

CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE REPORT
ON REBUILDING ANALYSES FOR QUILLBACK ROCKFISH IN CALIFORNIA

The California Department of Fish and Wildlife (CDFW) suggests the Council consider application of alternative conservation measures for quillback rockfish, a “non-target” species in mixed stock groundfish fisheries in the 2025-2026 biennial specifications process. Adopting a rebuilding analysis to guide the biennial specifications development might be premature as NMFS has yet to convey to the Council that it has determined that the *California* stock of quillback rockfish is overfished. The Magnuson-Steves Act (MSA) allows two years from the time the Council is notified of an overfished determination to submit a rebuilding plan for the overfished stock. That two-year clock has not commenced, and there is no certainty when or if it will.

Data-Moderate (DM) Stock Assessments

By definition, the suite of data that can be used in DM assessments is limited by the Terms of Reference.

As suggested in Informational Report 8 ([Supplemental Information Report 8: Council Staff Report Summarizing Relevant Council Record and Background Regarding data-Moderate Stock Assessments within the Pacific Fishery Management Council Process](#), November 2023), there have been a number of technical advancements with regard to the development of Data Moderate assessment methods. However, the Pacific Council hasn’t thoroughly or directly addressed the policy implications of these assessments, nor incorporated policy decisions for DM assessments into the Fishery Management Plan (FMP) or the Council Operating Procedures (COPs).

The schematic in Figure 1 from Information Report 8 describing the Council’s 2013 adopted process for treatment of DM assessments based on the estimated stock depletion is instructive. Although these recommended pathways were ultimately not included in the FMP or COPs, evaluating Figure 1’s application to the 2021 DM assessment for the future-defined stock of quillback rockfish off California is nonetheless useful. Because the estimated stock depletion falls below MSST, the SSC is to determine whether there is enough data to conduct a full assessment. If yes, a full assessment would be conducted in the next cycle, and the stock would be managed with precaution in the interim. If no, the status would be reported as overfished, and a rebuilding plan initiated. CDFW is not aware that an SSC determination has been made as to whether adequate data exists for a benchmark full assessment *for the quillback stock off California*.

California Quillback Data Yet to be Used

As described in the public comment under E.5.b (Agenda Item E.5.b, Tim Hobbs), the DM assessment for the portion of the stock off California lacked any indices of abundance, and relies on data from elsewhere to inform age and growth. CDFW offers that it has been working collaboratively with stock assessment scientists the past two cycles on development of an ROV index of abundance methodology for a number of select species. CDFW believes there is

immense value in these data streams and application, and expects an index or absolute abundance estimates to be developed using the 1540 observed quillback individuals. CDFW anticipates the data processing to be complete for inclusion in the upcoming west-coast wide full benchmark assessment, which the Council recommends for 2025 (See the [Council decision summary document](#) from Agenda Item G.7, September 2022 to adopt final stock assessment recommendations for 2023 and preliminary recommendations for 2025 as described in Table 2 of [Agenda G.7.a. Supplemental GMT Report 1](#)).

Additionally, in regard to developing a length-at-age relationship for the California stock of quillback rockfish, 123 otoliths collected in California remain unread from previous collections that were available to assessors for the last assessment that were not prioritized for use. Since 2021 over 150 additional otoliths have been collected in recent CDFW ad-hoc collection efforts from California recreational fisheries to inform growth of quillback rockfish off California, which should allow development of an age and growth curve specific to the California quillback stock, rather than relying on age and growth data from Oregon and Washington as a proxy for the California stock.

The 2021 DM Quillback Assessments

Supplemental Informational Report 8 recaps the June 2020 final Council action to adopt stock assessment recommendations (p.12). Specific to quillback rockfish, for stocks to be assessed in 2021, neither NMFS, the SSC, the GMT, nor the GAP recommended this species be assessed (neither full nor DM). The GMT and GAP recommended (and NMFS suggested) a full quillback assessment in 2023. However, the final motion recommended a DM assessment of “quillback rockfish” in 2021 with little rationale offered in the record for moving up the timeline or changing from a benchmark full to a DM.

Importantly, for all the 2021 Data Moderate assessments, there was an understanding that it would be up to the stock assessors to determine the particular area break points that made the most sense for assessment purposes, considering available data, geography, regulatory boundaries, and any biological distinctions. This allowed assessors, for example, to decide that for the copper rockfish DM assessment, four different assessment areas were appropriate. Allowing stock assessors full discretion to determine the most appropriate break points is consistent with past assessment and specification cycles. Once the assessments are complete, the resulting outputs are used to develop specifications and management measures. Each cycle, the GMT, GAP and Council develop recommendations on how to incorporate the assessments into management, which often has required breaking stock assessments apart into component contributions, or rolling contributions up from multiple assessments if the boundaries did not align with desired management lines. These policy decisions on how assessment outcomes are applied to meet management needs have been made on an ad hoc and as-needed basis. It is difficult to question a decision to break assessment areas at state lines, given both management and data collection programs for these fisheries have inherent differences. However, in hindsight, it is difficult not to wonder what the outcomes might have been if a break point for the DM assessments had been established at 40 10 N Lat. Like many groundfish assessments, instead of the Oregon/California border.

With regard to the three 2021 DM quillback assessment areas that were ultimately conducted, the Council was left to decide whether to apply the 40-10 Harvest Control Rule (HCR) to the combined assessments which in total assessed the west coast stock, or separately. Despite vastly different outcomes in depletion levels from the three areas, it was determined that by rolling up all three, the coastwide stock of quillback rockfish would fall in the precautionary zone with a combined depletion of just over 25 percent. Such a roll-up would have resulted in a single application of the HCR, which would have had the effect of increasing yields contributing to nearshore complexes for California management areas, and reducing yields that contribute to complexes off Oregon and Washington. Presumably for this reason, the Council decided to apply the HCR individually to each assessment area, rather than coastwide. Reasonably, other states should not be asked to ‘pay the bill’ for an assessment conducted off California.

For consistency with existing management North and South of 40-10, the southernmost assessment area off California was partitioned into component OFL contributions, in order to continue managing the stock in the minor nearshore complex North and South of 40-10. Importantly, around the same time, NMFS determined that there was no “California quillback stock” defined in the FMP and therefore an overfished determination on the portion of the quillback stock from that southernmost assessment area off California could not be made.

CDFW questions if NMFS can make a decision that the California stock is overfished from the 2021 DM assessment, and believes that adopting a rebuilding analysis from one from the package of three quillback DM assessments partitioned at the discretion of the assessors would be misplaced. In 2021, the FMP described quillback rockfish as a species managed under the Pacific Coast Groundfish FMP. An overfished determination from an assessment that covered only one portion of the coastwide stock defined at that time would seem procedurally incorrect, especially recognizing that the 2021 DM assessment of quillback off California relied entirely on an age and growth relationship from fish that will shortly be considered part of another stock.

Informational Report 8 concludes by summarizing that “...work related to the application (that is, the how, when, and why) of DM assessments for use in status determination, specifications setting, and management does not appear to have been conducted.” Considering the situation at hand, the Council would clearly benefit from additional work on these policies in the future, before additional DM assessments are recommended. Adopting a rebuilding analysis now that was produced from the outputs of the 2021 DM stock assessment that was conducted on only one portion of the stock as the stock was defined at that time might be premature and misguided. In the interim, as directed by the 2013 Council motion, the Council could recommend precautionary management via the 25-26 specifications, for the soon-to-be quillback rockfish stock off California until a benchmark full assessment can be conducted.

Stock Definitions

The outcome of the DM assessments suggests that at that time the assessment was conducted (2021), the California portion of the coastwide stock was below MSST. Yet at that time there was not a defined California stock of quillback rockfish. Per Amendment 31 and decisions on stock definitions in Phase 1, the California, Oregon and Washington stocks of quillback rockfish are expected to be defined in the FMP in early 2024. The question remains as to whether the newly-defined California stock, were it to be assessed in 2024 with data from only this stock,

would have a resulting outcome below MSST. Further, the question remains if it is appropriate to construe the 2021 DM off California is an accurate assessment of stock biomass for this newly-established stock. The same question is appropriately asked for the newly-established stocks of quillback off Oregon and Washington.

Work on Stock Definition Phase II is scheduled to take place through 2024 and 2025, as described in Agenda Item [E.8, Attachment 1, November 2023](#). CDFW asserts that only a portion of the outlined stock definition process has been conducted for the soon-to-be three quillback rockfish stocks off California, Oregon and Washington, and these three stocks have not had the benefit of inclusion in the upcoming stock complex revision process, or the Federal Jurisdiction and State Management considerations. It is possible that the structure and composition of complexes and jurisdiction could result in a substantial change from the current framework when considering the needs for individual species including quillback rockfish. Proceeding with status determinations from the 2021 DM assessments of these nearshore stocks prior to the full suite of stock definition considerations could create setbacks and conflicting policy outcomes.

Rebuilding Analysis Output Considerations

Inseason actions expected for California's sport and commercial fisheries in 2024 are projected by CDFW to reduce quillback rockfish total mortality to 6.32 mt, down from the GMT's original estimate of 10.62 mt, resulting in a projected 4.3 mt reduction from 2023 status-quo management. CDFW was surprised with the outcome between the two rebuilding analysis alternatives provided in the Draft 2023 Rebuilding analysis report ([Agenda Item E.2, Attachment 1, November 2023](#)), showing that despite a considerable reduction in anticipated mortality, it only resulted in a 0.14 mt increase in the quillback rockfish OFL (increase to 1.4 mt from 1.26) under a SPR of 0.55 in 2025. Generally accepted fishery population dynamics principles would suggest that leaving 4.3 MT of fishery removals in the water for a stock that reportedly has a total biomass of only 63.27 MT in 2024 should contribute significantly to rebuilding time (Table 12, page 49 from: [Status of quillback rockfish \(Sebastes maliger\) in U.S. waters off the coast of California in 2021 using catch and length data \(pcouncil.org\)](#)). Instead, the difference in the two alternatives suggests that T_{Target} is only one year faster to rebuild (2061 rather than 2062) under the 6.32 MT removal scenario.

Quillback Rockfish Contributions to Mixed-Stock Fisheries and Complexes

Considering quillback rockfish coastwide, it is one of the most minor contributors of aggregate yield to the nearshore complexes as seen in the comparison of the overfishing limit when the stock is at the target of 40% of unfished biomass from each of the stock assessments coastwide (Table 1). The rebuilding of such low productivity stocks comes at an extreme cost to the nearshore fishery stock complex not only due to prohibiting retention of quillback rockfish, but more importantly, preventing access to all co-occurring species, several of which have been recently assessed and are healthy. As such, these co-occurring nearshore stocks have their own allowable yields which must be all or in part foregone due to the management actions required to redirect fishing effort away from quillback rockfish. This raises concern over the current

management system and brings into question whether rebuilding requirements are actually providing the greatest long-term net benefit to the nation as intended by the MSA.

With the low contribution of quillback rockfish to California fisheries, at best, the 2025 OFL is 1.68 mt under an SPR harvest rate of 0.5 ([Agenda Item E.2, Attachment 1, November 2023, Table B2](#)). Once rebuilt to 40% of unfished spawning stock biomass, which is expected to take 47 years, quillback rockfish has the potential to contribute only 8.8 mt ([Agenda Item E.2, Attachment 4, November 2021, Table 11](#)) to the aggregate OFL from the nearshore fishery. Rebuilding to 40% of unfished biomass will not bring appreciable economic benefits in the short or long-term given forgone yield of co-occurring stocks. Quillback rockfish is likely to remain prohibited even after rebuilding due to the constraint of its relatively low productivity and contribution to aggregate yield.

Alternative Approach and Future Considerations

CDFW recommends that the yield (OFL) at B_{MSY} (biomass at maximum sustainable yield) for all co-occurring minor nearshore stocks should be reviewed as part of Amendment 31 Phase 2 parallel to stock definitions and low yield “non-target” stocks (i.e. <5% of aggregate yield for co-occurring stocks at B_{MSY}) should be identified in the nearshore, shelf and slope complexes for development of alternative harvest control rules and conservation measures. Such stocks provide low yield relative to the aggregate for the fishery and alternative conservation measures other than 40% of unfished spawning stock biomass for these non-target species should be developed in the future. Weak stock management for mixed-stock groundfish fisheries needs to be reconsidered and a more reasoned management paradigm is needed to focus efforts on stocks providing significant economic value to fishing communities rather than pursuing rebuilding of low yield stocks to the detriment of the fishery and fishing communities as a whole.

In the interim, given the uncertainties in the 2021 data-moderate stock assessment noted in the Groundfish Subcommittee report in E.2 ([GFSC Report 1, November 2023](#)), CDFW recommends including a range of precautionary OFL, ABC and ACL values for the 2025-2026 specifications that utilize the 50% SPR harvest rate MSY proxy from the 2021 assessment of quillback rockfish, as was done for the length-based DM assessment for quillback rockfish in Washington. In 2025, this would result in an OFL specification of 8.41 mt with a category 3 buffer. A range of management measure alternatives might include a range of P* values from 0.45 to 0.35 with appropriate scientific uncertainty buffers applied which would result in ABC:ACL values of 6.55 mt to 3.89 mt until a full assessment and alternative conservation and management measures for non-target species can be developed by the Council. For reference, the Washington quillback rockfish assessment utilized a P* of 0.45 with a Category 3 designation (buffer 22.2%).

Table 1. Nearshore species OFL contributions at target biomass of 40% coastwide and percent of total contributed by each species taken from most recent stock assessments.

Nearshore Species	OFL at B40% (mt)	Percent Total OFL
Black Rockfish	1088.5	38.61%
Blue/Deacon Rockfish	424.0	15.04%
Kelp Greenling	255.0	9.05%
Olive Rockfish	225.0	7.98%
Copper Rockfish	195.3	6.93%
Cabazon	178.7	6.34%
Brown Rockfish	148.9	5.28%
Gopher/Black and Yellow Rockfish	143.0	5.07%
Grass Rockfish	60.3	2.14%
China Rockfish	43.1	1.53%
Kelp Rockfish	27.7	0.98%
Quillback Rockfish	15.0	0.53%
Treefish Rockfish	13.4	0.48%
Calico Rockfish	1.0	0.04%
Total	2818.9	100.00%

CDFW Recommendations:

- 1. A benchmark full assessment of California quillback rockfish should be conducted before adopting a California quillback rebuilding plan.**
- 2. In the 2025-2026 biennial specifications cycle (Agenda Item E.5), manage quillback off California as contributions to the minor nearshore complexes N and S of 40 10 N. Lat., using an OFL specification of 8.41 mt with a category 3 buffer. Include a range of management measure alternatives with P* values from 0.45 to 0.35.**