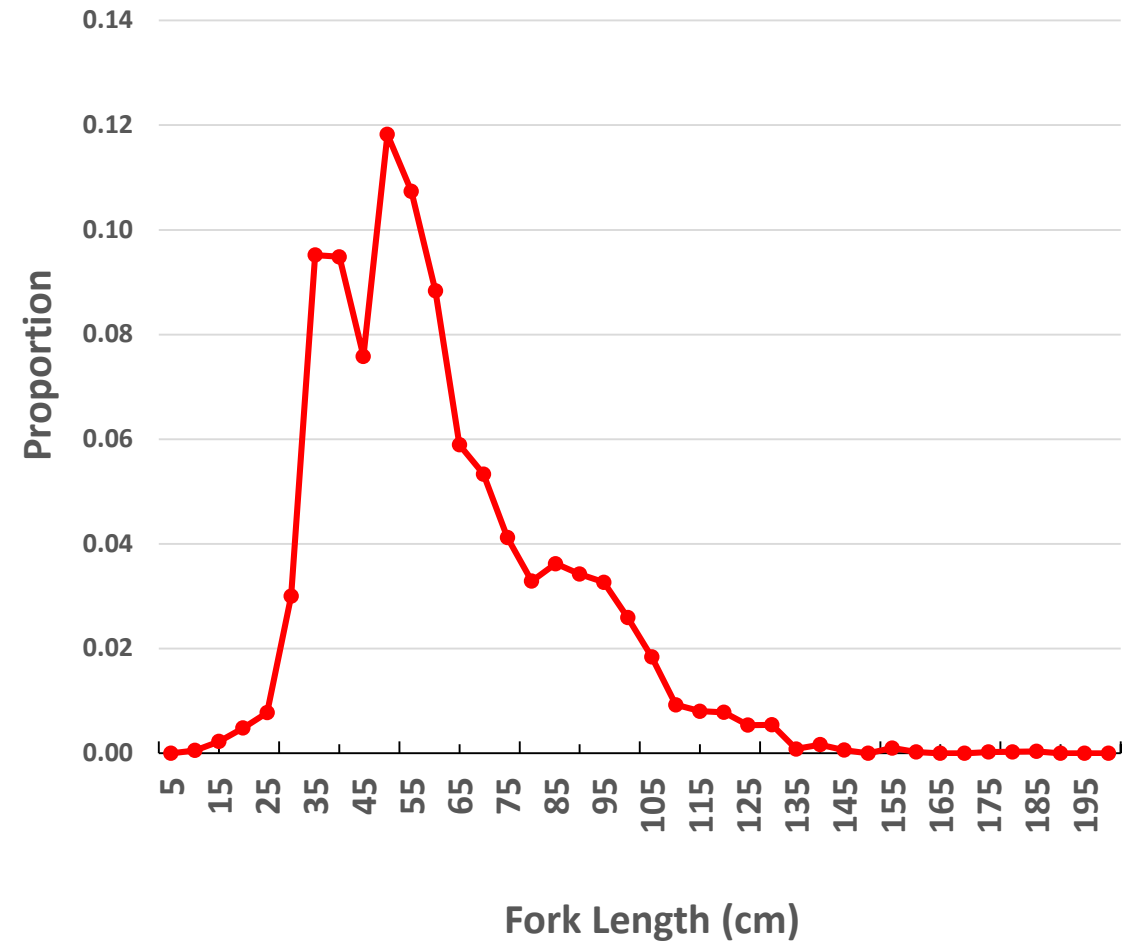


Fishery Independent Indices and Length compositions

Greater Amberjack Combined Video Index



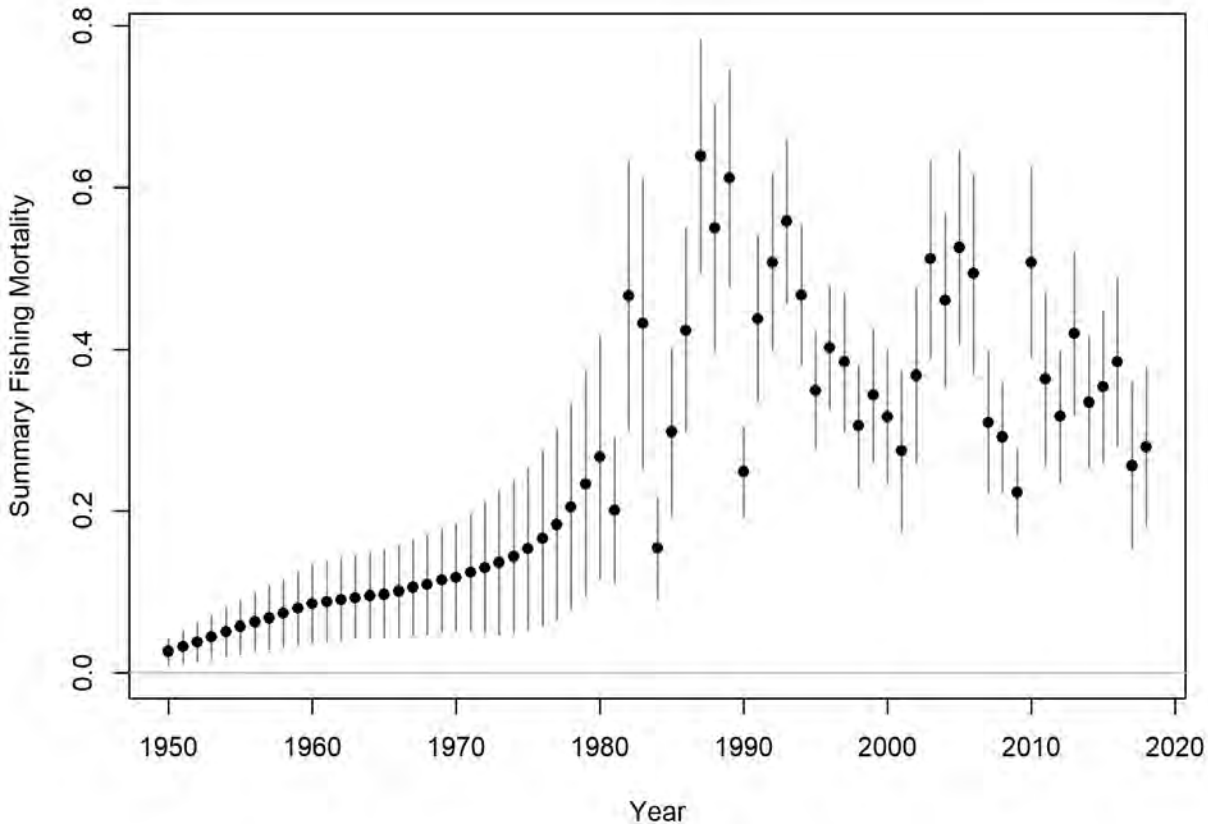
Combined Video Length Composition



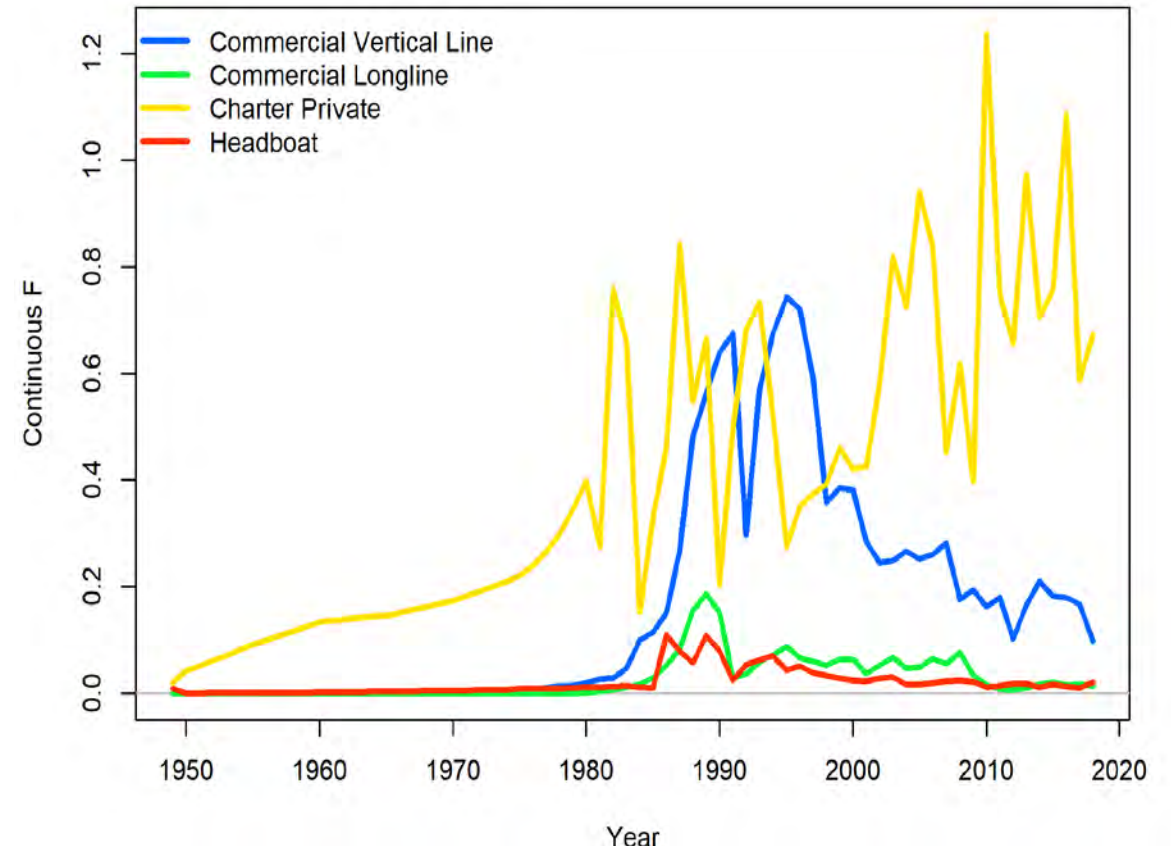
Addressing ToR 2, part 2

- Preliminary results received from LGL suggest that a significant fraction (30-40%) of the total abundance of Greater Amberjack occur on oil and gas platforms in the Central and Western GOM.
- The results of this study could have important implications for the stock assessment and the resulting management advice
 - The changes needed to restructure the model and adequate time and resources to acquire the necessary data to inform a model with the required temporal and spatial stratification were outside the scope of this Operational Assessment.
 - The SEFSC strongly recommends further consideration of this study during the next Research Track assessment of GOM Greater Amberjack.

Base Model Results – Fishing Mortality

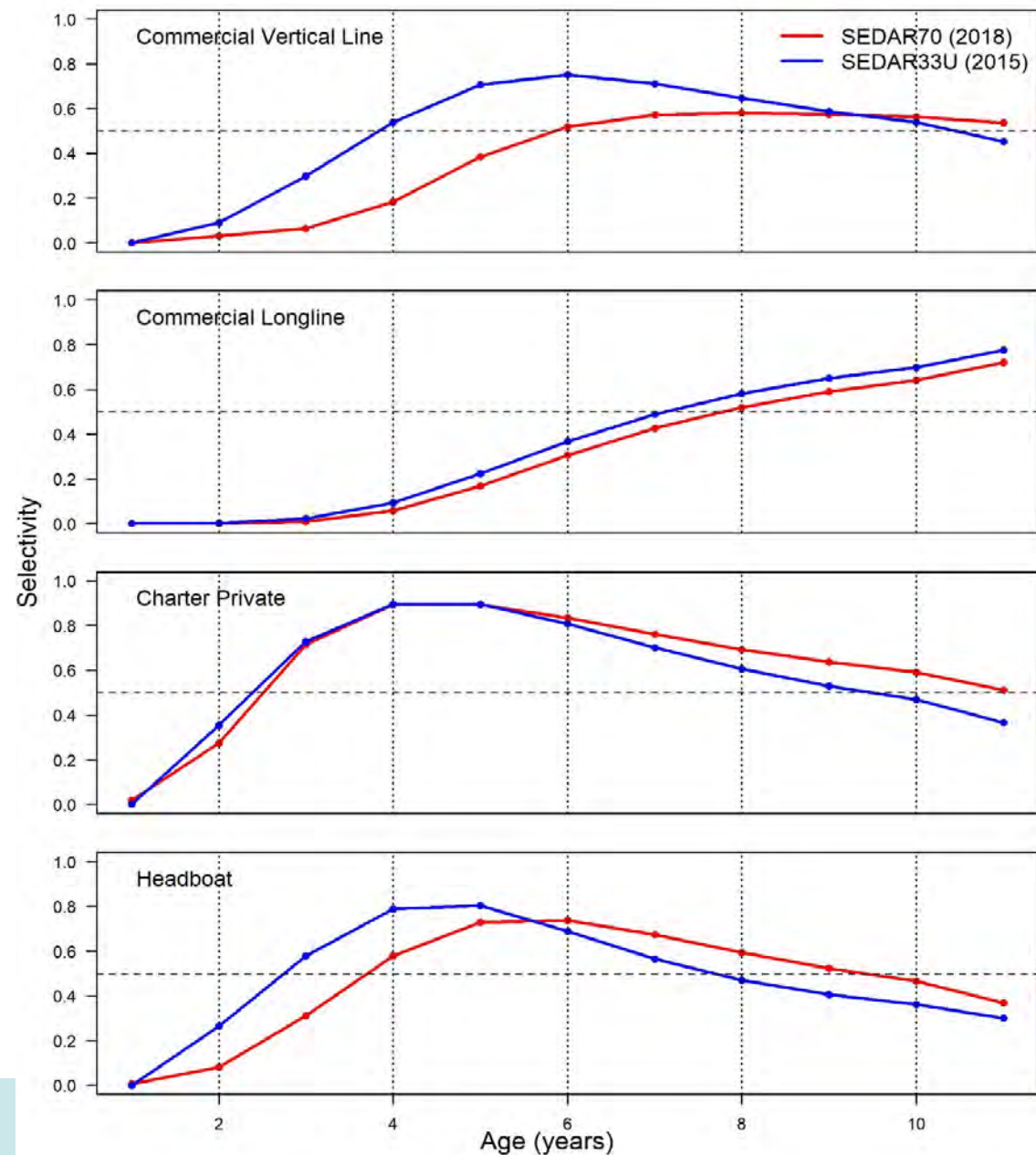
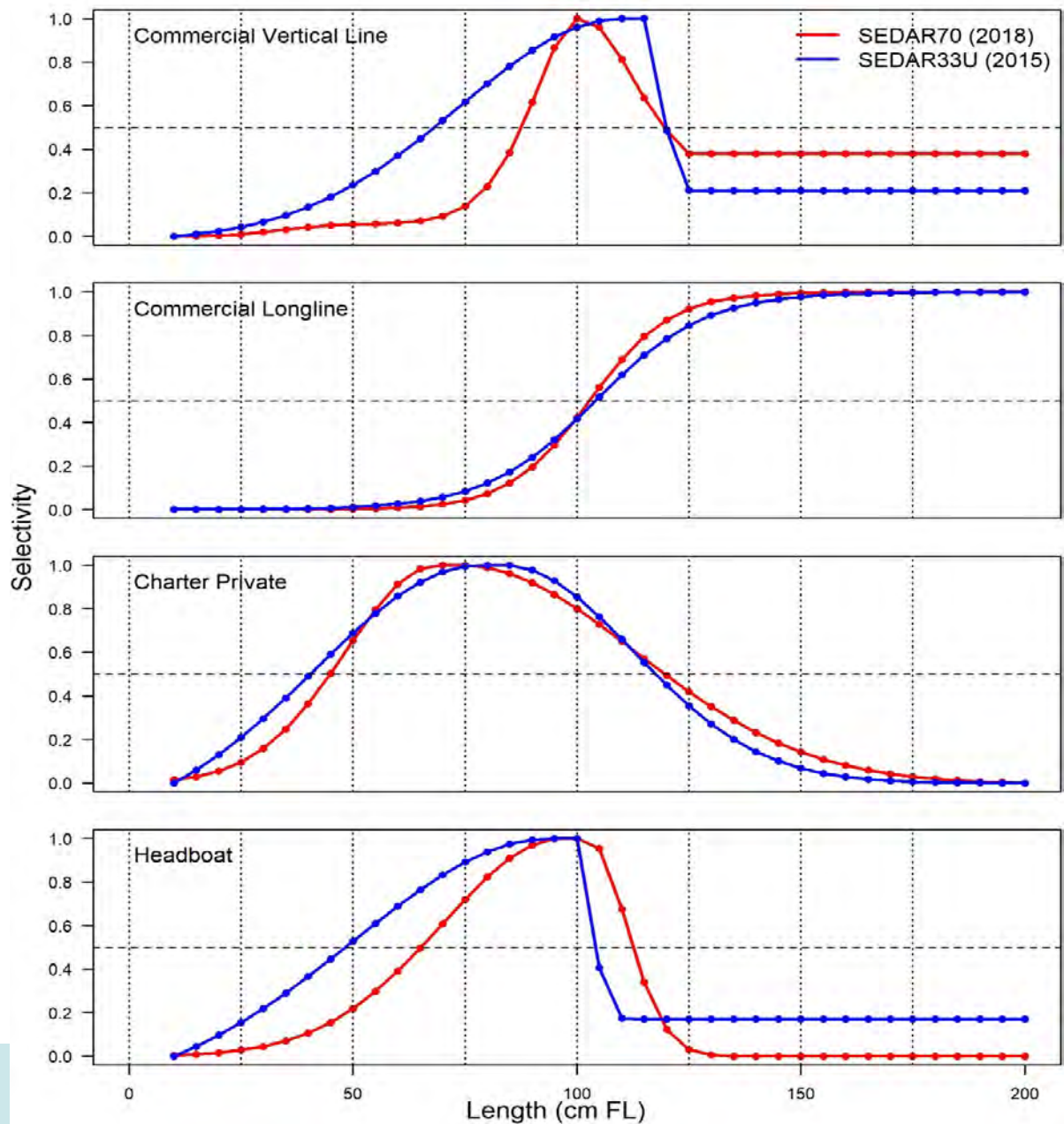


Annual exploitation rate (total kill/total biomass)

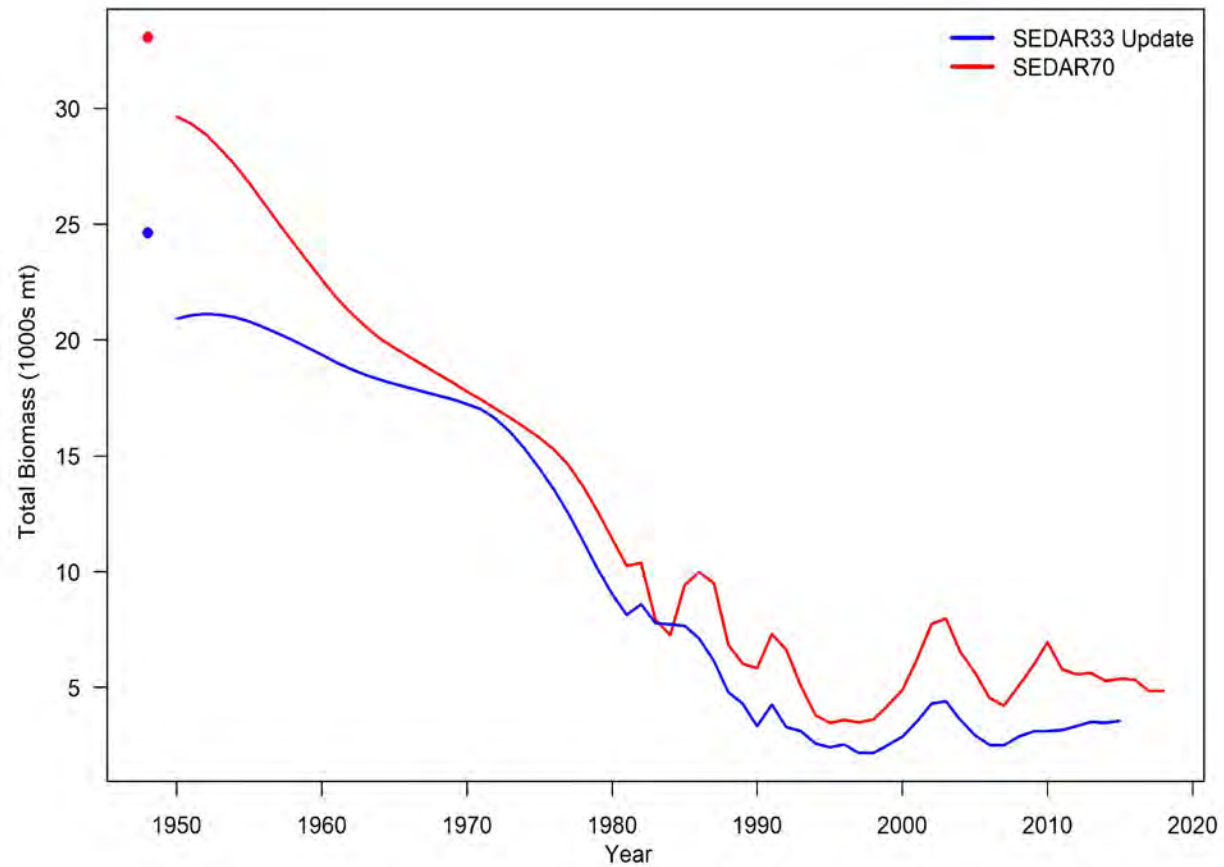


Fleet-specific estimates of instantaneous fishing mortality rate

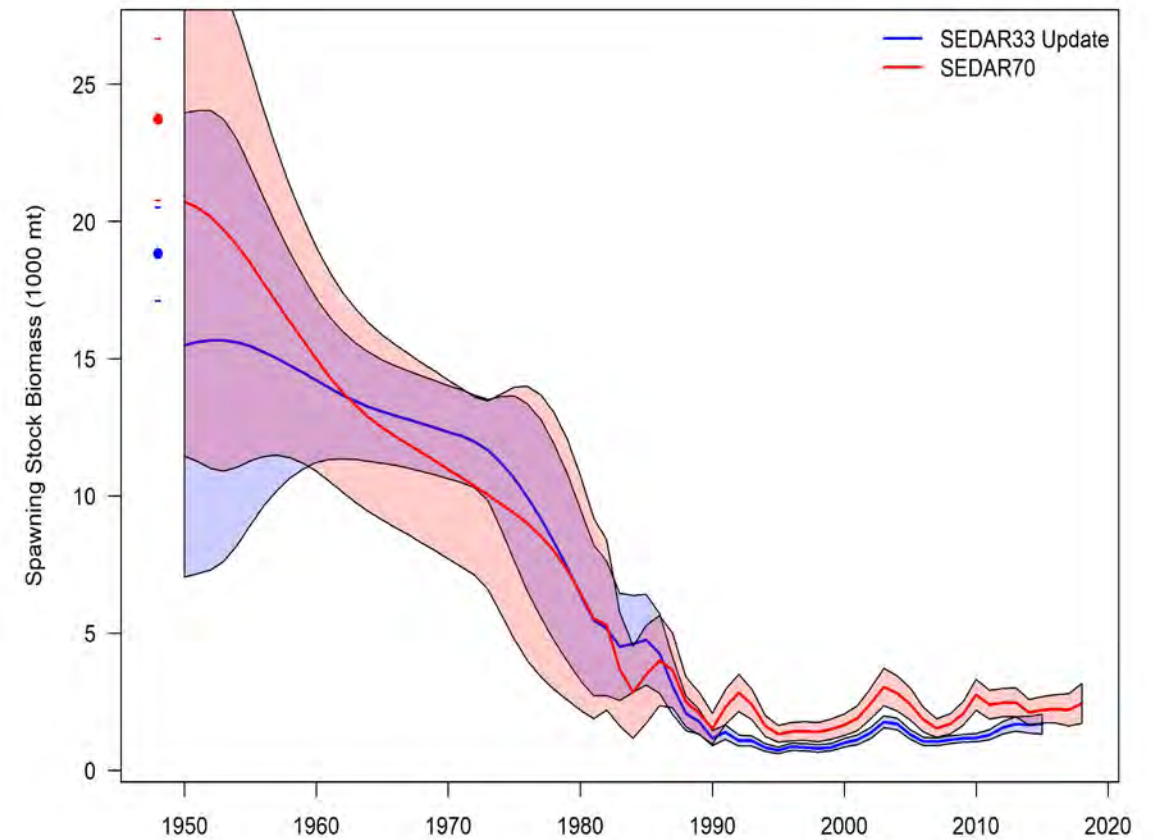
Base Model Results – Length and Age-Based Selectivities



Base Model Results – Estimated Biomass



Total biomass

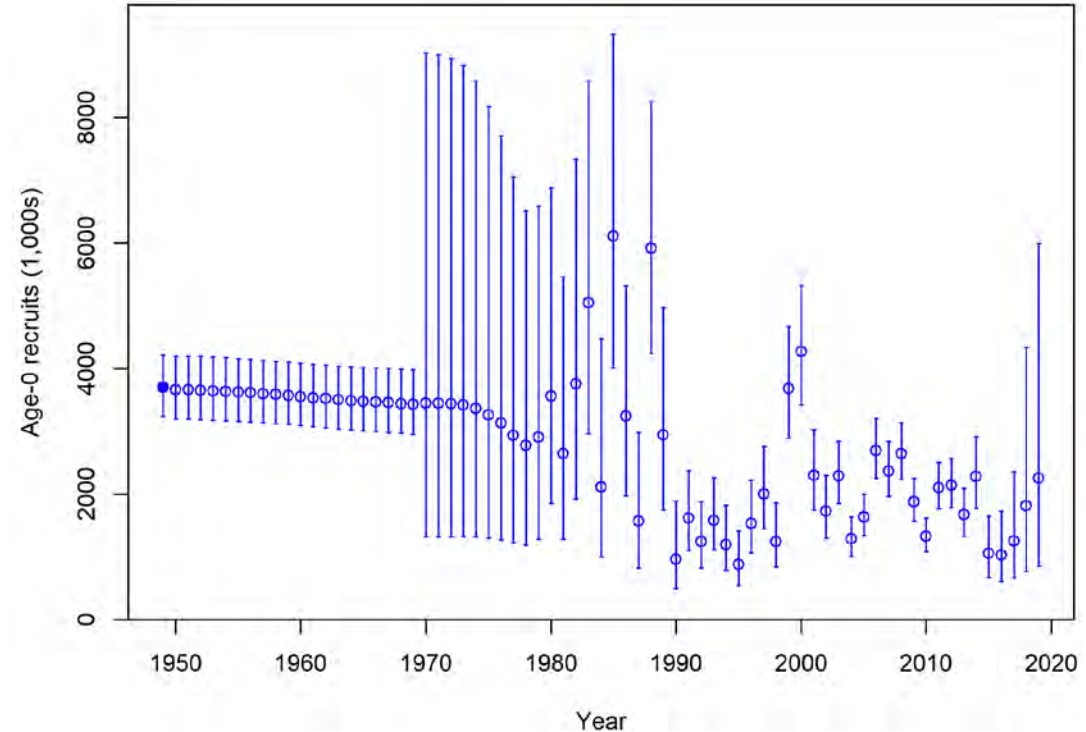
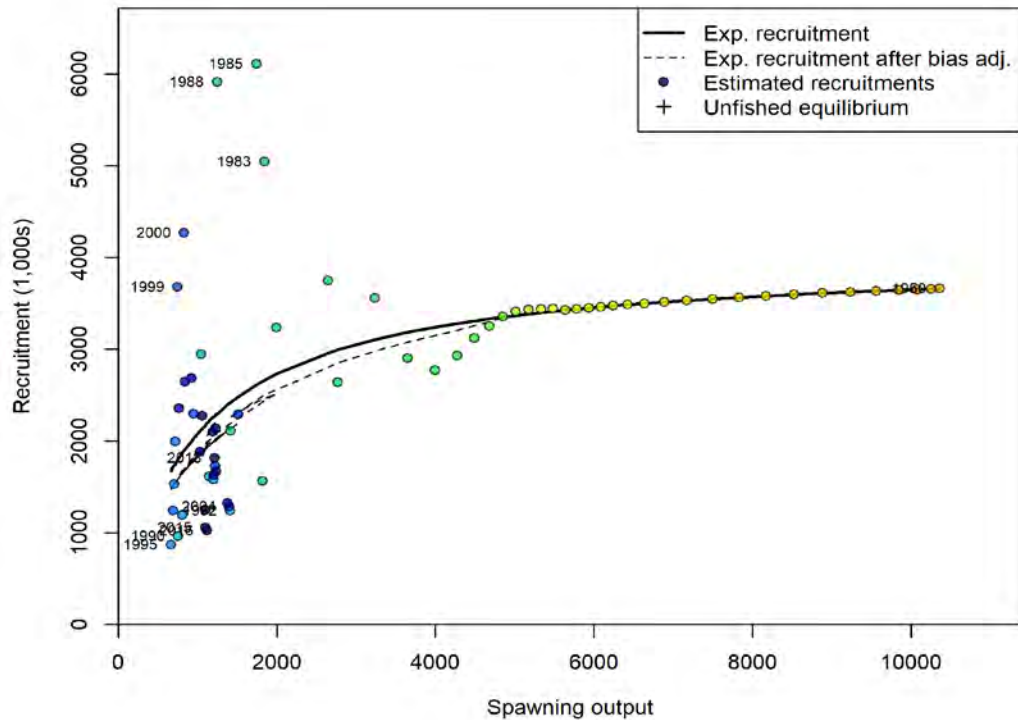


Spawning stock biomass

Base Model Results – Stock/Recruit Relationship

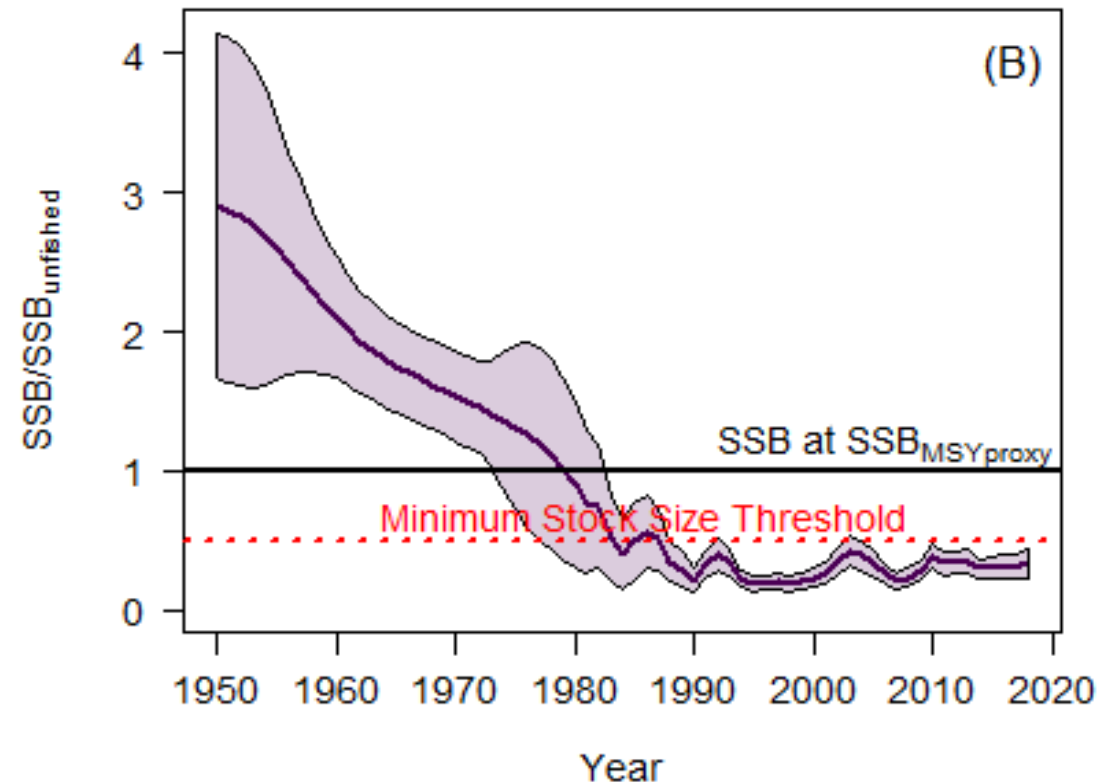
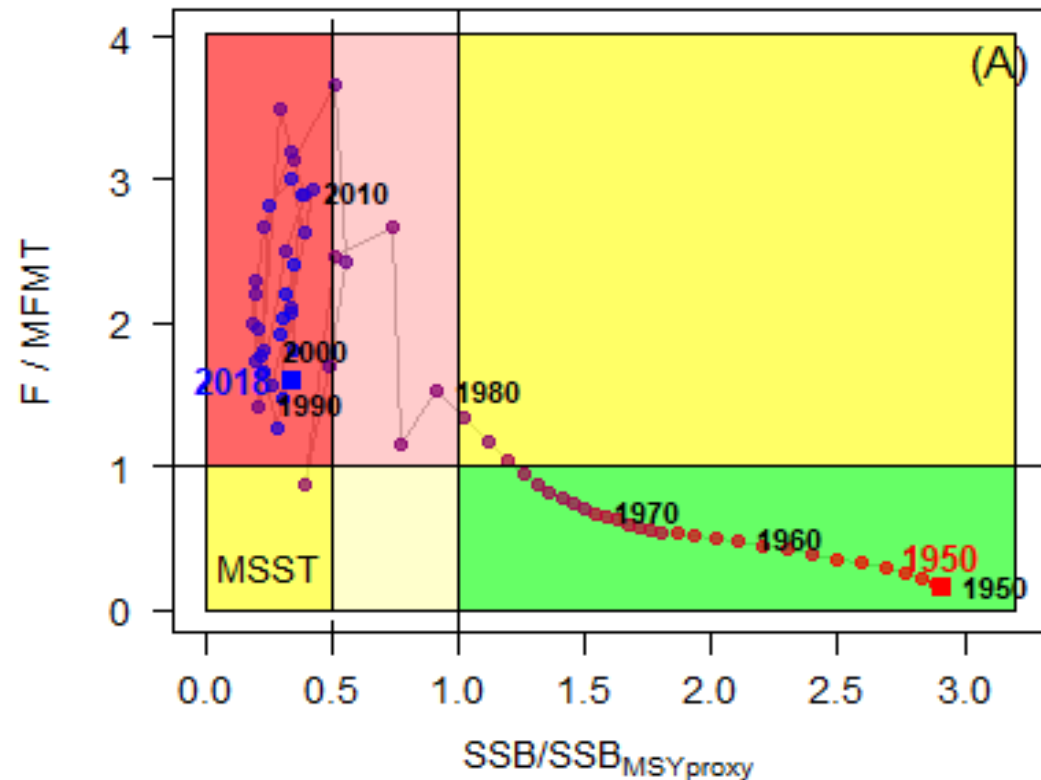
Spawner recruitment relationship not well-defined

- Steepness initially estimated in base model, along with R_0 and σ_R .
- Profile on steepness and σ_R was generally flat in the area of the MLE estimates.
- Model estimated values (MLE) for steepness and σ_R used as fixed parameter in base model and led to more model stability.



Base Model Results - Status

- Greater Amberjack in the Gulf of Mexico is undergoing overfishing and is overfished.
- Terminal year depletion estimate of 10% (SSB_{2018}/SSB_0) remains below the SSB at 30% SPR



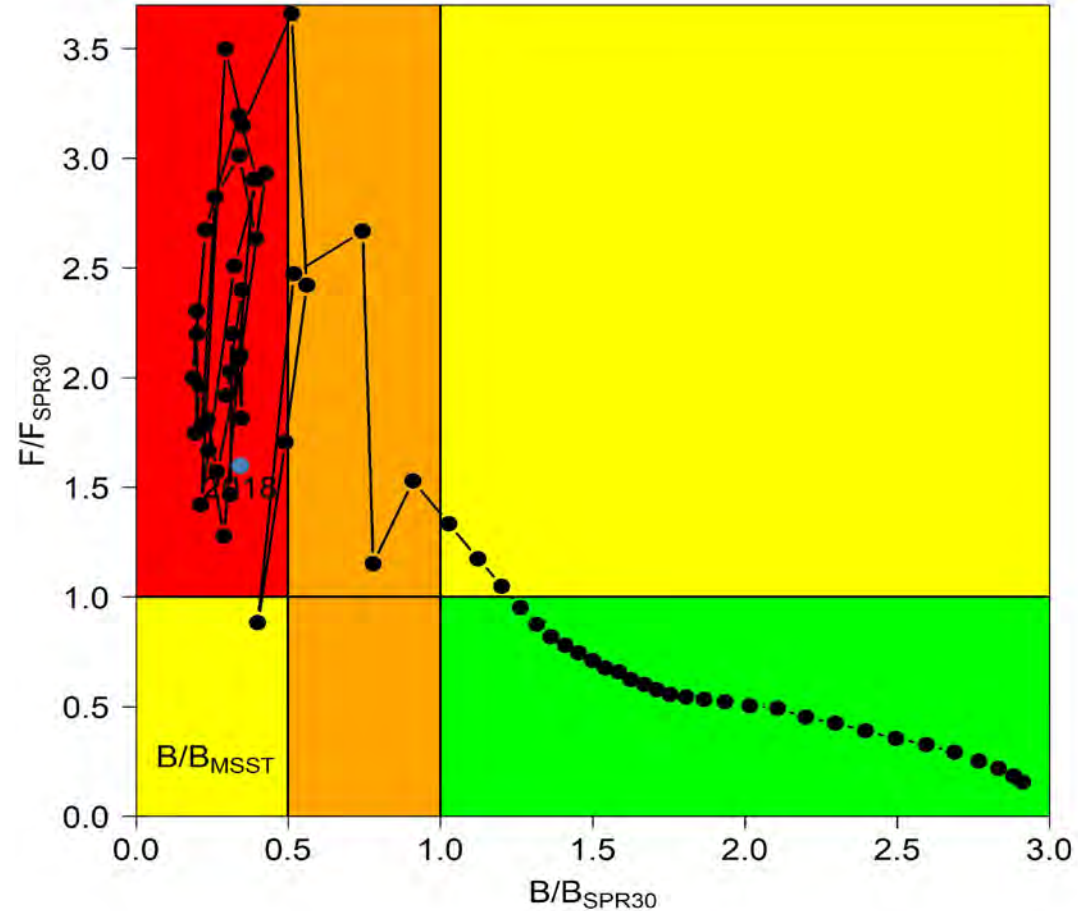
Projections – Results for SEDAR 28 with FES Landings

- Updating the SEDAR 33 Update model with the FES recreational landings resulted in notably increased estimates of virgin spawning stock biomass, recruitment, and projected yields
- Had the FES recreational landings been available during SEDAR 33 Update the equilibrium yield estimate would have been about 5.97 million pounds rather than the 3.71 million pounds estimated at the time
- Assuming the ABC from the hypothetical SEDAR 33 update FES run had been about 6 million pounds, the current recommendation of around 4 million pounds would represent a roughly 33% decrease in yield rather than the larger increase in yield that it appears to be.

Model	Terminal year (TY)	SSB (TY)	Recruits (TY)	F_{SPR30}	SSB ₀	SSB _{SPR30}	Equilibrium Yield (mp ww)
S33 Update	2015	1,640.28	1,341	0.198	18,779	5,685	3.706
S33 Update with FES	2015	2,169.95	2,507	0.199	28,986	8,798	5.968
S70 Operational	2018	2,432.83	1,813	0.175	23,733	7,119	3.969

Final Summary of SEDAR 70

- The SEDAR 70 Greater Amberjack assessment predicts a steady and significant decline in total biomass and spawning stock biomass and associated increasing and intense exploitation (as Gulf of Mexico greater amberjack remain in an unhealthy state with overfishing occurring and biomass at reduced levels (depletion estimate $SSB_{2018}/SSB_0 = 10\%$).
- The GOM Greater Amberjack stock is undergoing overfishing and remains in an overfished state based on the definition of MSST ($0.5 * SSB_{SPR30\%}$) and MFMT for the final SEDAR 70 base model.
- Overall, the SEDAR 70 base model is improved since the SEDAR 33 Benchmark and Update assessments, and it incorporates the best available data and addressed modeling issues evident in the prior assessments.



Recalling: Greater Amberjack Minimum size regulations

Species Affected	First Yr In Effect	Effective Date	End Date	Fishery	Size Limit	Size-FL CM	Length Type
Greater Amberjack	1990	2/21/1990	8/3/2008	Rec	28"	71.1	FL
	1990	2/21/1990	Ongoing	Com	36"	91.4	FL
	2008	8/4/2008	1/3/2016	Rec	30"	76.2	FL
	2016	1/4/2016	Ongoing	Rec	34"	86.4	FL