Discard Reductions of South Atlantic Red Snapper

SEFSC

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Summary

This document describes the reduction in dead discards of South Atlantic red snapper needed to meet the forecast scenario chosen by the SSC (Scenario 13, F= F30 starting in 2022, recent average recruitment and block 4 discard mortality). The Frebuild fishing rate of that scenario cannot be achieved simply by setting landings to ABC. Achieving Frebuild would additionally require reducing dead discards from a geometric mean of ~571,000 fish to around 200,000 fish, or about a 65% reduction in total dead discards.

Introduction

The SAFMC SSC[1] recommended ABCs be based on the forecast scenario they selected at their July 2021 meeting. This scenario used the "recent average (high) recruitment" option and included reductions in discard mortality rates that were expected from increased use of descender devices. In addition to landings (used for ABCs), the projection scenario also forecasted levels of dead discards. It is those levels of dead discards that are used here for computing the discard reductions implied by the SSC's recommended ABCs.

Methods and Results

To compute the discard reduction needed, dead discard from the ABC projection were compared to the current level of dead discards, reported in Table 21 of the SEDAR73 assessment report. The terminal year of the assessment was 2019; thus, the "current level" was computed as the geometric mean of values from 2017-2019, or 571,000 dead fish. This current level included all sectors (commercial, headboat, and general recreational). However, only 1% came from the commercial sector (although it should be noted the commercial discard estimates are from unvalidated logbooks with unknown bias). The vast majority—97%—of dead discards came from the general recreational sector (private boat and charter boat), and of these, about 95% came from the private boat fleet[2].

Compared to 571,000 dead fish, discard mortalities would need to be reduced to about 33%-37% of the current level, or 189,000-212,000 dead fish (Table 1). This represents a reduction in dead discards of about 65% (Figure 1).

Discussion

[1] The SSC recommended Projection Scenario 13 of this report: https://safmc.net/documents/2022/06/sedar73-red-snapper-forecasts-new-methodology-and-additional-scenarios.pdf/

[2] http://sedarweb.org/docs/wpapers/SEDAR73_WP09_General%20Recreational%20Data_SA_RS_11032020.pdf

The scale of reduction in dead discards is substantial enough that it is unlikely to be met by any management measures other than a reduction in private boat recreational fishing effort. Because most of the discarding occurs outside of the recreational mini-seasons, simply adjusting landings to the SSC's recommended ABC will be insufficient to meet the reduction in dead discards required to end overfishing.

Related to discard reductions is the question of how discards could be converted to landings. For this, the discard mortality rate (mortalities per released fish) provides one simple metric of conversion. For example, a discard mortality rate of 0.2 implies that, of every five fish released, one fish would die. Thus, in terms of total mortalities, landing one fish would be equivalent to releasing five. This also implies that given the same fishing effort, converting discarded catch to landed fish will result in an approximate 5x increase in mortality. In the assessment, release mortality was estimated to range from ~0.15 to ~0.3, with a median of 0.2 and a base-run value of 0.23 (Figure 2). This simple approach ignores any effects on population dynamics that would result from different selectivities of landings and discards. Also, converting dead discards to landings, although desirable, does not in itself address overfishing.

Table 1. Discard reductions implied by the projection scenario recommended by the SSC for setting ABCs. The first column indicates projection year, the second and third columns show dead discards (D in 1000s fish) from the ABC projection, in which extension *b* indicates base run and *m* indicates median of ensemble runs. The fourth and fifth columns indicate reductions (R) that were computed as ratios of dead discards from the ABC projection (numerator) relative to the current (2017-2019) level (denominator).

year	D.b	D.m	R.b	R.m
2020	443	407	0.78	0.71
2021	332	288	0.58	0.50
2022	195	189	0.34	0.33
2023	202	191	0.35	0.33
2024	207	194	0.36	0.34
2025	210	196	0.37	0.34
2026	211	196	0.37	0.34
2027	212	197	0.37	0.35
2028	212	197	0.37	0.35
2029	212	197	0.37	0.35
2030	212	198	0.37	0.35

Figure 1. Dead discards under Scenario 13 projection results with F= F30 starting in 2022 and recent average recruitment. Benchmarks are based on Block 3 and discard mortality on Block 4 with no reallocation of F toward landings. Achieving Frebuild would require reducing dead discards from a geometric mean of ~571,000 fish to around 200,000 fish or about a 65% reduction in total dead discards.

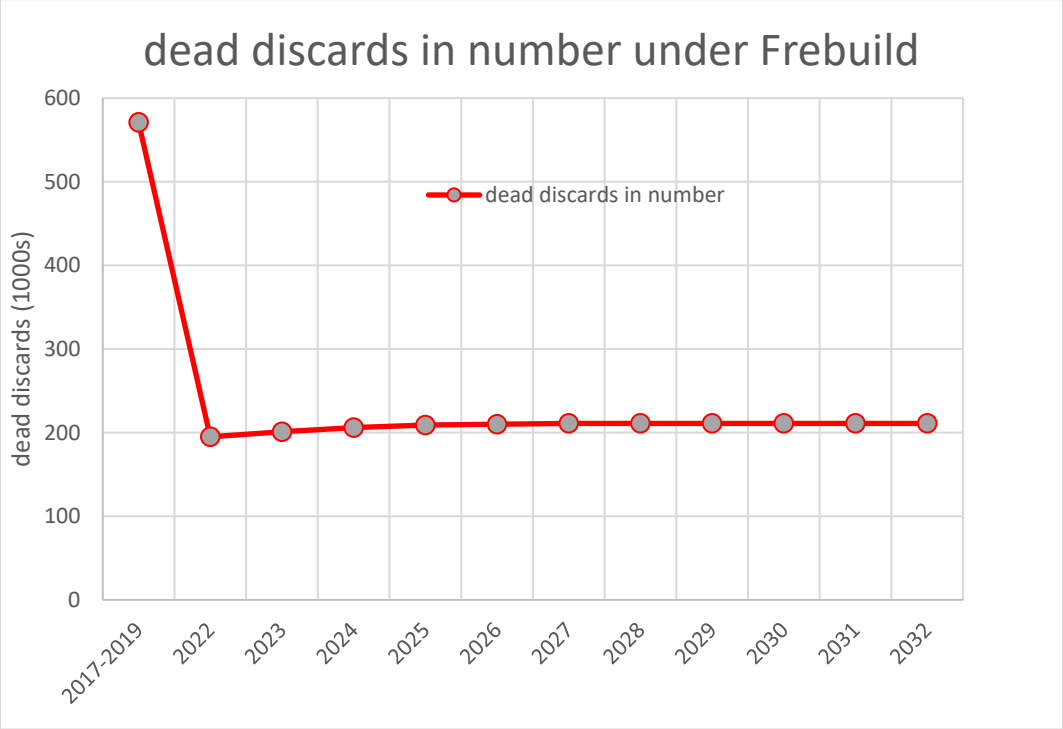

Figure 2. Average discard mortality rate pooled across fleets (heavily weighted by the recreational sector). The distribution is that from the ensemble of model runs, with the median indicated by the dashed vertical line and the base-run value by the solid vertical line.