



**NOAA  
FISHERIES**

**SEFSC**

**Atlantic Fisheries Branch  
Beaufort, NC**

# SEDAR 68 OA South Atlantic Scamp & Yellowmouth Grouper: Follow-up analyses #2



**SSC Review**

July 2023

# Topic

- Council request on behalf of the SSC
  - Projection with  $F = F_{40\%SPR}$  and long-term average recruitment (see briefing book for report)

# Broader Topic

- Issues related to nonstationarity in recruitment
  - Rebuilding
  - ABC
  - OFL

# Topic

Projection with  $F = F_{40\%SPR}$  and  
long-term average recruitment

# Projection methods

- Methods are the same as those document in the assessment report
  - Exception: new fishing rate (here,  $F_{40\%SPR}$ ) starts in 2025 instead of 2024
- Long-term average recruitment assumed to resume in 2023
- Reminder, removals include both landings and dead discards

year	R.base (1000)	R.med (1000)	F.base	F.med	S.base (mt)	S.med (mt)	TR.base (1000)	TR.med (1000)	TR.base (1000 lb)	TR.med (1000 lb)
2022	76	83	0.32	0.3	289	311	17	17	115	115
2023	291	240	0.33	0.31	291	318	18	18	115	115
2024	291	241	0.34	0.31	331	362	19	19	115	115
2025	291	242	0.28	0.3	434	455	17	19	97	113
2026	291	240	0.28	0.3	570	571	22	24	119	133
2027	291	238	0.28	0.3	702	690	32	33	171	177
2028	291	239	0.28	0.3	808	790	42	42	227	228
2029	291	240	0.28	0.3	887	861	49	49	270	269
2030	291	241	0.28	0.3	943	912	54	53	301	298
2031	291	241	0.28	0.3	983	950	56	55	323	318
2032	291	242	0.28	0.3	1010	977	58	57	338	331
2033	291	238	0.28	0.3	1029	997	59	58	349	342
2034	291	240	0.28	0.3	1042	1012	60	59	356	349
2035	291	240	0.28	0.3	1051	1020	61	59	361	354
2036	291	240	0.28	0.3	1057	1025	61	60	365	357

# Broader Topic

Issues related to  
nonstationarity in  
recruitment

# Rebuilding

- Rebuilding depends critically on future recruitment, and long-term forecasts of recruitment are unreliable
- Additional uncertainty for species showing low recruitment in recent years, such as scamp
  - Science can't tell us when, how, or if recruitment will return to the long-term average
- However, there is a legal obligation to specify  $T_{\min}$  and  $T_{\max}$
- The IPT is using  $T_{\min} = 5$  yr and  $T_{\max} = 10$  yr, based on NS1 Guidelines and projections with  $F = 0$  and long-term average recruitment
  - This is consistent with **no** declaration of a regime shift

# ABC

- The SSC recommended that ABC be based on the forecast with  $F = 75\%F_{40\%SPR}$  and recent average recruitment
- This follows the SSC protocol for short-term catch advice
- This makes scientifically sound sense, given what we know about autocorrelation in recruitment
  - recent recruitment is a good predictor of short-term future recruitment



# OFL

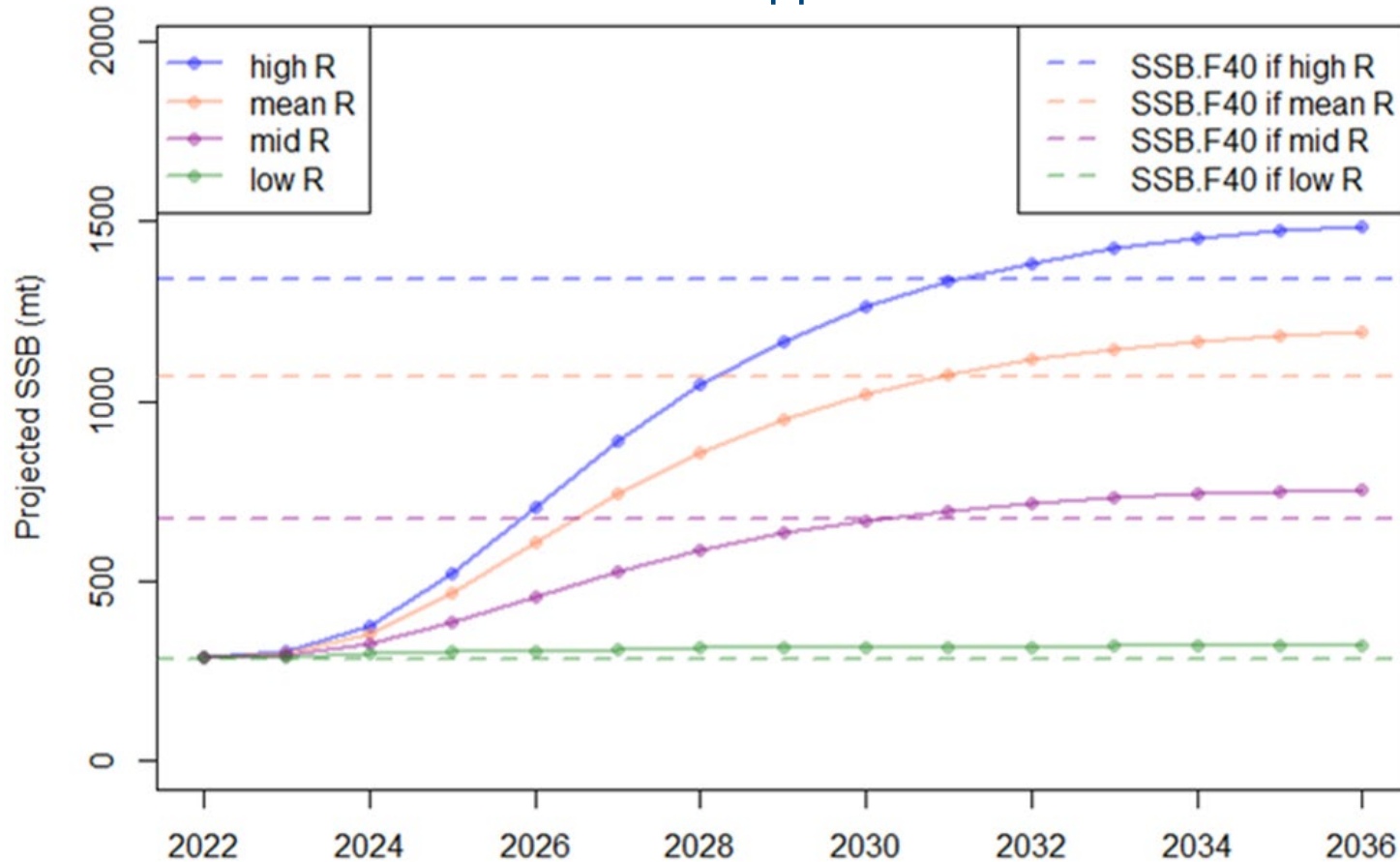
- Should OFL be based on long-term average recruitment?
  - This is consistent with not declaring a regime shift
  - It results in a large buffer between OFL and ABC, if ABC is based on recent recruitment (as it should be)
- Should OFL be based on recent average recruitment?
  - Is this different from declaring a regime shift?
  - Does a large buffer between OFL and ABC even matter in this case?
    - ABC is set correctly, and ABC is the more important metric for management. OFL is just computed to fill in the box.

# Related national (Alaska CCC SCS meeting) & NS1 revisions discussion; interested in any SSC feedback

- Dynamic  $B_0$ , moving window, or other nonequilibrium approach to setting biomass benchmarks
- Avoid declaration of stock status in cases of nonstationarity (stock status = unknown)
  - Avoids declaring rebuilding plans for which  $T_{\min}$  and  $T_{\max}$  must be defined per legal mandate, despite what science can provide
  - Can still estimate  $F$  benchmarks and fishing status
  - Fishery management focuses on controlling  $F$  anyway

# Example scamp forecasts fishing at $F = 75\%F_{40\%SPR}$

- We might not know what spawning stock biomass at  $F_{40\%SPR}$  (SSB.F40) is, but we would achieve the relevant benchmark for whatever the recruitment level happens to be



# Summary

## SEFSC Proposal

**Rebuilding time frame:**  $T_{\min}$  and  $T_{\max}$  based on long term average recruitment ( $R$ ), or evidence supported regime shift  $R$ .

**ABC:** Based on short term projections (not to exceed 5 yrs) and 'most plausible'  $R$  (in this case recent  $R$ ). Use  $F$  adjusted for buffer based on scientific uncertainty.

### OFL:

**Option a:** Use same  $R$  assumptions as in ABC projections with  $F = F_{\text{MSY}}$  (or proxy).

**Option b:** Use same  $R$  assumptions as in Rebuilding time frame projections with  $F = F_{\text{MSY}}$  (or proxy).

# Discussion

- Rebuilding is governed by two primary processes;  $R$  and  $F$ 
  - $R$  is largely up to nature and  $F$  is largely up to management
- ‘No regime shift’ assumes  $R$  will eventually shift back to long term average.
  - Absent any regime shift evidence, this is best default assumption
  - If  $R$  does not rebound,  $F$  (and thus  $ABC$ ) is primary process for recovery
- **Risk:** If  $R = f(SSB)$ , particularly at low levels, then recovery of  $R$  could be inhibited by  $\downarrow SSB$  from continued fishing
  - Population may never experience  $\uparrow SSB$  and allow for  $\uparrow R$  response.

