13 Demersal Shelf Rockfishes (Executive Summary)

by

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13.0 Introduction

Gulf of Alaska rockfish have been moved to a biennial stock assessment schedule to coincide with new survey data. In even years we will present an executive summary with the previous year's assessment parameters and catch updates from the current year. This year we present an executive summary with updated catches only. Methods for estimating unreported mortality associated with the commercial halibut fishery and the recreational fisheries are presented. Last year's full stock assessment is on the web (O'Connell et al. 2005, (http://www.afsc.noaa.gov/refm/docs/2005/GOAdemersalrock.pdf).

We continue to use a habitat-based stock assessment. Total yelloweye rockfish biomass is estimated for each management area in the Southeast Outside subdistrict (SEO) as the product of density, mean fish weight, and area estimates of DSR habitat. Yelloweye rockfish density is derived using line transects conducted from an occupied submersible. A harvest rate of F=M (0.02) is used to set ABC. The recommended ABC for yelloweye rockfish is increased 4.2% to account for other species in the assemblage.

13.1 Summary of Major Changes

The only new information available is updated catch. No new surveys were conducted in 2006 and there was no directed commercial fishery so updated fish weight information is also not available. The table below presents the 2005 assessment information used to set the ABC and overfishing levels for 2006.

2005 for 2006	EYKT	CSEO	NSEO	SSEO	Total
Survey year	2003	2003	2001	2005	
Density yelloweye/km^2	3557	1865	1420	2196	
CV(D)	0.172	0.1122	0.3144	0.1716	
Avg wt (kg)	4.05	2.96	2.98	3.16	
Habitat km^2	742	1414	472	732	3360
Biomass point estimate (mt)	10679	7802	1997	5080	25558
Biomass lower 90% CI (mt)	8055	6472	1202	3829	19558
Yelloweye ABC (F=0.02) (mt)	129	161	76	24	390
DSR ABC (yelloweye ABC/0.96)	135	168	79	25	410
Overfishing (F=0.032) adjusted for other species					650

We recommend that the 2006 ABC of 410 mt be used for the 2007 fishery. The corresponding reference values for DSR are summarized below. The stock is not overfished, nor is it approaching overfishing status although total catch (including recreational harvest and unreported

discards) may have approached the overfishing level in recent years. The primary reference values are shown in the following table.

M	0.020
2006 Biomass Estimate	19,558
F_{ofl} ($F_{35\%}$)	0.032
Max F ($F_{40\%}$)	0.026
F_{abc}	0.020
F ($_{avg\ 94\text{-}98}$)	0.020
F ($_{50\%\ F\ max}$)	0.013
Overfishing Level Includes 4.2% for other DSR	 650 mt
Maximum Allowable ABC	530 mt
2006 ABC Includes 4.2 % for other DSR	 410 mt
Recommended 2007 ABC	410 mt
2008 ABC	410 mt
2008 OFL	650 mt

13.2 Responses to SSC Comments

Specific Comments to the Assessment Authors:

• The SSC appreciates efforts to further enumerate mortality in sport and subsistence fisheries and looks forward to improved estimation procedures, particularly in the recreational fisheries. The SSC is concerned that the estimates of mortality in the commercial halibut fishery are imprecise, and requests additional attention to analysis of the reliability of statistics resulting from the full retention provisions for rockfish bycatch in both the state and federal fisheries.

Full Retention

The State of Alaska (SOA) implemented full retention of DSR in state waters of Southeast in June 2002. The National Marine Fisheries Service implemented full retention in federal waters of SEO in December 2004. Halibut fishermen are allowed to land and sell DSR bycatch equivalent to 10% of the round weight of halibut sold. Overage above this 10% must now be weighed and reported on a fish ticket. The overage may then be kept for personal consumption or donated, or, if the catch was taken in state waters, the overage may be sold with the proceeds of the sale given to the SOA. Federal regulation prohibits overage DSR caught in federal waters from entering commerce. The landings of DSR bycatch within the 10% saleable limit have been fairly stable since 2002, with about 135 mt landed each year. The landings of DSR overage have increased since 2002 with 32 mt landed in 2006 compared to 20 mt landed in 2002. Since the implementation of the federal regulation, over 85% of the overages are now retained for personal use rather than being donated or sold, and half of the overages (by total weight) are reported from federal waters. There appears to be increasing compliance with the full retention regulations and

there is currently an outreach campaign by Alaska Longline Fishermen's Association, Fishing Vessel Owner's Association, and Petersburg Vessel Owner's Association to their members to support full retention.

DSR bycatch (mt) landed in the SEO commercial halibut fishery by year

SEO	2002	2003	2004	2005	2006
landed within bycatch limits	130	138	135	163	139
landed overage (>10%)	9	17	13	23	32
Total	140	155	147	186	171

Disposition of DSR bycatch (round lbs) landed in the SEO commercial halibut fishery, by year.

Description	2002	2003	2004	2005	2006	Grand Total
Confiscated Fish	184		367			551
Fed. Donated				15		15
Fed. Forfeiture	12508	23212	11692		465	47877
Directed DSR Forfeiture	2014	783	5512			8309
State Forfeiture	6166	13246	15935	9576	9103	54025
Fed Retained, not sold				37291	34941	72232
State Retained, not sold	2102	3470	1977	8008	26222	41779
Grand Total	22974	40711	35483	54890	70730	224788

Commercial Halibut Fishery DSR Bycatch

In previous stock assessments the estimated total DSR mortality associated with the halibut fishery was calculated by using the IPHC halibut survey data to describe the bycatch rate of DSR by AD&G management area. This rate was then applied to the projected halibut catch from the management area by using a combination of the current years quota and the percent of the previous year's commercial halibut fishery catch taken in each area. Using this approach, the estimated DSR bycatch in SEO associated with the 2006 commercial halibut fishery was 354 mt.

Depth is an important component of the bycatch rate as DSR rockfish are more limited in their common depth distribution than are halibut. Halibut are often found in deep water in the early portion of the commercial fishing season and some halibut are landed in deeper water throughout the season when fishermen are targeting sablefish as well as halibut. The IPHC provided depth and area-specific survey and commercial catch information that allows evaluation of distribution of catch by depth and the rate of bycatch by depth.[1] Because there were very few survey stations in some management area/depth strata combinations, the data were analyzed by depth for the whole of SEO with only one area breakout. The three strata used were: 1) all waters of the EYKT subdistrict that were less than 100 fm except for the Fairweather Grounds, 2) all waters of the SEO less than 100 fm and not included in the previous category, and 3) all waters of SEO between 100 and 199 fm. Stratum-specific DSR bycatch mortality was estimated by applying the

[1] Unpublished data IPHC (contact Tom Kong for commercial data, Claude Dykstra for survey data).

ratio of yelloweye bycatch (lbs) to legal halibut catch (lbs) estimated from the IPHC survey data, to the projected halibut catch from the relevant stratum (Schaeffer et al 1979). Results are shown in the table below. The point estimate is 230 mt (122-337 95% CI). To date, 173 mt of DSR bycatch has been landed in the commercial halibut fishery with 95% of the 2C and 3A halibut quota landed.

Estimated DSR mortality (mt) associated with the 2006 SEO commercial halibut fishery by depth, using 2005 IPHC survey data and 2005 halibut commercial fishery depth and area distribution percentages

Depth Strata	DSR bycatch rate	# survey stations	% of halibut catch from stratum	Estimated DSR mortality (mt)	Lower 95%CI	Upper 95% CI
< 100 fm EYKT w/o Fairweather	0.021078	38	5.5% 3A	13.26	1.90	24.62
< 100 fm remaining area of SEO	0.159197	47	14.5% 2C + 1.1% 3A	131.89	97.87	165.92
100-199 fm SEO	0.044538	66	27% 2C + 5.1% 3A	84.50	22.47	146.44
				229.65	122.23	336.98

Recreational Fishery[2]

In February 2006, the BOF allocated the SEO DSR Total Allowable Catch (TAC) accordingly: 84% commercial fishery and 16% sport fishery. For the 410 metric ton (mt) TAC for 2006, this equated to a sport fishery quota of 66 mt.

To manage the 2006 sport fishery within the 66 mt quota, the following regulations for the entire Southeast Alaska region were implemented beginning on May 16, 2006:

1) The resident and nonresident bag limit is three non-pelagic rockfish only one of which can be a yelloweye; all non-pelagic rockfish caught must be retained until the bag limit is reached.

2) The nonresident annual limit is three yelloweye rockfish.

3) Charter operators and crewmembers may not retain non-pelagic rockfish while clients are on board the vessel.

To evaluate the total number of DSR harvested and released in the 2006 sport fishery in the SEO groundfish management areas, three sources of rockfish catch information (harvest and release) were available for examination:

1. Charter logbook data available from 1999-2006. The rockfish kept or released are designated as either pelagic or "Other" (i.e. non-pelagic) for 1999-2005, while in 2006 there was pelagic, yelloweye, and other non-pelagic besides yelloweye. This logbook data only represents charter (i.e., guided) harvest. Preliminary charter logbook data for 2006 was utilized for this analysis.

2. Statewide Harvest Survey (SWHS) estimates of rockfish harvest from 1977-2005. Note that there is no further breakdown of rockfish harvest, such as by pelagic vs. “other” or by species. The SWHS rockfish estimates for 2006 will not be available until August 2007.

3. Onsite creel survey estimates (charter, private, and combined) by species for Ketchikan, Sitka, Craig, Juneau, and Gustavus/Elfin Cove for 2001-2006.

[2] Recreational Fishery section written by Mike Jaeneke, Division of Sport Fish, ADF&G, Douglas AK.

Sport Fish Methods

1) The recent 5-year ratio of the SWHS rockfish harvest estimate versus the onsite creel survey rockfish harvest estimates was applied to the 2006 onsite creel rockfish harvest estimates at Craig and Klawock (SSEO), Sitka (CSEO), and Elfin Cove (NSEO) to estimate the 2006 SWHS rockfish harvest estimates. This initial projection of rockfish harvest by SWHS area essentially drives this DSR total removal estimation process, and it should be noted that in August 2007 the final 2006 SWHS rockfish harvest estimations will be available and used to finalize the 2006 DSR total removal estimation.

2) During the 2006 season, the collection of species composition of the rockfish harvest at all sampled creel survey ports was improved from previous years to include all seven species of DSR group (yelloweye, quillback, copper, china, tiger, canary, and rosethorn), as well as the predominate slope (silvergray, rougheye, shortraker, bocaccio, POP, redbanded) and pelagic (dusky and black) rockfish. The percent of total rockfish harvest of each of the seven DSR rockfish was thus calculated for each sampled port.

There were some discrepancies between 2006 logbook data versus creel survey data regarding the percent yelloweye harvest in the SSEO area: 14% based on the creel survey versus 37% based on the logbook data. The value of 30%, which corresponds to the same percentage yelloweye in the rockfish harvest for both CSEO and NSEO, was selected to represent the SSEO yelloweye percentage, although this may still be biased high or low. Future analysis of the logbook and creel data may indicate that this 30% value needs to be adjusted up and down.

3) Each of the seven DSR percentage of total rockfish harvest was applied to the estimated 2006 SWHS total rockfish harvest, to estimate the harvest by DSR species.

4) The average weights (in lb) of the seven DSR rockfish sampled in the 2006 onsite creel survey programs was multiplied by the respective estimated harvest of each species, to estimate the total harvested biomass by DSR species. Average weights of each of the seven DSR varied by area, for example, the average weight of yelloweye rockfish was 8.44, 7.96, and 9.19 for SSEO, CSEO, and NSEO, respectively. For years prior to 2006, Sport Fish Division had utilized average weights of winter commercial fishery DSR (7.0 lb for yelloweye and 2.5 lb for all other DSR species) to calculate an estimated total biomass mortality of DSR for SSEO, CSEO, and NSEO.

5) The SWHS rockfish harvest estimates for the SWHS areas Prince of Wales Island, Sitka, and Glacier Bay include areas of NSEI and SSEI groundfish areas. Examination of logbook and SWHS data indicated that 65% of the rockfish harvest for the Prince of Wales Island and Glacier Bay SWHS areas occur in the corresponding SSEO and NSEO groundfish areas, respectively. For the Sitka SWHS area, 90% of the rockfish harvest occurs in the CSEO groundfish area. These percentages were applied to the total harvest biomass of DSR for SWHS areas Prince of Wales Island, Sitka, and Glacier Bay to estimated the DSR harvest biomass in SSEO, CSEO, and NSEO, respectively. For years prior to 2006, Sport Fish Division had utilized a value of 75% to estimate the DSR harvest biomass in SWHS areas Prince of Wales Island, Sitka, and Glacier Bay.

6) The biomass of released DSR needed to be estimated for each outer coast groundfish area. Release rates for the 2006 season were available from the onsite creel surveys (release rate by DSR species) and the charter logbook database (release rate for yelloweye and then a release rate for the combined non-pelagic rockfish). Examination of the release rate by area for yelloweye and other DSR species generally agreed between the onsite creel survey and the logbook data. The release rates from the onsite creel survey for the seven DSR species were utilized to estimate the number and biomass released by DSR species. In cases where the release rate for a particular DSR species was 0% for the creel data, the logbook data release rate was applied. The release

rate information for the two main DSR species (yelloweye and quillback) tended to be higher based on the creel survey information, and lower with the logbook data. Future analysis of these 2 databases will be required to resolve these differences and to arrive at the best release rate values to use for SSEO, CSEO, and NSEO groundfish areas.

7) Total mortality (in terms of biomass removal from the DSR population) was estimated by adding the total DSR harvest and release biomass estimates for each groundfish area.

Sport Fish Conclusions

The 2006 sport fishery quota of 66 mt of DSR in the outer coast groundfish management areas was exceeded by an estimated 5.5 mt (see following table):

Groundfish area	Harvest biomass (mt)	Release biomass (mt)	Total Biomass (mt)
SSEO	19.6	4.5	24.1
CSEO	36.8	1.9	38.7
NSEO	7.7	1.0	8.7
Total	64.1	7.4	71.5

Preliminary analysis of the 2006 creel survey data indicated an approximate 30-40% reduction in yelloweye rockfish harvest at all sampled ports in Southeast Alaska. However, the reduction in total number of rockfish harvested ranged from 16% in Sitka to 30% in Ketchikan.

The above estimates are based on the best available data at this time, but may be subject to change as new information becomes available. Further, the final biomass removal estimate will be generated from the 2006 SWHS rockfish harvest estimates, available in August 2007. Finally, with each passing year of more specific rockfish fishery data from the logbook and onsite creel programs, the accuracy of the rockfish biomass removal estimates should improve.

13.3 Updated Catch Table

2006 DSR Catch SEO (mt)	**Directed Commercial**	**Bycatch Commercial**	**Sport fish Fisheries**	**Total**
Landed	0	178	64	224
Estimated discard	0	43	7	50
Total	0	215	72	287

13.4 Research Priorities

Bycatch rates in the commercial halibut fishery are being further reviewed. In 2007 ADF&G intends to contract with IPHC to sample DSR bycatch on the IPHC survey in Southeast and to fully count bycatch (rather than the first 20 hooks per skate used now). Currently there is no funding for surveys and an updated density and biomass estimate is needed for most of SEO.

13.5 Summaries for Plan Team

Year	Biomass	OFL	ABC	TAC	Catch
2005	18,508	640	410	410	187

2006	19,558	650	410	410	141
2007		650	410		
2008		650	410		

Catch data as reported landed catch by NMFS. Actual catch is higher.

References

O'Connell, V., C. Brylinsky, and D. Carlile. 2005. Assessment of the demersal shelf rockfish stock for 2006 in the southeast outside district of the Gulf of Alaska. Chapter 13 IN 2005 Stock Assessment and Fishery Evaluation Report for 2006. North Pacific Fishery Management Council, Anchorage, AK.

Schaeffer, R.L., W. Mendenhall and L. Ott. 1979. Elementary survey sampling. Duxbury Press. North Scituate, MA.

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