OREGON'S GROUNDFISH FISHERIES AND INVESTIGATIONS IN 2009

OREGON DEPARTMENT OF FISH AND WILDLIFE

2010 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 coast-wide. MRP is headquartered at Newport in the Hatfield Marine Science Center, with field stations at the coastal cities of Astoria, Tillamook, Charleston, Gold Beach, Brookings, and Corvallis. It 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 70 seasonal or temporary positions. The current annual program budget is approximately $8 million, with about 70 percent 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 30%.

B. MULTISPECIES STUDIES

1. Sport Fisheries Project

Sampling of the ocean boat sport fishery by MRP's Ocean Recreational Boat Survey (ORBS) continued in 2009. Starting in November 2005 major ports were sampled year round. We continue to estimate catch during unsampled periods in minor ports based on the relationship of effort and catch in minor ports relative to major ports observed during summer-fall periods when all ports are sampled. Black rockfish remains the dominant species caught in the ocean boat fishery. Lingcod, several other rockfish species, cabezon and kelp greenling are also commonly landed. Oregon's fishery for Pacific halibut continues to be a very popular, high profile fishery requiring International Pacific Halibut Commission (IPHC), federal, and state technical and management considerations.

The ORBS program continued species composition and biological sampling (length and weight) of groundfish species at Oregon coastal ports during 2009. As part of a related marine fish research project active since 2003, otoliths were gathered from several species of nearshore groundfish including rockfish species, kelp greenling and cabezon, in addition to lingcod fin rays, for ageing studies. Staff also scanned Pacific halibut for PIT tags. Starting in 2001, from April through October, a portion of sport charter vessels have been sampled at sea for species composition, discard rates and sizes, location, depth and catch per angler (CPUE) using ride-along samplers.

Starting in 2003, the harvest of several groundfish species has been monitored inseason for catch limit tracking purposes. Inseason action was taken in 2009 to prohibit retention of cabezon by anglers fishing from boats. The shore fishery remained open. As in recent years the retention of canary rockfish and yelloweye rockfish was prohibited year round. Landings in the sport Pacific halibut fisheries were monitored weekly for tracking the status of catch limits. The majority of halibut continue to be landed into the central coast sub-area, with Newport the top port for landings. Other ODFW management activities included participation in the U.S. West Coast Recreational Fish International Network (RecFIN) process, data analysis, and public hearings to discuss changes to the management of Pacific halibut and groundfish fisheries for 2010 and 2011.

Starting July 2005, sampling of the shore and estuary fishery was discontinued due to a lack of funding. 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. Salmon dominate estuary boat landings by weight. Pacific herring historically have made up the majority of both shore-based and estuary boat landings by number of fish, but have not dominated catch in recent years. ODFW is pursuing several funding opportunities to reinstate the shore and estuary sampling program.

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2. Commercial Fisheries Sampling Project

Data from commercial goundfish 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 inseason adjustments of the commercial nearshore fishery, which is conducted in state waters. Species composition sampling of rockfish and flatfish continued in 2009 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 (Table 1).

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Table 1. Fish ticket landings, age and length data collected for major groundfish species

COMMON NAME	FISH TICKET METRIC TONS	NUMBER OF AGEING STRUCTURES COLLETED	NUMBER OF LENGTHS COLLECTED
Flatfish			
Arrowtooth flounder	2,842	1,269	1,421
Dover sole	7,457	2,327	3,147
English sole	171	961	1,051
Pacific sanddab	185	830	930
Petrale sole	1,013	1,671	2,952
Rex sole	389	1,540	1,780
Sand sole	48	440	440
Starry flounder	5	253	253
Other sole[1]	1	119	149
Rockfish			
Black rockfish	134	893	2,961
Blue rockfish	2	147	152
Yellowtail rockfish	34	636	852
Nearshore rockfish[2]	11	99	533
Shelf rockfish[3]	11	935	967
Slope rockfish[4]	121	3,641	3,711
Thornyhead species[5]	1,517	3,244	3,934
Other fish			
Cabezon	30	21	415
Greenling species[6]	21	35	1,147
Lingcod	105	242	1,049
Longnose skate	678	417	596
Other skate[7]	340	147	147
Pacific cod	51	34	36
Pacific grenadier	44	160	160
Pacific hake	28,571	1,139	5,139
Sablefish	3,304	3,591	3,851
Spiny dogfish	55	5	5
Rebuilding species			
Canary rockfish	3.4	489	490
Darkblotched rockfish	89.7	2,620	2,818
Pacific ocean perch	61.2	1,963	2,140
Widow rockfish	49.1	936	937
Yelloweye rockfish	0.4	19	19

/1 Other sole species are butter, curlfin, and rock sole
/2 Nearshore rockfish species are black and yellow, China, copper, gopher, grass, and quillback rockfish
/3 Shelf rockfish species are bocaccio, chilipepper, cowcod, greenspotted, greenstriped, pygmy, redstripe, rosethorn, rosy, silvergrey, speckled, stripetail, tiger, and vermilion rockfish
/4 Slope rockfish species are aurora, bank, blackgill, redbanded, rougheye, sharpchin, shortraker, splitnose, and yellowmouth rockfish
/5 Thornyhead species are longspine and shortspine thornyhead
/6 Greenling species are kelp, rock, and whitespotted greenling
/7 Other skate species are big, black, california, sandpaper, and starry skate

3. Developmental Fisheries Project

The Developmental Fisheries Program (DFP) and Developmental Fisheries Board (Board) were created by the 1993 Oregon State Legislature (Legislature) with the responsibility of making recommendations to the Oregon Fish and Wildlife Commission (Commission) on developing fisheries. State policy gives the Commission the authority to institute a management system for developmental fishery resources that addresses both long term commercial and biological values and that protects the long term sustainability of those resources through planned commercial development when appropriate (ORS 506.455).

In 2007, funding and staff-time was provided by the Legislature to evaluate the DFP with the overarching goal to make the program more efficient and cost-effective and while continuing to allow for the exploration and development of new, sustainable fisheries. Steps of the evaluation included a survey of the past and current permit holders and board members, formation and meetings of a diverse and productive Board, review and assessment of active developmental fisheries, historical logbook assessment, a fishery independent research project, and assessment of the program's structure including funding sources, Board, staffing, and data storage. At-sea observing and market sampling for these fisheries began in March, 2008 and continued the duration of the evaluation, through June, 2009. These sampling efforts yielded information on landed catch and discard of hagfish and spot prawns, including length/weight, sex, and maturity data.

For the 2010/11 biennium the DFP received insufficient funding to continue a staffed and functioning program. At the end of 2009 the program was placed in a temporary suspension mode with no staff or funding to actively manage or assess any of the fisheries in the program, including the hagfish fishery. The Oregon Fish and Wildlife Commission decided to place four out of the five 2009 permitted fisheries on the Developmental Species B list, which means all effectively became open access with no permitting or landing restrictions for 2010. These fisheries include spot prawn, hagfish, ocean anchovy and ocean herring.

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4. Marine Finfish Ageing Unit

In 2009, the following primary tasks were completed by the age reading unit: the completion of production age reading for cabezon otoliths collected through 2008 for the recreational fishery and the maturity study, completion of production age reading for all kelp greenling samples collected through 2008, some commercial black rockfish production age reading, and subsample selection of all commercial and recreational lingcod fin rays for production age reading by WDFW. A summary report for the cabezon age reading project was compiled for future reference. The report included notes on why the thin-sectioning method was chosen, specific methods used, age reading guidelines, age reader precision statistics, and reference images.

Additionally, two new age and growth research projects were initiated in 2009. We are testing the usefulness of otoliths as an alternative structure for lingcod age determination by comparing the age data and precision statistics for otoliths with similar data for fin ray age structures, which require a significantly longer amount of time to collect and prepare. We are also working on a new and improved method for preparing longnose skate vertebral centra for age reading.

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5. Marine Reserves Project

In 2009, the Oregon legislature passed marine reserves legislation (HB 3013) that directs state agencies to implement marine reserve recommendations made by the Oregon Ocean Policy Advisory Council (OPAC), provides for funding of marine reserves work, and requires ODFW to develop a marine reserves work plan.

The specific call of the legislation is to implement the OPAC recommendations by:
(1) Adopting rules to establish two marine reserve pilot sites;
(2) Studying and evaluating potential marine reserves at three additional areas; and
(3) Supporting the development of a new marine reserve proposal at one final area.

ODFW has hired five marine reserves staff to work on implementation of HB 3013, and a marine reserves work plan was finalized in November 2009, for work to be conducted during the 2009-2010 biennium. A summary of completed and planned work follows.

Pilot sites:

- The two pilot sites have been established through state agency rule making. Harvest prohibitions will take effect on June 30, 2011.
- ODFW staff are working with scientific experts and pilot site community teams to develop biological and socioeconomic baseline studies and plans for long term monitoring at each site.
- ODFW staff are working with pilot site community teams and other agency staff to develop management plans for each site. Management plans will: incorporate biological and socioeconomic monitoring plans, include strategies for education and outreach, and include strategies for compliance and enforcement.
- Biological and socioeconomic baseline studies and year zero data for long term monitoring will be conducted starting in summer 2010 and completed by June 2011.
- ODFW will present a progress report to an interim legislative committee in November 2010.
- Reports on baseline studies and year zero of monitoring will be completed by June 2011.

Evaluation sites:

- Community teams representing diverse and balanced stakeholder interests, as prescribed in HB 3013, have been formed for each of the three evaluation sites and have been meeting since January 2010.
- Each team is to evaluate the original marine reserve site proposal recommended by OPAC, as to whether the site meets the sideboards established by Governor's Executive Order 08-07: the site is large enough to allow scientific evaluation of ecological benefits, but small enough to avoid significant economic or social impacts.
- State agency staff will compile and provide existing data and information to assist the community teams in their evaluation. New data may be collected depending on information needs, securing additional funds, and time.
- Community teams are to determine whether adjustments to the original proposed site must be made to meet sideboards.
- Community teams are to forward a final site recommendation to ODFW by October 2010.
- ODFW is to present a progress report to an interim legislative committee in November 2010.

Proposal site:

- The International Port of Coos Bay is leading a community effort to potentially propose a marine reserve site for further evaluation.

Contact: Cristen Don (cristen.n.don@state.or.us)

6. Marine Habitat Project

a. Hypoxia effects on seafloor communities

In 2009, personnel from ODFW's Marine Habitat Project partnered with the Partnership for Interdisciplinary Study of Coastal Oceans (PISCO) to document the ecological effects, including disturbance and recovery, of recently discovered hypoxia events on seafloor communities. We conducted a survey of seafloor biota offshore of Cape Perpetua (south of Newport) with a Remotely Operated Vehicle (ROV) during October 2009. In concert with PISCO's efforts to collect oceanographic data (e.g., temperature, salinity, dissolved oxygen content), which documented the spatial extent and degree of hypoxia in the study area over a seasonal time scale, we collected video footage of organisms occurring on the seafloor along a previously-established (i.e. "fixed") transect line. Our objective was to continue the nearly-annual time series of ROV video data along a fixed transect line. Hypoxic events did occur on the inner shelf in 2009, but the extent and duration of these events were not as extreme as in prior years (e.g., 2002 and 2006). We were able to document post-hypoxic conditions, and qualitative observations indicated that no significant die-offs of sessile or mobile species were detectable in 2009. We have monitored the Cape Perpetua reef complex regularly since 2000.

Contact: Mike Donnellan (Michael.D.Donnellan@state.or.us)

b. Resolving spatial scales of nearshore rocky reef groundfish-habitat relationships

We completed a ROV survey of fish-habitat affinities at Siletz Reef (offshore of Lincoln City in central Oregon). This study was undertaken to further progress towards our ultimate goal of habitat-based stock assessments for nearshore fish species. Using high-resolution bathymetry data and several bathymetry-derived explanatory variables (e.g., slope, rugosity, bathymetric position index) aggregated at varying spatial scales and species "presence" data gleaned from ROV surveys, we modeled the probability of occurrence of common groundfish species in unsampled areas of the reef. Models were constructed using Generalized Linear Models and General Additive Models, but model performance overall was relatively poor. Several possible reasons for the overall lack of model fit exist, such as improper specification, unknown important variables, and small sample size. A report on this work was completed during June 2009, and we plan to re-visit these analyses and contract with professional biostatisticians during late 2010.

Contact: Mike Donnellan (Michael.D.Donnellan@state.or.us)

c. Remotely Operated Vehicle survey of habitat and fish communities at Otter Rock

We surveyed benthic habitat and fish communities offshore of Otter Rock, a marine reserve slated for implementation in 2010, which is located on Oregon's central coast between Lincoln City and Newport. This survey was conducted in partnership with the United States Geological Service (USGS) and Oregon State University's Seafloor Tectonics

Laboratory. USGS conducted a multibeam bathymetry survey of the area during summer 2008, and we conducted ground-truthing of the remote sensing data with our ROV during 2008 and conducted surveys of seafloor biota during 2008 and 2009. Of particular note was the discovery of a dense sand dollar bed with dimensions of approximately 5 km alongshore by 1 km wide. To our knowledge, this is the first documentation of extensive sand dollar beds offshore of Oregon. A written report for this work was completed during December 2009.

Contact: Mike Donnellan (Michael.D.Donnellan@state.or.us)

7. Groundfish Research Project

a. Maturity studies

We 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. This work continued in 2009, with a focus on finalizing work on aurora and yelloweye rockfish and cabezon. An agency report is available summarizing the yelloweye rockfish and cabezon work (Hannah et al. 2009). A manuscript summarizing the aurora rockfish work is in review at Environmental Biology of fishes. Additional sampling of Pacific ocean perch was also conducted to examine interannual variation in abortive maturation (skip spawning) as a function of maternal age.

Contact: Bob Hannah (bob.w.hannah@state.or.us)

b. Testing a "motion sensing" acoustic tag

We completed a brief study of surgically implanted "motion sensing" acoustic tags in two cabezon, released back into a passive receiver grid. The data showed that accelerometer tags could be very useful in determining survival of strongly demersal fish and provided better data for evaluating diel cycles in activity than depth data. No agency report is yet available for this brief study.

Contact: Bob Hannah (bob.w.hannah@state.or.us), or Polly Rankin (polly.s.rankin@state.or.us)

c. Movement of rockfishes using acoustic telemetry

We completed most of the data analysis for our multi-year acoustic telemetry study of demersal rockfish movements at Siletz Reef, Oregon. A manuscript is in preparation comparing the spatial and vertical movements of seven species of rockfish on this high-relief rocky reef on the open Oregon coast.

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d. Discard mortality of rockfishes

We continued field work on 48 hour discard survival of a wide array of rockfish species using the single-fish, fish-friendly, caging system developed in 2008. To date, we have

collected depth-specific discard survival information on 218 specimens from 8 different species, spanning a depth range of 60-210 ft. This work continues in 2010.

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e. Development and testing of a video lander for studying demersal fishes on nearshore rocky reefs.
We began a project to determine the utility of using a video lander to study the abundance and distribution of demersal fish living on nearshore rocky reefs. Work in 2009 included building and testing of a prototype, followed by two revisions to the design and subsequent testing on a wide variety of rocky habitats. To date, it appears that a lander may be a useful tool for quickly and inexpensively evaluating presence/absence of many demersal rockfishes as well as primary and secondary habitat type on nearshore rocky reefs. The data generated are much less comprehensive than data from ROV surveys, but can be collected during very brief weather windows, in poorer weather and off much smaller research platforms.

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f. Effects of barotrauma on rockfish physiology and survival in the laboratory
Alena Pribyl of Oregon State University completed her dissertation research on the physiological effects of barotrauma in Pacific rockfish. To date, one published paper has been produced from this work (Pribyl et al. 2009) and an additional two manuscripts are in preparation.

Contact: Alena Pribyl (OSU) or Contact: Bob Hannah (bob.w.hannah@state.or.us)

g. Demersal fish movements at a low-relief rocky reef subject to frequent hypoxia
We began work in 2009 on a planned 2010 study that will use acoustic telemetry methods to study the movements of demersal fishes at a low-relief rocky reef structure off Cape Perpetua, Oregon, where seasonal hypoxia has been documented for several years. The aspects completed in 2009 include initial receiver grid and mooring design and range testing.

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h. Evaluating selective flatfish trawls
Work in 2009 focused on analysis of data collected in 2006-2008 using a DIDSON imaging sonar to study fish behavior in front of the trawl footrope as a function of light availability. This was a cooperative project with Waldo Wakefield and Mark Lomelli of NMFS Northwest Fishery Science Center.

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i. Shrimp trawl impacts on mud seafloor macroinvertebrate populations
In 2008, we completed publication of our 2007 study that used an ROV to study impacts of shrimp trawls on macroinvertebrate populations in mud habitats typically trawled by ocean shrimp fishers (Hannah et al. 2010). The primary focus of the study was to complete a baseline survey of the mud habitat areas in the vicinity of Nehalem Bank that have recently been closed to trawl gear, with the hope of monitoring changes over time as these areas recover from historical trawl impacts.

Contact: Bob Hannah (bob.w.hannah@state.or.us)

j. Tests of Bycatch Reduction Devices (BRDs) with reduced vertical bar spacing
We conducted a brief field study in 2009 that examined how reduced spacing of vertical bars in rigid-grate BRDs reduced bycatch in shrimp trawls, with special emphasis on bycatch of eulachon smelt. Due to damage to one of the pair of nets, along with extremely low abundance of eulachon on the shrimp grounds, results were inconclusive. The data collected may prove useful if combined with additional hauls from future work.

Contact: Bob Hannah (bob.w.hannah@state.or.us)

C. BY SPECIES

1. Aurora rockfish maturity, growth chronology, and age validation

Research results from our 2008 study on aurora rockfish growth chronology and age validation were combined with aurora rockfish maturity results for a manuscript entitled, 'Using cross-dating techniques to validate ages of aurora rockfish (Sebastes aurora): estimates of age, growth and female maturity'. This paper has been accepted for publication by the Environmental Biology of Fishes. The research project applied image analysis and dendrochronological techniques to indirectly validate the bands on aurora rockfish otoliths as "year marks". The study also showed a strong positive correlation between interannual otolith growth and the Northern Oscillation Index and a strong negative correlation with the Pacific Decadal Oscillation and a 1 year index of sea level. Growth chronology and cross-dating was also attempted for redbanded rockfish otoliths and the results, which are similar to those found for aurora rockfish, were presented at the International Otolith Symposium.

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2. Black rockfish PIT tagging

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 problems of sampling bias, or to changes in fishing distribution, bag limits, or fishing power. The need to independently estimate exploitation rates and population abundances for black rockfish off Oregon prompted us to investigate the use of passive integrated transponder (PIT) tags for a mark-recapture program. Because PIT tags are invisible to anglers, there is no tag non-reporting problem, and tag detection rates can be estimated directly. Tags were injected in the hypaxial musculature below the gill arches, determined to be the best site by a previous PIT tag retention study. At tagging, categorical barotrauma symptoms were noted and fish with significant barotrauma symptoms were recompressed by immediate submersion in a cage and

released at depth. In 2009, 4058 PIT tags (12mm x 2mm) were inserted during 20 days of fishing near Newport, Oregon, bringing the total number of black rockfish tagged to 25,741 since the project began in 2002. Carcasses of black rockfish are counted and electronically scanned for tags year-round upon being landed by recreational fishers. In 2009, 88% of the black rockfish landed in Newport and 41% of those landed in Depoe Bay were scanned for tags. We recovered 391 tags in Newport and 2 tags in Depoe Bay. All eight tag cohort years were recovered. We have had good recoveries each year and exploitation rates are within expected assessment values of approximately 5%. However, survival rate estimates remain poor and imprecise, likely due to problems with non-mixing. If catch rates allow, the number of fish tagged in 2010 will increase in an effort to increase tag recoveries and decrease variation in parameter estimates. Black rockfish populations off Oregon and California underwent a full assessment in 2007. Results from this study were included in the 2007 assessment as an index of abundance for the assessed population and may be incorporated in future assessments.

Contact: Greg Krutzikowsky (greg.krutzikowsky@state.or.us)

3. Yellowtail rockfish Exempted Fishing Permit

In 2009 the Oregon Chapter of the Recreational Fishing Alliance (RFA-OR) in conjunction with the Oregon Department of Fish and Wildlife (ODFW) received an exempted fishing permit (EFP) from the National Marine Fisheries Service (NMFS) to test experimental recreational fishing gear to target under-utilized yellowtail rockfish while avoiding the overfished yelloweye rockfish on select charter fishing trips. The experimental terminal tackle gear has a long leader (30-60 feet) between the weight and hooks, with a float to keep the line vertical in the water column. Ten charter vessels from three sections of the Oregon coast were to conduct three trips each over the course of the fishing season, to distribute trips spatially and temporally. ODFW supplied onboard samplers for each trip to gather information on total catch, gear set up, location, and to collect biological information from retained fish.

Due to several delays, only 13 out of the anticipated 30 trips were conducted in 2009, on five vessels out of three ports. During those 13 trips, 137 anglers, experienced and novice alike, participated in the project catching 1,521 yellowtail rockfish, 312 widow rockfish, 80 canary rockfish, 0 yelloweye rockfish, 31 other rockfish and 17 other non-rockfish. Most anglers and charter captains thought the gear worked well, however it was easy to get two or more lines tangled. RFA-OR and ODFW have received an EFP to continue this work in 2010, hopefully completing more trips out of more ports.

Contact: Lynn Mattes (541) 867-0300 ext. 237 (Lynn.Mattes@state.or.us)

D. PUBLICATIONS

Donnellan, M., A. Merems, W. Miller. 2009. Resolving spatial scales of fish-habitat relationships on nearshore rocky reefs. Final report for State Wildlife Grant program, Grant Number T-17. 110 pp.

Donnellan, M., A. Merems, W. Miller. 2010. South Coast remotely operated vehicle survey: habitat and fish communities at Otter Rock and Cape Foulweather. Final report to the

Department of Land Conservation and Development in fulfillment of 2007-08 Coastal Zone Management Section 309 Grant, Cooperative Agreement PS07066-04.

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Hannah, R. W., M. T. O. Blume and J. E. Thompson. 2009. Length and age at maturity of female yelloweye rockfish (*Sebastes rubberimus*) and cabezon (*Scorpaenichthys marmoratus*) from Oregon waters based on histological evaluation of maturity. Oregon Dept. Fish Wildl., Information Rept. Ser., Fish. No. 2009-04. 29 p.

Pribyl, A. L., C. B. Schreck, M. L. Kent and S. J. Parker. 2009. The differential response to decompression in three species of nearshore Pacific rockfish. North American Journal of Fisheries Management 29:1479-1486.

Thompson, J.E. and R.W. Hannah. (in press). Using cross-dating techniques to validate ages of aurora rockfish (Sebastes aurora): estimates of age, growth and female maturity. Environ. Biol. Fish.

E. PROJECTS PLANNED FOR YEAR 2009:

1. Remotely Operated Vehicle (ROV) survey of habitat and fish communities at Redfish Rocks Marine Reserve and Marine Protected Area and associated reference sites

We plan to survey benthic habitat and fish communities at Orford Reef and Redfish Rocks Reef on Oregon's south coast. Orford Reef is a very important area for Oregon's state managed commercial groundfish fisheries and Redfish Rocks has been proposed as a state marine reserve. We have conducted ROV surveys in these areas previously, but for various reasons we have not yet been able to complete an exhaustive study of these reefs.

Contact: Mike Donnellan (Michael.D.Donnellan@state.or.us)

2. Kelp canopy distribution and biomass survey of Oregon's kelp beds

We plan to conduct a state-wide survey of canopy-forming kelp resources in Oregon during the seasonal peak in canopy abundance in fall 2010. This survey will involve high-resolution near-infrared aerial photography and vessel-based biomass sample collections. Kelp forests are highly productive and ecologically important habitats in Oregon's nearshore environment, and we plan to assess the extent to which the canopy distribution and biomass have changed since the last state-wide aerial survey in 1990 and targeted surveys of south coast reefs in 1996-1999.

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3. Hypoxia effects on seafloor communities

With our collaborators associated with Oregon State University's Partnership for Interdisciplinary Study of Coastal Oceans program, we obtained an Oregon Sea Grant research grant during 2009 to continue and expand our time-series of ROV surveys and oceanographic measurements to document the ecological effects (e.g., community recovery) of recently discovered hypoxia events on seafloor communities. We plan to conduct ROV and oceanographic surveys at 3 sites along a hypoxia gradient from Cape Perpetua (south of Newport) to Siletz Reef (off Lincoln City) 3 times per year (pre-, during, and post-hypoxia season) for 2 years (2010-11). Other important components of this work include an analysis of fisheries data relative to hypoxia events, and outreach to the fishing community and the general public, the latter via development of an exhibit at the Hatfield Marine Science Center's visitor center.

Contact: Mike Donnellan (Michael.D.Donnellan@state.or.us)

4. Yelloweye retention EFP

The Pacific Fishery Management Council approved ODFW's request for an EFP to allow limited retention of yelloweye rockfish in Oregon's recreational charter boat fishery for the purpose of collecting age and maturity information. Vessels participating in the EFP will be required to turn over all retained yelloweye to a dedicated ODFW sampler in a whole and intact condition, and the total sample size will be limited to 100 fish. Currently the main source of this data is the IPHC setline survey, which does not capture any yelloweye less than about 40 cm in length. In addition to informing age based selectivity for the recreational fishery, we hope the smaller size of fish encountered in the recreational fishery will inform the lower portion of growth and maturity curves, and possibly provide a recruitment signal for the yelloweye stock assessment. Field work will be carried out over the summer of 2010.

Contact: Troy Buell (troy.v.buell@state.or.us)

5. Photograph based length estimation of recreational discards

Information on the size of fish discarded in Oregon's recreational bottomfish fishery is currently limited to data from 70-100 observed charter boat trips per year, and no data is available for the recreational halibut fishery. The goal of this project is to provide recreational fishermen the tools to document the size and potentially species composition of discarded fish. We plan to distribute known sized reference objects and cameras to both the charter and private boat fleets targeting bottomfish or halibut, and request that they photograph discarded fish with the reference object in the frame. After correcting for perspective distortion, the size of the fish may be estimated using the ratio of the reference object size and fish size measured in the photograph. Field work will be carried out over the summer of 2010.

Contact: Troy Buell (troy.v.buell@state.or.us)

6. Expanded IPHC setline survey

We plan to fund an additional 20 stations on the International Pacific Halibut Commission's (IPHC) 2010 setline survey. All stations will be located on the shelf in rocky habitat as defined by PFMC Essential Fish Habitat (EFH) designations. Stations will be randomly located, with the restriction that no station will be fished within 1.5 nautical miles of a standard IPHC station (measured between the station center points) in an effort to avoid bias associated with potential

localized depletion of demersal rockfish species at annually fished stations. The objective of this project is to generate an index of abundance for assessing the yelloweye rockfish stock off Oregon. This is an extension of work carried out on the 2008 IPHC survey, and will likely continue on a biennial or triennial schedule.

Contact: Troy Buell (troy.v.buell@state.or.us)

7. Discard mortality of rockfishes
We plan to continue the cage survival work carried out in 2009 with a wide variety of rockfish species to increase sample sizes for most nearshore species and depth bins.

Contact: Bob Hannah (bob.w.hannah@state.or.us), or Polly Rankin (polly.s.rankin@state.or.us)

8. Testing a video lander on nearshore reefs
We plan to do additional tests of our video lander to determine how the device performs for surveying demersal fishes on nearshore rocky reefs off Oregon across different seasons. A second test of this device to try and evaluate an MPA boundary is also planned.

Contact: Bob Hannah (bob.w.hannah@state.or.us) or Matthew Blume (matthew.blume@state.or.us)

9. Cape Perpetua acoustic studies
We will use acoustic telemetry methods to study the movements of demersal fishes at a low-relief rocky reef structure off Cape Perpetua, Oregon, where seasonal hypoxia has been documented for several years. If hypoxia develops, we hope to determine how demersal fish respond to it. We also hope to estimate home range during non-hypoxic conditions.

Contact: Bob Hannah (bob.w.hannah@state.or.us), or Polly Rankin (polly.s.rankin@state.or.us)

10. Maturity studies
We plan on collecting additional maturity samples in 2010 from female Pacific ocean perch for a longterm study of abortive maturation. We also hope to draft a report summarizing histology-based maturity curves for quillback rockfish.

Contact: Bob Hannah (bob.w.hannah@state.or.us)

11. Shrimp trawl impacts on mud seafloor macroinvertebrate populations
In 2010, we plan to use underwater video equipment to study interactions between shrimp trawl groundlines and epibenthic macroinvertebrates. Based on the video work, a comparison between trawl nets fishing a control and a modified groundline will be conducted to investigate the effects on shrimp catch and bycatch from a more “bottom-friendly” groundline.

Contact: Bob Hannah (bob.w.hannah@state.or.us)

12. Reducing eulachon entrainment at the footrope of a shrimp trawl
We plan to conduct some experiments investigating how the forward belly and/or the footrope configuration of shrimp trawls can be modified to reduce entrainment of eulachon smelt.

Contact: Bob Hannah (bob.w.hannah@state.or.us)