

Monkfish Northern and Southern Fishery Management Area Daily Landings and Days-at-Sea Limit Allocations for FY2011-FY2013

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Abstract

The Monkfish Plan Development Team (PDT) has been tasked with analyzing the effects of effort controls, days-at-sea (DAS) allocations and daily landing limits, on estimated landings of monkfish in both the Northern Fishery Management Area (NMA) and the Southern Fishery Management Area (SMA) for FY2011-FY2013. Two alternative total allowable landing (TAL) levels were considered for each area in the analysis. In the NMA, at each of the two TAL levels, two sets of incidental landings were considered. Different days at sea and trip limit combinations were analyzed to offer management flexibility in the means by which effort is regulated in this fishery.

Introduction

The New England and Mid-Atlantic Fishery Management Councils (Councils) are developing Amendment 5 to the Monkfish Fishery Management Plan (FMP) to address the new requirements of the Magnuson-Stevens Fishery Conservation and Management Act, including the establishment of TALs for FY2011 - 2013. The objective of this analysis was to produce a range of monkfish trip limit and DAS allocation options under the target TAL alternatives being considered for both management areas.

Two total allowable landings (TAL) alternatives were used in an analysis of DAS and trip limit allocation setting for both the NMA and the SMA for fishing years 2011 through 2013. Alternative TALs are being considered in each area in an effort to accommodate newly-mandated measures to ensure accountability, and prevent or react to exceeding the Annual Catch Limit. The Councils have decided to use an Annual Catch Target (ACT) as a proactive accountability measure, providing a buffer between the ACT, used to set management specifications, and the ACL. This buffer is necessary to compensate for the management uncertainty inherent to this fishery. If the Annual Catch Limit were to be exceeded, reactive accountability measures that could potentially have a negative impact on the future of the fishery would be activated.

In the NMA, alternatives that increase the TAL by 50% and 100% over the current total allowable catch (TAC) level (5000 mt) were considered. In the SMA, TAL alternatives that represent a 40% and a 75% increase over the current TAC (5100 mt) were considered. Since the new requirements are based on *catch* rather than *landings*, monkfish discard estimates were used in calculating the ACT. The assumed discard rates, based on the most recent stock assessment were 7% and 29%, for NMA and SMA fisheries, respectively.

The PDT analyzed a range of three trip limit and DAS alternatives for each TAC alternative specified above. In the NMA, two incidental landing alternatives were also considered: 1) incidental landings are assumed to be the same as FY2008, the last year for which there exists reliable landings information for this fishery, and 2) incidental landings would be 50% of their FY2008 levels due to an assumed 50% reduction in groundfish effort with the anticipated implementation of Amendment 16 to the Northeast Multispecies FMP which will have a direct impact on the incidental catch of monkfish in the NMA.

The first trip limit/DAS allocation alternative analyzed kept monkfish DAS allocations (FY2007-FY2010) at status quo levels to gauge the effect of a TAL increase on daily landing limits for each permit category. The second trip limit/DAS allocation alternative kept monkfish daily landing limits (FY2007-FY2010) at status quo levels to gauge the effect of a TAL increase on DAS allocation. The third alternative considered set either daily landing limits or DAS allocations at a specified historic level to determine the appropriate corresponding DAS or trip limit level.

Recent advances in reporting in the Vessel Monitoring System (VMS) have allowed us to use VMS Activity Code Declarations along with Vessel Trip Reports (VTR) and dealer-reported data to more accurately describe monkfish landings. Prior to the use of VMS activity code declarations, landings by limited access monkfish-permitted boats could not be separated into directed and incidental monkfish trips. Matching VMS activity code declarations to dealer-reported data and VTRs has enabled a description of directed monkfish activity by limited access vessels by area, namely when a vessel has declared it is using a monkfish DAS. Monkfish landings by limited access vessels not on a monkfish DAS were considered to be incidental landings. These incidental landings by limited access vessels can then be subtracted from a management area monkfish allocation by permit category, allowing for a more accurate description of this fishery.

Because proposed TAL levels in both management areas represent increases over TAC levels in the recent past, the method laid out in 50 CFR 648.96(b)(3)(iii) to reduce DAS and/or trip limits was not applicable. Basically, this method has used fishing vessel trip reports, scaled to dealer-reported landings, to adjust trip-level and vessel-level aggregate data down incrementally in an effort to identify DAS levels and/or trip limits that will sum to an allocated TAC for each of two sets of monkfish permit categories (AC and BDH) after subtracting estimated incidental landings. Instead, a method that combined empirical data of both vessel-by-vessel and fleet-wide landings with a linear increase in DAS and/or trip limits, after subtracting for both limited access monkfish and other vessel incidental landings, was employed. In other words, if the allocation to permit category were increased by x%, either the trip limit or DAS allocation was increased by x%. The purpose of this report is to describe the assumptions and methods used to arrive at recommended DAS allocations for each TAC/trip limit combination by permit category and management area.

Methods

Data sources

Data from fishing year 2008 were used as our baseline set for this analysis. Several data sources were used for this analysis, including: dealer electronic reports, the vessel permits database, days at sea activity declaration (which can be transmitted into the database via the Vessel Monitoring System or the Interactive Voice Response (IVR) system), and the fishing vessel trip report database. Data from fishing year 2008 are the most recent available and can be matched to a very descriptive VMS activity declaration for monkfish directed effort trips. Starting in FY2007, DAS activity declaration codes in the monkfish fishery include the management area, which has advanced our ability to describe and understand the directed monkfish fishery in the two management areas. Prior to this activity code, fishing vessel trip reports, which contained no indication as to whether a vessel was on an incidental or directed monkfish trip, were matched to dealer information to determine days and area fished.

Dealer-reported monkfish landings, while considered more comprehensive than fishing vessel trip reports (FVTR), lack information on the location of a fishing trip. Both DAS activity declaration and DAS charged, along with FVTR data, which contain fishing location information, are thus used to prorate the dealer-reported data by area, fishing activity (directed or incidental monkfishing by a limited access monkfish vessel) and permit category.

Assumptions

- Landings from monkfish permit category E, state-only permitted vessels, and unknown category vessels will be exactly the same, in terms of live pounds landed, in FY2011-FY2013 as they were in FY2008. This assumption enables a reasonable reduction of the FY2011 monkfish quotas to account for the landings from monkfish permit category E, state-only permitted vessels, and unknown category vessels.
- Landings and effort on trips in FY2008 by limited access vessels on non-directed (incidental) monkfish trips will be the same in FY2011-FY2013. An alternative to this assumption was analyzed in the NMA that anticipated a 50% reduction in incidental landings by limited access vessels on non-directed (incidental) monkfish trips due to a reduction in groundfish effort associated with Amendment 16.
- Fishing and landing patterns will be similar in FY2011 to those experienced in FY2007 and FY2008 as detailed in the text below.

Procedures for identification of incidental monkfish landings

Incidental landings by permit category E, state-only permitted and unknown vessels

The regulations indicate that incidental landings of monkfish must be subtracted from the total allowable catch before the remainder can be allocated to the limited access monkfish fishery. Monkfish total reported live pounds from the dealer-reported landings database by FY2008 limited access monkfish permitted vessels were subtracted from total

monkfish live pounds in the database to determine landings by non-monkfish limited access vessels. These are landings by monkfish permit category E, state-only permitted vessels and unknown permit vessels. The proportions of these monkfish landed by management area were determined with VTR data and then subtracted from management area TALs.

Incidental landings by monkfish limited access permitted vessels

Incidental landings for each permit category by management area by monkfish limited access vessels was estimated by matching dealer-reported trips with a vessel's VMS activity declaration and to the Fishing Vessel Trip Report. The VMS activity code indicates whether the vessel was on a directed or incidental monkfish trip. If the vessel was on an incidental trip (which has a DAS activity code that lacks monkfish management area), the VTR for the trip indicates the management area fished on the trip.

Procedures for calculation of DAS allocation and/or trip limits for each TAC/management alternative

As mentioned, trip limits and DAS allocations for each set of permit categories (AC and BD) could not be analyzed according to the method laid out in 50 CFR 648.96(b)(3)(iii). This method uses the most recent and complete set of vessel trip reports, scaled to dealer-reported landings, to adjust trip-level and vessel-level aggregate data **down** incrementally in an effort to identify DAS levels and/or trip limits that will sum to the appropriate allocated TAC for each of the two sets of monkfish permit categories after subtracting for estimated incidental landings. Because we were not scaling down trip limits or DAS, but instead were examining the effects of status quo or increased Total Allowable Landing limits, the previously-employed method was no longer applicable. In instances where the allocated TAL was equal to recent landings (i.e. the SMA in FY2007 and FY2008), status quo DAS and trip limits were maintained. In cases where the TAL was set higher than recent fleet-wide total landings (i.e. the NMA), a linear increase in trip limits and/or DAS was calculated.

Results and Discussion

Results for identification of incidental monkfish landings

Incidental landings by permit category E, state-only permitted and unknown vessels

The dealer and vessel permits databases allowed for the categorization of landings of monkfish in FY2008 by permit category. Matching these records to Fishing Vessel Trip Reports (FVTR) enables the allocation of landings from the dealer landings database by management area and permit category and the allocation of FY2011-FY2013 TAC to each of the two permit categories based upon historical landings. For FY2008, landings by permit category E, state-permitted-only vessels, and unknown vessels totaled 2,823,621 live pounds (Table 1).

Table 1: Summary statistics for monkfish in FY2008.

	Live pounds
FY2008 Monkfish Landings by permit category E, unknown Permit Category and state-permitted-only vessels	2,823,621
FY2008 Monkfish Landings Limited Access Permit Category vessels	20,020,426
Total FY2008 Monkfish Landings	22,844,047

Source: NMFS Permits, Dealer and Vessel Trip Report Databases.

Table 2: FY2008 Monkfish Landings by permit category E, unknown permit category and state-permitted-only vessels by management area.

Management area	Live pounds
NMA	938,679
SMA	1,884,942
Total	2,823,621

Source: NMFS Permits, Dealer and Vessel Trip Report Databases.

Incidental landings by monkfish limited access permitted vessels

Incidental and directed monkfish landings for each limited access permit category by management area was estimated by matching dealer-reported landings data with vessel reported DAS activity codes and fishing vessel trip reports. In the NMA, almost twice as many monkfish were landed on incidental trips for both permit categories (Table 3). In the SMA, directed monkfish landings were considerably higher than incidental landings, particularly for BDH category vessels (Table 3).

Table 3. FY2008 Monkfish Directed and Incidental Landings by Management Area and Permit Category

Management Area	Permit Category	Incidental or Directed Landings	Prorated Total Live lbs	Percentage of directed fishery by permit category and area
NMA	AC	D	1,315,563	57%
		I	2,218,284	
	BD	D	991,095	43%
		I	1,909,203	
SMA	AC	D	3,455,101	33%
		I	2,146,004	
	BDH	D	6,974,191	67%
		I	1,010,984	

Source: NMFS Permits, Dealer, Days-at-Sea, and Vessel Trip Report Databases.

Results for calculation of DAS allocation and/or trip limits for each TAC/management alternative

After subtracting for estimated discards, the two alternative Total Allowable Landing level alternatives for both management areas could be determined (Table 4).

Table 4. TAL alternatives in metric tons and pounds.

TAL (t)	Management Area	TAL (lbs)
7,140	SMA	15,741,008
8,925	SMA	19,676,260
7,500	NMA	16,534,673
10,000	NMA	22,046,230

NMA

In the NMA, two TAL alternatives were considered, a 50% and a 100% increase over FY2007- FY2010 TAC. For each alternative, three DAS and trip limit combinations were analyzed: the first carried over the DAS allocation from FY2007-FY2010 (31), the second carried over the FY2007-FY2010 trip limits (1,250 lbs. tail wt. per DAS for AC, 470 lbs. tail wt. per DAS for BD), and the third examined trip limits at 40 days at sea, the DAS allocation in the NMA from FY2000-FY2006. In all of the scenarios, the trip limit for permit category AC was designated to be 1,250 lbs. tail weight per DAS, which was the highest daily average landings recorded for vessels in this permit category prior to the imposition of trip limits.

In the first scenario, the BD trip limit was increased by ~50% and ~100% (Table 5). For the second alternative, under the 50% increase in the TAC, allocated DAS increased by 50%. For the second alternative under a 100% increase in the TAC, DAS were increased by ~65%, in light of uncertainty over the effect of increasing DAS allocation. The third alternative, which represented a DAS increase and a trip limit increase for the BD permit category, increased DAS by ~30% along with a ~25% increase in the BD trip limit.

A linear increase in trip limit for the BD permit category for the two alternatives is likely an appropriate management strategy in light of uncertainty in landings and management in this fishery. The DAS and trip limits of 1,250 lbs. and 470 lbs. for permit categories AC and BD were appropriate in FY2007, as 101% of the TAC was taken. In FY2008, although the entire TAC was not landed, it does not appear that DAS and/or trip limits were limiting the fleet's ability to take the TAC. In fact, DAS usage information from FY 2008 indicates that most vessels fishing in the NMA use only a small number of monkfish DAS and do not land the trip limit (Figures 1 and 2. A linear increase in the TAC allows for greater landings while maintaining effort controls in this fishery in a changing management environment.

Figure 1. FY2008 NMA DAS usage frequency distribution

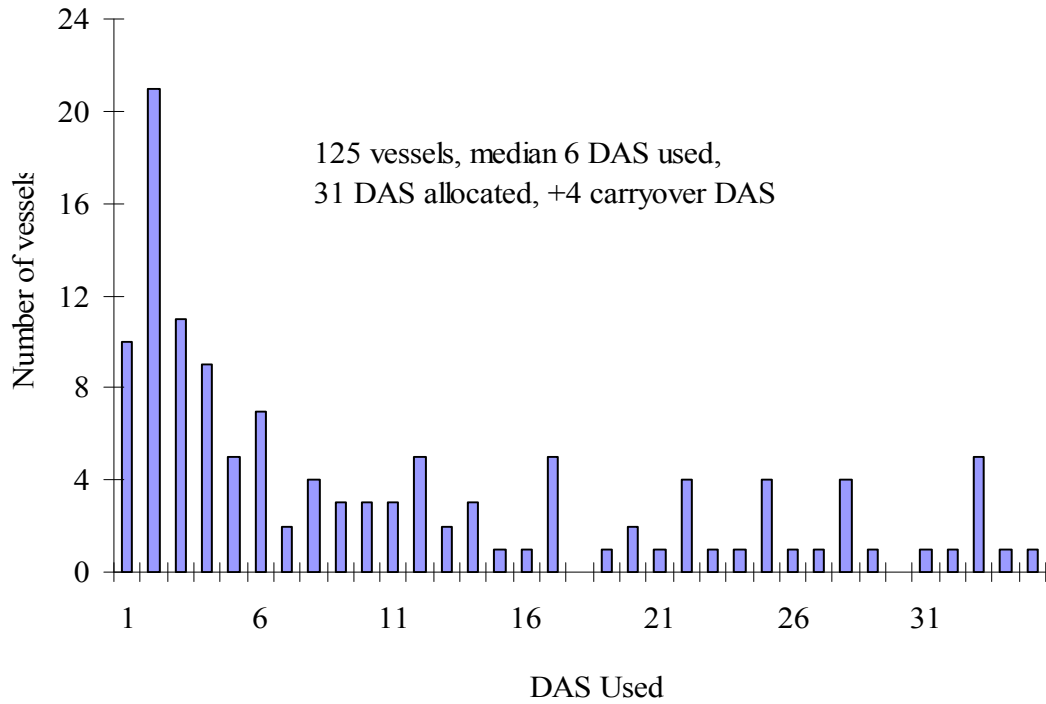
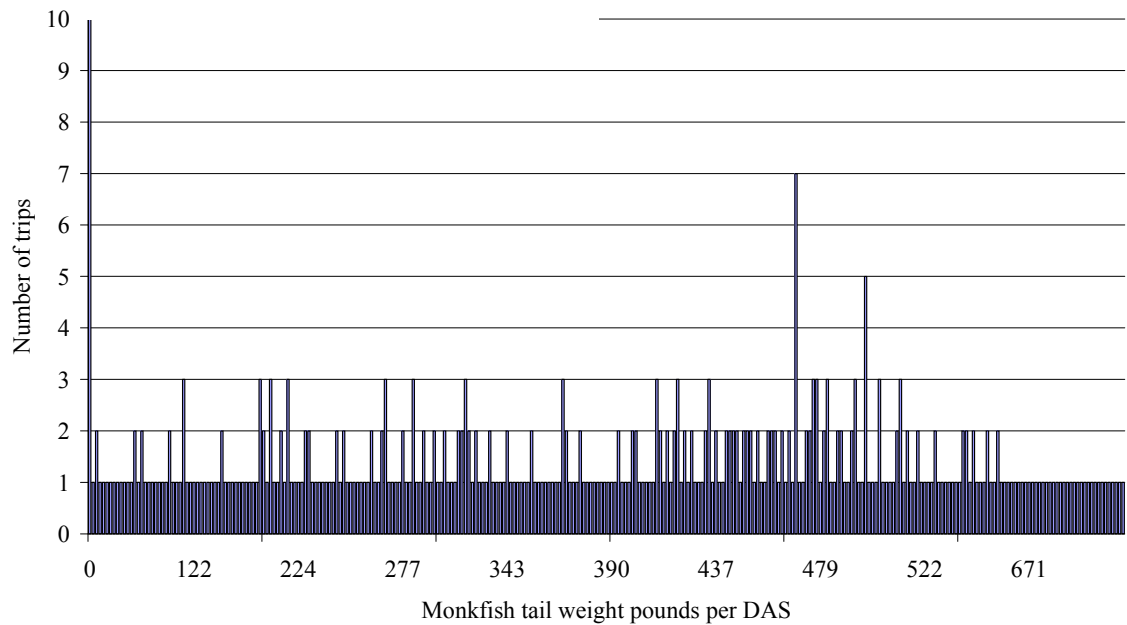


Figure 2. FY2008 NMA trip landings frequency distribution



Linear increases in trip limits in the BD permit category were also seen in the analyzed alternatives that cut incidental landings by 50% due to an assumption that anticipated allocations of groundfish species caught concurrently with monkfish will be constraining on vessels' ability to catch monkfish, either on directed or incidental trips. For both permit categories, allocated pounds increased by approximately 1,000,000 live lbs (Table 5). Given the fact that this fishery accommodates incidental landings in other directed fisheries (i.e. scallops and groundfish) prior to allocating to its own directed fleet, an assumption of decreased incidental landings opens the fishery to an increased risk of exposure to reactive accountability measures under the upcoming management regime, if the assumed reduction does not occur and the increased directed fishery allocation is taken. It is unclear at this time what an effect a change in groundfish management will mean to the monkfish fishery. It is clear from DAS usage in the NMA in FY2008 that monkfish DAS and trip limit allocations did not limit fleet landings. Two other constraining factors could have been responsible for holding FY2008 landings below the TAC: 1) available groundfish DAS, or 2) availability of monkfish to the fleet. If the former was the case and groundfish DAS did indeed limit monkfish landings, the loss of groundfish DAS, or reduced groundfish allocations to sectors might eventually result in an incidental-only monkfish fishery. This is because a case could be made that when a large segment of the groundfish fleet no longer needs to use groundfish DAS, as with Sectors, monkfish incidental landings could increase, resulting in no landings being allocated to the directed fishery. The effect of this assumption on incidental landings and DAS and trip limits has not been examined here. If the latter is the case and availability of monkfish in the NMA is waning, an increase in trip limits and or directed monkfish DAS is particularly uncalled for, as the fishery is providing an early indication of deteriorating stock status.

In the supplemental analysis requested by the Monkfish Committee, the alternatives that kept trip limits for both permit categories the same maintained the BD trip limits for both permit categories as these were the limits that were expected to land the BD permit category monkfish allocation (Table 5). Allocating landings from the AC permit category and giving them to the BD permit category would require a change in the regulations. Shifting permit category AC allocated landings to permit category BD to raise BD trip limits runs counter to the origins of the monkfish fishery management plan, which set up a two-tiered limited access permit system to reflect two distinct, and unequal, sets of qualifying criteria.

Table 5. TAC increase and DAS and trip limit options for FY2011-FY2013 for the Northern Fishery Management Area. Shading indicates the variable that has been solved.

Option	TAC Increase (percent)	NMA TAC	Discards (mt)	TAL (mt)	TAL (live lbs)	TAL (live lbs) Incidental landings subtracted	AC Incidental landings	BD Incidental landings	AC allocation of TAL	BD allocation of TAL	AC trip limit	BD trip limit	DAS
Incidental landings status quo	50	8,063	563	7,500	16,534,673	15,595,993	2,218,284	1,909,203	6,540,866	4,927,640	1250	700	31
							2,218,284	1,909,203	6,540,866	4,927,640	1250	470	45
							2,218,284	1,909,203	6,540,866	4,927,640	1250	600	40
Incidental landings status quo	100	10,750	750	10,000	22,046,230	21,107,551	2,218,284	1,909,203	9,684,288	7,295,776	1250	950	31
							2,218,284	1,909,203	9,684,288	7,295,776	1250	470	51
							2,218,284	1,909,203	9,684,288	7,295,776	1250	800	40
Incidental landings reduced 50%	50	8,063	563	7,500	16,534,673	15,595,993	1,109,142	954,601	7,717,887	5,814,363	1250	800	31
							1,109,142	954,601	7,717,887	5,814,363	1250	470	48
							1,109,142	954,601	7,717,887	5,814,363	1250	700	40
Incidental landings reduced 50%	100	10,750	750	10,000	22,046,230	21,107,551	1,109,142	954,601	10,861,309	8,182,498	1250	1000	31
							1,109,142	954,601	10,861,309	8,182,498	1250	470	58
							1,109,142	954,601	10,861,309	8,182,498	1250	900	40
Incidental landings status quo/ trip limits same	50	8,063	563	7,500	16,534,673	15,595,993	2,218,284	1,909,203	6,540,866	4,927,640	600	600	40
Incidental landings status quo/ trip limits same	100	10,750	750	10,000	22,046,230	22,046,230	2,218,284	1,909,203	9,684,288	7,295,776	800	800	40
Incidental landings reduced 50%/ trip limits same	50	8,063	563	7,500	16,534,673	16,534,673	1,109,142	954,601	7,717,887	5,814,363	700	700	40
Incidental landings reduced 50%/ trip limits same	100	10,750	750	10,000	22,046,230	22,046,230	1,109,142	954,601	10,861,309	8,182,498	900	900	40

SMA

For the SMA, the two TAL alternatives represented a 40% and a 75% increase over the current TAC of 5000 mt (Table 6). Maintaining status quo DAS and trip limit allocations with a 40% increase in the TAL was empirically-derived. In FY2007 and FY2008, the fleet in the SMA landed approximately 40% over the allocated TAC. As a result, increasing the TAL by 40% results in status quo DAS and trip limit allocations for both permit categories (Table 6). A 75% increase in the TAL results in a ~30% increase in trip limits or a 22% increase in DAS. Setting the trip limits to 700 and 600 lbs/DAS for AC and BDH permit categories, respectively, results in a 35% decrease in DAS at the 40% TAL increase or status quo DAS at a 75% TAL increase (Table 6). In the SMA, the fleet generally uses all allocated DAS, as well as all carryover DAS, and generally maximizes available trip limits on every fishing excursion. Based on DAS and trip limit information from FY 2008 (Figures 3 and 4), it appears that trip limits and DAS allocations constrain the monkfish fishery in the SMA.

Figure 3. FY2008 SMA DAS usage frequency distribution

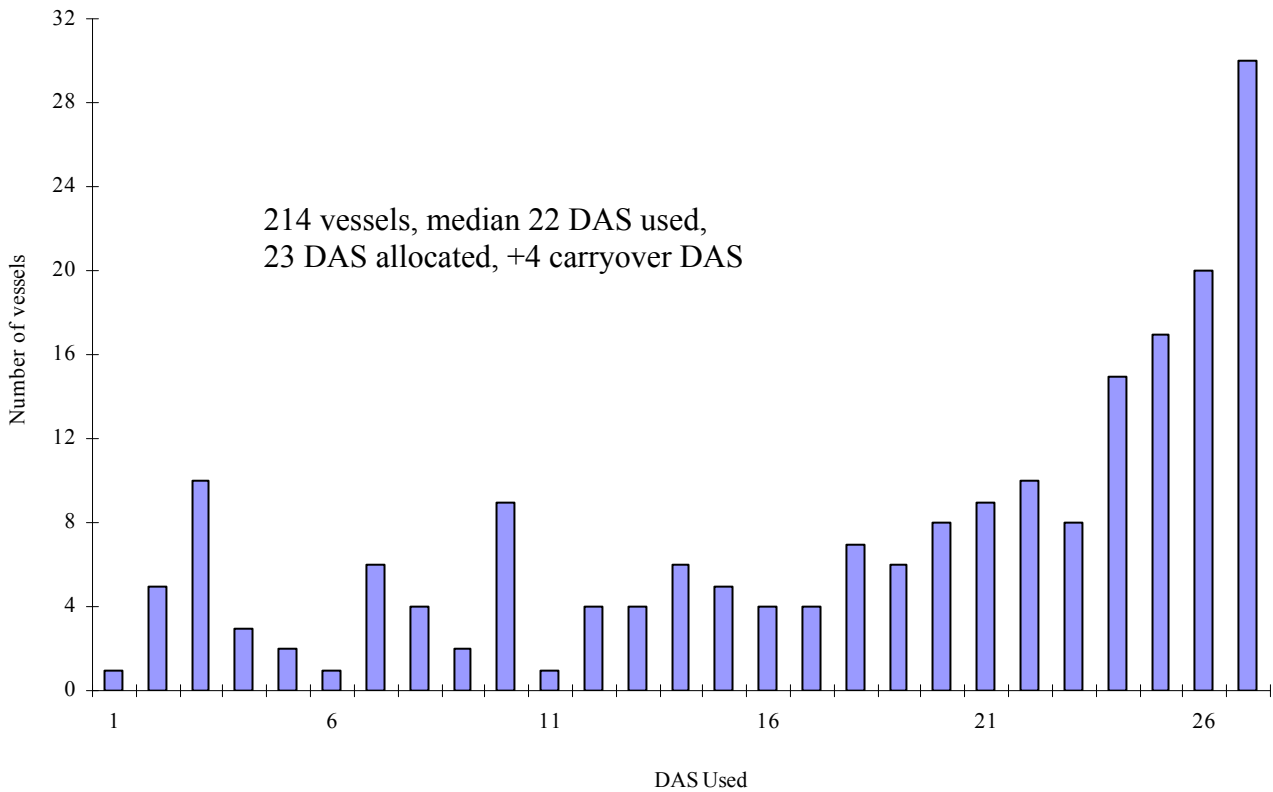


Figure 4. FY2008 SMA trip landings frequency distribution

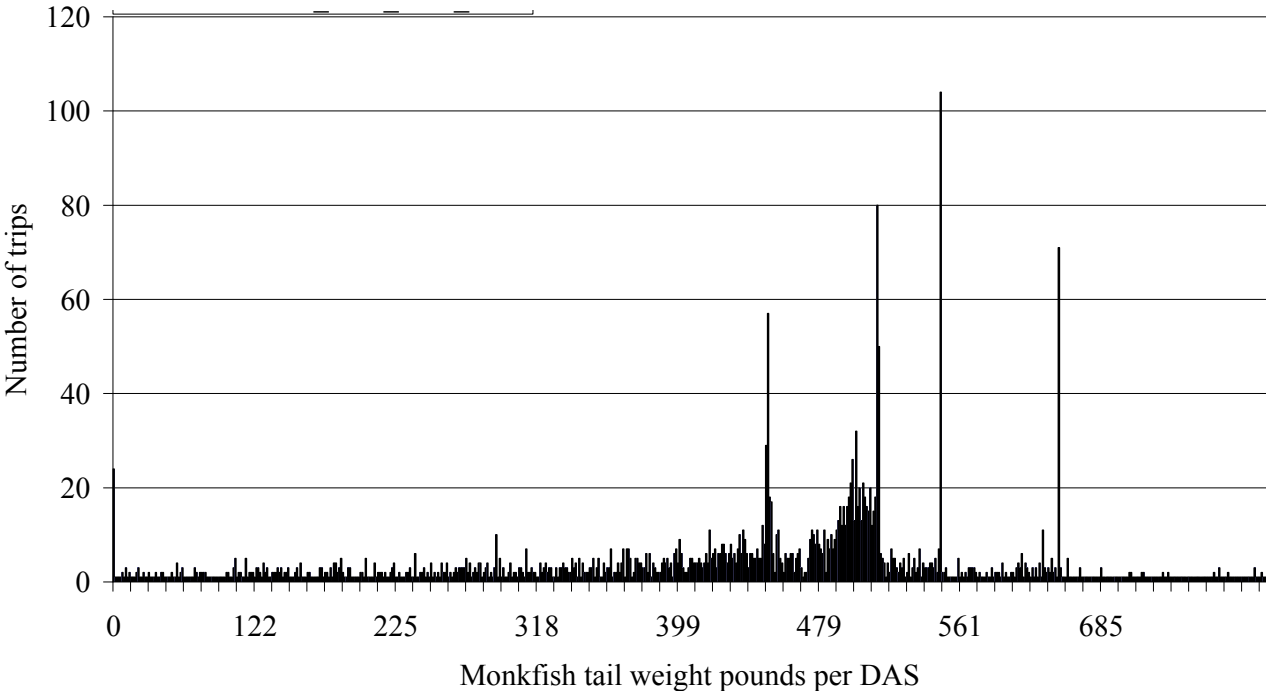


Table 6. TAC increase and DAS and trip limit options for FY2011-FY2013 for the Southern Fishery Management Area.

TAC Increase (percent)	SMA TAC	Discards	TAL (mt)	TAL (live lbs)	TAL (live lbs) Incidental landings subtracted	AC Incidental landings	BDH Incidental landings	AC allocation of TAL	BDH allocation of TAL	AC trip limit	BDH trip limit	DAS
40	9,211	2,071	7,140	15,741,008	13,856,066	2,146,004	1,010,984	3,544,478	7,154,600	550	450	23
						2,146,004	1,010,984	3,544,478	7,154,600	550	450	23
						2,146,004	1,010,984	3,544,478	7,154,600	700	600	15
75	11,513	2,588	8,925	19,676,260	17,791,318	2,146,004	1,010,984	4,848,180	9,786,150	700	600	23
						2,146,004	1,010,984	4,848,180	9,786,150	550	450	28
						2,146,004	1,010,984	4,848,180	9,786,150	700	600	23