

Proposed 2023 OFL CV Decision Criteria Table for Scup

Decision Criteria	Summary of Decision Criteria Considerations	Assigned OFL CV Bin (60/100/150)
Data quality	<p>Surveys</p> <ul style="list-style-type: none"> • Synoptic surveys over the stock area include the NEFSC spring and autumn bottom trawl surveys, but these surveys show large interannual fluctuations that reflect availability rather than abundance in any single year. • Surveys generally rarely catch fish age three and older, although older ages are present in commercial and recreational catch at ages. Other surveys do not cover the entire stock area, and most catch few fish over age 2. The inclusion of multiple state surveys, which by themselves are geographically restricted, enable broader coverage of the stock area in aggregate. • Covid-related issues limited coverage of state and federal surveys in recent years (2020-2022). <p>Landings and discards</p> <ul style="list-style-type: none"> • Commercial landings have been well sampled for length and age since 1995. • Commercial discards have been fairly well sampled since 2000, although discard observations are highly variable and skewed. • New MRIP data are now being used to estimate recreational landings and discards. • About 53% of the estimated total catch and discards in weight in 2022 was from the recreational fishery. • Length sampling of recreational landings has generally been adequate since 1988. • Recreational discard is low. • Covid-related issues introduced uncertainty into catch estimates, requiring imputation methods for 2020-2022 estimates. 	
Model appropriateness and identification process	<ul style="list-style-type: none"> • The assessment model is based on a complex statistical catch-at-age model (ASAP SCAA). • Catch is modelled as four fleets (commercial and recreational landings and discards). • Life history does not require special modelling adjustments. • Addition of new selectivity block improved the model diagnostics for the 2021 and 2023 management track assessments. • A significant portion of the stock biomass is represented by the plus group, which is assumed to be lightly exploited because of the selectivity pattern applied. • About 25 different configurations were explored in the 2015 benchmark. • The effect of new MRIP estimates on continued validity of prior sensitivity analyses depends on the magnitude of the change. Because proportion of landings attributable to new MRIP estimates is relatively low, we could expect sensitivity analyses to remain valid. 	

	<ul style="list-style-type: none"> Biological reference points were updated in the 2023 management track assessment. 	
Retrospective analysis	<ul style="list-style-type: none"> Retrospective patterns were not degraded from earlier assessment results following the addition of the 2013-present selectivity block. Adjusted 2022 SSB estimates were outside the model-estimated 90% confidence intervals, thus a retrospective adjustment was made for both the determination of stock status and for projections of catch and biomass in 2024 and 2025. General trends in retrospective patterns for SSB, R, and F have been consistent for the past five assessments. 	
Comparison with empirical measures or simpler analyses	<ul style="list-style-type: none"> Age structure in fishery and survey catches has been expanding since the 1990s. Aggregate survey indices remain near time series highs. Several large recruitment events likely gave rise to survey index highs. Given the potential effects of availability in any given year, swept area estimates of biomass are less reliable than for some other stocks. No empirical estimates of scale are available. 	
Ecosystem factors accounted	<ul style="list-style-type: none"> No ecosystem factors were considered in the assessment, but mean weights at age and maturity at ages 2 and 3 continue to decline. Previous assessments examined thermal habitat models to evaluate factors affecting availability, but no strong signals were observed. Scup are considered moderately vulnerable to climate effects in the Hare et al. (2016) report. 	
Trend in recruitment	<ul style="list-style-type: none"> Trends in recruitment have been consistent with no apparent trend; although the year classes in 2014 and (especially) 2015 were above average, the 2016 – 2021 year classes were below average. R/SSB has declined over the time series and has remained low, as would be expected as a result of the large stock size. OFL projections were sampled from estimated recruitment for 1984-2022; the SSC found this to be appropriate. 	
Prediction error	<ul style="list-style-type: none"> No estimate of prediction error is feasible at this point, given the inclusion of revised MRIP data in the updated assessment and attendant effects on biomass estimates. However, the updated MRIP data lead to relatively little change in estimates of F and SSB of Scup, so prediction error is unlikely to increase. 	
Assessment accuracy under different fishing pressures	<ul style="list-style-type: none"> Fishing mortality declined by more than four-fold over the assessment series, while SSB increased more than ten-fold. In the most recent years, fishing mortality rates have been moderate and at levels expected for management targets. Fishing mortality in the past 19 years has been low, but increases in SSB, R, C, and survey indices are consistent. 	
Simulation analysis/MSE	<ul style="list-style-type: none"> No formal MSE-type analyses have been conducted for this stock. 	NA