



New England Fishery Management Council

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MEMORANDUM

DATE: August 3, 2016
TO: Science and Statistical Committee
FROM: Monkfish Plan Development Team
SUBJECT: **2016 Monkfish Fishery Performance Report**

Risk Policy Considerations

What is the purpose of the recommendation for ABC?

To set the Acceptable Biological Catch (ABC) and subsequent Annual Catch Targets (ACTs) at a level that would not increase the potential for overfishing to occur on the monkfish stocks.

What is the information that is required to make the ABC successful?

Survey indices that adequately capture the biomass trends in the population can be used to assess the stock. Monkfish specifications were based on survey indices prior to moving to the SCALE model at SAW 50. If the assumption is correct that the survey trends reflect the trends in the monkfish biomass then this method would set an ABC conservative enough to not risk overfishing.

Accurate growth data are necessary in order for the SCALE model to be updated successfully, if a move back to the model was desired.

What is the quality of that information?

The NEFSC trawl survey data have been used to set catch advice for monkfish in the past. The loss of the SCALE model because of inaccurate growth data could increase uncertainty in the specifications. However, the model was subject to several sources of uncertainty in addition to potential growth mis-specification, thus using a model-free approach avoids those uncertainties. Catch rates of monkfish on the FRSV Bigelow for monkfish are 7-8 times greater than on the RV Albatross IV, and average coefficients of variation for monkfish indices from Bigelow surveys range 11-19%, indicating a relatively high level of precision.

What are the probabilities and severities of undesirable outcomes?

The 2016 monkfish operational assessment has examined recent catch and survey data and detected no major changes in the stock that warrant serious concern, thus continuing status quo regulations is unlikely to cause problems with the stock. The only potential concern is a recent downturn in exploitable biomass in the south; however this may be mitigated by the appearance and rapid growth of a very strong year class.

The strategy suggested to adjust catches (if status quo is not maintained) is similar to that used on GB cod, however, those GB cod specifications have been in place less than a year so there is no history of experience with the method. Recent landings have remained below the Total Allowable Landings (TALs), which may reduce risk by acting as an additional buffer from exceeding the ABC. Industry has taken a cautious approach to monkfish management in general and has only accepted moderate increases to DAS allocations when informed they could have large increases.

Does the benefit of achieving the purpose outweigh the risk?

In the absence of specifications, the ABC set in FW8 would rollover, thus maintaining status quo. When setting the ABC in FW8, the SSC determined that the existing ABC should be rolled over (from FW7 and A5) because of the level of uncertainty associated with the assessment.

Item	Comments
Outcomes	
Identify the major desirable and undesirable outcomes that may result from a management decision option	<ul style="list-style-type: none"> • Risk of overfishing continues to be low based on updated survey indices • Consistency for fishery • Under-harvesting of TAL could continue
Qualitatively describe the severity of negative outcomes in the short- and long-term.	<ul style="list-style-type: none"> • The continuation of under-harvesting of the TAL would maintain the negative economic impacts the fleet is currently experiencing • If under-harvesting occurs, it could have positive biological impacts since it is serving as an additional buffer for the ACL
Methods of analysis	
Identify the likelihood of the undesirable outcome(s) for each management decision option.	<ul style="list-style-type: none"> • The under-harvesting of the TAL is likely to continue; however, vessels in the NFMA are expected to have an unlimited monkfish possession limit when fishing on both a NE multispecies and monkfish DAS, if approved as part of FW9. This may reduce the under-harvesting
Characterize short- and long-term tradeoffs among broad management objectives (e.g., conservation versus economic	<ul style="list-style-type: none"> • This is a stable fishery in terms of catch – business plans can be followed • Based on the operational assessment no apparent large fluctuations in monkfish

benefit)	biomass in the recent past have occurred – the 2015 year class could change that and it is recommended that this year class be monitored
Management stability	
Review and document major sources of uncertainty that may cause management failure or instability	<ul style="list-style-type: none"> • Spring index 2016 – timing of the survey may affect estimation of relative abundance in that spring because monkfish may have migrated prior to delayed survey • If specifications are rolled over again, this would keep catch at a level that has not resulted in overfishing since 2010. The survey has not indicated a large change in biomass that would suggest the stock is being impacted by current fishing effort, although exploitable biomass in the south should be monitored • Exploitable biomass in SFMA has decreased in recent years even though total biomass has not shown a decline

Fishery Performance Report

In 2015, there were 600 monkfish limited access permits, of which 268 were Category C permits also holding limited access permits in either the multispecies or scallop fisheries. There were also 242 Category D permits holding a multispecies or scallop limited access permit. The total number of monkfish limited access permits in 2014 was 637 ([NEFMC, 2016](#)). The number of monkfish limited access permits can change year-to-year primarily due to voluntary relinquishment or through the placement of limited access rights into a ‘confirmation of permit history’ and not renewing the vessel permit.

Table 1 - Number of monkfish limited access vessels also issued a limited access permit in other fisheries in 2015, by monkfish limited access permit category

MONKFISH PERMIT CATEGORY	NUMBER OF MONKFISH PERMITS	NUMBER OF MONKFISH VESSELS ALSO ISSUED A LIMITED ACCESS PERMIT FOR:										
		BLACK SEA BASS	SUMMER FLOUNDER	HERRING	LAGC IFQ SCALLOP	LOBSTER	MULTI-SPECIES	OCEAN QUAHOG	RED CRAB	SCALLOP	SCUP	SQUID/ MACKEREL/ BUTTERFISH
A	22	13	10		4	14	2				12	1
B	43	19	8		4	22	3				10	4
C	268	97	211	15	147	218	136			161	103	88
D	242	94	150	22	111	217	237			19	116	78
F	17	16	17	8	9	17	15			2	17	17
H	8	2	1		1							
TOTAL	600	241	397	45	276	488	393	0	0	182	258	188

The FMP also provides an open-access permit (Category E) for vessels that did not qualify for a limited access permit, so those vessels can land monkfish caught incidentally in other fisheries. The number of Category E permits peaked in 2005 and has been declining since (Table 2).

Table 2 - Monkfish open-access (Category E) permits issued each year since implementation of the FMP since 1999

Fishing Year	Number of permits
1999	1466
2000	1882
2001	1991
2002	2142
2003	2120
2004	2256
2005	2379
2006	2310
2007	2265
2008	2163
2009	2066
2010	1998
2011	1827
2012	1763
2013	1713
2014	1644
2015	1595
TOTAL	4949

Source: NMFS-GARFO Analysis and Program Support Division, vessel permit database, accessed July, 2016.

Table 3 shows monthly landings for FY2015 by area and gear, as well as total monthly landings for the fishing year. The TAL was under-harvested in both management areas in FY2015. Based on feedback during the PDT call on August 2, 2016 (from both industry and Advisory Panel members), numerous factors other than availability of the stock affected the ability to land monkfish. In 2015, warmer water was encountered in the Southern Fishery Management Area followed by storms, which affected the timing of the availability of monkfish and the ability to go fishing for them. Regulations were considered to be restricting in the NFMA; if relaxed a higher percentage of the TAL could be achieved. In the SFMA, both voluntary and mandatory protected resource measures have affected fishing, and changes to possession limits have changed how much gear is fished on a trip.

Consistency is important to participants in this fishery. Participants on the call, particularly in the SFMA, were strongly in favor of status quo, which would enable them to continue their business plans.

Table 3 - Monkfish landings by area, gear, and month for FY2015 (converted to live weight)

	MAY 2015	JUN 2015	JUL 2015	AUG 2015	SEP 2015	OCT 2015	NOV 2015	DEC 2015	JAN 2016	FEB 2016	MAR 2016	APR 2016	MAY '15-APR '16		2015	
													Metric Tons	Percent of Area	May-Apr FY '15 as a % of Target TAL	Target TAL
																Metric Tons
NORTHERN	226	215	258	332	325	284	322	379	299	501	548	391	4,080	46%	70%	5,854
OTTER TRAWL	181	156	150	154	192	173	251	350	295	499	545	384	3,330	38%	57%	
GILLNET	39	38	86	148	126	104	64	29	4	2	1	6	647	7%	11%	
DREDGE	6	17	20	29	6	7	7	0		0	0	1	93	1%	2%	
OTHER GEARS	0	4	2	1	1	0	0	0			2	0	10	0%	0%	
SOUTHERN	1,030	748	332	99	64	198	256	469	295	254	444	544	4,733	54%	53%	8,925
OTTER TRAWL	53	15	20	15	19	97	33	99	46	88	111	87	683	8%	8%	
GILLNET	811	582	189	9	10	81	209	356	238	153	308	403	3,349	38%	38%	
DREDGE	142	117	95	68	32	10	9	11	10	12	15	29	550	6%	6%	
OTHER GEARS	24	34	28	7	3	10	5	3	1	1	10	25	151	2%	2%	
ALL AREAS	1,256	963	590	431	389	482	578	848	594	755	992	935	8,813	100%		
OTTER TRAWL	234	171	170	169	211	270	284	449	341	587	656	471	4,013	46%		
GILLNET	850	620	275	157	136	185	273	385	242	155	309	409	3,996	45%		
DREDGE	148	134	115	97	38	17	16	11	10	12	15	30	643	7%		
OTHER GEARS	24	38	30	8	4	10	5	3	1	1	12	25	161	2%		

Landings in both management areas peaked in FY2003 but then declined until reaching a relatively stable level between FY2011 – FY2015 (Table 4). However, a slight increase in landings was observed in FY2015 in the NFMA it is too soon to know if this is a trend of just a small fluctuation. Monkfish landings increased between FY 2002 and FY 2003, principally due to the increased trip limits in the SFMA, then declined in FY 2004 as trip limits and DAS allocations were reduced in that area. In FY 2005 total landings increased by 1,272 mt, due to an increase in SFMA landings as a result of increased trip limits and DAS allocations, despite a decline of 20% in NFMA landings from the previous year. NFMA landings declined between FY 2001 and FY2010, although trip limits were only established in FY 2007, and in FY 2008 landings were about 24% of what they were at the peak. The 2013 Emergency Action removed the NFMA possession limit but did not appear to significantly increase landings on previous fishing years. The NFMA harvest was below the target TAL for FY 2015 (70%); the SFMA harvest was also below the target TAL for FY 2015 (53%).

Table 4 - Monkfish landings by management area FY1999-2015

Year	NFMA (metric tons)	SFMA (metric tons)
1999	9,720	14,311
2000	11,859	7,960
2001	14,853	11,069
2002	14,491	7,478
2003	14,155	12,198
2004	11,750	6,193
2005	9,533	9,656
2006	6,677	5,909
2007	5,050	7,180
2008	3,528	6,751
2009	3,344	4,800
2010	2,834	4,484
2011	3,699	5,801
2012	3,920	5,184
2013	3,596	5,088
2014	3,403	5,415
2015	4,080	4,733

Source: NMFS-GARFO Analysis and Program Support Division, cfders dealer weighout and vessel trip report databases.

Table 5 is based on fishing year and landed weights, and suggests landings and revenues may be levelling out. Feedback from industry indicates that having stable landings during the season helps to keep the price high.

Table 5 - Total monkfish landings (landed weight) and revenues, 1995 - 2015 by federally-permitted vessels

Fishing Year	Landings*	Revenues*
(May 1 - April 30)	(1,000 lbs. landed wt.)	(\$1,000)
1995	18,416	\$24,759
1996	20,733	\$26,188
1997	21,774	\$30,127
1998	24,156	\$34,682
1999	26,077	\$48,714
2000	23,423	\$46,123
2001	30,520	\$42,354
2002	25,312	\$35,256
2003	29,319	\$37,469
2004	18,542	\$31,141
2005	22,857	\$42,719
2006	14,764	\$28,598
2007	14,367	\$29,426
2008	11,672	\$23,228
2009	9,494	\$18,364
2010	8,612	\$20,173
2011	11,365	\$28,885
2012	9,940	\$21,400
2013	9,395	\$18,065
2014	9,992	\$19,210
2015	9,949	\$19,046

Source: NMFS-GARFO Analysis and Program Support Division, cfders dealer weighout database, accessed July, 2016.

Table 6 and Table 7 show monkfish landings and revenues as a percentage of total landings and revenues by permit categories for FY2006 – 2014. Data for Connecticut is shown separately to facilitate comparison with earlier landings data summarized in previous monkfish management actions that account for different ways that Connecticut reported state landings to NMFS. Category A and B vessels continue to show a higher dependence on monkfish than Category C and D vessels.

Table 6 - Monkfish landings, 2006 - 2015 as a percentage of total landings by permit category

Monkfish Permit Category	1,000 pounds, landed weight									
	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
A	629	932	993	730	773	957	932	871	906	831
% of Total A Landings	9.8%	8.3%	8.7%	9.1%	10.1%	7.3%	14.7%	31.4%	25.5%	31.5%
B	1,206	1,628	1,558	1,117	1,210	1,579	1,429	1,251	1,446	1,154
% of Total B Landings	37.4%	42.3%	46.8%	27.0%	27.3%	28.3%	29.1%	28.5%	30.9%	21.1%
C	5,563	5,000	3,787	3,273	2,984	3,804	3,275	3,020	3,313	3,461
% of Total C Landings	6.1%	5.2%	3.8%	3.3%	3.0%	3.9%	3.9%	4.0%	4.9%	4.9%
D	5,842	5,384	4,503	3,734	3,199	4,288	3,531	3,509	3,674	3,901
% of Total D Landings	7.9%	7.1%	5.6%	4.3%	4.6%	4.7%	4.2%	4.3%	5.2%	6.0%
H	242	223	228	217	142	297	231	161	177	159
% of Total H Landings	19.4%	17.2%	14.8%	21.8%	12.0%	19.7%	18.7%	14.9%	15.5%	13.4%
E (Open Access)	987	937	605	424	282	342	417	526	378	344
% of Total E Landings	0.3%	0.3%	0.2%	0.1%	0.1%	0.1%	0.1%	0.2%	0.1%	0.1%
F					23	98	125	58	98	100
% of Total F Landings					0.7%	0.8%	0.8%	0.2%	0.3%	0.3%
CT	294	263								
% of Total CT Landings	2.8%	2.9%								
TOTAL MONK LANDED	14,764	14,367	11,672	9,494	8,612	11,365	9,940	9,395	9,992	9,949

Source: NMFS-GARFO Analysis and Program Support Division, cfders dealer weighout database, accessed July, 2016.

* CT data may include landings from vessels without a 2006-2007 Monkfish permit

If necessary, Category F landings have been allocated to prior permit categories to protect confidentiality

Table 7 - Monkfish revenues, 2006 - 2015 as a percentage of total revenues by permit category

Monkfish Permit Category	\$1,000, nominal (not discounted)									
	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
A	\$1,002	\$1,296	\$1,406	\$993	\$1,341	\$1,915	\$1,637	\$1,297	\$1,407	\$1,276
% of Total A Revenues	36.6%	40.6%	33.2%	35.0%	27.6%	31.2%	34.1%	31.2%	30.2%	30.9%
B	\$1,788	\$2,278	\$2,091	\$1,564	\$2,191	\$3,237	\$2,593	\$1,794	\$2,176	\$1,839
% of Total B Revenues	41.8%	44.9%	50.6%	35.4%	38.0%	40.3%	34.6%	30.7%	34.6%	30.3%
C	\$11,769	\$12,360	\$9,012	\$7,678	\$8,462	\$11,270	\$7,908	\$6,618	\$7,146	\$7,309
% of Total C Revenues	4.6%	4.8%	3.7%	3.2%	2.6%	3.1%	2.4%	2.3%	2.9%	2.6%
D	\$11,265	\$10,404	\$8,859	\$6,855	\$7,091	\$10,640	\$7,475	\$6,762	\$6,947	\$7,286
% of Total D Revenues	12.1%	11.4%	9.4%	7.9%	8.0%	9.3%	7.4%	7.8%	8.3%	8.3%
H	\$338	\$270	\$251	\$228	\$181	\$515	\$401	\$268	\$305	\$273
% of Total H Revenues	38.1%	27.1%	20.8%	32.9%	22.1%	36.5%	39.7%	35.5%	33.8%	41.5%
E (Open Access)	\$2,101	\$2,393	\$1,610	\$1,045	\$833	\$1,061	\$1,141	\$1,186	\$951	\$811
% of Total E Revenues	0.7%	0.7%	0.5%	0.3%	0.2%	0.2%	0.3%	0.3%	0.3%	0.2%
F					\$73	\$248	\$246	\$140	\$279	\$252
% of Total F Revenues					2.4%	2.6%	1.7%	0.8%	1.4%	1.1%
CT	\$334	\$425								
% of Total CT Revenues	0.9%	1.1%								19.6%
TOTAL MONK REVENUE	\$28,598	\$29,426	\$23,228	\$18,364	\$20,173	\$28,885	\$21,400	\$18,065	\$19,210	\$19,046

Source: NMFS-GARFO Analysis and Program Support Division, cfders dealer weighout database, accessed July, 2016.

* CT data may include landings from vessels without a 2006-2007 Monkfish permit

If necessary, Category F landings have been allocated to prior permit categories to protect confidentiality

Starting in Year 2 of the FMP (May, 2000-April, 2001) limited access monkfish vessels (Categories A, B, C, and D) were allocated 40 monkfish DAS. By definition, Category A and B vessels do not qualify for limited access multispecies or scallop permits, and Category C and D vessels must use either a multispecies or scallop DAS while on a monkfish DAS. Beginning in FY 2005 seven vessels qualified for a Category H permit fishery under the provisions adopted in Amendment 2, for vessels fishing exclusively in the southernmost area of the fishery.

Until FW 4 which took effect in FY 2007, vessels were not required to use a monkfish DAS in the NFMA, as there were no monkfish landing limits when a limited access vessel was on a multispecies DAS. Therefore, DAS usage was well below the total DAS allocated, and primarily reflected monkfish fishing activity in the SFMA. Starting in FY 2007, vessels in both areas were required to use a monkfish

DAS when exceeding the applicable incidental limit. The effect of this requirement shows the total DAS has remained approximately the same from FY 2009-2014, with FY 2014 indicating a slight increase in DAS used compared to FY2013.

As shown in Table 8, only a portion of the limited access vessels used at least one monkfish DAS in FY 2015, and the total DAS used by limited access vessels was only about 10% of the total allocated for all vessels. This represents a substantial amount of latent effort in the fishery. Even among active vessels (those that used at least one monkfish DAS), not all allocated DAS are used. Only about 42% of allocated DAS were used by active vessels. Part of this latent effort can be explained by the fact that a large portion of the permit category C vessels, 161 vessels, are limited access scallop vessels who choose not to use a scallop DAS to target monkfish under the monkfish DAS usage requirements because of the greater profitability of using scallop DAS to target scallops (Table 9).

Table 8 - Monkfish DAS allocation and usage, FY2015 (May 2015 - April 2016)

Permit Category	All Vessels			Active Vessels*		
	Total Number of Permits	DAS Allocated	DAS Used	Number of Active Vessels	DAS Allocated	DAS Used
A	22	1,082	374	14	689	374
B	43	2,116	655	28	1,378	655
C	268	13,186	984	46	2,263	984
D	242	11,906	1,421	71	3,493	1421
F	17	249	30	3	34	30
H	8	394	81	7	344	81
TOTAL	600	28,933	3,545	169	8,201	3,545

Source: NMFS Vessel Permits and Allocation Management System (AMS) databases, accessed July, 2016.

* Active = vessels that used >0 monkfish DAS

Permit Category A active vessel NMA DAS used not included due to confidentiality.

Table 9 - Monkfish-only, monkfish/multispecies, and monkfish/scallop DAS usage by management area by active vessels*, FY2015

Permit Category	Area	Number of Active Vessels	Monkfish	Monkfish/Multispecies	Monkfish/Scallop	DAS Used	Average DAS Usage
A	NMA	0	0	0	0	0	0.0
B	NMA	1	2	0	0	2	2.0
C	NMA	23	0	377	0	377	16.4
D	NMA	25	0	349	0	349	14.0
Total		49	2	726	0	728	15
A	SMA	14	374	0	0	374	26.7
B	SMA	28	653	0	0	653	23.3
C	SMA	29	0	606	0	606	20.9
D	SMA	51	0	1,071	0	1,071	21.0
F	SMA	3	0	30	0	30	10.0
H	SMA	7	0	81	0	81	11.6
Total		132	1,027	1,788	0	2,815	21.3

Source: NMFS Vessel Permits and Allocation Management System (AMS) databases, accessed July, 2016.

* Active = vessels that used >0 monkfish DAS