

April 21, 2009

#5

Gulf of Maine Cod (GARM II)

Stock Productivity Factors			
Factor	1	2	3
SSB/SSB _{MSY}	Less than 0.5	0.5-1	Greater than 1
Recent recruitment	Below median	Median to average	Above average
Weights at age	Declining/Low	Stable	Increasing/High
Population Age Structure	Narrow/truncated	Mixed	Dispersed/expanded
Geographic Distribution	Stock becoming concentrated		Dispersed throughout range
Susceptibility			

Stock Productivity

SSB/SSB_{MSY}: 1
 Recent Recruitment: 1
 Catch weights at age: 2
 Population age structure: 3
 Geographic Distribution: 2
 Vulnerability: 1

Average Productivity Score: 1.7

Assessment Uncertainty Factors			
Factor	1	2	3
Type of Assessment	Index/None	SPM	Age-based (VPA, SCAA, etc.)
Historic Assessment Performance	Poor: estimates of F or B highly variable; predicted catch does not match realized F	Fair	Good: Assessment provides consistent estimates over time; predicted catches match realized Fs
Retrospective pattern	Pattern strongly over-estimates terminal year B, or under-estimates terminal year F, persistent	Pattern variable or minor	Minimal or no pattern
Amount of projected catch based on a recruitment assumption	Over 25%	10%-25%	Less than 10%

Assessment Uncertainty

Type of Assessment: 3
 Historic performance: 2
 Retrospective Pattern: 2
 Amount of Catch Based

on Recruitment Assumption (2006/2007/2008/2009): 3/2/1/1 (5%/17%/31%/45%)

Average Assessment Uncertainty Score: 2.5/2.25/2/2

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Evaluation

Stock Productivity	3	ABC = 10% Fcontrol rule 10% Freb	ABC=25% of Fcontrol rule Or 25% of Freb	ABC= Fcontrol rule Or ABC=Median catch at Freb
	2	ABC = 10% Fcontrol rule or 10% Freb	ABC=25% of Fcontrol rule Or 25% of Freb	ABC=25% of Fcontrol rule Or 25% of Freb
	1	ABC = 1% Fcontrol rule or 1% Freb	ABC = 10% Fcontrol rule or 10% Freb	ABC = 10% Fcontrol rule or 10% Freb
		1	2	3

Assessment Uncertainty

Proposed TACs based on 10th percentile from projection:

2006	4053
2007	6671
2008	7717
2009	7938

Median catch at target mortality:

2006	5146
2007	10020
2008	10491
2009	10839

GOM Cod (GARM II)

	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	D	
GOM Cod SSB/SSBMSY	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	0.9
GOM Cod Nrs. At Age 1	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	3.5

GOM Cod SSB_at_age 1	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	4.1
GOM Cod SSB_at_age 2	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	3.4
GOM Cod SSB_at_age 3	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	2.2
GOM Cod SSB_at_age 4	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	3.1
GOM Cod SSB_at_age 5	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	2.7
GOM Cod SSB_at_age 6	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	3.0
GOM Cod SSB_at_age 7	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	3.6
GOM Cod SSB Total	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	0.9

GOM Cod C. wt. age 1	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	1.2
GOM Cod C. wt. age 2	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	0.8
GOM Cod C. wt. age 3	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	0.5
GOM Cod C. wt. age 4	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	0.4
GOM Cod C. wt. age 5	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	0.5
GOM Cod C. wt. age 6	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	0.6
GOM Cod C. wt. age 7	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	0.6
GOM Cod C. wt. age Mean	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	0.7

GOM Cod Nrs. at age 1	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	3.5
GOM Cod Nrs. at age 2	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	3.5
GOM Cod Nrs. at age 3	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	3.6
GOM Cod Nrs. at age 4	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	4.0
GOM Cod Nrs. at age 5	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	3.9
GOM Cod Nrs. at age 6	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	2.6
GOM Cod Nrs. at age 7	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	3.3
GOM Cod Nrs. at age Total	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	1.4

GOM Cod % Nrs. at age 1	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	2.1
GOM Cod % Nrs. at age 2	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	2.1
GOM Cod % Nrs. at age 3	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	2.9
GOM Cod % Nrs. at age 4	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	3.8
GOM Cod % Nrs. at age 5	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	4.6
GOM Cod % Nrs. at age 6	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	4.0
GOM Cod % Nrs. at age 7	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	5.8

Legend

● Above Cut Point	● Between Cut Points	● Below Cut Point		
● Highest	● 2nd Highest	○ Middle	● 2nd Lowest	● Lowest

GOM Cod SSB/SSBMSY: Lower Threshold Value = 0.5, Upper Threshold Value = 1
 GOM Cod Nrs. At Age 1: Lower Threshold Value = 6830, Upper Threshold Value = 7739
 : Lower Threshold Value = 0.5, Upper Threshold Value = 1
 D = Measure of Dispersion: Range/Median