



New England Fishery Management Council

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C. M. "Rip" Cunningham, Jr., *Chairman* | Paul J. Howard, *Executive Director*

MEMORANDUM

DATE: February 13, 2013
TO: Recreational Advisory Panel
FROM: Tom Nies and Fiona Hogan
SUBJECT: **Potential Recreational Measures for FY 2013**

1. The attachments provide information to support RAP discussions on recreational measures for FY 2013. NEFSC personnel will be at the meeting on Friday, February 15, 2013 to explain the data and answer any questions.

2. In brief, based on catches in 2012, projected stock size, and a model used to develop measures, there does not appear to be a need to change the measures for GOM cod – the current 19 inch minimum size and 9 fish bag limit should meet FY 2013 objectives. There is, however, a need to modify measures for GOM haddock. Table 1 shows the estimated catches in FY 2013 under the existing management measures. For both GOM cod and GOM haddock, the model suggests that removals will decline, primarily due to changing stock conditions. Example measures are shown in Table 2. Only measures that achieve the sub-ACL in more than 50 of the iterations should be considered adequate to meet mortality objectives. The analysts running the model offered these observations of the results:

- a) The haddock bag limit doesn't affect total haddock mortality very much. This is because there are very few trips which are encountering more than 5, 10, or 20 haddock.
- b) The haddock minimum size matters a lot for haddock catch, cod catch and total trips.
- c) The regulatory measures which are sufficient to get a median haddock catch which is less than 74mt is a 21" minimum. The simulation model predicts that this will catch less than 74mt 63% of the time. This produces 11% less effort (and 10% less cod catch). It also increases the discards by about 33%.

3. The RAP received a briefing of the model at its last meeting. Since that meeting, the following changes have been made to the model:

- a) Data and Population Model updates:
- The most recent 6 waves from MRIP are used to compute the recreational “encounters-per-trip” for both species and the “length of catch” for both species.
 - New stock assessment model for GOM cod. The “M2 split short projection” was used.
 - Updated Length-weight equations and age-length relationships for both species.
- b) Recreational discard mortality is set to 30% for cod and 0% for haddock.
- c) The model time step is the MRFSS/MRIP “wave” instead of the calendar year.
- Easier to model the fishing year instead of the calendar year.
 - “Encounters-per-trip” and “length of catch” varies across the waves to reflect different quality of recreational fishing in each wave.

Overview of 2012 GOM Cod and GOM Haddock Catch

Notes:

Catches include an estimate for April 2013 and Wave 6 that is based on “Removals” is the amount of fish killed and takes into account discard (B2) mortality rate of 30 percent for GOM cod. B2 discards are not counted in the GOM haddock catch at present.

Gulf of Maine Cod

FY2012

Angler Trips = 164,684

Cod Total Catch in Numbers $(a+b1+b2) = 728,291$

Cod Total Removals (i.e., assumed mortality) in Numbers $(a+b1+.3b2) = 410,231$

Cod Total Removals in Weight $(a+b1+.3b2) = 1,313,035$ lbs (596 mt)

Cod Avg. Catch Per Trip in Numbers = 4.42

Cod Avg. Removals Per Trip in Numbers = 2.49

Cod Avg. Removals Per Trip in Weight = 7.97 lbs

Cod Avg. Removals Weight Per Fish = 3.2 lbs

FY2011

Angler Trips = 235,343

Cod Total Catch in Numbers $(a+b1+b2) = 1,387,441$

Cod Total Removals (i.e., assumed mortality) in Numbers $(a+b1+.3b2) = 773,085$

Cod Total Removals in Weight $(a+b1+.3b2) = 4,664,022$ lbs (2,116 mt)

Cod Avg. Catch Per Trip in Numbers = 5.90

Cod Avg. Removals Per Trip in Numbers = 3.28

Cod Avg. Removals Per Trip in Weight = 19.82 lbs

Cod Avg. Removals Weight Per Fish = 6.0 lbs

Gulf of Maine Haddock

FY2012

Angler Trips = 164,684

Haddock Total Catch in Numbers (a+b1+b2) = 320,893

Haddock Total Removals (i.e., mortality) in Numbers (a+b1) = 144,145

Haddock Total Removals in Weight (a+b1) = 464,427 lbs (211 mt)

Haddock Avg. Catch Per Trip in Numbers = 1.95

Haddock Avg. Removals Per Trip in Numbers = 0.88

Haddock Avg. Removals Per Trip in Weight = 2.82 lbs

Haddock Avg. Removals Weight Per Fish = 3.2 lbs

FY2011

Angler Trips = 235,343

Haddock Total Catch in Numbers (a+b1+b2) = 180,761

Haddock Total Removals (i.e., mortality) in Numbers (a+b1) = 142,410

Haddock Total Removals in Weight (a+b1) = 510,286 lbs (232 mt)

Haddock Avg. Catch Per Trip in Numbers = 0.77

Haddock Avg. Removals Per Trip in Numbers = 0.61

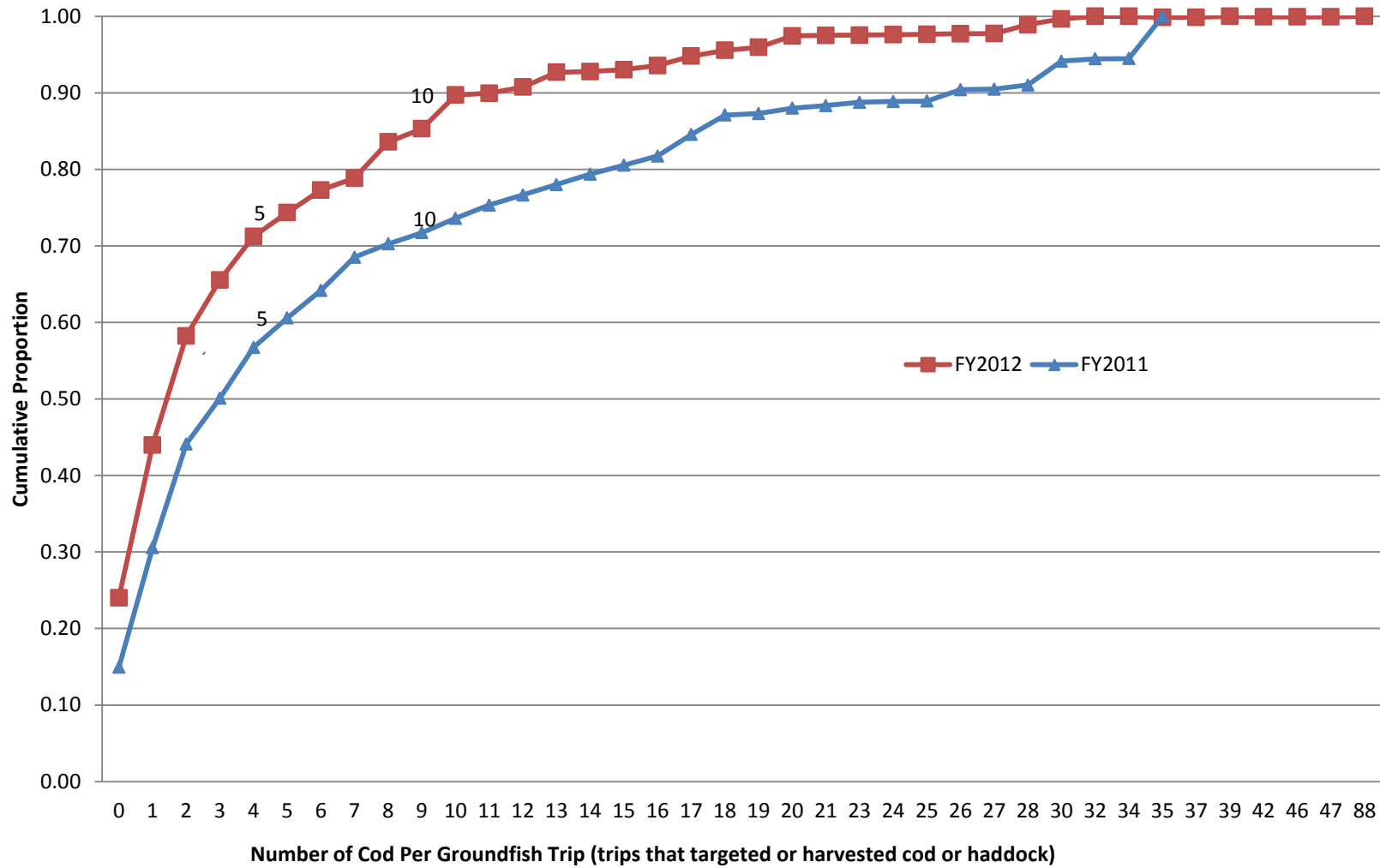
Haddock Avg. Removals Per Trip in Weight = 2.17 lbs

Haddock Avg. Removals Weight Per Fish = 3.6 lbs

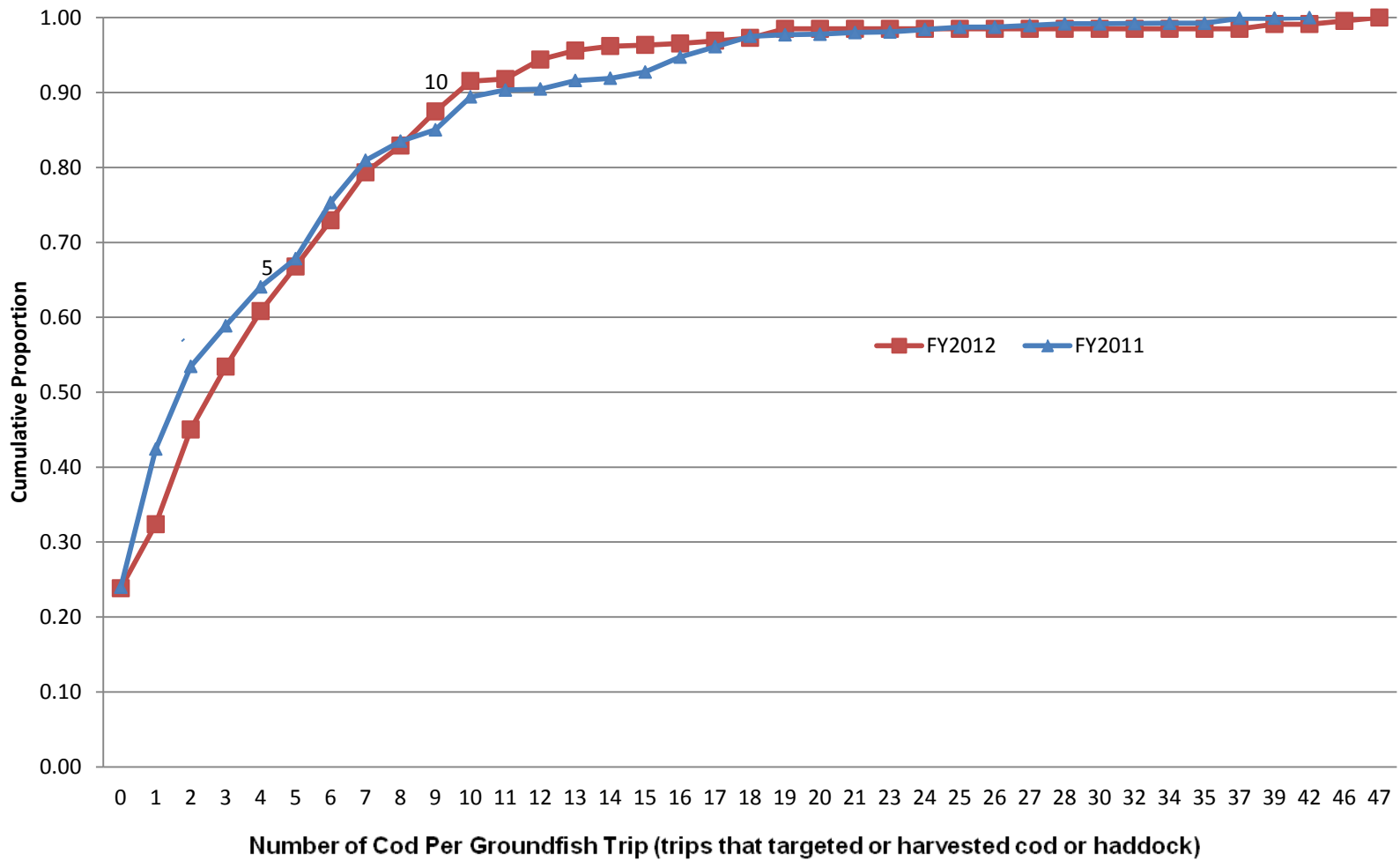
Gulf of Maine Cod Catch by Fishing Year and Mode (numbers of fish)				
fishing year	mode	total_catch (a+b1+b2)	harvest (a+b1)	release (b2)
2012	p/c	293,174	140,069	153,105
2012	private	435,117	133,851	301,266
2011	p/c	774,347	317,113	457,234
2011	private	613,095	192,676	420,418
Gulf of Maine Haddock Catch by Fishing Year and Mode (numbers of fish)				
fishing year	mode	total_catch (a+b1+b2)	harvest (a+b1)	release (b2)
2012	p/c	151,264	90,118	61,146
2012	private	169,629	54,027	115,602
2011	p/c	109,779	87,332	22,446
2011	private	70,983	55,077	15,906
Number of Groundfish Trips that Targeted or Harvested Gulf of Maine Cod or Haddock by Fishing Year and Mode				
fishing year	mode	number of trips		
2012	p/c		72,450	
2012	private		92,203	
2012	shore		31	
2011	p/c		98,600	
2011	private		135,924	
2011	shore		819	

Cod Catch Per Groundfish Trip by Fishing Year and Mode (numbers of fish)				
		catch per trip		
fishing year	mode	total_catch (a+b1+b2)	harvest (a+b1)	release (b2)
2012	p/c	4.0	1.9	2.1
2012	private	4.7	1.5	3.3
2012	shore	0.0	0.0	0.0
2011	p/c	7.9	3.2	4.6
2011	private	4.5	1.4	3.1
2011	shore	0.0	0.0	0.0
Haddock Catch Per Groundfish Trip by Fishing Year and Mode (numbers of fish)				
		catch per trip		
fishing year	mode	total_catch (a+b1+b2)	harvest (a+b1)	release (b2)
2012	p/c	2.1	1.2	0.8
2012	private	1.8	0.6	1.3
2012	shore	0.0	0.0	0.0
2011	p/c	1.1	0.9	0.2
2011	private	0.5	0.4	0.1
2011	shore	0.0	0.0	0.0

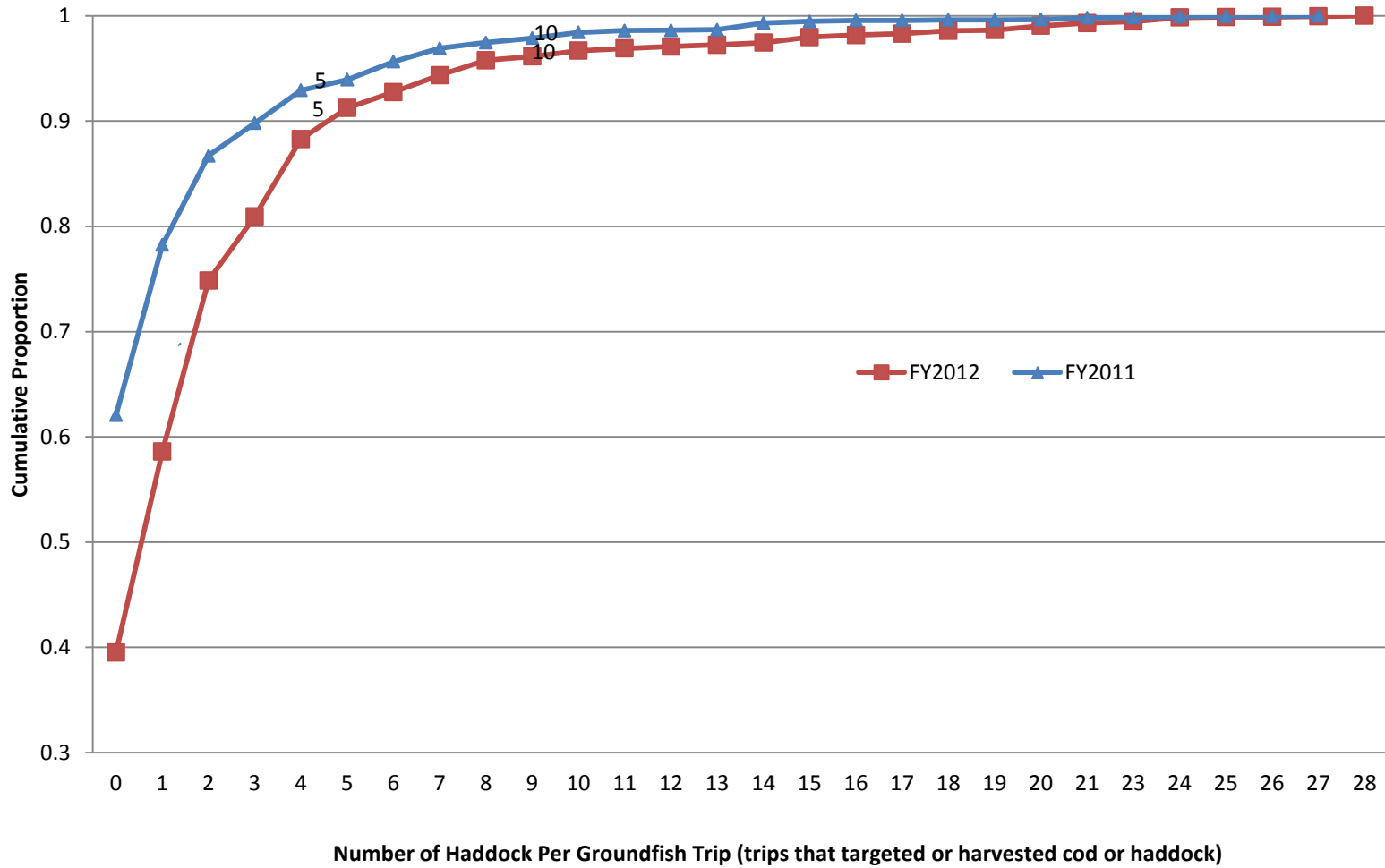
Cumulative Proportion of Gulf of Maine Cod Catch (a+b1+b2) by Party/Charter Anglers



Cumulative Proportion of Gulf of Maine Cod Catch (a+b1+b2) by Private Boat Anglers



Cumulative Proportion of Gulf of Maine Haddock Catch (a+b1+b2) by Party/Charter Anglers



Cumulative Proportion of Gulf of Maine Haddock Catch (a+b1+b2) by Private Boat Anglers

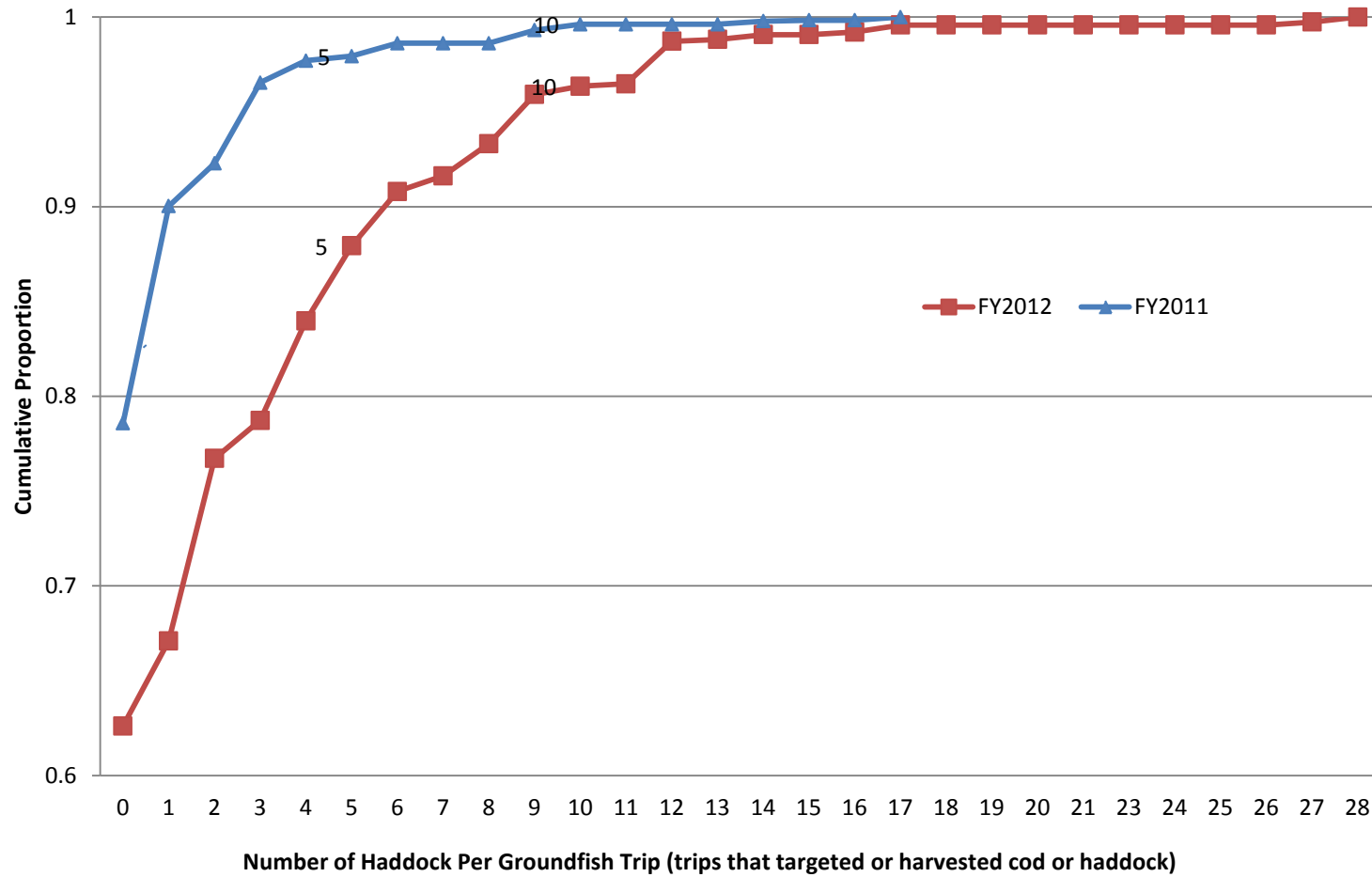


Table 1 – Expected 2013 catches under current regulations for GOM cod and GOM haddock

	2012	Model 2013	
<u>Trips</u>	164,684	152,566	
a+b1 kept cod (lbs)	1,100,441	836,333	
a+b1 kept cod (num)	273,920	215,867	
b2 disc cod (lbs)	708,646	716,843	
b2 discard mortality	212,594	215,053	
disc cod (num)	454,371	472,295	
Cod Mortality (lbs)	1,313,035	1,051,386	-19.3 %
a+ b1 kept hadd (lbs)	477,307	319,091	
a+b1 kept hadd (num)	144,145	103,565	
b2 disc hadd lbs	211,532	221,216	
disc hadd (num)	176,748	182,504	
<u>Haddock Mortality (lbs)</u>	477,307	319,091	-33.15%

Table 2 – Example recreational measures for FY 2013

Cod Bag	Haddock Bag	Cod Min	Haddock Min	Trips (Median)	Cod Mortality lbs (Median)	Haddock Kept lbs (Median)	Under Cod sub-ACL (out of 100 trials)	Under Hadd sub-ACL (out of 100 trials)	Cod Kept (lbs)	Cod Discard (lbs)	Cod Discard Dead (lbs)	Hadd Discard (lbs)
9	10	19	18	153,700	998,554	334,299	64	11	821,590	596,489	178,947	213,785
9	35	19	18	153,549	997,888	337,692	65	11	824,294	596,022	178,806	212,651
9	5	19	18	153,380	999,554	332,924	67	11	823,402	597,543	179,263	213,219
9	20	19	18	153,251	999,642	335,349	66	11	826,857	595,877	178,763	213,043
9	20	19	20	141,610	922,150	182,796	78	42	757,979	548,286	164,486	266,450
9	35	19	20	141,586	926,307	182,669	77	42	763,237	549,922	164,976	266,220
9	10	19	20	141,577	924,444	183,814	77	42	763,023	550,658	165,197	266,762
9	5	19	20	141,394	928,165	183,954	77	42	768,460	551,460	165,438	266,867
9	10	19	21	137,194	896,983	126,631	81	63	736,252	531,454	159,436	283,494
9	20	19	21	137,190	900,769	128,187	82	63	738,568	531,685	159,506	284,873
9	5	19	21	136,898	898,811	127,462	82	63	733,396	532,005	159,601	284,305
9	35	19	21	136,622	902,304	126,264	82	63	737,653	532,411	159,723	284,551