1.0 Alternatives under Consideration

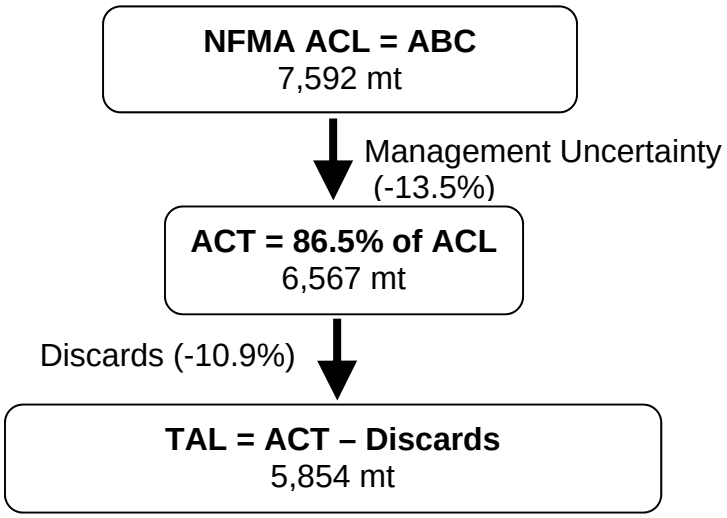
1.1 Updates to Annual Catch Limits

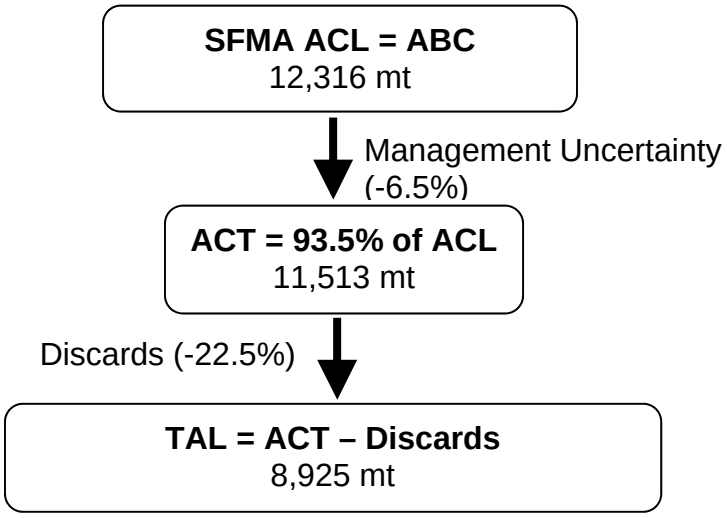
1.1.1 **Revised Annual Catch Limits**

The 2016 operational assessment did not include an update to the population model (SCALE) used in previous assessments because new information revealed problems with methods used to estimate monkfish age and growth. Therefore the 2016 assessment updated indicators including commercial fishery statistics, fishery-independent survey indices, and fishery performance indices, but did not update the SCALE population model. Based on the observed trends, the SSC recommended status quo OFLs and ABCs for both management areas for FYs 2017 - 2019.

1.1.1.1 Option 1: No Action

This option would maintain the specifications (ABC, ACT, and TAL) for both the NFMA and SFMA as set in Framework 8 (NEFMC, 2014). This option would not take into account the updated discard rate information from the 2016 operational assessment. The overfishing limit (OFL) would be maintained as 17,805 mt and 23,204 mt for the NFMA and SFMA, respectively, and the ABC, ACT and TAL calculated as in FW8:

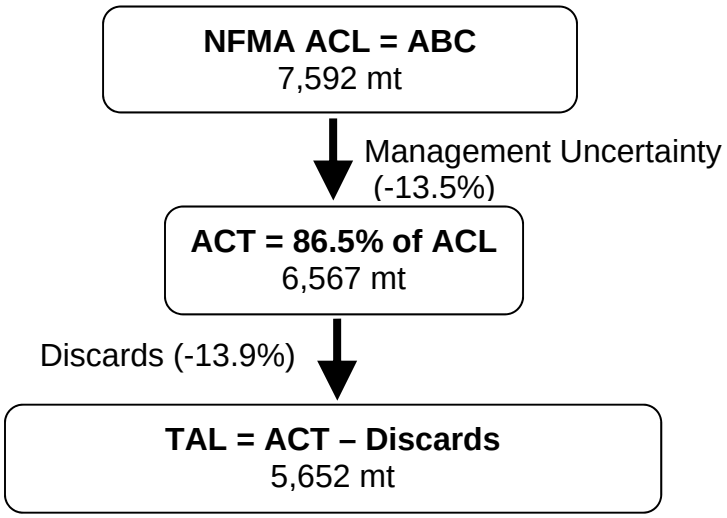


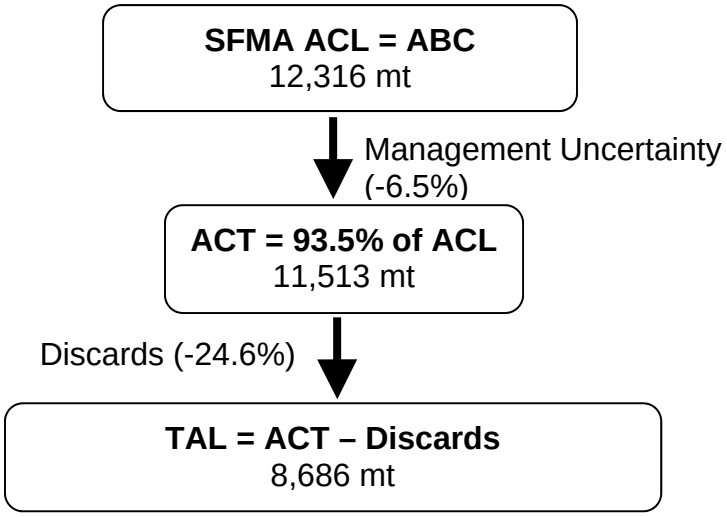


Rationale: The 2016 operational assessment provided a plan for setting catch advice. The SCALE model could not be updated because of uncertainty about the ageing methodology currently used to estimate monkfish growth. The OFL is defined as the product of $F_{threshold}$ and current exploitable biomass ($B_{current}$) and was last calculated using the SCALE model updated in the 2013 operational assessment (NEFSC, 2013). The 2016 operational assessment did not vacate the benchmark assessment, however, and since the SCALE model was not updated, the OFL was not updated. The status quo TAL would continue to use the 2007 Data Poor Working Group Assessment discard estimates that do not include updates in data and estimation methodology. The discard rate is calculated as the ratio of discards to catch, and under status quo, the years used to calculate the discard rate would be 2004-2006.

1.1.1.2 Option 2: Updated Discard Rate for Northern and Southern Fishery Management Areas

This option would maintain the specifications (ACL and ACT) for both the NFMA and SFMA as set in Framework 8 (NEFMC, 2014) but would update the discard rate for both management areas based on the 2016 operational assessment.

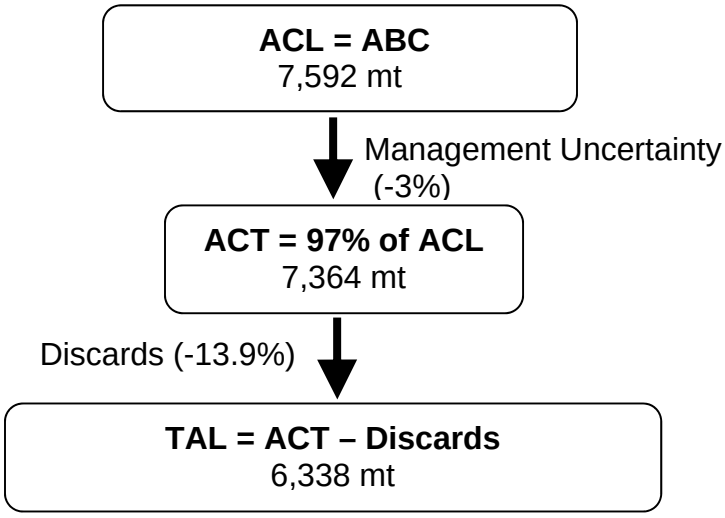




Rationale: The 2016 operational assessment provided a plan for setting catch advice. It did not update the reference points derived from the SCALE model. The SCALE model could not be updated because of uncertainty about the ageing methodology currently used to estimate monkfish growth. The PDT recommended that the ACL should always be set below the OFL due to the extent and magnitude of scientific uncertainty in the assessment. Sources of scientific uncertainty include fishery data (landings, discards, observer/port sampling), biological parameters (growth, longevity, natural mortality), the SCALE model, survey data, and lag time between updated assessment results. The OFL is defined as the product of $F_{threshold}$ and current exploitable biomass ($B_{current}$) and was last calculated using the SCALE model updated in the 2013 operational assessment (NEFSC, 2013). The 2016 operational assessment did not vacate the benchmark assessment, however, since the SCALE model was not updated, the OFL also was not updated. The discard rate is calculated from the ratio between the same 3 years of discards and catch. Under Option 2, the years used to calculate the discard rate were 2013-2015.

1.1.1.3 Option 3: Revised Annual Catch Limit for the Northern Fishery Management Area

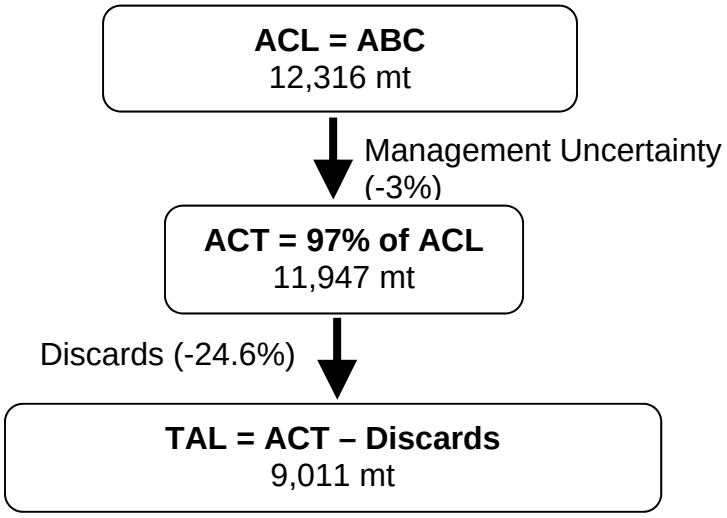
Option 3 would reduce the management uncertainty buffer in the NFMA to 3%. The ACL would not be affected by that reduction. The revised specifications would also update the years used to calculate the discard rate from 2004-2006 to 2013-2015. The overfishing limit (OFL) would be maintained as 17,805 mt.



Rationale: The methodology used to calculate discards has performed well by setting aside an adequate amount of poundage to reduce the likelihood of the ACL being exceeded. This could justify reducing the management uncertainty buffer. The SCALE model could not be updated because of uncertainty about the ageing methodology currently used to estimate monkfish growth. The OFL is defined as the product of $F_{threshold}$ and current exploitable biomass ($B_{current}$) and was last calculated using the SCALE model updated in the 2013 operational assessment (NEFSC, 2013). The 2016 operational assessment did not vacate the benchmark assessment, however, since the SCALE model was not updated, the OFL also was not updated. The ACT was established as a proactive Accountability Measure (AM) that was set sufficiently below the ACL to prevent the ACL from being exceeded in consideration of all sources of management uncertainty. Sources of management uncertainty included number of permits (active limited access permits, open access permits), DAS/trip limits (DAS usage rate, DAS usage pattern, catch rates), incidental catch fisheries (participants, catch rates), annual participation in each management area, gear used, enforcement, and regulations in other FMPs. Less than 62% of the ACL was achieved in FY2015, indicating that the risk of exceeding the ACL is low. The discard rate is calculated from the ratio between the same 3 years of discards and catch. Under Option 3, the years used to calculate the discard rate were 2013-2015. The

1.1.1.4 Option 4: Revised Annual Catch Limit for the Southern Fishery Management Area

Option 4 would reduce the management uncertainty buffer in the SFMA to 3%. The ACL would not be affected by that reduction. The OFL would be maintained as 23,304 mt. The revised specifications would also update the years used to calculate the discard rate from 2004-2006 to 2013-2015.



Rationale: The performance of the methodology used to calculate discards has performed well by setting aside an adequate amount of poundage to reduce the likelihood of the ACL being exceeded. This could justify reducing the management uncertainty buffer. The SCALE model could not be updated because of uncertainty about the ageing methodology currently used to estimate monkfish growth. The OFL is defined as the product of $F_{threshold}$ and current exploitable biomass ($B_{current}$) and was last calculated using the SCALE model updated in the 2013 operational assessment (NEFSC, 2013). The 2016 operational assessment did not vacate the benchmark assessment, however, since the SCALE model was not updated, the OFL also was not updated. The ACT was established as a proactive Accountability Measure (AM) that was set sufficiently below the ACL to prevent the ACL from being exceeded in consideration of all sources of management uncertainty. Sources of management uncertainty included number of permits (active limited access permits, open access permits), DAS/trip limits (DAS usage rate, DAS usage pattern, catch rates), incidental catch fisheries (participants, catch rates), annual participation in each management area, gear used, enforcement, and regulations in other FMPs. Less than 48% of the ACL was achieved in FY2015, indicating that the risk of exceeding the ACL is low. The discard rate is calculated from the ratio between the same 3 years of discards and catch. Under Option 4, the years used to calculate the discard rate were 2013-2015.

1.2 Modifications to Current Monkfish Days-at-Sea and Trip Limits

In order to land more than incidental amounts of monkfish, vessels must be fishing under one or a combination of the following: a monkfish DAS, a Northeast (NE) multispecies day-at-sea (DAS), an Atlantic sea scallop DAS. Monkfish Permit Category C and D vessels (i.e., those also issued a limited access NE multispecies DAS permit) can declare a monkfish DAS while at sea in the NFMA if they are fishing on a NE multispecies DAS and declare the "monkfish option" prior to leaving port at the start of its trip. Permit Category C and D vessels fishing in the NFMA on both a NE multispecies and monkfish DAS do not have a monkfish trip limit.

1.2.1 **Modify the DAS allocation and/or trip limits in the NFMA**

More than one option could be selected, i.e. Options 2 and 3 could both be implemented.

1.2.1.1 Option 1: No Action

No action would maintain the existing DAS allocations and trip limits in the NFMA. Trip limits would remain as outlined in Table 1 when fishing on a monkfish DAS. DAS allocations would be kept at 45 DAS.

Table 1 - Landing limits while on a monkfish DAS in the NFMA

NFMA				
Permit Category	A	B	C	D
Landing limit (tail weight per DAS)	1,250 lb	600 lb	Unlimited (when also on a NE multispecies DAS)	Unlimited (when also on a NE multispecies DAS)

Rationale: The no action alternative would continue the stability and consistency that allows participants to maintain their business plans and reduce the likelihood of overfishing. The NFMA fishery is not limited by DAS allocations or the daily landing limit. The number of DAS used in the NFMA is low (Hermsen, 2016). The number of permit holders using their full allocation is low in the NFMA.

1.2.1.2 Option 2: Increase the DAS allocation

Option 2 would maintain the status quo possession limits in the NFMA (Table 1) but would increase the NFMA DAS allocation to a level at which landings were projected to achieve the TAL (based on FY 2015 landings patterns). DAS would increase from 45 to XX (analysis range up to 74 or 87 DAS depending on the management uncertainty buffer). Incidental landing limits would remain at 25% of landings onboard, not to exceed 300 lb for permit category E, F, or H, 600 lb for category C permits, and 500 lb for category D permits when fishing on a NE multispecies DAS.

Rationale: Because the NFMA TAL was not achieved in FYs 2014 and 2015, this alternative increases DAS allocations as the primary means of increasing landings in the directed fishery. This alternative could provide incentive for vessels fishing on groundfish DAS to declare a monkfish DAS and enable higher retention of monkfish. This may reduce monkfish discards that are above the incidental limit while fishing on a groundfish DAS alone.

1.2.1.3 Option 3: Increase the trip limits in the NFMA

Option 3 would maintain the status quo DAS allocations in the NFMA, but would increase the NFMA DAS trip limits to a level at which landings were projected to achieve the TAL (based on FY 2015 landings patterns). Trip limits for permit categories A, B, C, and D would increase to greater than 1,250 lb tail weight per DAS. Incidental landing limits would remain at 25% of landings onboard, not to exceed 300 lb for permit category E, F, or H, 600 lb for category C permits, and 500 lb for category D permits when fishing on a NE multispecies DAS.

Rationale: Because the NFMA TAL was not achieved in FYs 2014 and 2015, this alternative increases trip limits as the primary means of increasing landings in the directed fishery. This alternative could provide incentive for vessels fishing on groundfish DAS to declare a monkfish DAS and enable higher retention of monkfish. This may reduce monkfish discards that are above the incidental limit while fishing on a groundfish DAS alone.

1.2.2 **Modify the DAS allocation and/or trip limits in the SFMA**

More than one option could be selected, i.e. Options 2 and 3 could both be implemented.

1.2.2.1 Option 1: No Action

No action would maintain the existing DAS allocations and trip limits in the NFMA. Trip limits would remain as outlined in Table 2 when fishing on a monkfish DAS. DAS allocations would be kept at 32 DAS.

Table 2 - Trip limits in the SFMA when on a monkfish DAS

SFMA			
Permit Category	A, C, or G	B, D, or H	F
Landing limit (tail weight per DAS)	610 lb	500 lb	1,600 lb

Rationale: The no action alternative would continue the stability and consistency that allows participants to maintain their business plans. This would also maintain fishing effort at a level not shown to result in overfishing in previous assessments. However, the 2016 operational assessment indicated a decrease in exploitable biomass.

1.2.2.2 Option 2: Increase the DAS allocation

Option 2 would maintain the status quo possession limits in the SFMA (Table 2) but would increase the SFMA DAS allocation to a level at which landings were projected to achieve the TAL (based on FY 2015 landings patterns). DAS would increase from 32 to XX (analysis range up to 56 or 58 DAS depending on the management uncertainty buffer). Incidental landing limits would remain 50 lb for category E or H permits and non-trawl category C, D, or F permits, and at 300 lb for trawl category C, D, or F permits.

Rationale: Because the SFMA TAL was not achieved in FYs 2014 and 2015, this alternative increases DAS allocations as the primary means of increasing landings in the directed fishery. The majority of landings in the SFMA come from directed trips. Because more directed trips occur in the south, the southern fishery is restricted by DAS allocations and trip limits. Some vessels in the SFMA are using their entire DAS allocations (Figure 2, Hermsen, 2016). Therefore we would expect to see a larger impact on landings in the SFMA rather than the NFMA if the DAS allocations or daily landings limits were increased.

1.2.2.3 Option 3: Increase the trip limits in the SFMA

Option 3 would maintain the status quo DAS allocations in the SFMA, but would increase the SFMA DAS trip limits to a level at which landings were projected to achieve the TAL (based on FY 2015 landings patterns). Trip limits for permit categories A and C would increase to 1160 or 1200 lb tail weight per DAS for permit category B and D vessels and 1000 or 1030 lb tail weight per DAS, depending on the management uncertainty buffer. Incidental landing limits would remain at 50 lb for category E or H permits and non-trawl category C, D, or F permits, and at 300 lb for trawl category C, D, or F permits.

Rationale: Because the SFMA TAL was not achieved in FYs 2014 and 2015, this alternative increases trip limits as the primary means of increasing landings in the directed fishery.