October 2023 SA SSC Meeting: Interim Assessment of South Atlantic Vermilion Snapper

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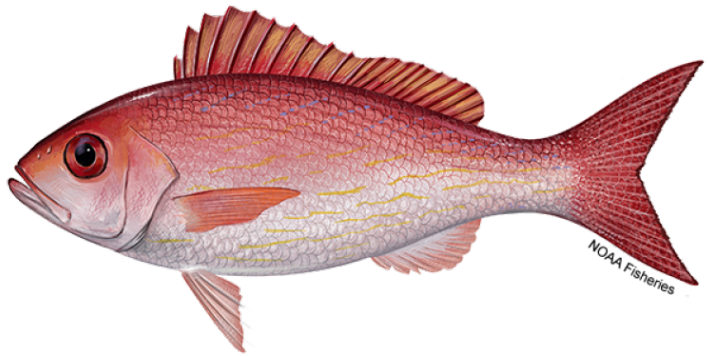

Introduction

Assessment history

- SEDAR 02, 2003 Benchmark Assessment
- SEDAR 17, 2008 Update Assessment
- SEDAR 17, 2012 Update Assessment
- SEDAR 55, 2018 Standard Assessment

Introduction

Summary of previous assessments

- The two most recent assessments determined that SA vermilion snapper was not undergoing overfishing
- All four stock assessments determined that SA vermilion snapper was not overfished

Assessment	Model	M	Steepness	MSY (klb)	F_{MSY}	MSST†	F/F_{MSY}	SSB/MSST
Bnch (S02), 2003	CAL	0.25	0.9	1025	0.32	0.19	1.60‡	1.64
Updt (S17), 2008	CAA	0.22	0.56	1665	0.39	7.14	1.274‡	1.10
Updt (S17), 2012	CAA	0.22	0.71	1563	0.75	4.66	0.67	1.26
Stnd (S55), 2018	CAA	0.22	0.69	1306	0.41	13.7	0.61	1.51

† MSST units $= 10^{12}$ eggs
‡ F/F_{MSY} numerator is terminal year value

Introduction

Background

- Klibansky et al. 2022. Evaluating procedures for updating catch advice of reef fishes between stock assessments, with management strategy evaluation
- Report and presentation provided to SSC at the October 2022 SSC meeting
- Plan for conducting interim analysis for vermilion snapper presented at April 2023 SSC meeting

Introduction

Background

Possible interim adjustment process

1. Center staff conducts scientific analysis
   - 1.1 Compute adjusted catch
   - 1.2 Evaluate performance of projections from recent assessment
   - 1.3 Evaluate performance of recent management
2. SSC reviews catch adjustment and makes recommendation to SAFMC
3. SAFMC implements SSC recommendation

Introduction

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Possible interim adjustment process

1. **Center staff conducts scientific analysis**
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Methods

Computing adjusted catch

Data required for computing adjusted catch

1. SEDAR 55 vermilion snapper BAM assessment output
   a. Terminal year = 2016
   b. Observed trap/video index
   c. Predicted trap/video index
2. Vermilion snapper standardized chevron trap index from SCDNR 2023 Trends Report

Methods

Computing adjusted catch

- a = catch adjustment
- $\tilde{I}_{\text{rcn}}$ = Average trap index from 3 recent years (~~2020~~, 2021, 2022)
- I_{ref} = Trends Report trap index value, from terminal year (2016) of last assessment SEDAR 55
- $\hat{\sigma}$ = standard deviation of the residuals from the assessment model fit to the trap/video index from SEDAR 55
- sd() = standard deviation function
- $I_{\text{bam,ob}}$ = observed trap/video index from SEDAR 55
- $I_{\text{bam,pr}}$ = predicted trap/video index from SEDAR 55

$$a = \frac{\tilde{I}_{\text{rcn}} + \hat{\sigma}}{I_{\text{ref}} + \hat{\sigma}} \tag{1}$$

$$\hat{\sigma} = \text{sd}(I_{\text{bam,ob}} - I_{\text{bam,pr}}) \tag{2}$$

Methods

Evaluating performance of projections and management

Data required for evaluating performance of projections and management

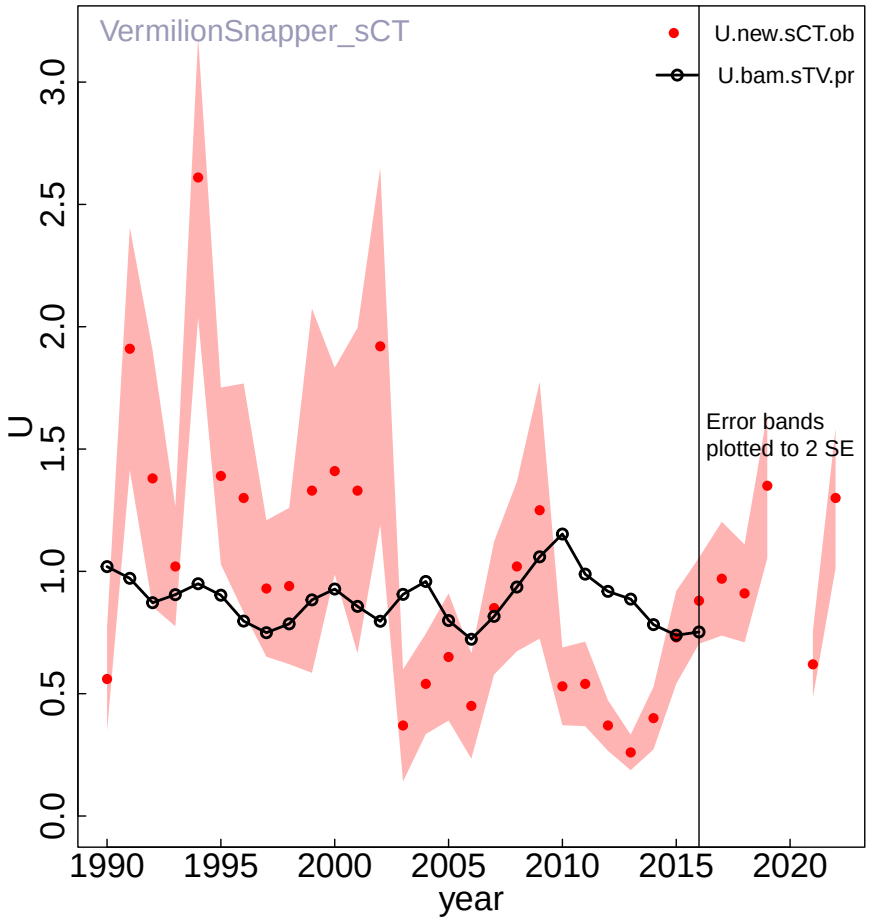
1. SEDAR 55 vermilion snapper $P^* = 0.40$ projections
   a. Projected trap/video index
   b. Projected landings and discards
2. Vermilion snapper snapper standardized chevron trap index from SCDNR 2023 Trends Report
3. Recent estimates of landings and discards (NOAA Fisheries One Stop Shop)

Results

Computing adjusted catch

$$\tilde{I}_{\text{rcn}} = 0.96$$
$$I_{\text{ref}} = 0.88$$
$$\hat{\sigma} = 0.61$$

$$a = \frac{\tilde{I}_{\text{rcn}} + \hat{\sigma}}{I_{\text{ref}} + \hat{\sigma}} = \frac{0.96 + 0.61}{0.88 + 0.61} = \mathbf{1.05}$$



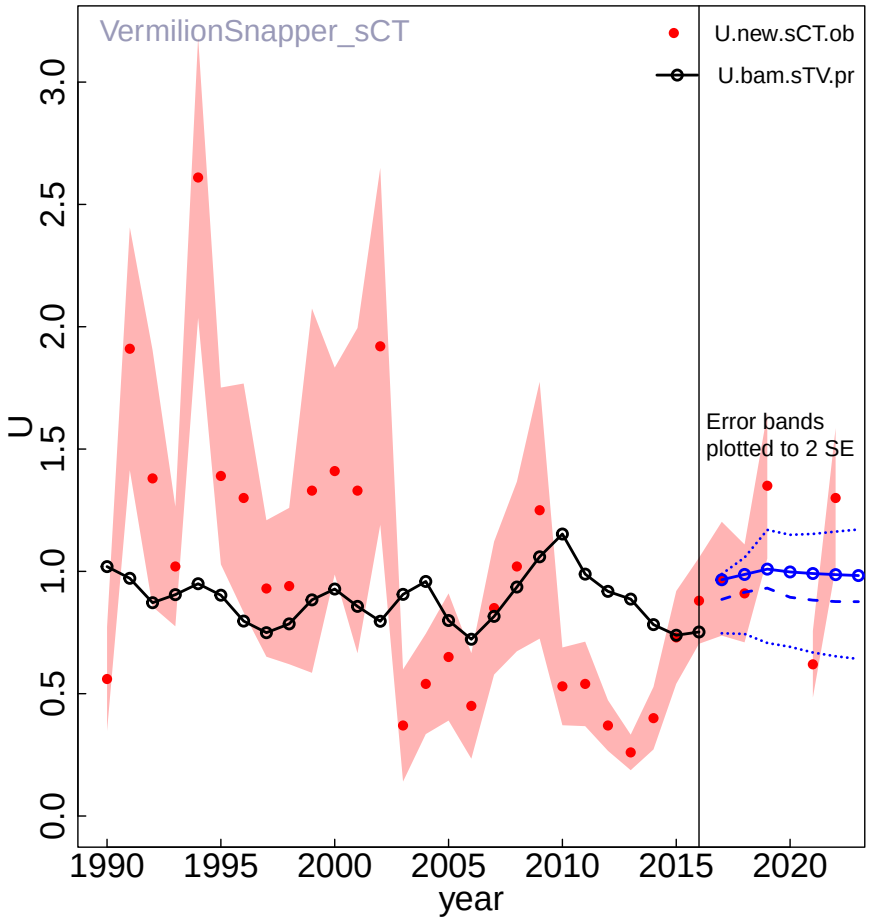
Current SERFS trap index (filled red circles), SEDAR 55 predicted trap/video index (black line).

The computation of a=1.05 suggests a small, 5% increase in catch.

Results

Evaluating performance of projections and management

- Although the current SERFS trap index doesn't match model predicted values from SEDAR 55 well, the projected index matches the general trend of the recent observations.
- Thus the projected relative abundance appears consistent with empirical data, suggesting that stock dynamics are well described, and projection methods are performing well.

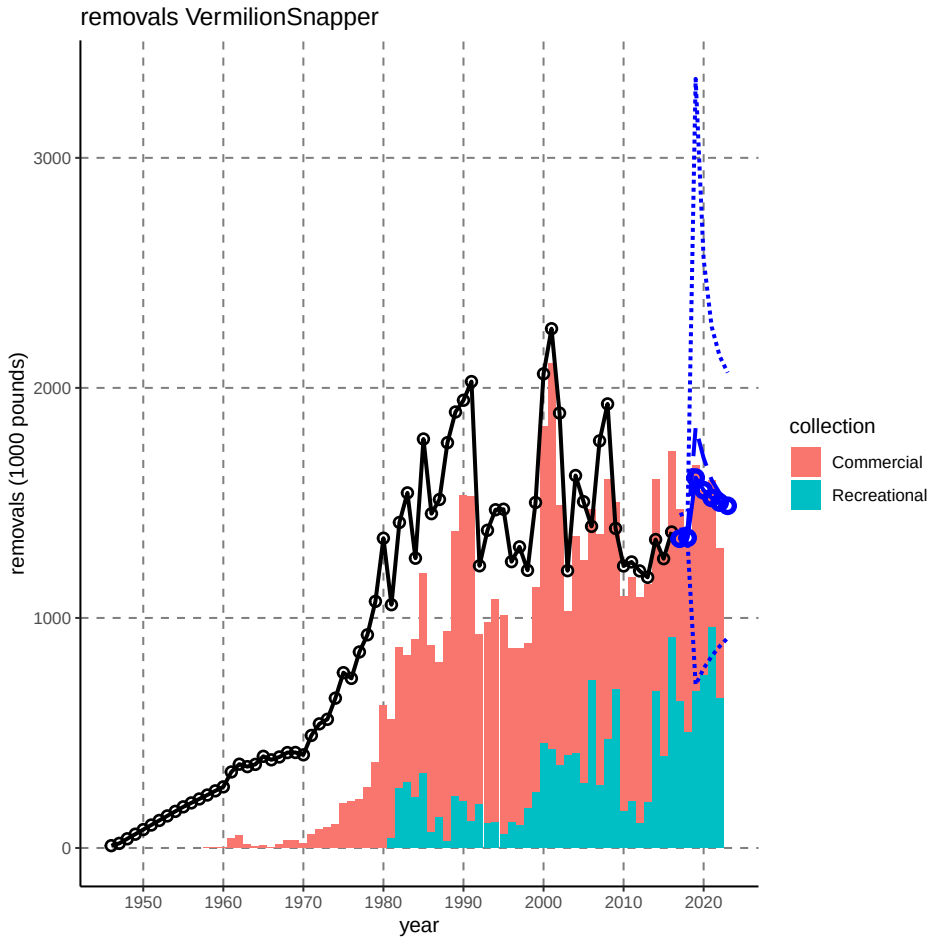


Current SERFS trap index (filled red circles), SEDAR 55 predicted trap/video index (black line), and projected trap/video index (blue lines).

Results

Evaluating performance of projections and management

- Although FOSS removals prior to 2000 do not match SEDAR 55 removals well, they are quite similar since 2000
- Observed FOSS removals from years since 2016 are very similar to removals in the SEDAR 55 $P^* = 0.40$ projections
- Thus management appears to be effectively maintaining removals at projected levels.



Observed FOSS (colored bars), SEDAR 55 estimated (black line), and projected (blue lines) removals.

The computation of a=1.05 suggests a small, 5% increase in catch.

Evaluation of projections suggests that they are performing well and current management is on track.

Conclusions

Next steps

Possible interim adjustment process

1. Center staff conducts scientific analysis ✓
   - 1.1 Compute adjusted catch ✓
   - 1.2 Evaluate performance of projections from recent assessment ✓
   - 1.3 Evaluate performance of recent management ✓
2. **SSC reviews catch adjustment and makes recommendation to SAFMC**
3. SAFMC implements SSC recommendation