# OREGON'S GROUNDFISH FISHERIES AND INVESTIGATIONS IN 2013

OREGON DEPARTMENT OF FISH AND WILDLIFE

2014 AGENCY REPORT
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OREGON DEPARTMENT OF FISH AND WILDLIFE

A. AGENCY OVERVIEW – MARINE RESOURCES PROGRAM

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The Marine Resources Program (MRP) is within the Oregon Department of Fish and Wildlife (ODFW) and has jurisdiction over marine fish, wildlife and habitat issues coastwide. MRP is headquartered at Newport in the Hatfield Marine Science Center, with field stations at the cities of Astoria, Charleston, Brookings and Corvallis. MRP is tasked with the responsibility for assessment, management and sustainability of Oregon's marine habitat, biological resources and fisheries. In addition to direct responsibilities in state waters (from shore to three miles seaward), MRP provides technical support and policy recommendations to state, federal, regional and international decision-makers who develop management strategies that affect Oregon fish and shellfish stocks, fisheries and coastal communities. Staffing consists of approximately 60 permanent and more than 60 seasonal or temporary positions. The current annual program budget is approximately $8.75 million, with about 77% coming from state funds including sport license fees, commercial fish license and landing fees, and a small amount of state general fund. Grants from federal agencies and non-profit organizations account for the remaining 23% of the annual program budget.

B. MULTISPECIES STUDIES

1. Sport Fisheries Project

Sampling of the ocean boat sport fishery by MRP's Ocean Recreational Boat Survey (ORBS) continued in 2013. Starting in November 2005, major ports were sampled year-round and minor ports for peak summer-fall season. We continue to estimate catch during un-sampled time periods in minor ports based on the relationship of effort and catch relative to major ports observed during summer-fall periods when all ports are sampled. Samplers were stationed in all ports during the winter of 2011-2012, to attempt to groundtruth estimates for minor ports in un-sampled periods. This was the result of a review of the ORBS program and funded through the National Marine Recreational Information Program (MRIP). The results of that overwinter sampling are still being analyzed. Black rockfish (*Sebastes melanops*) remains the dominant species caught in the ocean boat fishery. Lingcod (*Ophiodon elongatus)*, several other rockfish species, cabezon (*Scorpaenichthys marmoratus)* and kelp greenling (*Hexagrammos decagrammus)* are also commonly landed. Oregon's fishery for Pacific halibut (*Hippoglossus stenolepis)* continues to be a popular, high profile fishery requiring International Pacific Halibut Commission (IPHC), federal and state technical and management considerations.

The ORBS program continued collecting information on species composition, length and weight of landed groundfish species at Oregon coastal ports during 2013. Since 2003, as part of a related marine fish ageing research project, lingcod fin rays and otoliths from several species of nearshore groundfish, including rockfish species, kelp greenling and cabezon, were gathered. Starting in 2001, a portion of sport charter vessels were sampled using ride-along observers for species composition, discard rates and sizes, location, depth and catch per angler (see Section B.2).

Beginning in 2003, the recreational harvest of several groundfish species is monitored in-season for catch limit tracking purposes. Pre-season in 2013, the cabezon season was modified to July 1 through December 31. This allowed the cabezon season to proceed with no in-season actions being necessary for the first time in many years. As in recent years, the retention of canary rockfish (*S. pinniger)* and yelloweye rockfish (*S. ruberrimus)* was prohibited year round. In order to remain within the yelloweye rockfish impact cap (via discard mortality), the recreational groundfish fishery was restricted pre-season to inside of 30 fathoms from April 1 to September 30. Landings in the sport Pacific halibut fisheries are monitored weekly for tracking the status of catch limits. The majority of halibut continue to be landed in the central coast sub-area, with the greatest landings in Newport followed by Pacific City. Other ODFW management activities in 2013 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 2014.

Starting in July 2005, sampling of the shore and estuary fishery was discontinued due to a lack of funding. While salmon dominate estuary boat landings by weight, black rockfish make up the largest component of the estuary boat groundfish taken and surfperch made up the majority of shore-based catch by weight. Pacific herring historically have comprised the majority of both shore- and estuary-based boat landings by number of fish, but have not dominated catch in recent years. ODFW continues to pursue funding opportunities to reinstate the shore and estuary sampling program.

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2. Development of a Relational Database for Sport Groundfish State Observer Data

In 2013, MRP staff collaborated with National Marine Fisheries Service - Southwest Fishery Science Center scientists to develop a fully relational database for ODFW's Sport Groundfish Onboard Sampling Program. Beginning as a pilot program in 2001, from April through October, a portion of sport charter vessels were sampled using ride-along state observers for species composition, discard rates and sizes, location, depth and catch per angler (catch per unit effort or CPUE). The program became permanent in 2003. The program surveys the charter boat fleet targeting groundfish from seven of Oregon's major ports. Through 2012, observers have collected spatially-explicit catch and discard records for 12,377 fishing locations during 997 observed trips. Lengths of discarded fish caught by observed anglers are also recorded to monitor discards. Development of the database included quality control methods applied to data through 2012. Data from the new Access database are available by permission from ODFW. Information on the sampling program and the new database's development can be found in a NOAA technical memorandum (Monk et al. 2013).

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3. "No Floaters: Release At-Depth" Barotrauma Outreach Campaign

To reduce bycatch mortality of overfished rockfish species in the sport fisheries, ODFW conducted a large-scale outreach campaign in 2013 with the goal of increasing descending device usage among sport anglers. The effort, branded "No Floaters: Release At-Depth", distributed over 5,000 descending devices to all charter vessel owners and to the majority of sport boat owners who had previously targeted groundfish or halibut. In addition, several thousand stickers bearing an emblem of the brand (Figure 1) were distributed with the goal of making rockfish conservation an innate aspect of fishing culture. The

outreach campaign appeared to be highly successful. Prior to the campaign, fewer than 40% of anglers used the devices. After the campaign, the percentage of users increased to greater than 80%. The remaining 20% of non-users were surveyed to determine if and how they could be persuaded to use a descending device. Nearly all (~99%) said that they could be persuaded (for a variety of reasons), and the most common response (47%) was a need for visual proof rockfish surviving after being released with descending devices. In response, videos are being produced that show fish successfully swimming away after release with a device. Since the results of this outreach campaign appeared to be successful, the methods may provide a useful template for other descending device outreach campaigns or conservation based outreach campaigns, in general.

Figure 1: Picture of sticker provided to anglers as part of the "No Floaters" outreach campaign.


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4. Commercial Fisheries Monitoring and Sampling

Data from commercial groundfish landings are collected throughout the year and routinely analyzed by ODFW to provide current information on groundfish fisheries and the status of the stocks. This information is used in management, including in-season adjustments of the commercial nearshore fishery (Section B.5), which is conducted in state waters, and for participation in the Pacific Fisheries Information Network (PacFIN). Species composition sampling of rockfish and biological sampling of commercially landed finfish continued in 2013 for commercial trawl, fixed gear and hook and line landings. Biological data including length, age, sex and maturity status continued to be collected from landings of major commercial groundfish species.

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5. Oregon's Commercial Nearshore Fishery

The commercial nearshore fishery in Oregon became a limited-entry permit-based program in 2004, following the development of the open access nearshore fishery in the late 1990's. The commercial nearshore fishery exclusively targets groundfish, including black rockfish, blue rockfish (*S. mystinus*), cabezon, kelp greenling and an "other nearshore rockfish" complex, and is primarily composed of small vessels (< 10 meters) fishing in waters less than 30 fathoms. Major gear types include hook-and-line,

longline and fish pots. Fish landed in the commercial nearshore fishery supply mainly the live fish market, but also fresh markets as well, along the entire Oregon coast. Landings are regulated through two-month trip limits, minimum size limits and annual harvest caps for each species or species complex. Weekly updates on landings allow MRP staff to more effectively manage in-season.

Landings in the 2012 commercial nearshore fishery, along with logbook compliance, are detailed in the 2012 Commercial Nearshore Fishery Summary (Rodomsky et al. 2013). Overall, the majority of active permit holders are located on the southern Oregon coast, resulting in most of the catch consistently landed in southern Oregon ports, including Port Orford, Gold Beach and Brookings. Black and blue rockfish continued to comprise the majority of landings by weight in 2012. In-season management changes in 2012 included changes to two-month trip limits for black and blue rockfish, cabezon and kelp greenling.

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6. Continuation of Marine Fish Ageing Project at MRP

During 2013, age estimates for black rockfish were provided to recreational, commercial and Marine Reserve programs. A total of 2,757 black rockfish ages were produced, and an additional 517 test ages were made during the year. In addition to the black rockfish, age estimates were made of 505 blue rockfish (103 tested) for a concurrent maturity study.

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7. Rockfish Maturity Studies

ODFW continued research begun several years ago to produce histologically verified female maturity data for a variety of species for which maturity data is unavailable or outdated. Analysis was initiated on both copper and solid-type blue rockfish in 2013; however, work has not been completed on either species and will continue into 2014.

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8. Movement of Rockfishes Using Acoustic Telemetry

ODFW investigated whether holding yelloweye rockfish in delayed-release cages after tagging with internal and external acoustic tags would increase survival and facilitate a VPS-based movement study at Stonewall Bank, Oregon. All of the seven fish survived four days of cage confinement and various time periods following release. A few fish from both tagging methods survived long enough to provide some information on movements. However, these data indicated a larger scale of movement than expected on this large rocky reef, exceeding the VPS grid dimensions. One externally-tagged fish was re-sited with a baited video lander. This fish appeared to be in good condition, displayed behavior that was similar to the untagged fish observed at the same site and showed no adverse effects from tagging. The findings of a prior rockfish movements study at Cape Perpetua was also published in 2013 (Rankin et al. 2013).

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9. Development and Testing of a Video Lander for Studying Demersal Fishes on Nearshore Rocky Reefs

ODFW continued developing and testing a video lander as a survey tool for rocky reef fishes. Progress in 2013 included the development and testing of a baited, stereo-video high-definition lander system and a systematic evaluation of the effect of bait on fish counts and sizes. Bait increased the counts of many demersal fish species, as well as their "measurability" with the stereo-video system by bringing them closer to the cameras. Some species were seemingly unaffected by the presence of bait. A manuscript describing the lander system and the study results has been accepted (Hannah and Blume, in press).

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10. Reducing Eulachon Entrainment at the Footrope of a Shrimp Trawl

A third year of testing of footropes designed to reduce trawl entrainment of eulachon in shrimp trawls was completed in 2013. The study concluded that reduction of eulachon can be achieved via footrope modifications; however, shrimp catches are reduced by similar amounts with all of the tested designs. A report describing these study results is available at:

http://www.dfw.state.or.us/MRP/publications/#Research (Hannah and Jones 2013).

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11. Discard Mortality of Hook-and-Line-Caught Rockfish with Barotrauma

Additional cage-survival experiments in 2013 on yelloweye and canary rockfish were conducted, extending prior work at capture depths less than 64 meters (m) out to capture depths of up to 174 m. As capture depth increased beyond about 84 m, 48-hour survival of canary rockfish fell to about 25%, while yelloweye rockfish survival remained high. A manuscript describing the results from this study has been accepted (Hannah et al., in press).

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12. Marine Reserves in Oregon

*Status of sites*
Harvest prohibitions took effect on January 1, 2014 for two new marine reserves at Cascade Head and Cape Perpetua, bringing the total number of implemented no-take reserves in state waters to four. Harvest prohibitions at a fifth and final marine reserve site at Cape Falcon will begin on January 1, 2016, as mandated by Senate Bill 1510 passed by the 2012 Oregon Legislature.

Site management plans have been completed and are currently being implemented for the Redfish Rocks and Otter Rock Marine Reserves. Development of site management plans for the Cape Perpetua and Cascade Head sites is currently underway, with assistance from local communities. Management plans outline site-specific strategies for outreach, reporting on monitoring activities and results, ways to

improve compliance and enforcement, opportunities for community and public engagement and for addressing site specific management issues. The plans also highlight local community interests, priorities, and projects for the marine reserve site.

*Monitoring Program*
In 2013, ODFW continued collection of baseline ecological data in Cascade Head and Cape Perpetua Marine Reserves. These data were collected by ODFW staff in collaboration with partners at Oregon State University and the Oregon Coast Aquarium. Local fishing vessels were contracted when feasible to serve as research platforms.

*Survey Design:* Monitoring data were collected inside the no-take marine reserves and outside the reserves in control sites, hereafter referred to as comparison areas. Comparison areas were selected based on similar depths, habitats, oceanographic conditions and fishing pressure as the associated marine reserve. Unlike the reserve however, comparison areas remain open to fishing. Long-term monitoring of the marine community will be conducted identically in both the reserve and comparison areas to discern changes due to environmental variation from changes caused by marine reserve protection. Baseline data establishes a starting point, from which future changes will be monitored in both the reserve and comparison areas through time. To detect reserve effects, the analyses will focus on comparing the magnitude of temporal change from the baseline data for response variables such as fish and invertebrate diversity, size and abundance.

*Monitoring Conducted:* The ecological monitoring program focuses on three techniques to collect data: (1) underwater video surveys, (2) subtidal SCUBA surveys, and (3) fishery-independent hook-and-line surveys. In addition, temperature, salinity and dissolved oxygen are measured to track oceanographic metrics that could influence nearshore community composition. Five local fishing vessels (including both charter and commercial vessels) were contracted in 2013 to assist with monitoring efforts. In 2013, 82 stationary video surveys (approximately four minutes in duration) were completed at the Cascade Head site in rocky reef habitats, from which fish and invertebrate community composition was quantified. A towed video sled was used to survey soft bottom habitats and associated communities in the Cape Perpetua and Cascade Head marine reserve sites. Eight tows were completed in 2013 (surveying approximately 8 kilometers (km) of habitat) at Cape Perpetua, and 31 tows were completed at Cascade Head (surveying approximately 31 km of habitat). A remotely operated vehicle (ROV) equipped with high definition video was used to survey deep rocky reef communities in the Cascade Head site (approximately 10 km of reef habitat surveyed). Subtidal SCUBA surveys quantifying the seaweed, invertebrate and fish communities were initiated in the Cascade Head site in 2013, involving the training of an Oregon-based cadre of volunteer scientific divers. Both the training and surveys are ongoing. Lastly, hook-and-line surveys were completed in Cascade Head and Cape Perpetua sites as part of the baseline sampling effort. The third year of hook-and-line survey monitoring was completed in the Redfish Rocks site, in accord with long-term monitoring plans.

In 2013, hook-and-line surveys involved 75 volunteer anglers, 26 survey days and over 384 total angler hours. Over 3000 fishes representing 27 nearshore species were caught, weighed and total length recorded. From this data, CPUE, size frequency distribution and mean length per species was determined and compared for differences between the marine reserve and comparison area. Data from the underwater video surveys is currently being reviewed for fish and invertebrate diversity and abundance, as well as relationship of these organisms to spatially-explicit features of the habitat. These results will be compiled with 2012 sampling results in a monitoring report anticipated for April 2015.

Baseline survey summaries for Redfish Rocks and Otter Rock Marine Reserves (2010-2011) can be found in a monitoring report completed in March 2014.

More information, including copies of monitoring plans and reports, is available on the Oregon Marine Reserves website at www.oregonocean.info/marinereserves.

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13. North Coast Rocky Reef ROV Surveys

The Marine Habitat project conducted a survey of seafloor biota at six rocky reefs areas on the northern Oregon coast (Government Point, Cascade Head, Cape Kiwanda, Cape Meares, Manzanita and Cannon Beach) with a ROV during September and October of 2012. The objective was to conduct the first visual survey of these recently mapped rocky reef areas. The video from this survey was reviewed during the spring of 2013. Cascade Head is designated as one of three new marine reserve sites in Oregon state waters, and these efforts are part of the baseline data collection at this site, as mentioned in the previous section.

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14. Ocean and Estuary Shoreline Habitat Mapping

MRP staff are currently working on a project to map and classify Oregon's ocean and estuary shorelines using the ShoreZone mapping protocol. ShoreZone is a coastal habitat mapping and classification system in which aerial imagery is collected specifically for the interpretation and delineation of geomorphic and biological features of the intertidal zone and shoreline environment. The overall goal of ShoreZone mapping is to provide a representation of the coastal and estuarine shoreline morphology and a basic framework for the biophysical characterization of the coast. This mapping protocol has been used extensively in Alaska, British Columbia and Washington, and is now being extended into Oregon. Aerial image interpretation and mapping, has been completed for 80% complete as of 2013. Staff obtained a grant to complete the final 20% in 2014. The aerial photography is viewable at http://www.coastalatlas.net/shorezone/.

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C. BY SPECIES

1. Black Rockfish PIT Tagging

Black rockfish comprise approximately 50% of the catch in Oregon's recreational groundfish fishery, making this species an important component of managing the fishery. Historically, assessments of Black Rockfish have relied on CPUE data from recreational fisheries to estimate the trend of relative population abundance. However, these data are not robust to sampling bias or to changes in the fishery, such as effort distribution and regulations. The need to independently estimate exploitation rates and population abundances for black rockfish off Oregon prompted the development of a mark-recapture program using passive integrated transponder (PIT) tags. Tags are injected in the hypaxial musculature below the gill arches, determined to be the best site by a previous PIT tag retention study by ODFW. Since PIT tags are invisible to anglers, there is no tag non-reporting bias and tag detection

rates can be estimated directly. The program has been ongoing since 2002. The minimum size for tagging was increased from 29 centimeters (cm) to 32 cm in 2007.

In 2013, PIT tags (12 millimeters (mm) by two mm) were inserted in 2,767 black rockfish over 21 days of fishing near Newport, Oregon. Categorical barotrauma symptoms of each fish tagged were recorded. Fish with significant barotrauma symptoms that were unable to submerge when released were recompressed using a descender device and released at depth. The total number of black rockfish ≥ 32 cm tagged since the project began in 2002 is now 38,578. Carcasses of black rockfish are counted and electronically scanned for tags year-round upon being landed by recreational fishers on the central coast. During the study recovery year (July 1, 2012 to June 30, 2013), 51,921 black rockfish were landed in Newport and 77.12% were scanned for tags. Likewise in Depoe Bay, 35,478 black rockfish were landed and 50.29% were scanned for tags. In 2012/2013, 402 tags were recovered, all in Newport. Tags were recovered from all twelve tagging cohort years. Estimates of annual exploitation rate derived from this project vary from 3.15% to 4.93% and are less than expected assessment values of approximately 5%. The annual exploitation rate in 2011/2012 was 3.15%. Exploitation rates for 2012/2013 will be available in 2014. Annual population estimates of black rockfish in the program area range from 1.17 to 1.89 million fishery-sized fish.

Black rockfish in Oregon and California were assessed in 2007. Results from this study were included in the 2007 assessment as an index of abundance for the assessed population. Based on the input of the assessment author and reviewers, this index will likely be incorporated in future assessments of black rockfish.

In early 2014, due to the lack of federal funding, tagging operations for this project has been terminated. Tag recovery collection will continue through at least the end of June 2014. Because these tags will last for decades within the population, it may be possible to recover tags in the future and use this data to make further estimates if there is adequate funding and staff to continue scanning black rockfish carcasses and analyzing data. The 2013 annual progress report for this project summarizes the data collected during the past 12 years (Krutzikowsky et al. 2014).

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2. Kelp greenling growth and maturity work

In 2012, ODFW renewed efforts to fill in data gaps on the growth and maturity of kelp greenling in Oregon waters. A review of data collected to date indicated that additional samples of small kelp greenling (<25 cm) were needed. In 2013, ODFW continued to fill in data gaps on the growth and maturity of kelp greenling in Oregon waters. Efforts to collect fish through fishing, beach seining, and trapping yielded 74 kelp greenling ≤27 cm. Nine fish were collected in Siletz Bay, four from Alsea Bay and 61 from Yaquina Bay on the central Oregon coast. Fish ranged from 6.9 to 27.0 cm with weights from 2.8 to 251.6 grams (g). Otoliths were collected from all fish. Thirty-five of the 74 fish (47%) were females from which ovary samples were collected. Ovary weights ranged from 0.0015 to 0.4678 g. Maturity of female fish has been determined by ODFW staff and is now being validated by NOAA NWFSC staff. A total of 86 juvenile kelp greenling samples have now been collected. Additional sampling efforts are anticipated to continue in 2014.

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D. PUBLICATIONS

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E. PROJECTS PLANNED FOR YEAR 2014

1. Maturity Studies

Maturity data for solid-type blue rockfish and copper rockfish will be finalized and summarized during 2014.

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2. Testing a Video Lander for Surveying Rocky Reefs

Work planned for 2014 includes an evaluation of how light color (orange-filtered versus white) and how ambient light levels influence avoidance of the video lander by various demersal fish species.

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3. Eulachon Bycatch Reduction Studies

In a cooperative study with Mark Lomeli of PSMFC, ODFW will be testing whether Lindgren-Pitman lights can be used to increase the exclusion efficiency of rigid-grate bycatch reduction devices for eulachon.

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4. Discard Mortality of Rockfishes

ODFW will be investigating several aspects of the health of yelloweye rockfish that have experienced capture-related barotrauma. One experiment will utilize an on-bottom observation cage to evaluate the post-recompression behavior of yelloweye rockfish. An additional experiment will employ longer term holding and veterinarian-led necropsies of yelloweye rockfish that have experienced, and recovered or died from capture-related barotrauma.

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5. Nearshore Video Lander and CTD Survey

In 2014, ODFW will use a video lander and a Seabird CTD to study habitat characteristics and demersal fish populations on nearshore rocky reefs. The study area will range from Cape Foulweather to Alsea Bay, and offshore to about 30 fathoms. Approximately 200 individual video lander drops are planned, with 200 associated CTD casts. Observations of seabirds and marine mammals will also be collected during this survey.

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6. Marine Finfish Ageing

Ageing of commercially and recreationally captured black rockfish otoliths will continue in 2014. Ageing of recreationally caught kelp greenling (approximately 1,000 otoliths) will resume this year. Ageing female copper rockfish otoliths were completed in early 2014 (260 ages with an additional 52 tests).

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