Analysis of high and low Gulf of Maine cod ABC scenarios using the Quota Change Model

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To estimate the economic impact of different GOM cod ABC's on Sector vessels, the Quota Change Model was run 100 times using the following parameters:

- GB cod ABC = 2,506mt
- GB ytf ABC = 1,150mt
- Full (10%) carryover for all authorized stocks.

On gross groundfish revenues of between $61-63 million, the mean estimated difference between a GOM cod ABC of 1,250mt and 1,550mt is approximately **$1.4 million**. On gross revenues on groundfish trips retaining more than 15 lbs of groundfish of between $81-83 million and approximately, the mean estimated difference is about **$1.6 million**. For gross groundfish revenues, the majority of this difference ($814K) is a direct result of the increased GOM cod landings. The additional cod quota is also predicted to increase American plaice, pollock, white hake and CC/GOM yellowtail flounder landings slightly (Table 1, Table 2).

These median values represent 2-3% of estimated FY2013 gross revenues. The coefficient of variation for these estimates is about 4.5%, so while the median values are higher under the higher GOM cod quota the increase is within one standard deviation from the mean value (Table 3, Illustration 1).

Net revenues on all groundfish trips landing more than 15 lbs of groundfish (comprised of gross revenues minus variable costs and quota costs) are estimated to be of a similar magnitude, about a 3% difference between the two GOM cod ABC scenarios (Table 3).

Effort metrics (days absent, number of trips) and crew opportunities (crew days) are estimated to be approximately 4-5% higher under the 1,550mt GOM cod ABC scenario (Table 4).

		limit	catch	utilization	ex-vsl value
am_plaice	all	4,166,981	3,159,086	76%	$4,155,073
cod	gb_east	211,642	150,167	71%	$190,537
cod	gb_west	4,698,579	4,183,885	89%	$8,348,974
cod	gom	2,245,221	2,244,697	100%	$5,260,468
haddock	gb_east	8,712,579	1,227,232	14%	$1,853,411
haddock	gb_west	54,912,838	2,525,274	5%	$4,146,001
haddock	gom	552,914	490,303	89%	$1,026,347
halibut	all	113,738	89,258	78%	$169,708
non_gfish	all	-	27,352,221	0%	$19,882,236
ocean_pout	all	433,298	94,399	22%	$0
pollock	all	31,003,290	15,114,833	49%	$12,239,743
redfish	all	24,074,452	7,395,341	31%	$4,036,784
wh_hake	all	8,050,538	5,450,156	68%	$5,932,825
windowpane	north	217,046	249,495	115%	$16
windowpane	south	224,631	216,382	96%	$177
winter_fl	gb	8,507,110	3,834,636	45%	$7,537,892
winter_fl	gom	1,673,953	279,560	17%	$550,099
winter_fl	sne_ma	742,950	280,990	38%	$17,294
witch_fl	all	1,639,341	1,503,334	92%	$2,623,212
wolffish	all	136,173	57,563	42%	$0
yt_flounder	cc_gom	1,254,638	921,394	73%	$1,151,888
yt_flounder	gb	774,338	770,591	100%	$1,013,692
yt_flounder	sne	1,136,912	1,135,290	100%	$1,534,977
	total:	*155,483,160*	*78,726,085*		*$81,671,353*
	total groundfish:		*51,373,865*	*51%*	*$61,789,116*

Table 1 - QCM estimated gross revenues when GOM cod ABC = 1,250mt

		limit	catch	utilization	ex-vsl value
am_plaice	all	4,166,981	3,257,567	78%	$4,279,290
cod	gb_east	211,642	148,879	70%	$184,092
cod	gb_west	4,698,579	4,230,769	90%	$8,402,596
cod	gom	2,592,591	2,591,346	100%	$6,075,322
haddock	gb_east	8,712,579	1,257,241	14%	$1,920,454
haddock	gb_west	54,912,838	2,553,464	5%	$4,162,816
haddock	gom	552,914	513,149	93%	$1,083,627
halibut	all	113,738	91,252	80%	$177,665
non_gfish	all	-	27,204,810	0%	$19,677,055
ocean_pout	all	433,298	92,526	21%	$0
pollock	all	31,003,290	15,387,732	50%	$12,475,681
redfish	all	24,074,452	7,364,134	31%	$4,044,565
wh_hake	all	8,050,538	5,650,631	70%	$6,090,041
windowpane	north	217,046	251,244	116%	$21
windowpane	south	224,631	204,767	91%	$188
winter_fl	gb	8,507,110	3,847,184	45%	$7,537,907
winter_fl	gom	1,673,953	287,123	17%	$568,860
winter_fl	sne_ma	742,950	274,454	37%	$18,037
witch_fl	all	1,639,341	1,523,794	93%	$2,670,641
wolffish	all	136,173	59,593	44%	$0
yt_flounder	cc_gom	1,254,638	975,213	78%	$1,214,377
yt_flounder	gb	774,338	770,805	100%	$1,014,640
yt_flounder	sne	1,136,912	1,049,754	92%	$1,460,997
	total:	*155,830,530*	*79,587,429*		*$83,058,870*
	total groundfish:		*52,382,619*	*51%*	*$63,381,816*

Table 2 - QCM estimated gross revenues when GOM cod ABC = 1,550mt

Table 3 - Revenue and cost estimates from 100 QCM simulations

model	_STAT_	gross_revenue	*gfish_gross*	net_revenue	trip_cost	*variable_cost*	*lease_cost*
low_cod	MIN	69.4	*53.1*	43.9	25.4	*13.4*	*11.8*
	MAX	87.8	*66.6*	56.4	32.8	*18.3*	*14.9*
	MEAN	81.1	*61.2*	51.4	29.9	*16.2*	*13.7*
	STD	3.8	*2.7*	2.5	1.4	*0.9*	*0.6*
high_cod	MIN	70.5	*53.8*	44.5	26.2	*13.9*	*12.1*
	MAX	91.4	*68.7*	58.3	33.2	*18.1*	*15.3*
	MEAN	82.9	*63.0*	52.4	30.6	*16.5*	*14.1*

Table 4 - Crew opportunity and fishing effort estimates from 100 QCM simulations

model	_STAT_	crew_days	days_absent	n_trips
low_cod	MIN	44,442	12,542	6,486
	MAX	56,964	15,997	8,161
	MEAN	52,207	14,711	7,534
	STD	2,474	692	346
high_cod	MIN	45,045	12,798	6,846
	MAX	58,739	16,592	8,699
	MEAN	53,301	15,064	7,863
	STD	2,356	657	327

Illustration 1 - Revenues and costs under high and low cod scenarios