

INITIAL STOCK ASSESSMENT PLANS AND TOR  
NORTHWEST FISHERIES SCIENCE CENTER REPORT

**Groundfish Stock Assessment Prioritization For 2015**

In April, NWFSC provided the Council and its advisors with a table which summarized numerous informational elements relevant to the selection of species for 2015. Although the Council did not address this issue in April, Dr. Jim Hastie had opportunities to conduct productive, preliminary discussions with the SSC and GAP during that meeting. Those discussions have resulted in some revisions to the assessment suggestions for 2015 that were included in the April table (see attached). As in April, there has been no attempt to derive a systematic overall priority rating from the factors that are included in the table. Color-coding in the table is intended to draw attention to factors that support consideration of a species for assessment in 2015, with green representing the upper tier, and yellow the intermediate tier, *for that factor*.

The upper half of first page of the attached table focuses on species which we believe are the most compelling candidates for some level of assessment (or data report). The first columns indicate what level/type of assessment we think would be appropriate. Our highest priorities are marked with capital 'X's and highlighted in green (e.g. black rockfish), with less compelling choices designated by lower-case 'x's, in yellow. For several species, an assessment could be conducted as one of two or three different types, and the selection of a particular type (if any) will depend on workload considerations, species' priority, and other factors. The next set of columns summarizes information from the most recent assessment (excluding data-poor), if one exists. The column showing the year of the most recent assessment is colored green for stocks that are unassessed or were last assessed before 2009. Stocks assessed in 2009 or 2011 are colored yellow. This section includes the current category in which each species is managed, the last estimated depletion level, and an indicator for rebuilding stocks.

The next column shows the PSA (vulnerability) score for each species. Frequently, the highest PSA values are presented as red, to indicate the stocks' higher vulnerability. However, since greater vulnerability elevates the importance for assessing a stock, those values are colored green in this table. Next is a block of 5 columns containing information regarding the importance of each stock to commercial and recreational fisheries. The commercial columns show the ranking of each species, on the basis of shoreside, ex-vessel revenue (2008-2012), for all gears and for hook-and-line gears. The recreational columns rank species on the basis of landed catch amounts for the entire coast, for California, and for Oregon and Washington, combined. In addition to the green and yellow coloring, situations where rebuilding species ranked outside the top-30 but are constraining for a fleet were highlighted in pink. The next two columns report the estimated fishing mortality in 2012, for each species as a percentage of its ABC and OFL (or the species' contributions to assemblage ABCs and OFLs). Where necessary, catch and specifications were combined across multiple areas, for purposes of this table. The final column provides a qualitative indication of the suitability of the NWFSC's bottom-trawl survey to

provide index and biological information to support an assessment. Species' cells for which the survey is most informative are colored green.

The list of species in the upper block of page 1 is a larger list than could likely be completed in 2015, even if the least time-consuming option were selected for each species. Given issues that arose in the 2013 data-moderate assessment and review process, it is probably desirable to limit the number of species assessed in that manner to 4, so that assessments using both modeling platforms can be completed and reviewed for each species. There should also be a balance between species utilizing survey and fishery CPUE abundance indices, as the latter are more analytically demanding. In many cases, models must be developed for multiple areas, which increases the development and review burden. The issue of single species requiring multiple assessment models is also a concern in the STAR process. Often, multiple modeling areas are dictated by differences in the available data, as with black rockfish. In determining how many species can be assigned to a particular STAR panel, attention should be paid to how many separate models the panel will be asked to review. Several of these are indicated by an 'x2' notation, after the species name.

Bocaccio, darkblotched, and petrale sole are suggested assessments, because they may have completed the process of rebuilding. Because petrale has had a full assessment in each of the last 3 cycles, it is suggested for an update. Bocaccio and darkblotched are suggested for full assessments, based the SSC's prior recommendations. Black rockfish is an extremely important species to both the commercial and recreational fisheries and has not been assessed since 2007. Similarly, canary rockfish received its last full assessment in 2007, and NWFSC staff have been working throughout the winter to review and streamline the inputs used in this assessment. Though widow rockfish was determined to be rebuilt in 2011, considerable uncertainty was associated with that finding. Given industry interest in renewing a targeted mid-water fishery for widow, a full assessment in 2015 is suggested. Given that black rockfish will likely be assessed with two separate area models, the strongly recommended species would fill 3 panels, leaving room for two additional species, or one requiring multiple models. At the April Council meeting, the SSC noted that current estimates of historical catch for kelp greenling in Oregon are very different from the time series that was used in the 2005 assessment of that area. This development makes Oregon kelp greenling a strong candidate for a new full assessment. The amount of kelp greenling biological data that is available from California fisheries is not believed to be adequate to support a full assessment.

The 2011 sablefish assessment showed the stock to be stabilizing after a period of decline during the late 2000s; however, its status was squarely in the middle of the precautionary zone. Given the economic importance of this species and the soundness of the last assessment, an update is suggested. Another stock suggested for an update is lingcod, last assessed in 2009. Although this species has been relatively lightly exploited, we are likely to be able to utilize student help in conducting the updates of the northern and southern models. Additionally, updating this assessment will support anticipated research by UW and The Nature Conservancy to examine the effects of lingcod predation on rockfish recovery.

The 2013 data-moderate assessment for northern China rockfish was a subject of considerable discussion at the March Council meeting. Barring the ability to establish a CPUE index for

China rockfish in Washington waters, it is suggested that, in 2015, a new data-moderate or full assessment be conducted for Oregon waters and California north of 40°10', along with a data-poor assessment for Washington. If the Council wishes to have China rockfish assessed with an area boundary at the OR-CA border, then the options suggested above would apply to Oregon waters. If a full assessment were chosen for the area including Oregon, with either boundary, the Council could consider adding a full for the corresponding California area. There is a considerable amount of recreational length data in California, however, the only age structures were collected prior to 1990. Oregon, on the other hand has considerable length data and age structures from recent commercial and recreational fisheries, and also has a nearshore logbook that may yield useful CPUE information. Several other species are identified as candidates for data-moderate assessments. Of these, only arrowtooth flounder and bank rockfish are apt to benefit from trawl survey abundance indices. The remaining species comprise a suite of important nearshore species that have not received full assessments since 2007, if ever. Data reports are suggested for yelloweye rockfish and Pacific ocean perch in 2015.

The lower part of page 1 shows information for all remaining previously-assessed, category 1 and 2 species. The second page of the table shows species that have only been assessed previously with data-poor methods. in the upper section, and a selection of the remaining species that have some high-priority aspects, in terms of PSA score, fleet importance, or ABC attainment. The last page of the table includes all of the remaining species for which only data-poor assessments have been conducted.

Although the Council is not scheduled to take final action on the 2015 assessment schedule until September, it would be very useful to have as clear a statement of Council priorities as is possible during the June discussion of this topic. Many of the species under consideration for full or update assessments have not been assessed for 5 or more years. In many such cases, there may be a substantial inventory of un-aged otoliths, and the additional 3 months of ageing time may be quite important.

A final important issue relating to planning and workload involves the management line that the Council intends to use for delineating northern and southern areas in the next round of specifications, and whether the Council is expecting that all existing data-poor and data-moderate assessments for such species would need to be re-modeled, with partitioning at the OR-CA border. This would require numerous new data-poor assessments, and potentially re-apportionment of catch limits for some other species. This workload could impact the number of other new assessments that could be conducted, and should be identified as a priority before other assignments are finalized.

Background Information Pertaining to Selection of Groundfish Stocks for Assessment in 2015.

Species	Suggestions for 2015 Assessments				Most Recent Assessment and Current Status					PSA	Fleet rank (2008-2012):					2012 catch as a % of		Survey info
	Full	UpD	D-M	Dat Rpt	Current Tier	Last year assessed	Type	Last Depl. N   S	Rblid?		Comm. \$		Rec. mt			ABC*	OFL*	
											All	H & L	All	CA	OR-WA			
arrowtooth fl.			x		2	2007	Full	79%		1.21	8	48	52		26	21%	17%	
bank rf			x		2	2000	Full			2.02	30	42	47	44		4%	3%	
black rf x2	X				1	2007	Full	53%   71%		1.94	6	3	1	1	1	53%	51%	
blue rf			x		2	2007	Full	30%		2.01	33	17	4	9	5	33%	29%	
bocaccio	X				1	2013	Update	31%	Y	1.93	42	26	7	5	13	20%	19%	
CA scorpionfish			x		1	2005	Full	80%		1.41	36	20	5	4		65%	62%	
canary rf	X				1	2011	Update	23%	Y	2.01	46	67	17	19	12	8%	7%	
chilipepper	x	x			1	2007	Full	71%		1.35	14	27	30	29	39	17%	16%	
China rf	x		X		2	2013	D-M	37%   66%		2.23	25	12	16	15	10	124%	104%	
cowcod	x			x	2	2013	Full	34%	Y	2.13	73	56	45	42		11%	9%	
darkblotched rf	X				1	2013	Full	36%	Y	1.92	22	24				22%	21%	
gopher rf			x		1	2005	Full	97%		1.76	12	7	10	7		42%	39%	
kelp greenling (OR)	x		x		1	2005	Full	49%		1.56	18	10	15	17	6	79%	59%	
lingcod x2	x	X			1	2009	Full	62%   74%		1.55	7	5	2	2	2	28%	26%	
olive rf			x		3					1.87	47	31	13	13	31	21%	17%	
POP	x	x		X	1	2011	Update	19%	Y	1.69	31	43				6%	6%	
petrale sole	x	X			1	2013	Full	22%	Y	1.94	3	44	40	40	19	91%	87%	
quillback rf x2	x		x		3					2.22	35	18	20	28	7	169%	141%	
sablefish	x	X			1	2011	Full	33%		1.64	1	1	42	48	15	66%	63%	
widow rf	X				1	2011	Full	51%		2.05	28	41	33	32	17	6%	6%	
yelloweye rf	x			X	2	2011	Full	21%	Y	2.00	61	45	27	33	11	25%	24%	
starry flounder					2	2005	Full	50%		1.02	41	49	41	39	24	1%	1%	
longnose skate					1	2007	Full	66%		1.68	9	25	61		32	34%	33%	
cabezon					1	2009	Full	52%   48%		1.48	10	4	11	12	4			
greenstriped rf					2	2009	Full	81%		1.88	45	60	38	36	26	3%	2%	
splitnose rf					1	2009	Full	66%		1.82	34	46				6%	6%	
blackgill rf					1	2011	Full	30%		2.08	15	9				77%	73%	
Dover sole					1	2011	Full	84%		1.54	2	33	57	53	37	17%	16%	
greenspotted rf					2	2011	Full	35%		1.98	53	34	18	16	32	11%	9%	
spiny dogfish					1	2011	Full	63%		2.13	29	23	31	30	23	41%	38%	
aurora rf					1	2013	Full	64%		2.10	38	30				116%	97%	
brown rf					2	2013	D-M	42%		1.99	13	6	9	6	20	57%	48%	
copper rf					2	2013	D-M	48%   76%		2.27	32	16	8	8	9	65%	54%	
English sole					2	2013	D-M	89%		1.19	24	63	58	55	39	2%	2%	
longspine thd					2	2013	Full	75%		1.53	5	14				32%	27%	
Pacific sanddab					3	2013	Full	96%		1.25	20	22	12	10	21	9%	6%	
rex sole					2	2013	D-M	79%		1.28	16	64				15%	10%	
rougheye/blksp. rf					2	2013	Full	47%		2.27	23	15	28	26	37	375%	313%	
sharpchin rf					2	2013	D-M	89%		2.05	55	72				7%	6%	
shortspine thd					1	2013	Full	74%		1.80	4	2				41%	39%	
stripetail rf					3	2013	D-M	>77.5%		1.80	75	75	51	47		35%	29%	
yellowtail rf					1	2013	D-M	69%		1.88	11	29	6	11	3	36%	34%	

Key			
	Higher Priority	X	Recommended
	Lower Priority	x	Potential
			Constraining (and not ranked in top-30)
			From prior Data-Poor assessment

\* In cases where individual ABCs and OFLs were not published for a species, its ABC- and OFL-contributions were used

Background Information Pertaining to Selection of Groundfish Stocks for Assessment in 2015. (cont.)

Species	Suggestions for 2015 Assessments				Most Recent Assessment and Current Status					PSA	Fleet rank (2008-2012):					2012 catch as a % of		Survey info
	Full	UpD	D-M	Dat Rpt	Cur Tier	Last year	Type	Last Dep.	Rblld?		Comm. \$		Rec. mt			ABC*	OFL*	
											All	H & L	All	CA	OR-WA			
black and yellow rf					3					1.70	21	11	21	20	34	76%	63%	
calico rf					3					1.57	82	77	34	34		95%	91%	
flag rf					3					1.97	57	40	25	24	39	65%	55%	
grass rf					3					1.89	17	8	23	22	25	72%	60%	
honeycomb rf					3					1.97	78	69	29	27		96%	80%	
kelp rf					3					1.59	43	28	22	21		91%	76%	
redbanded rf					3					2.02	37	21	52	52	34	71%	59%	
shortraker rf					3					2.25	40	35				365%	304%	
squarespot rf					3					1.86	66	58	32	31		95%	79%	
starry rf					3					2.09	50	32	14	14		41%	34%	
tree rf					3					1.73	39	19	24	23		117%	98%	
vermilion/sunset rf					3					2.05	27	13	3	3	8	94%	79%	
redstripe rf					3					2.16	70	70	62	59	39	5%	4%	
bronzespotted rf					3					2.12	74	65						
California skate					3					2.12	69	73	55	50		5%	3%	
greenblotched rf					3					2.12	64	54	43	41		5%	4%	
speckled rf					3					2.10	63	51	26	25		27%	23%	
rosethorn rf					3					2.09	60	52				35%	29%	
tiger rf					3					2.06	54	36	36	45	14	274%	229%	
chameleon rf					3					2.03	65	55						
pink rf					3					2.02	79	79				34%	28%	
silvergray rf					3					2.02	62	59	49		22	2%	2%	
soupin shark					3					2.02	44	50	46	43	39	6%	4%	
leopard shark					3					2.00	49	38	19	18		33%	23%	
big skate					3					1.99	58	71	48	46	28	24%	17%	
yellowmouth rf					3					1.96	52	47				6%	5%	
southern rock sole					3					1.95	48	61	39	38	34	32%	22%	
harlequin rf					3					1.94								
Swordspine rf					3					1.94	81	76	62	58		1%	0%	
rosy rf					3					1.89	56	39	50	50	29	20%	17%	
pinkrose rf					3					1.82	80	74	60	55				
Mexican rf					3					1.80	67	57	59	53		2%	1%	
spotted ratfish					3					1.72	71	66	54	48		9%	6%	
freckled rf					3					1.55	77	68						
pygmy rf					3					1.55	83	79						
halfbanded rf					3					1.38			35	35				
Pacific cod					3					1.34	19	37	44		16	29%	20%	
curlfin sole					3					1.23	68	62				30%	21%	
sand sole					3					1.23	26	53	37	37	18	16%	11%	
butter sole					3					1.18	72	79	55	57	30	72%	50%	
shortbelly rf					2				73%	1.13	76	78				0%	0%	
flathead sole					3					1.03	59	79				39%	27%	

Key	
	Higher Priority
	Lower Priority

\* In cases where individual ABCs and OFLs were not published for a species, its ABC- and OFL-contributions were used