Draft OFL CV Decision Criteria Table for Spiny Dogfish – Oct. 2023

Decision Criteria	Summary of Decision Criteria Considerations	Assigned OFL CV Bin (60/100/150)
Data quality	**Surveys** • Three fishery-independent surveys are available and used: NEFSC spring bottom trawl offshore Yankee 36 (1968-1972), Yankee 41 (1973-1981), and NEFSC spring bottom trawl (inshore + offshore survey, Albatross -Biglow1982-2022) data are available for all years (except fall 2014 and 2020 Bigelow) in the assessment. • NEFSC fall bottom trawl (inshore + offshore survey, Albatross - Biglow1982-2022) and regional surveys such as NEAMAP, MSDMF, and ME-NH trawl surveys are not used in Management Track model tuning. There were sensitivity runs in the Research Track but not comparable with the base run because the data weighting was not comparable. No update on these sensitivity runs was provided in the management track assessment report. **Landings and discards** • Age data are of high uncertainty and not used in the model • Discard uncertainty is high, such as extrapolating pre-1989 and low trip coverages in the 1990s. • Discard mortalities from recreational and commercial (otter trawl, sink gillnet, scallop dredge, and longline) fisheries are based on assumptions in NEFSC 2006 (43rd SAW), which was not based on direct studies on spiny dogfish. **Life history data** • Growth data is treated as uncertain and not used; growth was estimated from the model.	
Model appropriateness and identification process	• A sex-specific age-structured model fitting to length frequency data implemented in Stock Synthesis version 3.30.21 (SS3). • Catch is modelled as 2 fleets: sink gillnet+recreational+others, long-line+ottertrawl+foreign. • Discards are modelled as 3 fleets: sink gillnet+scallop dredge, large mesh otter trawl+longline+recreational, small mesh otter trawl • Life history time blocks (2) used to address the changes in growth and maturity • Selectivity blocks used in all the catch and discard fleets. • Spawner stock-recruitment (SR) relationship was based on a survi-vorship configuration with $Z_{f\,rac}$, β and σ_R fixed. • Biological reference points were updated in the 2023 management track assessment. SSB biological reference points are sensitive to SR parameter assumptions. • Model results are sensitive to data weighting to survey indices.	
Retrospective analysis	• Persistent retrospective patterns were identified in the most recent model but minor, with low retrospective errors in F and SSB output.	

Comparison with empirical measures or simpler analyses	• The research track assessment included a comparison with the Stochastic Estimator (wept area) biomass. The descriptions of historical population dynamics from the two approaches are different. • A few other simpler analyses were provided in the research track review, including DCAC, DB-SRA, and Ismooth. They either don't show stock status or show different stock status. • The management track assessment extended the data back to 1924 (compared to 1989 in the research track assessment). The results are consistent in SSB and F trends but not in SSB_{msy} ($SSB_{60\% SPR}$) output.	
Ecosystem factors accounted	• No ecosystem factors were included in the assessment. • No significant changes in spatial shift over time are detected through a VAST analysis. Maturity and growth are found to have changed after the 2010s and have been included in the assessment. No factors ("driver") are identified to cause the maturity and growth changes. • Classified as "low climate vulnerability" by Hare et al. (2016).	
Trend in recruitment	• There are no SR relationship changes modeled or detected. The survivorship SR relationship, including the variance of recruitment, is fixed in the SS3 model. • The estimated recruitment over time did show patterns with years of high or low recruitment. Recruitment in the recent 4 years (2019-2022) was not lower than long term average.	
Prediction error	• No forecast error plots provided. • This is the first structured stochastic dynamic model. It may take some years to be validated. • The model results are sensitive to SR assumption and survey data weighting.	
Assessment accuracy under different fishing pressures	• Fishing mortality has been relatively high from 1960-2000, so the data should be informative about fishing mortality rates and biomass.	
Simulation analysis/MSE	• No MSE-type analyses were conducted.	