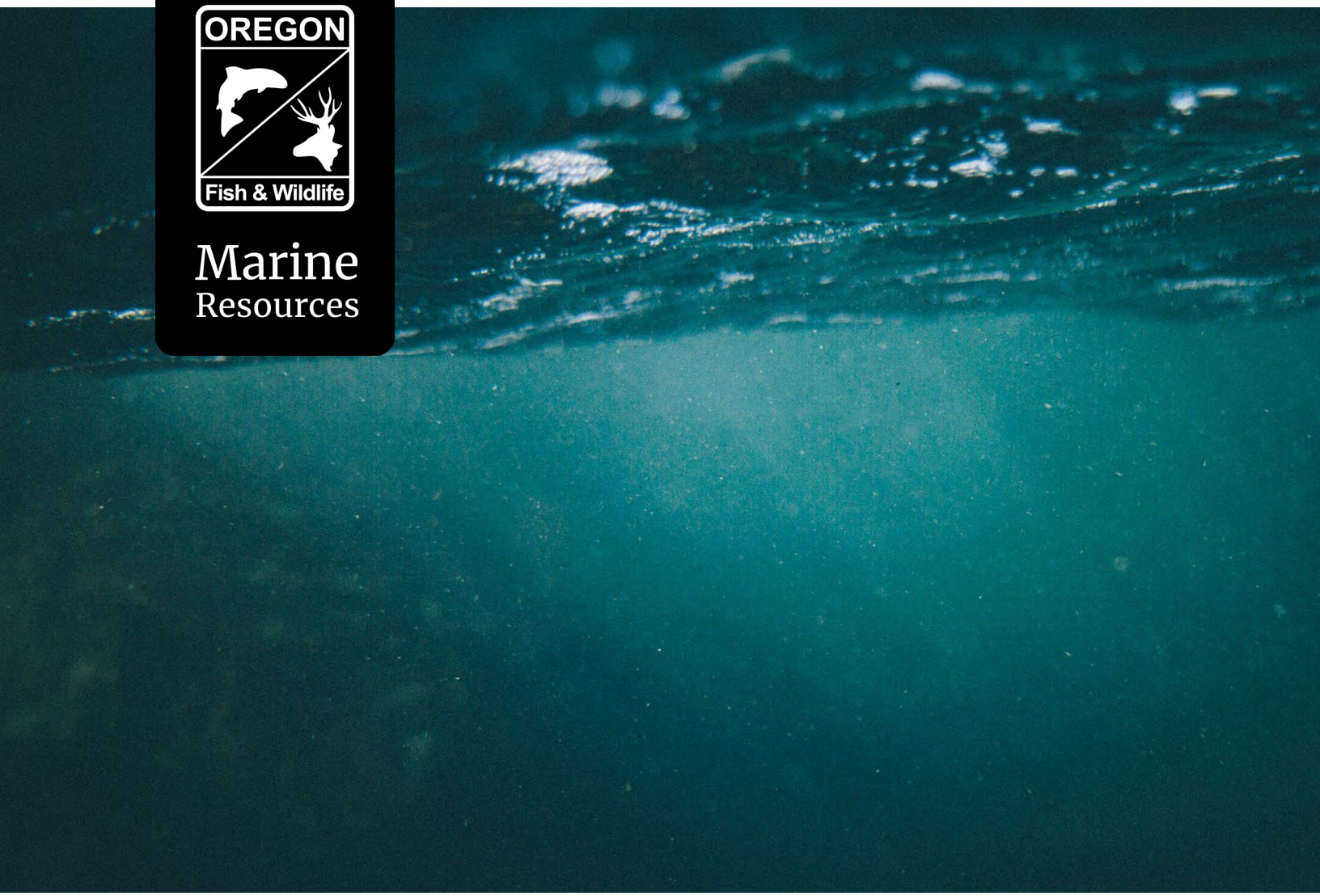

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OREGON'S GROUNDFISH INVESTIGATIONS IN 2024

Marine Resources Program
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1. Executive Summary

The Marine Resources Program (MRP) works with Oregon communities to sustain ocean and estuary resources for today and for future generations. The MRP is a part of Fish Division at the ODFW and organized into three sections, including Fisheries Management, Data and Technical Services, and Resource Assessment and Management. Organization within MRP did not change substantially in 2024. However, there are two new permanent section leaders and a new permanent program leader as of 2024. Budgets and staffing levels for the MRP have been largely stable over the last decade. However, the ODFW is anticipating some limited state budget cuts in 2025 and there is substantial uncertainty in federal funding, which would affect most programs at the MRP and have major impacts to the MRP's ability to manage and conduct research on Oregon's groundfish species.

The 2025 ODFW report to the GTC details all groundfish research, monitoring and management activities in the 2024 calendar year and anticipated work in 2025. These include a description of fisheries survey and monitoring programs, research and monitoring in Oregon's marine reserves, brief descriptions of current stock assessments and research projects, and state and federal management of groundfish species. Groundfish species predominant in the nearshore or species of conservation interest are the focus of the majority of MRP's groundfish research, including yelloweye rockfish, black rockfish and dogfish in 2024. The MRP also continues to focus on development of non-extractive survey methods, such as video landers and planning a second statewide visual-hydroacoustic survey. MRP staff continue to be substantially involved in federal groundfish management and stock assessment development in 2024.

2. Surveys and Monitoring

This section contains information on surveys and monitoring that took place in 2024.

Recreational Fisheries Monitoring

Sampling of the ocean boat sport fishery by MRP's Ocean Recreational Boat Survey (ORBS) continued in 2024. Like 2023, a combination of ongoing hiring and employment issues related to the lack of affordable housing on the coast led to several ports being under-staffed during the summer months and a couple of minor ports not being staffed at all.

Starting in November 2005, major ports are sampled year-round and minor ports for the peak summer-fall season. We continue to estimate catch and effort during unsampled time periods in minor ports based on the relationship of effort relative to major ports observed during summer-fall periods when most ports are sampled and catch rates are borrowed from when the unsampled port was sampled. Pacific halibut, lingcod, multiple species of rockfish, cabezon and kelp greenling are the most commonly landed species.

The ORBS program continued collecting information on species composition of landed groundfish species at Oregon coastal ports during 2024, along with biological data such as lengths and weights of landed fish. Since 2003, as part of a related marine fish ageing research project, lingcod fin rays and otoliths from multiple species of nearshore groundfish (including rockfishes, greenlings and cabezon) were gathered. Starting in 2001, selected sport charter vessels were sampled using ride-

along at-sea observers for discard species composition, discard rates and sizes, location, depth and catch per angler (the Ocean Recreational Fishery Survey, or ORFS). Sampling was suspended in 2020 and 2021 due to COVID safety protocols, though ride-alongs resumed in 2022. Beginning in 2003, the recreational harvest of multiple groundfish species is monitored inseason for catch limit tracking purposes and beginning in 2015, a projection tool was developed to predict year-end attainment.

Other ODFW recreational monitoring activities in 2024 include participation in the U.S. West Coast Recreational Fish International Network (RecFIN) process, data analysis, public outreach and education, and public input processes to discuss changes to the management of groundfish and Pacific halibut fisheries for 2024 and 2025.

Commercial Fisheries Monitoring

Commercial fisheries monitoring data from commercial groundfish landings are collected throughout the year and analyzed by ODFW to provide current information on groundfish fisheries and the status of the groundfish stocks off Oregon's coast. This information contributes to fisheries management decisions, stock assessments, in-season adjustments to fisheries, and economic analyses.

Commercial fishery data, including logbooks, fish tickets, and biological data, are uploaded to the Pacific Fisheries Information Network (PacFIN) on a regular basis and are used for inseason monitoring and as a primary commercial data source for federal stock assessment. In 2023, preparations continued to add fixed gear fishery logbooks to the PacFIN clearing house. Species composition sampling of rockfish and biological sampling of commercially landed groundfish continued in 2024 for commercial trawl, fixed gear, and hook and line landings in Oregon's ports. Throughout 2024, adequate sampling of all sectors was accomplished. Most of the landings were monitored at the ports of Astoria, Newport, Charleston, Port Orford and Brookings, with additional sampling occurring routinely at Garibaldi, Pacific City, Depoe Bay, Bandon, and Gold Beach. Biological data including length, weight, age (from collected age structures: otoliths, vertebrae, and fin rays), sex, and maturational status continued to be collected from landings of major commercial groundfish species. In 2024, commercial sampling staff were focused on contributing to on-going studies including a lingcod aging validation study and ovary sampling for histological studies by the FRAM group.

Ecological Monitoring and Research in Oregon's Marine Reserves

Ecological monitoring includes sampling by MRP Marine Reserves staff as well as collaborative efforts with local industry and academic institutions. Sampling was conducted both in the reserves and comparison areas outside of the reserves where fishing remains open. The marine reserve ecological monitoring team successfully conducted the following subtidal, intertidal, and oceanographic monitoring and research in 2024:

- Hook-and-line surveys - This successful survey platform that employs local boat captains and volunteer anglers returned to the Cascade Head and Cape Perpetua Marine Reserves as well as associated non-reserve comparison areas. In 2024, 73 volunteer anglers joined ODFW staff on charter boats, catching 3,583 fish spread out among 17 fish species.

- SCUBA diving surveys - This survey technique employs volunteer scientific divers to survey fish, invertebrate, algae and benthic habitat communities. In 2024, SCUBA surveys occurred at the Cape Falcon and Redfish Rocks Marine Reserves and its comparison areas with the help of the Oregon Coast Aquarium and Oregon State University, and their volunteer divers. 240 transects were completed targeting invertebrate, algae, and benthic communities. With each transect 30m long, the total length of transects was longer than 65 football fields.

- Oceanographic data collection - Ecological team members collected ocean oxygen, and temperature data at four marine reserves and comparison areas. The team deployed moorings with sensors at Cape Falcon, Cascade Head, Otter Rock, and Redfish Rocks Marine Reserves and nearby comparison areas. Collaborators with the Partnership for Interdisciplinary Studies of Coastal Oceans (PISCO) continued monitoring at the Cape Perpetua Marine Reserve for temperature, oxygen, salinity, current speed, and pH.

- Juvenile fish settlement work - Ecological team members and university partners monitored juvenile fish settlement at Otter Rock and Redfish Rocks Marine Reserves and two nearby comparison areas. A total of 16 moorings were used to collect the juvenile fish data. Juvenile fish settlement data for yellowtail rockfish and tiger rockfish are currently being assessed for inclusion in federal stock assessments.

- Intertidal surveys - Intertidal work at the Cascade Head and Otter Rock Marine Reserves was carried out in partnership with Oregon State University and community volunteers. Among other things, the health of sea stars was assessed, and the extent of mussel beds was measured. Like in past years, less than 1% of sea stars showed signs of sea star wasting disease.

ROV Stereo Video Sampling of Kelp Communities Along the Southern Oregon coast

Oregon experienced a record-breaking marine heatwave beginning in 2013-2015. Anomalously high seawater temperatures have been coupled with decreased dissolved oxygen concentrations and constitute a substantial shift in the nearshore marine ecosystem. In addition, Sea Star Wasting Syndrome (SSWS) resulted in the functional extinction of an important predator (the sunflower sea star), which were recently listed as Critically Endangered by the IUCN. These changes in nearshore ocean conditions and the elimination of a key predator contributed to a complex cascade of impacts to several important species, including red sea urchins, purple sea urchins, red abalone, and flat abalone. These changes are linked with concurrent reductions in the extent of bull kelp beds, which are essential fish habitat for many nearshore groundfishes. In 2023, we initiated a sampling effort to document community shifts in shallow (10 – 25 m) nearshore rocky ecosystems, focusing on kelp-bearing regions to provide an up-to-date understanding of changes in this important habitat. We conducted stereo video transects using a small, hand deployable ROV (BlueRobotics BlueROV2) with a calibrated, high-definition, GoPro camera-based stereo video system allowing for precise size measurements. The surveys document the spatial distribution, density, and size structure of red and purple sea urchin populations, while also acquiring data about other important species that interact with sea urchins and kelp, particularly including sunflower sea stars (Pycnopodia). The density of groundfish species such as kelp greenling and lingcod are also recorded. Index transects were randomly distributed across known rocky reef habitat within the study's 10 – 25 m depth range

at seven sites in fall 2023: Cape Arago Reef, Orford Reef, Redfish Rocks, Humbug Mountain, Mack Arch Reef, Cape Ferrelo, and Chetco Point. Additional sampling was completed at Rogue Reef in early 2024.

Species Assessment and Monitoring (SAMs)

Inspired by the Groundfish Synopses workflow and reports developed by DFO (Anderson et al. 2019), in 2024, the ODFW started developing Species Assessment and Monitoring (SAM) reports to more efficiently utilize their fishery-dependent and fishery-independent data to monitor species of management or conservation interest between federal assessment cycles. A pilot project is underway to develop three SAM packages for 1) data extraction/tidying, 2) analysis/plotting and 3) report assembly. This pilot aims to produce SAM reports for three groundfish species with a variety of available data, including black rockfish, quillback rockfish and cabezon. Data for these reports come from a variety of data sources commonly utilized for federal stock assessments, including catch and biological data, fishery-dependent and -independent indices of abundance, and potentially select logbook data. Code and other documentation will be available on GitHub as it develops. ODFW staff hope to have draft SAM reports for the pilot project species by the end of 2025.

3. Research

This section details groundfish research activities at the MRP in 2024.

Yelloweye Rockfish Habitat Modeling (Ongoing)

This research is in partnership with Morgan Johnson and Susan Piacenza at Oregon State University. Since Oregon's rockfish fishery collapsed in 2002, Yelloweye Rockfish's (*Sebastes ruberrimus*) ecological and economic functions have remained severely depressed and are constraining other healthy fisheries. Yelloweye's true population size has remained elusive due to the complexity of their preferred habitat, steep rocky reefs, and inability of trawl surveys to access this habitat. Without accurate abundance estimates, the ODFW and PFMC cannot effectively regulate fishing industries or support functioning ecosystems. ODFW is addressing this issue by mapping the distribution and abundance of Yelloweye Rockfish across Oregon's territorial seas, using remote camera sensing technology that can survey rocky reefs without disturbing the habitat or removing sensitive species. This effort may inform a future Yelloweye Rockfish benchmark assessment by providing spatially explicit fisheries-independent abundance indices for untrawlable habitat.

To map the abundance of Yelloweye, we are building a predictive species distribution model (SDM) by coupling video camera derived abundance with oceanographic and habitat data. The video lander data used in this study was collected by ODFW from 2011 to 2014 on Stonewall Bank inside and around the Yelloweye Rockfish Conservation Area. Environmental parameters included in the model, including bathymetry, substrate type, Chlorophyll-a concentration, temperature, and frontal gradients, have been collated from multiple public databases such as NOAA's Coast Watch database (via ERDDAP), UC Santa Cruz's Regional Ocean Modeling System, and the BOEM Multibeam survey. To combine video observations and remotely sensed environmental parameters in a spatially explicit SDM, we are using the R package sdmTMB to fit generalized linear mixed models. After rigorous model selection and cross-validation to ensure strong predictive accuracy,

we have six top performing models that include the above parameters. Results from these models show a large relative increase in the predicted Yelloweye abundance on Stonewall Bank from 2011 to 2014. 2011 had an estimated 1.6 million fish and 2014 had an estimated 11 million fish, over 130 km^2 area. If you were underwater swimming around the reef, it would look like ~ 8 fish per 30ft by 30ft square. The next steps in this project are to apply this survey and modeling method to other untrawlable habitats around the state so that we can build an index of abundance substantial enough to inform future stock assessments.

While methods to conduct species distribution models are well established, applying *in situ* video lander data is an emerging application in marine ecosystems. The extension of remote camera surveys represents an important step forward in improving our knowledge of spatial ecology and resource abundance for marine species. Results of this research may be used to better manage Yelloweye Rockfish rebuilding efforts, guide Oregon fishers in better managing their quota in the mixed stock groundfish fishery, and to guide future monitoring efforts in rocky reefs off Oregon's coast.

Black Rockfish Age Structure (Ongoing)

This research is in partnership with Madison Bargas and Cheryl Brown at Oregon State University. Black rockfish (*Sebastes melanops*) are a recreationally and commercially valuable species that support numerous coastal communities from Alaska to California. Recent stock assessments, however, suggest that relative spawning output is at or below management targets. Although these models are sensitive to changes in life history parameters, the lack of fine-scale spatial information required assumptions that some traits, such as growth and maturity, do not vary in time or space. We are testing this assumption by assessing latitudinal variation in growth and maturation rates of black rockfish in the Gulf of Alaska and California Current. We work with fishery stakeholders, including angling groups, charter companies, and agency scientists, to collect and analyze age and maturity information for this valuable species. We then use macroscopic and histological methods to estimate maturity stages and the break-and-burn technique to estimate ages. The spatial extent of this project spans four well-established biogeographic breaks within the California Current (Cape Flattery, Columbia River, Cape Blanco, and Point Arena), in addition to the Gulf of Alaska. Since life history traits tend to vary with sea surface temperature, prey availability, and a myriad of other ecological variables, these estimates can improve state-specific biomass estimates, which can have profound impacts on local communities. This work's results will provide spatially explicit growth and maturity estimates for use in future stock assessment models.

Dogfish Movement and Catchability (Ongoing)

This research is in partnership with Alex McInturf, Cheryl Barnes, James Sulikowski and Taylor Chapple (Oregon State University), Ian Taylor and Jim Hastie (NOAA-NWFSC), and Cindy Tribuzio (NOAA-AFSC). For the last decade, NOAA has been increasingly interested in improving stock assessments for the Pacific Spiny dogfish (hereafter, "dogfish"; *Squalus suckleyi*). The dogfish is a small but important upper trophic level shark species common in the eastern North Pacific Ocean and is managed as four stocks from Baja California to the Bering Sea: Pacific Coast Stock (PCS), the British Columbia stock, the Bering Sea/Aleutian Islands Shark Complex, and the Gulf of Alaska (GOA) Shark Complex. Of these, PCS dogfish specifically have been subjected to intense fishing pressure in both directed and bycatch fisheries and available data suggest a continued worrying decline in their numbers. However, it is uncertain if this decline is due to a reduction in the incidental capture

rates or a result of uncertainty in assessment parameters; specifically, dogfish survey catchability. This uncertainty was highlighted in the most recent stock assessment and is largely driven by a lack of data on dogfish movement, because the methods currently used to assess dogfish may be highly influenced by the seasonal and spatial overlap of dogfish and survey efforts. Therefore, we are employing a combination of acoustic and satellite tags to estimate the characteristics (horizontal and vertical) and predictors of PCS dogfish movements in Oregon and the broader Northeast Pacific. Our results, specifically absent in previous assessments, can improve estimation of survey catchability in the next stock assessment, which will then be used to inform management decisions for targeted and bycatch fisheries in Oregon. If warranted, these data also provide information that could reduce fishery/stock interactions by determining the conditions under which there may be high overlap.

Our research team spent over 40 days along the Oregon coast fishing for spiny dogfish between spring 2024 and the start of 2025. This included participation in NOAA trawl surveys as well as independent longline and hook-and-line efforts. Dogfish were successfully captured in large numbers starting in November off the coast of Newport, Oregon and high catch rates persisted there through December but declined through January 2025. Despite published reports indicating sex segregation at mature life stages, our team found aggregations of pregnant females and mature males together. During these efforts, we successfully deployed 47 electronic tags. Some of those tags (n=16) popped prematurely after a few weeks to months due to unknown circumstances, but in doing so provided fascinating insights into dogfish distribution. Specifically, dogfish appear to remain in Oregon and Washington during fall and winter (with some individual variation), and exhibited active daily diving behavior during that time, roaming throughout the water column.

Inter-Reef Movement of Yelloweye Rockfish

Of the seven species of Pacific rockfish declared overfished in the California Current in 2008, yelloweye rockfish (*Sebastes ruberrimus*) is the only remaining overfished rockfish species. Part of the original rebuilding plan included designation of a Yelloweye Rockfish Conservation Area (YRCA), a rocky reef closed off the Central Coast of Oregon that is closed to bottom fishing. The YRCA's ability to help rebuild the population is predicated on the theory that demersal rockfishes are relatively sedentary. However, in the years since being declared overfished, acoustic tagging studies suggested yelloweye rockfish do not remain in the YRCA. However, where they went remained a mystery. In this paper, we describe the use of pop-off satellite tags to conduct a mark-recapture study of 11 yelloweye rockfish tagged within the Stonewall Bank YRCA. We used back-in-time particle tracking coupled with an ocean circulation model to attempt to increase the precision in the location at which each tag shed off the fish and further validated that location by associating it to the underlying seafloor habitat type. Ten out of eleven tags were shed from the fish while it was outside the Stonewall Bank YRCA's boundary. While most fish remained within 50 km of the Stonewall Bank YRCA, one tagged fish swam to an offshore reef off Central Washington (~40 km from the shore). Backtracked locations were more likely over rock than the initial satellite transmission, indicating the method was effective at identifying tag shed locations. We found no relationship between days at large, fish sex or length and the distance between release site and shed location. Our work supports a growing body of work that suggests yelloweye rockfish have less site fidelity than previously hypothesized.

Rasmuson LK, Blume MTO, Lawrence KA, Laughlin BM, Edwards CA, Terwilliger MR, Ayrea AC,

McInturf AG, Legare BJ, Chapple TK (2025) Routine large-scale movements of the yelloweye rockfish (*Sebastes ruberrimus*). Front Mar Sci 12:1539206.

Effectiveness of Quantitative Stereo Landers during Day and Night (Ongoing)

Development and adaptation of fishery-independent survey methods for Oregon's nearshore demersal fish populations is an ongoing priority for ODFW. In addition to acoustic, hook-and-line, and tagging studies, ODFW has also used remote underwater vehicles such as ROVs and landers. Due to their relatively low cost and ease of use, landers are widely used and an accepted source of data for fisheries management around the world. However, as with any survey tool, questions regarding survey efficacy and data utility remain. The primary expenditure of many surveys goes to chartering a research vessel and includes the time traveling to/from the port or being tied to the dock at night. In 2018 we initiated a study that sought to address this inefficiency in lander studies by testing whether increasing the number of hours a day the survey significantly impacts species composition or count. If there is no significant difference, lander surveys may potentially be less costly to conduct, potentially increasing our ability to conduct fishery-independent surveys on a greater number of species, or over a larger survey area. Additionally, this study aims to address a topic of ongoing debate in the scientific literature; whether to process abundance estimate data from video landers using the MaxN approach (maximum number of each species observed per video), or whether to generate a mean abundance of fish observed throughout the video.

The data collection phase of this project is complete. Beginning March 2018 and ending April of 2019, two calibrated stereo-video landers were deployed at total of 316 times. Deployments were conducted in predetermined sampling grids, spaced sufficiently to avoid spatial autocorrelation. Beginning five hours before sunset, landers were deployed at 40-60 locations at each grid. The landers were deployed again at the same locations after sunset. Day/night sampling was repeated five times and included both shallow and deep sampling grids to account for potential influence of ambient light at shallower depths. Video review of the 316 videos was completed in January of 2025. Initial results from the shallow depth bin indicate a significant difference in both species composition and count during the daytime lander drops than those conducted after sunset. Further analysis of these trends is ongoing, as is analysis comparing the trends in abundance indices for rockfish generated with MaxN and mean MaxN video review methodology.

Effect of Hypoxia on Groundfish CPUE in the Recreational Fleet (Ongoing)

It is well established that hypoxia influences fish behavior and the catchability of fish in commercial fisheries. Many of these fisheries operate on the continental shelf where near bottom waters are consistently hypoxic during summer months. In the nearshore, hypoxic events are less common and often shorter duration. We are examining how these events influence catch of important nearshore groundfish species. We combined near bottom oxygen data from the ocean observing initiative's inshore mooring with single species CPUE estimates and bag limit diversity from the Ocean Recreational Boat Survey (ORBS) sampling program. GAMMs were used to model the relationship between these two datasets and are finding that the effect of hypoxic events on groundfish catch are not consistent across species. Some species are caught at much lower levels during hypoxic events, whereas others are more frequently encountered.

Updating Surface Mortality Rates for Mortality Credits (Ongoing)

Fish encountered by a fishery and discarded at sea are released either due to catch restrictions or simply because the fish is undesirable to that fisher. Unfortunately for all rockfish species, interaction with fisheries often results in barotrauma, the physical response to rapidly being brought to the surface that results in expansion of their swimbladder, often leading to significant injuries such as damage to their internal organs, connective tissue and gills. Over the past 20 years, research into the impact of discards from hook-and-line fisheries has led to a wealth of knowledge about the anatomical and physiological impacts of barotrauma and the associated survival of released rockfish. Additionally, this research has been the foundation of a management tool used by the Pacific Fisheries Management Council (PFMC) known as 'Discard Mortality Rates'. Discard Mortality Rates are defined as the proportion of fish who will survive catch/release from a fishery and are applied by species (or species group), depth bin, and by whether the fish was released at the surface or at the seafloor via a rockfish descending device. Despite the breadth of research in this area over the last two decades, data gaps in discard mortality values exist for many species/depth bin combinations for both surface and bottom released fish. In 2023, the fisheries research team was asked to help fill the data gaps for two species of concern, black rockfish and quillback rockfish. The data gap for quillback rockfish was low sample size for surface released fish in every depth bin. On the other hand, of the four depth bins, the sample size for black rockfish was relatively high in the two shallowest bins but low for the two highest depth bins. Our aim was to increase the sample size of surface released black and quillback rockfish in the depth bins with the smallest sample sizes to potentially refine Discard Mortality Rates.

In the spring of 2023, we conducted six days of hook-and-line fishing in depths representing all four depth bins used by the PFMC to define surface release mortality rates (range: 0-10 fm, 11-20 fm, 21-30 fm, and >30 fm). Fish were caught on terminal tackle commonly used by recreational hook-and-line fisheries in the area. After being caught, fish were measured, assigned a barotrauma score, and released at the surface into a floating pen. If the fish swam down on its own within five minutes of being released it was considered to 'survive'. Any fish still at the surface after five minutes was considered a mortality. Overall, all encountered quillback (n=12, across 11 – 30fm) survived, which differs significantly from the current surface release mortality rates for quillback rockfish in the two middle depth bins. However, due to the low encounter rate of quillback in our study, we'd suggest increasing our sample size to improve confidence in these results. Further, quillback rockfish were not encountered in either the shallowest or deepest depth bin, a finding that is supported by recreational catch data. Black rockfish were not encountered in the deepest depth bin, which is also reflected in the recreational catch data. Of the remaining three depth bins, black rockfish surface release mortality rates aligned with the rates set by the PFMC for all but the shallowest depth bin (0-10 fm). Our results show that in depths of 10 fathoms or less, all black rockfish were able to successfully submerge on their own in under 20 seconds of being released. A summary of the results of this study are forthcoming and will be published internally as an ODFW Information Report.

4. Stock Assessments and Management by Species/Group

This section includes groundfish stock assessments and management actions that were completed in the report year by the ODFW.

Multi-Species

Federal management

Various new regulations and management measures in 2024 were applicable to a broad suite of groundfish species. First, commercial Limited Entry Fixed Gear vessels were allowed to obtain their LE trip limits while fishing with non-bottom contact gear within the Non-trawl Rockfish Conservation Area (RCA). Next, stocks were defined for chilipepper rockfish, English sole, redbanded rockfish, rougheye/blackspotted rockfish, widow rockfish, yelloweye rockfish, and yellowtail rockfish. All were defined as coastwide except for yellowtail rockfish, which was defined as North and South of 40° 10' N. latitude. Finally, the two-year trawl and non-trawl allocations were set as status quo, except for widow rockfish. The non-trawl allocation of widow rockfish decreased from 400 mt to 300 mt, with the remainder to trawl.

Fixed-Gear Nearshore Commercial Fishery

Nearshore rockfish compose the majority of landings in the commercial nearshore fishery. In Oregon, this fishery became a limited-entry permit-based program in 2004 following the rapid development of the open access nearshore fishery in the late 1990s. The commercial nearshore fishery exclusively targets groundfish, with separate management groups for Black Rockfish, Blue and Deacon Rockfish, Cabezon, Greenling, and Oregon's "Other Nearshore Rockfish" complex. The fishery is primarily composed of small vessels (25 ft. average) fishing in waters less than 30 fathoms. Fishing occurs mainly with hook and line jig and bottom longline gear types. Most active permit holders are located on the southern Oregon coast, resulting in most of the catch landed in Port Orford, Gold Beach and Brookings. Black Rockfish continue to comprise the majority of landings. The fishery supplies mainly live fish markets but also provide fresh fish products.

Landings are regulated through bimonthly trip limits, minimum size limits, and annual harvest guidelines (HG). In 2024, landings from commercial nearshore fishing, logbook compliance, economic data, and biological data were published in the 2023 Commercial Nearshore Fishery Data Update (Vestfals and Noordman 2024). Updates for the 2024 commercial nearshore fishery will be published in 2025.

Weekly updates on landings and model projections allow MRP staff to effectively manage the fishery in-season. In 2024, overall effort (number of fishing trips) was lower than average for most of the year, resulting in 2024 total effort below the long-term average. Due to this low effort, landings of Black Rockfish were projected to be well below the commercial HG of 122.9 metric tons before the end of the year. In response, trip limits for Black Rockfish in Periods 4 – 6 were increased from 2,400 to 2,700 pounds per period to allow for greater opportunity for reaching the Black Rockfish commercial HG. Blue and Deacon Rockfish landings in 2024 were at or above the historical average for the entire year, setting a new historical maximum for the second year in a row. Despite the historically high landings, the HG of 15.2 metric tons was not reached from landings alone. Blue and Deacon Rockfish trip limits were not adjusted up as they do not limit landings. Landings of Other Nearshore Rockfish, which had an HG of 16.1 metric tons, were below or near the historical average at the beginning of the year, then exceeded the historical average until June, after which they remained at or below the historical average through the remainder of 2024. Trip limits in

Periods 4 – 6 were increased from 450 to 650 pounds per period to allow for greater opportunity for reaching the Other Nearshore Rockfish commercial HG. End of the year attainment of the state HGs, not including discard mortality, was 76% for Black Rockfish, 90% for Blue and Deacon Rockfish, and 53% for Other Nearshore Rockfish. Discard mortality is also counted against HGs, but final estimates are not available until fall 2025 when the NMFS West Coast Groundfish Observer Program total mortality report is released. For Greenling and Cabezon management specifics see the Other Groundfish section, below.

Vestfals, C.D. and. L.L. Noordman (2024). The Oregon Commercial Nearshore Fishery Data Update: 2023. ODFW Science Bulletin 2024.

CARE Activities

ODFW and NWFSC co-hosted the biennial CARE meeting in Newport in 2024, which included representatives from state, federal, and international ageing labs on the west coast of North America. Working groups on otometrics and ageing protocols for Lingcod, Sablefish, and Rougheye/Blackspotted Rockfish were a few of the highlights.

Sport Catch Reconstruction

Beginning in the early 1970s, the Ocean Recreational Boat Survey (ORBS), previously known as the Ocean Salmon Sampling Project, monitored recreational ocean boat landings at Oregon coastal ports. To improve historic recreational catch estimates for marine fish (non-salmonid) from the federal Marine Recreational Fisheries Statistical Survey (MRFSS), ODFW staff at the Marine Resources Program comprehensively reconstructed ORBS catch estimates for all major recreational species from 1979 to 2000. This sport catch reconstruction was a five-year project that was finally completed and published in 2024 (Whitman 2024).

Estimated catch (numbers of fish) of major species categories (flatfish, lingcod, miscellaneous fish and rockfish) are extrapolated to address spatial and temporal gaps in sampling coverage. Species compositions from two concurrent data sources, MRFSS sampling and ORBS sampling, are applied to the category-level numbers of fish to produce alternative species-specific estimates delineated in space (port) and time (year, month) by fishing mode. The species-specific estimates using the ORBS species compositions are recommended as the observed sample size is much larger than the MRFSS dataset and the fishing modes more closely align to those of the catch estimates, resulting in fewer un-speciated fish.

Whitman, A.D. 2024. Oregon Historical Marine Recreational Catch Reconstruction: 1979 – 2000. ODFW Science Bulletin 2024-09.

Hagfish

Management

The commercial hagfish fishery operates year-round. Two types of trap gear are typically used, a 55-gallon drum and five-gallon bucket. Each of these contains escape holes to increase the size selectivity of the commercial fishery. Commercial hagfish landings in 2024 were down to 197,175 pounds, or 8% of the 1.6-million-pound state harvest guideline, continuing a downward trend that started in 2020. Lower landings are largely attributable to reduced effort, as only three vessels currently target hagfish. No hagfish management actions were taken by ODFW in 2024.

Pacific Whiting

Management

The United States and Canada agreed upon a 2024 coastwide total allowable catch (TAC) of 550,000 mt. Of this coastwide TAC, the United States' portion was 410,034 mt. The U.S. caught 40.7% of their quota and Canada caught 2.7% of their quota for a total coastwide catch of 170,850 mt, which was 48% below the 10-year-average.

Rockfish

Production Aging

ODFW has historically focused on production aging of nearshore groundfish for inclusion in stock assessments, so we started off 2024 by aging China Rockfish in anticipation of that species being assessed in 2025. We aged 493 commercially caught China Rockfish from catch years 2014-2022 and weighed 362 samples (222 commercial, 140 sport) in accordance with CARE (Committee of Age Reading Experts) protocols.

We soon learned that neither China Rockfish, nor any other nearshore species, were included in the Groundfish Management Team's list of species to be assessed in 2025. Therefore, we switched gears and estimated ages for Oregon's component of the Rougheye and Blackspotted Rockfish complex (a slope species) for inclusion in the 2025 assessment. In 2024, ODFW produced break-and-bake age estimates for 1765 fish from catch years 2017 and 2021-2023, all from the commercial fishery. Weights were taken from 2612 otoliths and data provided to NWFSC for FT-NIRS (Fourier transform near infrared spectroscopy) age estimation.

ODFW routinely performs double reads on 20% of all otoliths to generate an internal index of precision, defined as the reproducibility of repeated measurements on a given structure. Precision estimates lend insight on the ease of aging a structure, assess the reproducibility of an individual's age determinations, or compare the skill level of one ager relative to that of others. ODFW employs a single reader to age commercially and recreationally important groundfish; therefore, double reads are used to determine the precision of a single reader. Only catch years 2021-2023 were double read during the 2024 calendar year, and average percent error (APE) for those collections was 5.66%. Given the long-lived nature of this species and the inherent difficulty in ageing it, our APE value is considered acceptable.

Other Aging Activities

Prior to aging China Rockfish, we imaged an additional 708 China Rockfish samples (in addition to 1215 images taken in 2023) for a study using otolith shape to potentially further separate the central stock (from the Oregon-Washington border south to 40°10′ N) into a northern and southern component. This study is ongoing.

ODFW obtained 25 Black Rockfish otolith samples captured by DFO during their Gulf of Alaska surveys in 2019, 2020, and 2022. These samples were of particular interest because they came from relatively large fish and Oregon Black Rockfish aged for the 2023 assessment showed a lack of large, old females. We are still awaiting the sex data for these samples, but because the ages were relatively young (range 9-20 years), they lend credence to the hypothesis that large old females are absent from populations throughout the range of Black Rockfish.

Stock Assessments

ODFW participated in multiple federally led stock assessments through the Pacific Fishery Management Council in 2024. Benchmark assessments include yellowtail rockfish and rougheye/blackspotted rockfish, for which ODFW staff were members of the Stock Assessment team (STAT). Work on these assessments will continue into 2025.

Data products for stock assessments from ODFW include standardized catch estimates and biological sampling that are housed in the West coast data repositories for commercial and recreational fisheries (PacFIN and RecFIN, respectively) but also include other products only available directly from ODFW. For this assessment cycle (2025/2026), historical catch reconstructions for commercial and recreational fisheries were provided. Fishery-dependent indices from the recreational fishery were also developed, along with special projects (non-standard) biological samples. ODFW contributed data to all six benchmark federal assessments and two update assessments in 2024 and 2025.

Management - Recreational Fishery

Black rockfish (*S. melanops*) remains the dominant species caught in the recreational ocean boat fishery. The black rockfish federal harvest limit remained the same in 2024 as in 2020-2023, though attainment of black rockfish dipped in 2024 from 296 metric tons (mt) in 2023 to 266 mt. To remain within the yelloweye rockfish impact cap (via discard mortality), the recreational groundfish fishery had previously been restricted to inside of 40 fathoms during the summer months. However, beginning in 2023, the summer depth restriction was no longer necessary to stay within the updated impact cap as the yelloweye stock continues to rebuild, providing some relief to black rockfish and other nearshore species. The retention of yelloweye rockfish (*S. ruberrimus*) has been prohibited year-round since the early 2000s. Beginning in 2022, quillback rockfish were also prohibited. The 2021 assessment for quillback rockfish (*S. maliger*) indicated that while the stock is considered healthy, the total biomass is much smaller than previously estimated. The allowable amount annually is not enough to allow for any retention.

The fishery season structure and regulations, such as daily bag limits (with species specific sub-bag limits) and depth restrictions, are set pre-season to balance impacts to a number of species, as what reduces impacts on one species may increase impacts to the other. For 2024, no inseason changes were required. The nearshore rockfish complex was the only species (or group of species) that exceeded their Oregon recreational specific harvest guideline in 2024, though other fisheries north of 40° 10′ N. lat. underutilized the nearshore rockfish complex, allowing the recreational fishery to remain unchanged through the calendar year.

Outreach – Recreational Fishery

ODFW staff host public meetings three times a year for halibut and groundfish, taking place in February, July or August, and September or October. The summer meetings take place in multiple ports along the Oregon Coast (and occasionally in Salem) to encourage engagement with the local communities. These meetings provide an opportunity to share information with the public and gain feedback on regulations from an angler perspective. Meetings hosted in Newport are offered as a hybrid for anglers across the state to join virtually. Additionally, staff continue to work with anglers via webinars, conference calls, emails, and online materials as needed.

To reduce bycatch mortality of prohibited rockfish species in the sport fisheries, ODFW staff continue to participate in angler education workshops, meetings, and shows to educate anglers

and distribute descending devices into marine angling communities. These efforts have proven to be successful, as anglers now hold each other accountable at-sea and promote the devices themselves. To further increase usage, anglers requested that ODFW make descending devices mandatory on any vessel fishing the ocean for bottomfish or halibut. This regulation went into effect on January 1, 2017. Additional outreach efforts include: videos online that show fish successfully swimming away after release with a device, rockfish barotrauma flyers, and videos on how to use the various descending devices.

ODFW has also been educating anglers on a relatively new opportunity to use what is termed "longleader gear" to target underutilized midwater rockfish species such as yellowtail (*S. flavidus*) and widow (*S. entomales*) rockfishes, while avoiding more benthic species such as yelloweye rockfish. The longleader gear requires a minimum of 30 feet between the weight and the lowest hook, along with a non-compressible float above the hooks, to keep the line vertical in the water column. ODFW has produced informational handouts with the gear specifics, species allowed, and other associated regulations.

Sablefish

Management

Sablefish is an economically valuable species in the West Coast bottom trawl and fixed gear fisheries. The 2024 fixed gear sablefish trip limits (both open access and limited entry) were raised throughout the year with inseason action to allow for higher attainment of sablefish allocations. In 2024, the Individual Fishing Quota (IFQ) trawl fleet landed 1,334 mt of sablefish into Oregon, and the combined non-trawl gear groundfish fisheries (including IFQ "gear switchers") landed 1,383 mt. The IFQ trawl fishery includes both groundfish bottom and midwater (including shoreside Pacific whiting) trawl vessels.

The PFMC is continuing to consider changes to the "gear-switching" provision of the trawl IFQ program which allows the use of non-trawl gear to harvest trawl IFQ pounds. The gear-switching issue arose during the first five-year review of the trawl IFQ program and centered on concerns by trawl fishermen that fixed gear participation has led to higher sablefish quota lease rates and reduced their ability to catch co-occurring stocks. Gear-switching participants are concerned that limits adopted could undermine significant investments already made to fish in the IFQ fishery with non-trawl gear, under a legal provision of the program.

In April 2024, the PFMC adopted a final preferred alternative (FPA) on this management action. The FPA stated that gear switching would only be limited in years when sablefish quota pound (QP) availability is low—specifically, when the northern (north of 36° N. Latitude) sablefish annual catch limit (ACL) is below 6,000 mt. The limitation would be imposed through the issuance of gear-specific QP (any-gear QP and trawl-only QP). In years with an ACL above 6,000 mt, there would be no restrictions on gear switching. There were other provisions within the FPA that addressed "legacy participant" status. Further discussion to clarify implementation is scheduled for the June 2025 council meeting. More information can be found at the PFMC's Gear-Switching webpage.

Lingcod

Aging Activities

ODFW typically sends Lingcod fin rays to WDFW for processing and ageing; however, in 2024 it was

deemed cost prohibitive to continue that practice. In late 2024, port samplers from ODFW and PSMFC began preparing commercial (N = 1168) and sport (N = 1040) fin ray samples from years 2020-2023 for ageing. Fin ray preparation is a long, tedious process that includes gluing, sectioning, and mounting fin sections onto microscope slides.

Management - Commercial

Lingcod are managed commercially using two-month trip limits in both the limited entry fixed gear and open access fisheries. Oregon is managed in the North of 40° 10′ N latitude management area. Trip limits are updated biennially and inseason if necessary. The 2024-2025 trip limits are higher than the 2022-2023 trip limits for both the non-trawl sectors. In 2024, the combined non-trawl gear groundfish fisheries (including IFQ trawl vessels using non-trawl gear, i.e., "gear switchers") landed 121 mt of lingcod into Oregon.

Annual allocations for the IFQ trawl fishery that operates off Oregon, as well as the rest of the US West Coast, are also set on a biennial cycle. The IFQ trawl fishery includes groundfish bottom trawl vessels, midwater trawl vessels targeting midwater rockfish, and shoreside Pacific Whiting vessels. In 2024, the IFQ trawl fleet landed 386 mt of lingcod into Oregon.

Management - Recreational

Lingcod is a popular target in the Oregon recreational bottomfish fishery. Beginning in 2023, the summer depth restriction was removed for the bottomfish fishery, allowing anglers to harvest lingcod, rockfish, and halibut on the same trip (when halibut retention is allowed). Anglers prefer to target Lingcod at deeper depths, as larger Lingcod are believed to occur in deeper offshore waters. Lingcod have their own daily bag limit (2 fish per angler per day), separate from other bottomfish. There is also a minimum size limit of 22 inches. In 2024, anglers landed over 58,000 lingcod, totaling 175 mt.

Pacific Halibut

Management

Oregon's recreational fishery for Pacific halibut continues to be a popular, high-profile fishery requiring International Pacific Halibut Commission (IPHC), Federal, and state technical and management considerations. In 2019, the IPHC recommended an annual fishery catch limit for Area 2A (Oregon, Washington, and California) of 1.5 million pounds which the IPHC Commissioners indicated would be in place for four years, 2019-2022. The Commissioners have since extended the 1.5 million pounds catch limit for Area 2A for 2023 and 2024.

The recreational fishery for Pacific halibut in Oregon is managed under three subareas with a combination of all-depth and nearshore quotas. In 2024, the Columbia River subarea quota was 18,612 pounds, the Central Coast subarea quota was 266,161 pounds, and the Southern coast sub-area quota, was 8,000 pounds. Landings in the recreational Pacific halibut fisheries are monitored weekly to ensure catch limits were not exceeded. Most Pacific halibut continue to be landed in the Central Coast subarea, with the majority of all landings in Newport. Total recreational landings in the Central Coast subarea for 2024 were 190,310 pounds, 72 percent of the quota. Landings in the Southern subarea were 8,413 pounds (105% of the quota) and in the Columbia River subarea, landings were 17,504 pounds (97%). Fishing in the Central Coast subarea was hampered by weather for a couple weeks in May, though fishing was good during the month of June. For the rest of the season, the majority of anglers switched over to salmon fishing. The Columbia River subarea was

able to open as scheduled in early May with good catches and extend the season all the way through September, though halibut fishing tailed off during prior to Labor Day Weekend. In all three fishing subareas, anglers continue to report smaller fish. The average weight of landed fish in 2024 was about 16 pounds, the smallest average since 2020.

Other Groundfish – Kelp Greenling

Management – Commercial Fishery

The commercial Greenling HG for 2024 was 98.4 metric tons. Greenling are targeted by very few commercial fishers despite the relatively high HG and price per pound paid for live fish. The bimonthly trip limit in 2024 was set at 1,200 pounds per period after considering public input, markets, and local depletion concerns. To increase opportunity and attainment, ODFW increased the bimonthly trip limit by 800 pounds per period to 2,000 pounds for Periods 4 – 6. Greenling landings, not including discard mortality, ended the year with 15% of the HG attained. Barring changes in targeted effort catch rates and markets, Greenling attainment is likely to continue to remain low.

Other Groundfish – Cabezon

Management – Commercial Fishery

The commercial HG for Cabezon was 31.7 metric tons in 2024. Cabezon landings ran below the historical average through most of the year and were projected to come in well below the HG. To increase opportunity and attainment, ODFW increased the bimonthly trip limit from 1,500 pounds per period to 2,500 pounds for Periods 4 – 6. Despite this increase, landings remained below average. Final commercial fishery attainment, not including discard mortality, was 54% after in-season adjustments.

Management – Recreational Fishery

Cabezon is another popular target for recreational bottomfish anglers. Cabezon have a one-fish sub-bag limit as part of the general marine bag limit (five-fish bag limit), and a 16-inch minimum size, additionally the season does not open until July 1. Retention is prohibited January through June, as that is the time that cabezon generally spawn and nest guard. The cabezon harvest guideline has remained relatively constant over the last decade, though even with the average angler catching less than one per day, the quota can go very quick. In 2024, the season remained open through the end of the year. However, as recently as 2022, cabezon was prohibited shortly after Labor Day to stay within the harvest guideline.

5. Reserves

The ODFW Marine Reserves Program oversees the management and scientific monitoring of Oregon's five nearshore marine reserves. These sites, from north to south, include: Cape Falcon; Cascade Head; Otter Rock; Cape Perpetua; and Redfish Rocks. All fishing and marine development are banned in the reserves, which also are surrounded by marine protected areas where some types of fishing are allowed. Together they represent 9% of Oregon's nearshore waters and they were all created through a public process. Each reserve has distinct habitat and biological characteristics and therefore requires site-specific monitoring and research planning. This section presents an update on management, ecological monitoring and research activities from 2024. More detailed information is available on the Oregon Marine Reserves website at

http://oregonmarinereserves.com/.

An Oregon First

Oregon's marine reserve system is the state's first long-term nearshore ocean conservation and monitoring program. It is the only ecosystem-focused, fisheries-independent monitoring program designed to track and understand ocean changes occurring in Oregon's state waters. It also provides information on Oregon's juvenile and subadult rockfish as well as track oceanographic conditions of nearshore waters such as ocean acidification and hypoxia.

The program also is the first with a comprehensive human dimensions research effort examining the reserves' impacts on the economic, social, and cultural dynamics of the Oregon coast and coastal communities. It remains the West Coast's only comprehensive human-dimensions research program ever focused on marine protected areas.

Management

The ODFW Marine Reserves Program underwent a legislatively mandated programmatic review in 2023, which found that in general Oregon's marine reserves were effectively designed and implemented to achieve the goals and policy objectives set forth in legislation. Senate Bill 1510, passed in 2012 by the Oregon legislature, called for a check-in and report on the ODFW Marine Reserves Program to the legislature in 2023. This check-in mandated an independent university to review the Marine Reserves Program and prepare a report for the Scientific and Technical Advisory Committee of the Ocean Policy Advisory Council to share with the Oregon legislature by March 1, 2023. The university report evaluated whether the program was meeting its mandated goals and provided recommendations for improvements.

The basis for the university report was the ODFW Marine Reserve Program Synthesis Report, which provided a comprehensive overview of the program and first 10-years of marine reserves implementation. The recommendations from the university assessment were used to inform an introduced bill in the 2023 legislative session; however, the bill did not make it through the end of the session. In early 2024, HB 4132 was passed tasking ODFW Marine Reserves with implementing an adaptive management plan, as well as other new goals such as researching the reserves' resilience to climate change.

6. Data Management

Broadly speaking, each year, the ODFW contributes a significant amount of catch, biological and logbook data to West coast data repositories, PacFIN and RecFIN. These data are accessible to a variety of end users but include both the general public and agency personnel involved in the assessment and management of groundfish species. Internally, the data for these repositories are housed in multiple Access-linked SQL databases (or for some logbooks, Access databases) that are continually updated and periodically transmitted to PacFIN/RecFIN. ODFW also maintains multiple internal SQL or Access databases with data not appropriate or ready to disseminate. Examples of these databases include special projects biological sampling (e.g. for growth or maturity studies), or smaller-scale survey/study specific databases, such as those for marine reserves ecological monitoring or for Ocean Recreational Fishery Survey. These internal data are available upon request

through a data-use agreement with ODFW. Summarized data from PacFIN/RecFIN are available to the general public but detailed data can also be requested through the Pacific States Marine Fisheries Commission. Most of the databases, particularly those that feed into PacFIN/RecFIN, are managed by the Technical and Data Services Section, more commonly known as the "Data Shop".

Few staff at the Marine Resources Program use common code repositories, though specific projects have begun to utilize GitHub to store code and project-specific non-confidential data. Staff that work on federal stock assessments teams utilize GitHub as data and code repositories to increase transparency in the development of federal groundfish assessments.

7. Upcoming Work, Emerging Needs, and Challenges

This section contains information on upcoming research projects, surveys, stock assessments and management activities for the Marine Resources Program at the ODFW.

Research

Multiple research projects described above in Section 3 are ongoing and work will continue on data collection, analysis and publication for these projects.

Surveys

ODFW will repeat their statewide black rockfish acoustic-visual survey they started in 2021 during the summer of 2025. The work will now use a Simrad EK80 instead of a Biosonics DTX and due to limited staffing, no fishing will occur.

Management/Stock Assessments

Participation at the PFMC, NPFMC, and the IPHC will continue into 2025. Some anticipated topics include:

1. PFMC: Adopting 2025 Stock Assessments for 2027-2028, followed by development of harvest specifications
2. PFMC: Stock Definitions (Phase 2)
3. PFMC: Intersector Allocation Review
4. NPFMC: Annual crab and groundfish harvest specifications
5. NPFMC: June meeting in Newport, OR, with MRP staff and local industry coordinating events and excursions for the NPFMC
6. IPHC: FISS (Fishery Independent Setline Survey) will return to Oregon this year
7. IPHC: ODFW will continue to be involved leading up to the IPHC Interim Meeting and next year's Annual Meeting as we prep for the 2026 halibut season and quotas

Work continues on federal rockfish stock assessments during the 2025/2026 cycle. In addition to yellowtail and rougheye/blackspotted rockfish, two update assessments for yelloweye and widow rockfish are scheduled to be completed in early 2025. In addition to participation in the federal assessments themselves, ODFW staff continue to automate and optimize data products for federal stock assessments. These include incorporating historical catch reconstructions into PacFIN and

RecFIN, automation of dataset development and modelling approaches for indices of abundance, and the incorporation of new data sources. ODFW staff are working to enhance internal capacity to lead stock assessments through participation in a "state stock assessors" working group.

Emerging Needs/Challenges

Staffing, particularly for seasonal sampling positions, remains a challenge for a variety of reasons, but the primary challenge is the lack of available housing on the Oregon coast for employees that require affordable, short-term rentals.

Capacity to age Oregon's biological samples continues to be a limiting factor in the development of both federal and potential state-led age-structured stock assessments.

Overarching all these continued issues is the broad uncertainty in federal funding and support to continue to study, monitor and manage Oregon's public marine resources, which will be a considerable challenge in the years to come.

8. Other Publications

N/A

9. Agency Contact List

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