Revisions to OFL Contributions for Category 3 Stocks

Methods for estimating Overfishing Limits (OFLs) for category 3 (data-poor and data-limited) stocks were reviewed by the Data-Poor Methodology Review Panel in April 2011. The Scientific and Statistical Committee (SSC) endorsed several catch-based methods, including Depletion-Corrected Average Catch (DCAC) and Depletion-Based Stock Reduction Analysis (DB-SRA). In a report to the Methodology Review Panel, the technical team described minor errors in the execution of DCAC and DB-SRA, and presented revised OFL estimates for category 3 stocks to the Panel (PFMC, June 2011; Agenda Item E.2.a, Attachment 6). Following correction of the errors (two priors with correlated random draws, and a mis-specified production function), the Review Panel and SSC found the theoretical basis and implementation of DCAC and DB-SRA to be sound.

Category 3 OFLs from the 2011-12 management cycle that were based on DB-SRA or DCAC are compared to the revised estimates in Tables 1 and 2. The revised DB-SRA estimates also reflect increased Monte Carlo sample sizes (5 million samples with replacement) from each OFL and bias-correction distribution, reducing variability due to random sampling error, as noted by the Review Panel (Agenda Item E.2.a, Attachment 6, page 9). Comparisons of yield estimates are based on coast wide OFLs, unless otherwise noted, and have not been allocated to management areas (e.g. North/South of 40° 10′ N. latitude).

The change in median DCAC estimates is minor, typically <1 mt and <3% change. The percentage change (100% × [new-old]/old) in DB-SRA estimates varies (Table 1, Figure 1). This is due, in part, to the revised bias correction distributions, but is also affected by application of the corrected production function to each individual unassessed stock, as well as the removal of correlated draws from two of the prior distributions.

Table 1. Median DCAC estimates (mt) from the 2011-2012 management cycle, compared to revised estimates following the Data-Poor Methodology Review Panel.

Species (Region)	2011-2012 median DCAC	Revised median DCAC	Percent Change
Gopher rockfish (S. of 34° 27′ N. lat.)	26	25.6	-1.5%
Squarespot rockfish	5.9	5.8	-1.7%
Mexican rockfish	2.8	2.8	0.0%
Blackgill rockfish (N. of 40° 10′ N. lat.)	4.7	4.7	0.0%
Blue rockfish (S. of 34° 27′ N. lat.)	74	72.9	-1.5%
Blue rockfish (N. of 42° N. lat.)	33.1	32.3	-2.4%
Honeycomb rockfish	7.8	7.7	-1.3%
Soupfin shark	62.4	61.6	-1.3%

Table 2. Median DB-SRA estimates (mt) from the 2011-2012 management cycle, compared to revised estimates following the Data-Poor Methodology Review Panel. Species are grouped into rockfishes, flatfishes, and other fish. Rockfishes are sorted by the percent change.

| Species (Region)	2011-2012 median DB-SRA	Revised median DB-SRA	Percent Change
Rosy rockfish	39.5	47.5	20%
Olive rockfish	189.8	225.0	19%
Stripetail rockfish	55.9	64.0	15%
Swordspine rockfish	12.9	14.2	10%
Grass rockfish	56.2	60.3	7%
Kelp rockfish	25.9	27.7	7%
Bocaccio (N. of 40°10' N. latitude)	268.2	284.0	6%
Yellowmouth rockfish	185.5	193.3	4%
Brown rockfish	202.7	210.1	4%
Black-and-Yellow rockfish	26.8	27.5	3%
Treefish	13.2	13.4	2%
Greenblotched rockfish	25.9	24.4	-6%
Redstripe rockfish	288.9	270.4	-6%
Sharpchin rockfish	242.5	224.4	-7%
Speckled rockfish	43.1	39.6	-8%
Rougheye rockfish	78.7	71.5	-9%
Copper rockfish	184.6	167.5	-9%
Pink rockfish	2.8	2.5	-10%
Starry rockfish	70.5	62.6	-11%
Aurora rockfish	46.8	41.4	-11%
Silvergray rockfish	180.6	160.0	-11%
Tiger Rockfish	1.1	1.0	-12%
Flag rockfish	26.7	23.5	-12%
Redbanded rockfish	63.5	55.7	-12%
Bank rockfish	594.5	520.5	-12%
Vermillion rockfish	319.5	279.0	-13%
Shortraker rockfish	22.0	18.8	-14%
Yellowtail rockfish (S. of 40°10' N. lat.)	1248.9	1064.4	-15%
Rosethorn rockfish	17.7	15.0	-15%
Quillback rockfish	15.0	12.8	-15%
China rockfish	31.5	26.4	-16%
Cowcod (N. of 34° 27' N. latitude)	6.8	4.8	-30%
Bronzespotted rockfish	6.7	3.6	-45%
Pacific sanddab	4942.5	4801.0	-3%
Rex sole	4308.6	4371.5	1%
Rock sole	66.0	66.7	1%
Sand sole	780.8	773.2	-1%
Kelp greenling (S. of 42° N. latitude)	110.6	118.9	7%
Leopard shark	164.0	167.1	2%
Pacific rattail	1178.1	1119.0	-5%
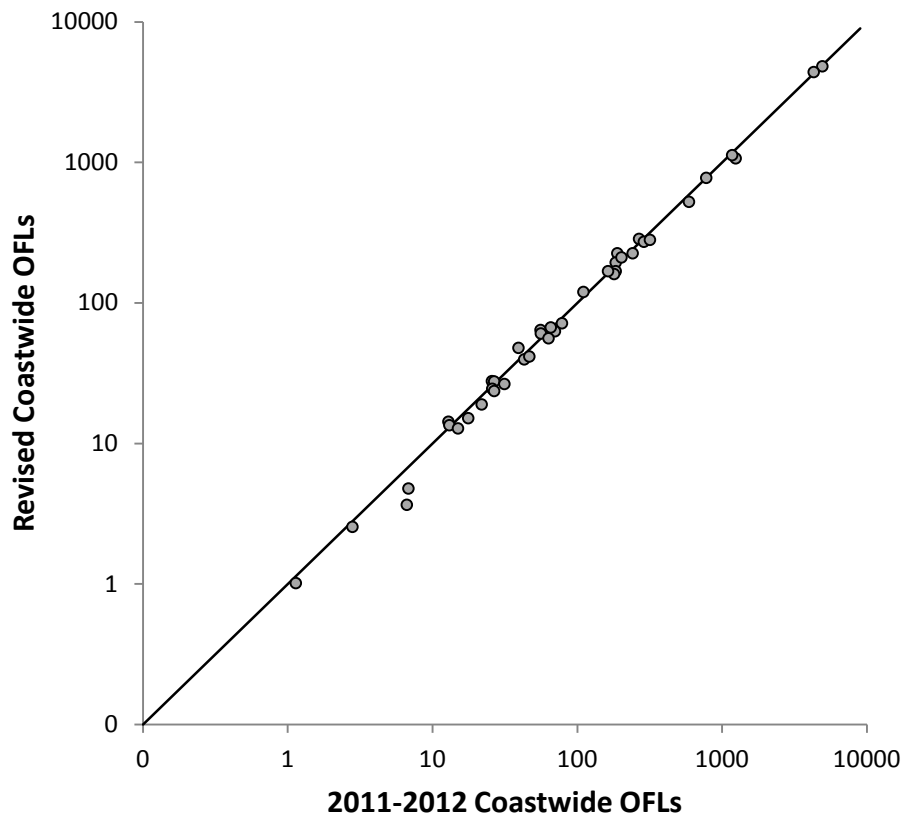
Figure 1. Comparison of DB-SRA estimates (log scale) from 2011-2012 management cycle to revised estimates. Solid line is 1:1.

E. J. Dick
NMFS SWFSC Fisheries Ecology Division
edward.dick@noaa.gov