NATIONAL MARINE FISHERIES SERVICE REPORT ON
FINAL RECOMMENDATIONS 2021 GROUNDFISH STOCK ASSESSMENTS
AND SPECIES FOR CONSIDERATION IN 2023

Drawing upon the prioritization data package presented to the Council and its groundfish advisors in March and the Council's preliminary selection of species for assessment during the next two cycles, we conducted additional evaluation of available data and workload associated with assessing those species. We note that workload includes not only the 'assessment' activities associated with model development, exploration, and documentation, but also age-reading to supply important inputs for full/benchmark assessments, and their updates. Operations by staff involved in both of these areas have been affected by COVID-19 precautions, and there remains considerable uncertainty over the cumulative impacts that will be felt a year from now. Additionally, staff engaged in groundfish age-reading for assessments is at or near its lowest level over the past two decades.

Recommendations for 2021 Assessments

These issues were discussed with each of the advisory bodies leading into this meeting, and have led us to recommend the species for assessment in 2021 that are displayed in Table 1. This includes full assessments for lingcod, vermilion/sunset rockfish, and Dover sole. Owing to the number of expected modeling areas that will be required for the first two, each of them would have its own STAR Panel. The lingcod assessment will address recent genetic research, as well as issues that led to the removal of all fishery age data during the 2017 Panel. Dover sole, which has always been a coastwide assessment, would be reviewed in a STAR Panel along with Pacific spiny dogfish. Both of these species were last assessed in 2011, and would revert to data-poor, catch-only assessments without attention in 2021. The 2019 sablefish assessment is identified for an update, though with less survey data (and potentially less fishery data) than would normally be the case after 2 years.

In May, the SSC's Groundfish Subcommittee reviewed research findings relating to an expanded data-moderate assessment approach, in which length composition would be included with catch data and available index information, but without direct inclusion of age data in the model. While the SSC review and Council adoption of this approach is not anticipated until the fall, we are hopeful that the SSC will decide in September to endorse application of this intermediate approach between current full and data-moderate approaches for use in 2021. Accordingly, we recommend that, if available, the length-based data-moderate approach be applied to three species: copper rockfish, brown rockfish, and squarespot rockfish, all of which were included in the Council's (March) tentative list for full assessments in 2021.

Table 1. NMFS recommendations for 2021 stock assessments, by type, along with the species ranking in the 2020 prioritization analysis, the potential number of modeled areas for each species, and the year it was last assessed.

Stock	Year Last Assessed	Assessment Type	NMFS 2020 Rank	Potential Areas
Lingcod	2017	**Full**	7	2+
Vermilion/sunset rockfish	--	**Full**	1	3+
Dover sole	2011*	**Full**	8	1
Pacific spiny dogfish	2011*	**Full/Length-based Data-moderate**	14	1
Sablefish	2019	**Update**	5	1
Copper rockfish	2013 (D-M)	**Length-based Data-moderate**	17	2+
Brown rockfish	2013 (D-M)	**Length-based Data-moderate**	3	2
Squarespotted rockfish	--	**Length-based Data-moderate**	3	1

*Stock will pass the 10-year forecast threshold without a new assessment. Updates were not recommended for either of these species by the SSC in 2011.

We also acknowledge and appreciate the GMT's early identification of the following species for Catch-Only Projections in 2021: canary rockfish, arrowtooth flounder, darkblotched rockfish, and petrale sole.

2021 STAR Panel Timing
We propose that the three 2021 STAR Panels be scheduled for the weeks of May 3-7, June 7-11, and July 19-23. Tentatively, Dover sole and Pacific spiny dogfish, would be reviewed in the first Panel, lingcod in the second, and vermilion/sunset in the third. Results from the first Panel would feed into the June Council meeting, while results from the other two Panels would come forward in September. If needed, a Mop-up Panel could be held the week of September 27.

Recommendations for 2023 Assessments

A large number of species are included in Table 2, for consideration of some type of assessment in 2023. Existing assessment and ageing capacity will require that this list be trimmed considerably over the next two years. Three strong candidates for full assessments are Black rockfish, petrale sole, and the rougheye/blackspotted assemblage, whose previous assessment will be reaching 10 years of age. Several other species have choices between designation for full assessments and either updates or the new length-based data-moderate approach. These include sablefish, quillback and redbanded rockfishes, both of which have had high attainment of their ABC contributions, and yellowtail rockfish. A full assessment for yellowtail rockfish south of $40^{o}10'$ N lat. was attempted during the 2017 cycle, but was abandoned during the STAR Panel review. Prospects for future success are highly dependent on greater availability of fishery age data. A length-based, data-moderate approach might be possible, but the base model submitted to the STAR Panel for review in 2017 was highly sensitive to removing the age data that were available.

Canary and yelloweye rockfishes could be good update candidates. Cowcod is also listed, but will only have two years of landings data by 2023, which would limit the value of the update. Greenspotted rockfish was listed in the SSC statement as a potential candidate for an update; however, at the time of its last assessment, the SSC recommended that their next assessment be a full. Greenspotted has had low attainment of its ABC contribution, but is listed in Table 2, as a possible candidate for a length-based, data-moderate assessment.

A large number of other species are also listed as data-moderate candidates in Table 2, most of which have experienced low attainment of their ABCs (or ABC contributions), with the major exception being starry rockfish. Four of the species were last assessed in 2013, and consequently will be reaching their 10-year forecast thresholds. Although highly ranked in the prioritization analysis, treefish is the least viable candidate, at this time, averaging just 31 fishery lengths, annually, from 2002-18, with minimal-to-no inventory of age structures.

Table 2. NMFS recommendations for species to be considered for assessment in 2023, by type, along with the species ranking in the 2020 prioritization analysis.

Stock	Year Last Assessed	Assessment Type	NMFS 2020 Rank	
Petrale sole	2019 (U); 2013 (F)	**Full**	12	New eco-driver of recruitment
Black rockfish	2015	**Full**	2	New surveys
Rougheye/Blkspt. rockfish	2013[1]	**Full**	22	High ABC attain.
Quillback rockfish	--	**Full or LB-DM[2]**	3	High ABC attain.
Sablefish	2021(U); 2019 (F)	**Full or Update**	5	Re-examine age-length conflict
Redbanded rockfish	--	**Full or LB-DM**	13	High ABC attain.
Shortbelly rockfish	2007	**Full**	--	Survey smpls aged
Yellowtail rockfish (north)	2017	**Full or Update**	14	
Yellowtail rockfish (south)	--	**Full or LB-DM**	14	Need fishery ages
Canary rockfish	2015	**Update**	16	
Yelloweye rockfish	2017	**Update**	11	
Cowcod	2019	**Update**	57	Little new fishery data by 2023
Starry rockfish	--	**LB-DM**	19	High ABC attain.
Shortspine thornyhead	2013[1]	**LB-DM**	26	
Longspine thornyhead	2013[1]	**LB-DM**	38	Low ABC attain.
Greenspotted rockfish	2011[1]	**LB-DM**	42	Low ABC attain.
English sole	2013 (D-M)[1]	**LB-DM**	33	Low ABC attain.
Rex sole	2013 (D-M)[1]	**LB-DM**	24	Low ABC attain.
Bank rockfish	--	**LB-DM**	23	Low ABC attain.
Olive rockfish	--	**LB-DM**	34	Low ABC attain.
Speckled	--	**LB-DM**	25	Low ABC attain.
Treefish	--	**LB-DM**	10	Few lnths; no ages

[1] Stock will pass the 10-year forecast threshold without a new assessment.

[2] Length-based, Data-Moderate method