California Department of Fish and Wildlife
Agency Report
to the
Technical Subcommittee
of the
Canada-United States Groundfish Committee

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I. Agency Overview

Within the California Department of Fish and Wildlife (CDFW), the Marine Region is responsible for protecting and managing California's marine resources under the authority of laws and regulations created by the State Legislature, the California Fish and Game Commission (CFGC) and the Pacific Fishery Management Council (PFMC). The Marine Region is unique in the CDFW because of its dual responsibility for both policy and operational issues within the State's marine jurisdiction (0 – 3 miles; 0-4.8 km). It was created to improve marine resources management by incorporating fisheries and habitat programs, environmental review and water quality monitoring into a single organizational unit. In addition, it was specifically designed to be more effective, inclusive, comprehensive and collaborative in marine management activities.

The Marine Region has adopted a management approach that takes a broad perspective relative to resource issues and problems. This ecosystem approach considers the values of entire biological communities and habitats, as well as the needs of the public, while ensuring a healthy marine environment. The Marine Region employs approximately 140 permanent and 100 seasonal staff that provide technical expertise and policy recommendations to the CDFW, CFGC, PFMC, and other agencies or entities involved with the management, protection, and utilization of finfish, shellfish, invertebrates, and plants in California's ocean waters.

Groundfish project staff are tasked with managing groundfish and providing policy recommendations to the CDFW, CFGC, and PFMC. Other staff work indirectly on groundfish, such as our California Recreational Fisheries Survey (CRFS) staff that sample our recreational fisheries and our Marine Protected Areas (MPA) Project and their remotely operated vehicle (ROV) work that benefits groundfish. Additionally, Pacific States Marine Fisheries Commission (PSMFC) staff sample the state's commercial groundfish fishery. The Marine Region's annual Year in Review provides a summary of all its programs, including groundfish. The Marine Region's annual By the Numbers Report provides another view of the breadth of work conducted by CDFW's Marine Region.

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II. Surveys

ROV Visual Survey and Analysis for MPA and Fishery Data Needs

Scientists from CDFW's Groundfish and MPA Management Projects continued analysis of ROV survey data collected from 2014 to 2016 to develop methods for estimating fish density and total expanded biomass for select species using design and model-based approaches. CDFW will develop models with the 2014-2016 statewide survey data and the most recent coverage from 2019-2021 to inform upcoming stock assessments of Copper (*Sebastes caurinus*) and Quillback (*S. maliger*) rockfish in 2023. A workshop will be held in November of 2022 to review advancements since the 2020 methodology review by the PFMC's Scientific and Statistical Committee (SSC) and evaluate best practices for incorporating estimates of absolute abundance and length composition data into the Stock Synthesis

assessment platform regularly used in PFMC groundfish stock assessments. In addition, density by depth and length frequency by depth are being considered relative to depth restrictions to provide empirical estimates of changes in selectivity with depth restrictions.

The estimates of density and biomass from these models may also be used to measure MPA performance. Preliminary results indicate differences in length compositions and density inside and outside MPAs as a result of site selection or accumulation of biomass in long established locations with protections. Two area models reflecting these differences may provide more representative estimates of status and scale if incorporated in assessments currently only reflecting data from openly fished areas. Future surveys may provide a time series to examine long-term trends in abundance to inform fishery and MPA management.

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III. Reserves

Marine Protected Areas Research and Monitoring

Marine Protected Area Monitoring Program research teams have completed seven long-term projects to gain a better understanding of MPAs. Teams collected and synthesized past research and utilized a variety of novel scientific approaches for their final reports. These reports will inform the evaluation of California's MPA network and contribute to the upcoming 2022 decadal management review of the network.

Since 2019, the Ocean Protection Council (OPC) has funded projects totaling $14.8 million through the Marine Protected Area Monitoring Program. These projects were administered by California Sea Grant in partnership with OPC and the CDFW. The collaborative projects supported research in California's network of MPAs and involved researchers from 24 universities, agencies, and institutions across the state. These projects build on more than a decade of monitoring, and include data from the MPA Baseline Monitoring Program, which ran from 2007-2018.

Results showcase the complexities of studying, understanding, and making recommendations for MPAs, while taking into account factors such as the kelp crisis and conducting research during the COVID-19 pandemic. Despite challenges, teams made progress answering MPA network questions spanning diverse topics from ecological, physical, chemical, human use, and climate change impacts, to enforcement metrics used to evaluate the effectiveness of California's MPAs.

The results and recommendations gleaned from the completed MPA long-term monitoring projects are one part of the information gathering needed to understand the effectiveness of California's MPA network. California's 124 MPAs span the state's 1,100-mile (1,770 km) coastline and protect 852 square miles (2,207 km^2; 16 percent) of state waters. Individual MPAs have varying levels of protection, including reserves that encompass 9 percent of state waters and prohibit all "take" within their boundaries. California's MPA network is the largest of its kind in North America and

one of the largest ecologically connected networks in the world. These results, combined with research dating back to the creation of the MPA network in 2012, will help to inform the future of California's MPAs.

The California marine protected area long term monitoring program final reports 2019-2021 are available online. The links below contain project result summaries and the final report PDFs.

All California marine protected area long term monitoring program final reports 2019-2021:

- Establishing a statewide baseline and long-term MPA monitoring program for commercial and CPFV fisheries in the state of California
- Monitoring and evaluation of kelp forest ecosystems in the MLPA marine protected area network
- Evaluating the performance of California's MPA network through the lens of sandy beach and surf zone ecosystems
- California Collaborative Fisheries Research Program – monitoring and evaluation of California marine protected areas
- Assessment of rocky intertidal habitats for the California marine protected area monitoring program
- Integrated ocean observing systems for assessing marine protected areas across California
- Monitoring and evaluation of mid-depth rocky reef ecosystems in the MLPA marine protected area

In fall 2021, the CDFW, in partnership with the OPC, hosted a series of four public Community Meetings. The meetings were held both to inform California's ocean community about the upcoming MPA Decadal Management Review, and to receive public input on the process.

Nearly 400 participants shared diverse perspectives at the meetings and provided valuable feedback to help CDFW prepare for the review, including:

- Interest in engaging with MPA management, science, and the monitoring process
- A desire for increased collaboration and participation across agencies and groups/organizations interested in management of MPAs
- Requests for increased and diversified communications and outreach from the State and partners about California's MPA Network

Feedback received during these meetings has been captured in a Key Themes Summary document. In addition, recordings of the meetings will soon be posted to CDFW's Decadal Management Review web page.

For any inquiries or comments about the review or MPAs in general, please email the MPA Decadal Management Review Team.

IV. Review of Agency Groundfish Research, Assessment and Management

A. Groundfish, all species combined

1. Research off California

Scientific Collecting Permits are issued by CDFW to take, collect, capture, mark, or salvage, for scientific, educational, and non-commercial propagation purposes. Permits are generally issued for three years, except that student permits are for one year. While a complete report of groundfish-related research activities isn't available for this report, the permits fall into four broad categories: 1) public display in aquariums and interpretive centers; 2) environmental monitoring; 3) life history studies that include age and growth, hormone assays and genetics for population structure; and, 4) studies related to changing environmental conditions such as ocean acidification and hypoxia.

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2. CDFW Research

Cowcod

In 2020, CDFW applied for and was granted a federal Exempted Fishing Permit that would allow select Commercial Passenger Fishing Vessels (CPFV) that are part of the EFP to retain incidentally-caught Cowcod rockfish (*Sebastes levis*). The purpose of the EFP is to collect biological data on Cowcod that are taken in current fishing activities that can be used in future stock assessments. Cowcod was declared overfished in 2000 while the stock has since rebuilt, take has not been allowed, this is, due in part, to assessment uncertainty. This EFP will allow participating CPFVs to retain Cowcod legally when incidentally caught during normal fishing activities and turn those fish over to CDFW to collect needed biological data. To date, four Cowcod have been taken under this EFP.

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Quillback Rockfish

In 2021, CDFW began an ad hoc private vessel recreational sampling program focusing on a few key species, one of which is Quillback Rockfish. CDFW staff have collected 33 fish from various port from San Francisco to Crescent City and plan to continue this sampling program. The goal of this program is to be able to update California-specific age and growth curves.

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Yelloweye Rockfish

In 2021, CDFW continued its ongoing research on Yelloweye Rockfish (*Sebastes ruberrimus*). The population off the West Coast was designated as an overfished stock in the early 2000s. Commercial and recreational regulations were implemented to minimize gear interactions in combination with a prohibition on retention (or limited retention in designated fishing sectors) and area closures. As a result, there has been limited opportunity to

collect biological information for studying age and growth parameters that are crucial components of stock assessment modeling.

In coordination with CRFS staff, CDFW collected 42 Yelloweye Rockfish from the recreational fishing sector in 2021. Since 2016, CDFW has collected almost 300 Yelloweye Rockfish from the recreational fishery. Data from these fish will be used to inform future stock assessments on Yelloweye Rockfish.

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Yellowtail Rockfish

Starting in 2013, the PFMC recommended issuance of an Exempted Fishing Permit (EFP) to commercial fishermen to study a method of commercial jig fishing to determine whether it is possible to target Yellowtail Rockfish (*Sebastes flavidus*) inside the Rockfish Conservation Areas (RCA; depth-based fishing closures) while avoiding overfished rockfish species (e.g. Canary (*S. pinniger*), Yelloweye, and Bocaccio Rockfish (*S. paucispinis*)) from the Oregon/California border to Point San Pedro. The goal of this study has been to determine if targeting species in the midwater column can provide additional fishing opportunities for the commercial fishery in the RCAs while avoiding overfished stocks that are more likely to reside on the bottom. Data from trips taken between 2013 and 2020 indicate that the gear is successfully targeting healthy stocks such as Yellowtail and Widow (*S. entomelas*) Rockfish, and now Canary Rockfish, while avoiding overfished species. Canary Rockfish and Bocaccio have since been rebuilt (in 2016 and 2019, respectively), and are currently allowed to be retained and sold under this EFP. The PFMC is currently considering authorizing the use of the EFP gear in the RCAs for fishers targeting these midwater rockfishes as part of the regulation development for 2023-2024. At it's April 2022 meeting, the PFMC included this in the preliminary preferred alternative, action will be taken in June.

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3. Assessment

   CDFW groundfish staff contributed to the 2021 stock assessments by providing length and age data for Lingcod, Copper and Quillback Rockfish, reviewing historic landings, as well as during the review process. Staff were co-authors on some stock assessments (Lingcod [*Ophiodon elongatus*], Copper, Quillback and Squarespot [*Sebastes hopkinsi*] Rockfishes). Multiple staff also participated as Stock Assessment Review panel members. CDFW staff provided additional length and age data for inclusion in the Copper and Quillback Rockfish stock assessments as well as the Lingcod stock assessment.

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4. Management

   Groundfish management is a complex issue and is conducted by the PFMC with input by CDFW as well as the states of Oregon and Washington and the

treaty tribes, and guided by the federal Pacific Coast Groundfish Fishery Management Plan. With the exception of some nearshore species, harvest guidelines, fishery sector allocations, commercial trip limits and recreational management measures (e.g., bag limits, season limits, RCAs) are recommended by the PFMC and implemented by NMFS.

Proposed Coral and Sea Sponge Closure Areas

In November 2021, CDFW proposed repealing the Cowcod Conservation Areas (CCAs) and continue to manage fishery impacts using the Rockfish Conservation Areas depth-based closures. The CCAs were established to protect areas where Cowcod were concentrated in the early 2000s after Cowcod was declared overfished. Now that Cowcod have recovered, there is no need for the CCAs. However, there is need to protect coral, sea sponge and sea pen habitat as pointed out by the Council's Habitat Committee in their September 2021 report to the PFMC.

The CDFW gathered a group of stakeholders including fishery representatives and environmental groups with the stated goal of repealing the CCAs to increase fixed gear and recreational opportunity while establishing new protections for coral, sponges and other living habitat.

Over the course of several meetings and using NOAA's Deep Sea Coral Data Portal the workgroup was able to identify discrete areas within the CCAs suitable for protection. The workgroup identified eight proposed protection areas that were generally agreeable to all. The proposed areas encompass approximately 44 and 35 percent, respectively, of the observed corals and sponges inside the CCAs. The proposed closures would encompass roughly 12 percent of the total 4,300 square-mile areas currently off limits to groundfish fishing in the CCAs.

CDFW presented the a report about the proposed closed areas for corals and sea sponges at the April 2022 PFMC meeting. This proposal will be included in the range of alternatives for the non-trawl sector area management measures that is being considered by the PFMC. It is hoped that these management measures will be adopted in 2023 and implemented for 2024.

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5. Commercial Fishery Monitoring

Statistical and biological data from landings are continually collected and routinely analyzed by CDFW staff to provide current information on groundfish fisheries and the status of the stocks. California's primary commercial landings database is housed in CDFW's Marine Landings Database System. Outside funding also enables California fishery data to be routinely incorporated into regional databases such as Pacific Coast Fisheries Information Network.

Commercial sampling is conducted by PSMFC staff and occurs at local fish markets where samplers determine species composition of the different market categories, measure and weigh fish, and take otoliths for future

ageing. Market categories listed on the landing receipt may be single species (e.g., Bocaccio), or species groups (e.g., group shelf rockfish). Samplers need to determine the species composition so that landings of market categories can be split into individual species for management purposes. Biological data are collected for use in stock assessments and for data analyses to inform management decisions. In 2021, the commercial fishery was sampled in the same manner and at similar rates to pre-COVID-19 pandemic levels.

Inseason monitoring of California commercial species landings is conducted by CDFW biologists. This work is done in conjunction with inseason monitoring, management and regulatory tasks conducted by the PFMC's Groundfish Management Team.

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6. Recreational Fishery Monitoring
In the beginning of 2021, CRFS continued to operate under modified sampling guidelines to ensure compliance with all department, county and state COVID-19 health advisories and best practices. As guidelines relaxed in the spring, CRFS transitioned away from the modified sampling protocols. This transition allowed for direct sampler observations of catch and species identification, reducing the reliance on angler reported catch for rockfish species. Fish length data, which can be used to estimate weight, was also collected from the northern California Pacific Halibut fishery to help track the pounds landed. In July 2021, normal sampling resumed. Despite these challenges, CRFS staff interviewed California's marine recreational anglers at more than 400 sampling sites coastwide and conducted more than 7,000 field intercept surveys.

   The beaches and banks survey was re-established in November 2020 and 2021 marked the first year CRFS had full beaches and banks coverage since 2017. In addition to sampling beaches and banks, CRFS resumed the Angler License Directory Telephone Survey to collect recreational fisheries information. This technique allowed data to be collected from nighttime fishing, as well as fishing originating from private marinas or slips which may otherwise be excluded from regular field intercept surveys.

   For more information about CRFS, visit the Department website at https://wildlife.ca.gov/Conservation/Marine/CRFS.

   Recreational Inseason Monitoring

   Catch and effort information generated by CRFS is uploaded to RecFIN and used to track inseason recreational catch, however there is a five-to-eight week lag time between when data are collected and CRFS catch estimates are available. Preliminary CRFS reports of fish observed or reported are converted into an Anticipated Catch Value (ACV) in metric tons using catch and effort data from previous years and used to track catch inseason. Once

the monthly CRFS catch estimate is available, the ACV value is replaced with the CRFS catch estimate for that month. ACVs have been an effective and reliable tool to closely monitor recreational inseason mortality on a weekly basis, and CDFW has used this tool since 2008 for a variety of rockfish species and Pacific Halibut. A recent CDFW report to the PFMC describes how CDFW conducts inseason monitoring and how ACVs are developed.

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C. Pacific Halibut & International Pacific Halibut Commission activities

1. Research and Assessment
   Research and assessment activities for Pacific Halibut (*Hippoglossus stenolepis*) off the coast of California are conducted by the International Pacific Halibut Commission (IPHC).

2. Management
   The CDFW collaboratively manages the Pacific Halibut resource off the coast of California with the IPHC, NMFS, PFMC, other west coast states, and the CFGC. Pacific Halibut management activities occur on an annual timeline, with most changes to management occurring through the PFMC's Catch Sharing Plan and federal regulations published by NMFS. Changes to the Catch Sharing Plan for the following year are approved in November by the PFMC.

   Once the federal regulations are adopted, the state can then take action to conform state regulations to federal regulations for the recreational fishery by notifying constituents within 10 days of publication of the regulations in the Federal Register. Notification is done via press release and the CFGC is notified of the action at their next scheduled meeting.

3. Commercial Fishery Monitoring
   The directed commercial fishery for Pacific Halibut is managed under a coastwide (Washington, Oregon and California) quota and operates as a derby fishery. The fishery was structured based on 56-hour openers that are spaced two weeks apart, beginning the last Tuesday in June. The fishery operates on this schedule until the coastwide quota has been met. California effort in this fishery continued in 2021 with nine different California vessels landing 1,592 dressed kg (3,509 dressed lb) over the three fishery openers.

4. Recreational Fishery Monitoring
   The 2021 recreational Pacific Halibut fishery in California was scheduled to be open May 1- November 15. However, based on the preliminary catch projections available in late June, it was determined the recreational quota of 39,260 net lb (17,808 net kg) would likely be exceeded unless the fishery was closed. CDFW in consultation with the IPHC, NMFS and the PFMC closed the recreational fishery on June 30, 2021.

   In response to high catches in 2020 CDFW increased the frequency of inseason tracking in 2021 from weekly to daily. High catch events began the

week of June 7 and continued throughout the month. CRFS recorded 286 Pacific Halibut kept by anglers in June, which is the highest number of sampled fish for a single month on record. Preliminary catch projections from May 1 through June 30 were 33,896 net lb (15,375 net kg) or 86.3 percent of the quota. Typically, quota attainment at the end of June is about 25 percent of the quota.

In June 2021, CRFS samplers measured lengths for 192 Pacific Halibut and the resulting weights were calculated using the IPHC length/weight conversion factor. This robust sample size resulted in the average weight used to calculate June CRFS estimates changing from 10-12 kg (22-26 kg) used in past years to 5.02 kg (11.07 lb) per fish in 2021. The drop in average weight by approximately half resulted in a June CRFS estimate which was dramatically lower than the preliminary catch projection used to make the inseason closure decision with NMFS, PFMC staff and IPHC. As a result, the recreational Pacific Halibut fishery was reopened on September 3, 2021 and remained open until November 15, 2021. The total 2021 catch estimate is 24,800 net lb (11,250 net kg), or 63 percent of the quota.

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