



NOAA
FISHERIES

THE IMPACT OF A REDUCTION IN SHRIMP EFFORT THRESHOLDS ON SEDAR 52 GULF OF MEXICO RED SNAPPER CATCH LIMIT PROJECTIONS



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Outline

- Request
- Methods
- Results
- Interpretation



Council Request

- Illustrate impact of shrimp effort increases on resulting ABCs
- Can shrimp effort be increased (i.e., threshold value reduced) without harming the resource, impeding rebuilding, or reducing the ABCs?

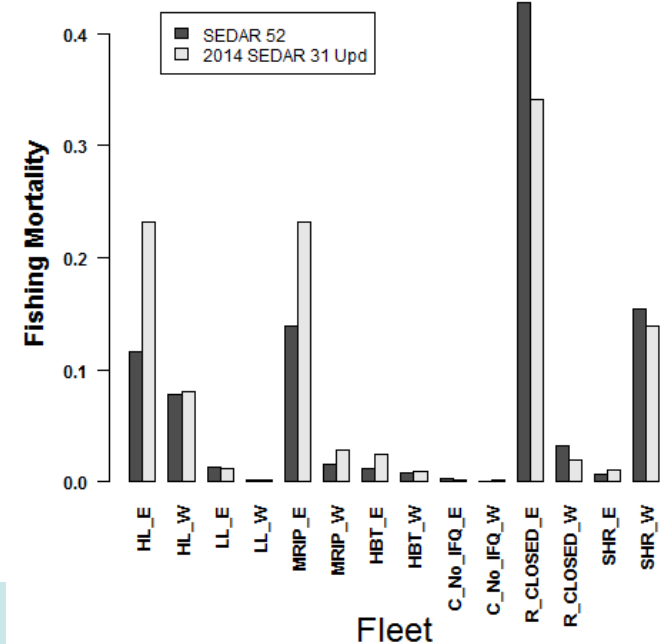
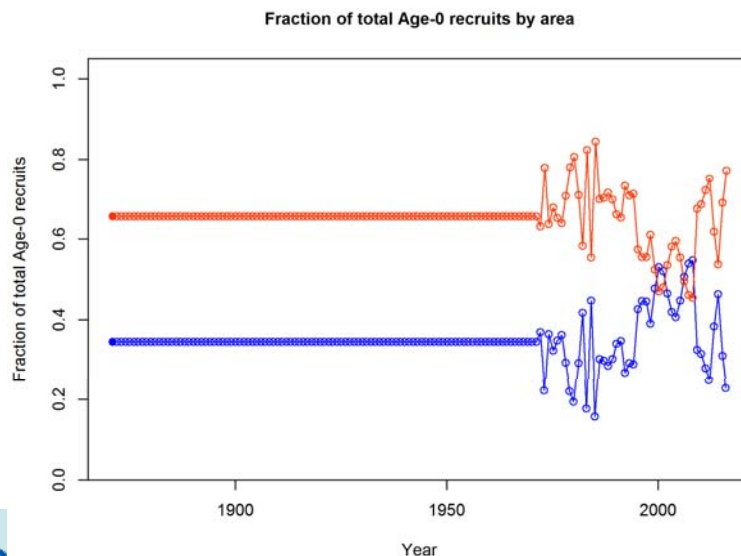
The initial effort reduction was 74% from the baseline, but this percentage was changed to a 67% reduction from the baseline in 2011 and remains in effect. Also in the amendment, a target reduction goal of 60% from the baseline by 2032 was outlined. The shrimp fishery has been consistently above the target reduction goal of 67%, thus, closures in the fishery have not been necessary to date. However, the Council feels that due to the red snapper stock no longer being overfished, it is time to evaluate if this shrimp effort reduction threshold can once again be lowered from the baseline. The Council requests that the Southeast Fisheries Science Center incorporate, at a minimum, target reduction thresholds in the next red snapper assessment of percentage reductions in one percent increments from 67% to 60% so that the Council may evaluate if another modification to the target reduction is warranted for the shrimp fishery.

Projections



Projection Settings

- Constant recruitment based on recent period
- Selectivity, retention, and discard mortality taken from most recent timeblock
- Discard and bycatch fleets fishing mortality taken from terminal year and held constant
- Allocation 51:49, Comm : Rec
- Used 2017 provisional landings of 15.36 million pounds
- Fully utilized 2018 ACL of 13.74 million pounds

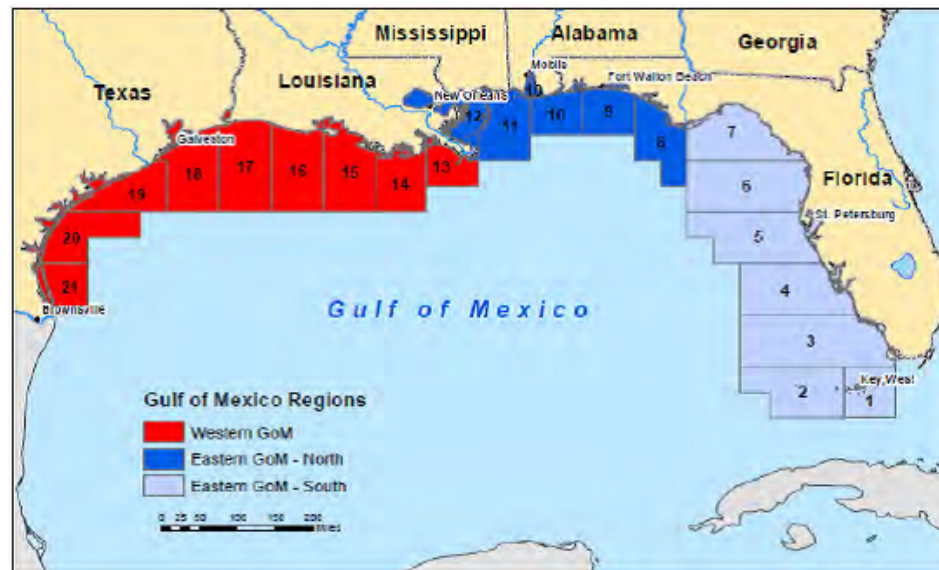


Assumptions

- Shrimp effort (or shrimp days) and shrimp bycatch fishing mortality (F) are directly proportional
 - % change in effort represents an equal % change in F
- % change in gulfwide effort reflects same % change in regional effort or F
 - Model is regional and no information provided on regional allocation of effort reductions

Caveats

- Assessment model covers statistical areas 1 - 21 with the eastern region covering areas 1 – 12 and the western region covering areas 13 - 21
 - Effort thresholds in Amendment 14 were calculated for areas 10 – 21
 - Using Amendment 14 areas, there has been a 69% reduction
 - Using all areas, there has been a 63% reduction



Caveats

- Relationship between % change in effort threshold and % change in effort is not linear
 - Distribution of effort between regions varies among time periods
 - The eastern gulf contained 15% of the shrimp effort in 2016, whereas it contained 24% during the 2001 – 2003 baseline period
 - To move from a 63% threshold to a 60% threshold requires an 8% increase in gulfwide effort

Scenarios

- *Reduce_60*: 60% effort reduction compared to the SEDAR 52 total effort levels from 2001 – 2003
 - Matches the maximum threshold reduction (i.e., to 60% of the baseline effort) and maximum percentage increase in effort of 8% requested by the GMFMC
- *Reduce_56*: 56% effort reduction compared to 2001 – 2003
- *Reduce_40*: 40% effort reduction compared to 2001 – 2003
- *Reduce_0*: 0% effort reduction compared to 2001 – 2003
- *Assess_F_2001_2003*: use the average shrimp bycatch fishing mortality rates for 2001 to 2003 from the SEDAR 52 assessment

Scenario Run	SEDAR 52 Base	Reduce_60	Reduce_56	Reduce_40	Reduce_0	Assess_F_2001_2003
% Reduction In Gulfwide Shrimp Days Compared to 2001-2003 Average	63%	60%	56%	40%	0%	--
% Increase in Shrimp Days Compared to Base Model	--	8%	20%	63%	270%	447% east*, 247% west*
East Shrimp Bycatch F	0.0069	0.0075	0.0083	0.0113	0.0187	0.0310
West Shimp Bycatch F	0.1537	0.1660	0.1844	0.2505	0.4150	0.3797

*These values represent changes in fishing mortality rates not shrimp days.

Results

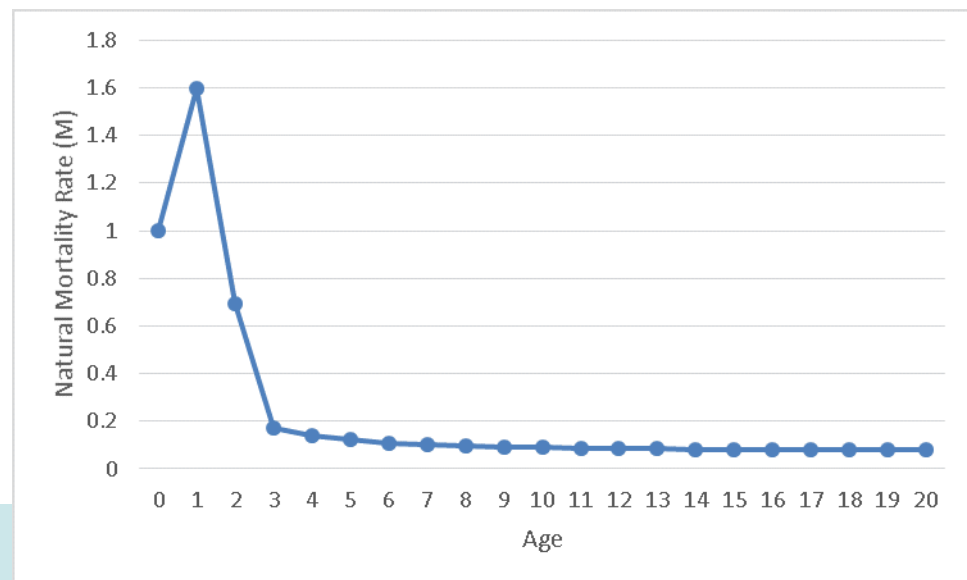
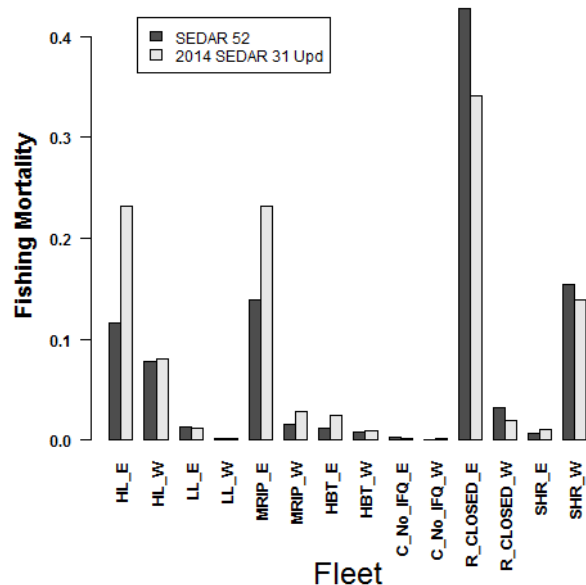
- Moderate changes in shrimp effort/days has little impact on ABCs or rebuilding
- Reverting back to effort levels associated with 2001 – 2003 would reduce ABCs by about 2.5 – 3 million pounds per year

Year	ABC					Assess_F_2001_2003
	SEDAR 52 Base	Reduce_60	Reduce_56	Reduce_40	Reduce_0	
2019	16.0	16.0	16.0	14.7	13.1	13.3
2020	15.0	15.0	15.0	13.9	12.5	12.7
2021	14.3	14.3	14.2	13.3	12.0	12.2
2022	13.8	13.7	13.7	12.8	11.5	11.7
2023	13.4	13.3	13.3	12.4	11.1	11.2
2024	13.2	13.1	13.0	12.2	10.7	10.9
2025	13.1	13.0	12.9	12.0	10.6	10.7
2026	13.0	13.0	12.8	12.0	10.5	10.7
2027	13.0	12.9	12.8	12.0	10.5	10.6
2028	13.0	12.9	12.8	11.9	10.5	10.6
2029	13.0	12.9	12.8	11.9	10.5	10.6
2030	13.0	12.9	12.8	11.9	10.4	10.6
2031	13.0	12.9	12.8	11.9	10.4	10.6
2032	13.0	12.9	12.8	11.9	10.4	10.6



Interpretation

- Why doesn't the shrimp effort threshold have a more substantial impact on ABCs?
 1. Recreational closed season fishing mortality now more substantial than shrimp bycatch fishing mortality and reduces impact of shrimp bycatch
 2. High natural mortality assumed for age-0 and 1 red snapper (i.e., those ages caught as bycatch in shrimp trawls) lessens impact of shrimp bycatch compared to older assessments (e.g., prior to SEDAR 31), because more fish are dying due to natural mortality before they are caught as bycatch



Questions

