

CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE REPORT ON INITIAL STOCK ASSESSMENT PLAN AND TERMS OF REFERENCE

The California Department of Fish and Wildlife (CDFW) offers the following report in response to Appendix A of the NFMS Report on Initial Stock Assessment Plan ([Agenda Item H.2, Attachment 1, March 2020](#)). This report details current data collection efforts by CDFW and Pacific States Marine Fisheries Commission (PSMFC), identifies some deficiencies of the commercial sampling program, and summarizes CDFW efforts to fill current data gaps. We also offer input on the stocks to be prioritized in the upcoming stock assessment cycle.

California Data Collection Programs

Over the last several years, CDFW has participated in various Stock Assessment Review (STAR) panel reviews, via representatives on the Groundfish Management Team and Science and Statistical Committee, specific to groundfish species of importance to California. The associated public data-sleuthing meetings and STAR panel reports have generated discussion between CDFW, National Marine Fisheries Service (NMFS) stock assessors, and PSMFC to identify how data-gaps can be filled. As currently structured, commercial and recreational groundfish fisheries are sampled for biological data, however each are designed for different purposes and as a result, may not collect all the data needed for stock assessments. Discussion of both programs is followed by CDFW projects aimed at filling data gaps.

California Cooperative Groundfish Survey

The commercial groundfish sampling program is known as the California Cooperative Groundfish Survey (Cooperative Survey) which has been in place since 1980. As the program's details are not frequently discussed in Council circles, CDFW encourages a visit to the program's website at: <https://calcom.psmfc.org/>

The Cooperative Survey was originally designed with input from CDFW, NMFS and PSMFC when commercial groundfish fisheries were predominantly conducted with trawl gear, and landings were in the thousands of pounds. Currently, the Cooperative Survey is funded by NMFS, and is conducted by PSMFC staff, while CDFW provides administrative support to PSMFC staff via office space, computers, etc. The Cooperative Survey primarily focuses on species composition sampling of the commercial groundfish fishery for use in catch accounting and inseason quota tracking, as well as biological data collection (length, weight, sex, maturity, and age structures) for use in stock assessments. Level program funding from NMFS for the past 10+ years has reduced the number of Cooperative Survey samplers from 8 ½ to 6 ½ positions, which has resulted in reduced coverage for smaller ports (no sampling in Crescent City, Bodega Bay and San Diego, reduced sampling in Los Angeles/Orange). For comparison, commercial ocean salmon fishery field monitoring and biological data collection activities routinely employ approximately 18 seasonal PSMFC fishery samplers in stationed between Crescent City and Santa Barbara, California.

In addition to poor statewide sampling coverage, the Cooperative Survey has had few substantive changes to the sampling methodology over time despite major changes to the way fish are marketed in California, especially for both live fish (e.g., cabezon, nearshore rockfishes) and some high value fish (e.g., lingcod, vermilion rockfish). In the past, buyers would purchase and process the fish at or near the docks, selling them as fillets. Now in most ports, buyers are purchasing fish and selling them whole or alive, or are transporting the fish to inland processing plants where fish are filleted away from the samplers.

Despite these dramatic changes to the fishery over time, the Cooperative Survey is largely unchanged since its institution, and NMFS and PSMFC have been reticent to review the program to make it more responsive to current conditions. The sampling protocol currently requires two 100 pound samples (clusters) for lingcod, two 50 pound clusters for rockfish, and for sablefish, each size sort needs to be sampled using 50 pound clusters. If the landing weight is less than the cluster size, all the fish in the market category are to be sampled. The problem with these sample sizes is that over 80 percent of both lingcod and vermilion rockfish landings are less than the size of a single cluster (100 pounds and 50 pounds, respectively). Additionally, samplers are expected to collect age structures from the entire cluster, if possible. This means that samplers should be taking age structures from every fish in the load for these smaller landings. Although PSMFC staff have recently reinitiated external sexing of cabezon and lingcod and are exploring alternate ways of removing age structures that minimize external cutting of fish, if the cluster sizes were smaller, and/or fish were subsampled for age structures (e.g., first 5 or 10 fish) it might be easier to collect samples, especially age structures.

California Recreational Fisheries Survey

The recreational sampling program is the California Recreational Fisheries Survey (CRFS) which has been in place since 2004. The prime directive for CRFS is to collect statewide data to produce monthly estimates of recreational catch and effort for all modes of fishing including private skiff, Commercial Passenger Fishing Vessel (CPFV), and shore-based access points for use in fisheries management. Between 1980 and 2004, the Marine Recreational Fisheries Survey conducted by PSMFC collected the same recreational information. Secondly, the CRFS program collects length, weight, and sex data where possible, but does not routinely collect maturity data or age structures beyond yelloweye rockfish. As currently funded, the CRFS program does not have sufficient resources to add field collection of sex, maturity and age structures to the protocol for all groundfish species. Moreover, a number of additional program elements would be needed to ensure safe extraction of otoliths from fish at the location of the angler intercept.

Ancillary CDFW Data Collection Efforts

In response to the current constraints for each of these programs to collect adequate levels of biological data, CDFW has developed alternative means to provide fishery dependent data for both target and sensitive groundfish species.

CDFW Commercial Biological Sampling Project

CDFW has been exploring other opportunities to sample commercial groundfish separately from the Cooperative Survey in an effort to try to fill some of the existing data gaps. CDFW conducted a commercial sampling project from February through June 2019 to acquire priority species. CDFW staff, in consultation with NMFS stock assessors, prioritized species based on those identified as potentially being assessed in the near term that would benefit from additional data collection. Random sampling protocols were developed to reduce any bias in the age data, and every effort was made to stratify geographically across the state. Over 2000 samples from 14 different species were obtained spanning port complexes from Crescent City to Santa Barbara, with the majority coming from Morro Bay (Table 1). The majority of samples were landed utilizing hook-and-line gear, though some trawl caught samples were also obtained. In addition to age structures, data collected included port of landing, gear type, length, weight, sex, and maturity.

Table 1. Count of commercial groundfish species sampled by CDFW in 2019.

Species	Count	Species	Count	Species	Count
Black Rockfish	320	Canary Rockfish	149	Quillback Rockfish	6
Blackgill Rockfish	83	Copper Rockfish	30	Starry Rockfish	2
Blue Rockfish	523	Gopher Rockfish	5	Vermilion Rockfish	336
Brown Rockfish	355	Grass Rockfish	7	Yellowtail Rockfish	138
Cabezon	24	Lingcod	113		

Recreational Yelloweye Rockfish Collection Project

Yelloweye rockfish have been prohibited in the California recreational fishery since 2003. However, CRFS has been collecting whole yelloweye rockfish at private skiff sites from anglers who have mistakenly retained these fish and opt to voluntarily surrender them. Between 2009 and 2016, this effort yielded approximately 100 otolith pairs which were used in the 2017 yelloweye rockfish stock assessment with positive results. An additional 207 yelloweye rockfish have been collected from the California recreational fishery since 2016, and the otoliths are available for use in the next assessment.

Recreational Carcass Sampling Project

In 2017, CDFW began opportunistically collecting groundfish carcasses from the recreational fishery to increase recreational biological data that cannot readily be collected by the CRFS program. These efforts began with the assistance of the Sportfishing Association of California, which supplied about 60 filleted lingcod carcasses from CPFVs to CDFW staff for collection of biological information. Recently, CDFW staff have been collecting filleted groundfish carcasses from partnering CPFV operators and at public fillet stations, launch ramps and piers. Current efforts have been primarily focused in the Crescent City and Monterey Bay port complexes. In addition to age structures, data collected include port of landing, carcass length and sex when it can be determined from the filleted carcass. Additionally, a graduate student at California Polytechnic University, San Luis Obispo is working on a study of total length to carcass length

for recreational species, including rockfish and lingcod. The results of this study will help inform the best treatment of length information attained from carcasses. Almost 2000 carcasses from recreationally-caught fish have been collected and processed from 18 species (Table 2). Otoliths from these fish are available for use in upcoming stock assessments.

Table 2. Count of recreational groundfish carcasses sampled by CDFW, 2017 to 2019.

Species	Count	Species	Count	Species	Count
Black Rockfish	462	China Rockfish	16	Starry Rockfish	18
Blue Rockfish	357	Copper Rockfish	35	Tiger Rockfish	3
Bocaccio	87	Kelp Greenling	7	Treefish	1
Brown Rockfish	25	Lingcod	324	Vermilion Rockfish	105
Cabezon	8	Olive Rockfish	137	Widow Rockfish	25
Canary Rockfish	154	Quillback Rockfish	29	Yellowtail Rockfish	129

Recreational Cowcod Collection Project

CDFW has applied for an Exempted Fishing Permit (EFP) for 2021-22 ([Agenda Item H.5., Attachment 3, November 2019](#)) to collaborate with select CPFVs to collect cowcod specimens taken incidentally during the course of normal recreational fishing operations, for the purpose of collecting additional biological data for inclusion in future stock assessments. Because cowcod may not be taken or possessed in the non-trawl commercial and recreational fisheries, no mechanism exists to retain individual fish for scientific purposes that are taken in conjunction with these regular fishing activities. This EFP will allow the retention of cowcod aboard participating CPFVs for biological sampling, which will allow for development of a new fishery-dependent data source for cowcod that has been lacking for almost 20 years.

Other data processing considerations

CDFW supports efforts by NMFS to utilize new technologies to increase throughput to process backlogged structures that remain in archives and increased coordination in processing to ensure existing samples are utilized in future assessments. These efforts may have resolved issues with a lack of age data from available structures that adversely affected the viability of the yellowtail rockfish south assessment in 2017, and the petrale sole update in 2019, in which available samples were not processed.

Stock Assessment Prioritization

Vermilion rockfish, squarespot rockfish, quillback rockfish and treefish are candidates for assessment in 2021 and 2023 given the prioritization exercise conducted by NMFS and consideration of recent catches. The data-limited stock assessment workshop and methodology review to be held in May of 2020 has the potential to provide methods that utilize length composition data in addition to historical catch. Such methods would better inform harvest specifications in the future by reflecting recent trends in recruitment that are not captured in the historical catch that forms the basis for data-poor methods currently employed in deriving OFLs for these stocks. Squarespot rockfish, quillback rockfish and treefish are candidates for data-

moderate assessments given the limited data available and the CDFW is supportive of efforts to incorporate what additional data is available to reflect recent trends in abundance.

CDFW supports scheduling a full stock assessment for vermilion rockfish in 2021, as this species is critically important to both commercial and recreational fisheries in southern and central California. In addition to the vermilion/sunset collections CDFW has in possession that are described above, there is considerable new information from the NMFS-NWFSC hook and line fishery-independent survey that now include data from both inside and outside the Cowcod Conservation Area. The raw fish per hook catch-per-unit-effort index from the fishery independent hook and line survey conducted by the NMFS-NWFSC in the Southern California Bight indicates that the vermilion rockfish and squarespot rockfish stocks have been increasing in abundance in recent years, contributing to higher catches.

With the rebuilding of previously constraining stocks such as canary rockfish, bocaccio, and cowcod, and progress in rebuilding yelloweye rockfish resulting in increased ACLs, resumed access to depths previously closed to the recreational and commercial fisheries in the Rockfish Conservation Area (RCA) may be allowable in the near future. Additional access to deeper depths will lead to increased encounters with shelf rockfish such as yellowtail rockfish as the shoreward boundary of the RCA is moved outward. Similarly, encounters with more shallowly distributed slope rockfish such as bank rockfish are expected to increase as the seaward boundary is moved inward. CDFW is supportive of either data-moderate or full assessments of yellowtail rockfish south of 40°10' N. Lat. and bank rockfish being prioritized for 2021 or 2023, despite not having ranked within the top 10 stocks in the prioritization exercise conducted by NMFS.