

Overview of NEFMC Multispecies Groundfish: Data and Model Configuration Summary

For
Groundfish Operational Assessments
Assessment Oversight Panel Meeting
July 27, 2015

The assessments of all twenty stocks in the Northeast Multispecies Fishery Management Plan will be updated in 2015 by following the operational assessment process. The simultaneous updates of all stocks will allow a synoptic comparison of the overall status of groundfish stocks and lay a sound basis for future research. These updates will be governed by the decisions made in the most recent benchmark assessments or as modified by any subsequent operational assessments or updates. The overall goal is to update the assessments with new data using the current model configurations. Per the guidance of the Northeast Regional Coordinating Council, minor flexibility will be allowed to address emerging issues.

The purpose of this Assessment Oversight Panel summary document is to provide a brief overview for each of the twenty stocks including information about the current model formulation, data that will be updated, current status, and where details from the previous assessment can be found. This is not a comprehensive review, but rather a “cheat sheet” to allow quick comparison among the stocks and easy reference.

Unless otherwise noted, the data to be used in the groundfish updates will use the following standard procedures. The US commercial landings are estimated by market category from the area allocation (“AA”) tables which combine dealer and vessel trip reports to determine where fish were caught. The US commercial discards are estimated by gear types using the Standardized Bycatch Reporting Methodology (SBRM) which combine observer data (including at sea monitors) and dealer landings. The US recreational landings and discards come from the Marine Recreational Information Program (MRIP). Both commercial and recreational discards have species specific discard mortality rates applied to the discarded fish. Catch at age is estimated using age-length keys applied to expanded length frequency distributions. Additional sources of catch for some species come from Canadian or other foreign fishing.

The Northeast Fisheries Science Center spring and fall bottom trawl surveys are the most common source of information for population trends. These surveys are calibrated to Albatross units in most cases to allow for the longest time series possible. In some instances the calibration coefficient varies by length but in others a simple scalar adjustment is applied to all length classes. Other surveys used include the Massachusetts Division of Marine Fisheries spring and fall bottom trawl surveys, the Maine-New Hampshire spring and fall bottom trawl surveys, the Canadian Department of Fisheries and Oceans February survey, and some additional state surveys. Catch per unit effort is

not typically used as a source of population trends due to the many regulatory changes that have occurred over time in the Northeast.

There are thirteen stocks assessed with an age-based approach, eight use the statistical catch at age model ASAP while the other five use virtual population analysis. For the five VPA stocks, the 2015 spring survey information will be included in the model. The remaining seven stocks are assessed with a range of model types including surplus production, length-based (SCALE), index (AIM), and direct survey expansion. The reference points for the age- and length-based assessments are derived from stochastic projections of the Fmsy for many years (typically 100) while the other assessment types use stock specific rules for deriving the reference points. Based on the last assessment, nine stocks were overfished, nine stocks were not overfished, and two stocks could not determine overfished status. In contrast, five stocks were undergoing overfishing, fourteen stocks were not undergoing overfishing, and one stock could not have overfishing status determined. Six stocks were rebuilt, twelve stocks were in a rebuilding plan and two stocks could not determine rebuilding status.

The following Tables 1-5 summarize the primary attributes of the stocks, data used, model parameterization and current status. The table formats and information may be modified during the meeting of the Assessment Oversight Panel.

Table 1. List of stocks included in the groundfish update.

Label	Stock Abbrev	Stock Name
A	GOMcod	Gulf of Maine Cod
B	GBcod	Georges Bank Cod
C	GOMhad	Gulf of Maine Haddock
D	GBhad	Georges Bank Haddock
E	CCGOMyt	Cape Cod/Gulf of Maine Yellowtail Flounder
F	SNEMAYt	Southern New England/Mid-Atlantic Yellowtail Flounder
G	GBwinf	Georges Bank Winter Flounder
H	SNEMAwinf	Southern New England/Mid-Atlantic Winter Flounder
I	redfish	Acadian Redfish
J	plaice	American Plaice
K	witch	Witch Flounder
L	w_hake	White Hake
M	pollock	Pollock
N	wolffish	Wolffish
O	halibut	Atlantic Halibut
P	Nwindow	Gulf of Maine/Georges Bank Windowpane
Q	Swindow	Southern New England/Mid-Atlantic Windowpane
R	pout	Ocean Pout
S	GOMwinf	Gulf of Maine Winter Flounder
T	GByt	Georges Bank Yellowtail Flounder

Table 2. Lead scientist for each stock (current/previous if different), information about last assessment, status, and reference.

Stock Abbrev	Lead Scientist (current/previous)	Last Assessment	Type	Year Published	Terminal Year of catch data	overfished?	overfishing?	Rebuilding Status	reference
GOMcod	Michael Palmer	Op. Update	Update	2014	2013	Yes	Yes	Rebuild by 2024	CRD14-14
GBcod	Loretta O'Brien	SARC 55	Benchmark	2012	2011	Yes	Yes	Rebuild by 2026	SARC55
GOMhad	Michael Palmer	SARC 59	Benchmark	2014	2013	No	No	Rebuilt	SARC59
GBhad	Liz Brooks	GARM2012	Update	2012	2010	No	No	Rebuilt	CRD12-06
CCGOMyt	Larry Alade/Chris Legault	GARM2012	Update	2012	2010	Yes	Yes	Rebuild by 2023	CRD12-06
SNEMAYt	Larry Alade	SARC 54	Benchmark	2012	2011	No	No	Rebuilt	SARC54
GBwinf	Lisa Hendrickson	Op. Update	Update	2015	2013	No	No	Rebuild by 2017	CRD15-01
SNEMAwinf	Tony Wood/Mark Terciero	SARC 52	Benchmark	2011	2010	Yes	No	Rebuild by 2023	SARC52
redfish	Brian Linton/Tim Miller	GARM2012	Update	2012	2010	No	No	Rebuilt	CRD12-06
plaice	Loretta O'Brien	GARM2012	Update	2012	2010	No	No	Rebuild by 2024	CRD12-06
witch	Susan Wigley	GARM2012	Update	2012	2010	Yes	Yes	Rebuild by 2017	CRD12-06
w_hake	Kathy Sosebee	SARC 56	Benchmark	2013	2011	No	No	Rebuild by 2014	SARC56
pollock	Brian Linton	Op. Update	Update	2015	2013	No	No	Rebuilt	CRD15-01
wolffish	Chuck Adams/Chad Keith	GARM2012	Update	2012	2010	Yes	No	Unknown	CRD12-06
halibut	Dan Hennen/Jessica Blaylock	GARM2012	Update	2012	2010	Yes	No	Rebuild by 2055	CRD12-06
Nwindow	Toni Chute/Lisa Hendrickson	GARM2012	Update	2012	2010	Yes	Yes	Rebuild by 2017	CRD12-06
Swindow	Toni Chute/Lisa Hendrickson	GARM2012	Update	2012	2010	No	No	Rebuilt	CRD12-06
pout	Susan Wigley	GARM2012	Update	2012	2010	Yes	No	Rebuild by 2014	CRD12-06
GOMwinf	Paul Nitschke	Op. Update	Update	2015	2013	Unknown	No	Unknown	CRD15-01
GByt	Chris Legault	TRAC 2015	Update	2015	2014	Unknown	Unknown	Rebuild by 2032	TRAC2015

Table 3. Data used in each assessment.

Stock Abbrev	Catch					Surveys							
	US Commercial Landings	US Commercial Discards	US Recreational Landings	US Recreational Discards	Canadian Catch	NEFSC Spring	NEFSC Fall	NEFSC Winter	Mass Spring	Mass Fall	ME/NH Spring	ME/NH Fall	DFO Spring
GOMcod	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Yes	No	No	No	No
GBcod	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	Yes
GOMhad	Yes	Yes	Yes	Yes	No	Yes	Yes	No	No	No	No	No	No
GBhad	Yes	Yes	No	No	Yes	Yes	Yes	No	No	No	No	No	Yes
CCGOMyt	Yes	Yes	No	No	No	Yes	Yes	No	Yes	Yes	Yes	Yes	No
SNEMAYt	Yes	Yes	No	No	No	Yes	Yes	Yes	No	No	No	No	No
GBwinf	Yes	Yes	No	No	Yes	Yes	Yes	No	No	No	No	No	Yes
SNEMAwinf	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No	No	No	No
redfish	Yes	Yes	No	No	No	Yes	Yes	No	No	No	No	No	No
plaice	Yes	Yes	No	No	Yes	Yes	Yes	No	Yes	Yes	No	No	No
witch	Yes	Yes	No	No	No	Yes	Yes	No	No	No	No	No	No
w_hake	Yes	Yes	No	No	Yes	Yes	Yes	No	No	No	No	No	No
pollock	Yes	Yes	Yes	Yes	No	Yes	Yes	No	No	No	No	No	No
wolffish	Yes	Yes	Yes	No	No	Yes	Yes	No	Yes	No	No	No	No
halibut	Yes	Yes	No	No	Yes	No	Yes	No	No	No	No	No	No
Nwindow	Yes	Yes	No	No	No	No	Yes	No	No	No	No	No	No
Swindow	Yes	Yes	No	No	No	No	Yes	No	No	No	No	No	No
pout	Yes	Yes	No	No	No	Yes	No	No	No	No	No	No	No
GOMwinf	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes	Yes	No
GByt	Yes	Yes	No	No	Yes	Yes	Yes	No	No	No	No	No	Yes

Table 4. Assessment type and reference points from previous assessment. Note: sp=stochastic projection.

Stock Abbrev	Assessment	Type	F definition	B definition	Fmsy type	Fmsy value	Bmsy type	Bmsy value	MSY type	MSY value	
GOMcod	ASAP	age-based	Ffull	SSB	F40%SPR	0.18	sp	47,184 (M=0.2) or 69,621 (Mramp)	sp	7,753 (M=0.2) or 11,388 (Mramp)	
GBcod	ASAP	age-based	Ffull	SSB	F40%SPR	0.18	sp	186,535	sp	30,622	
GOMhad	ASAP	age-based	Ffull	SSB	F40%SPR	0.46	sp	4,108	sp	955	
GBhad	VPA	age-based	avg F ages 5-7	SSB	F40%SPR	0.39	sp	124,900	sp	28,000	
CCGOMyt	VPA	age-based	avg F ages 4-6	SSB	F40%SPR	0.26	sp	7,080	sp	1,600	
SNEMAYt	ASAP	age-based	avg F ages 4-5	SSB	F40%SPR	0.316	sp	2,995	sp	773	
GBwinf	VPA	age-based	avg F ages 4-6	SSB	Fmsy	0.44	sp	8,100	sp	3,200	
SNEMAwinf	ASAP	age-based	avg F ages 4-5	SSB	Fmsy	0.29	sp	43,661	sp	11,728	
redfish	ASAP	age-based	Ffull	SSB	F50%SPR	0.04	sp	238,000	sp	8,891	
plaice	VPA	age-based	avg F ages 6-9	SSB	F40%SPR	0.18	sp	18,398	sp	3,385	
witch	VPA	age-based	avg F ages 8-11	SSB	F40%SPR	0.27	sp	10,051	sp	2,075	
w_hake	ASAP	age-based	Ffull	SSB	F40%SPR	0.20	sp	32,400	sp	5,630	
pollock	ASAP	age-based	avg F ages 5-7	SSB	F40%SPR	0.27	sp	76,900	sp	14,800	
wolffish	SCALE	length-based surplus production	Ffull	SSB	F40%SPR	0.33	sp	1,756	sp	261	
halibut	RYM	production	biomass wted F relative F catch (kt)/survey biomass (kg per tow)	biomass	F0.1	0.0731	deterministic calculation	49,000	deterministic calculation	3,500	
Nwindow	AIM	index	relative F catch (kt)/survey biomass (kg per tow)	survey B (kg/tow)	replacement ratio	0.44	MSY proxy/Fmsy proxy (units = kg / tow)	1.60	median catch 1995-2001	700	
Swindow	AIM	index	relative F catch (kt)/survey biomass (kg per tow)	survey B (kg/tow)	replacement ratio	2.09	MSY proxy/Fmsy proxy (units = kg / tow)	0.24	median catch 1995-2001	500	
pout	index	index	biomass (kg per tow)	survey B (kg/tow)	median relative F 1977-1985	0.76	exploitation rate associated with F40% from length-based YPR	4.94	median survey B 1977-1985	Fmsy * Bmsy	3,754
GOMwinf	empirical	survey expansion	exploitation rate (catch/30+cm biomass)	survey B (mt)	length-based YPR	0.23		NA	NA	NA	
GByt	empirical	survey expansion	NA	survey B (mt)	NA	NA		NA	NA	NA	

Table 5. Model attributes from most recent assessment for stocks with age-based and length-based models.

Mohn's Rho

<i>Stock Abbrev</i>	<i>Assessment</i>	<i>F-retro</i>	<i>B-retro</i>	<i>Retro Adjust-ment used?</i>	<i>Split Survey Series?</i>	<i>Comments</i>
GOMcod	ASAP	-0.33 (M=0.2)	0.53 (M=0.2)	No	No	
		-0.05 (M-ramp)	0.17 (M-ramp)	No	No	
GBcod	ASAP	-0.46	0.68	Yes	No	
GOMhad	ASAP	0.30	-0.15	No	No	
GBhad	VPA	0.15	0.20	No	No	
CCGOMyt	VPA	-0.19	0.68	Yes	No	
SNEMAYt	ASAP	-0.16	0.14	No	No	
GBwinf	VPA	-0.16	0.26	No	No	
SNEMAwinf	ASAP	-0.31	0.35	No	No	
redfish	ASAP	-0.04	0.04	No	No	
plaice	VPA	-0.35	0.62	Yes	No	
witch	VPA	-0.33	0.61	No	Yes	Recruitment Age 3
w_hake	ASAP	-0.13	0.15	No	No	
pollock	ASAP	-0.25	0.29	No	No	
wolffish	SCALE	-0.55	1.06	No	No	