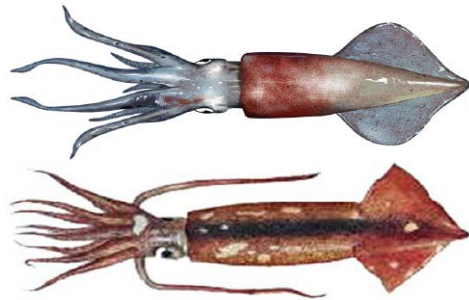


# SQUID AMENDMENT ATLANTIC MACKEREL, SQUID, AND BUTTERFISH FISHERY MANAGEMENT PLAN

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Measures to Reduce Latent Permits and  
Modify Trimester 2 Management

DRAFT Public Information Document – **February 2017**  
(FMAT will Review Document Prior to Public Hearings)



## 1.0 EXECUTIVE SUMMARY

In this Amendment to the Atlantic Mackerel, Squid, and Butterfish Fishery Management Plan (MSB FMP) the Council considers measures to reduce latent (unused or minimally used) longfin and *Illex* squid permits and also measures to modify how Trimester 2 (May-August) of the longfin squid fishery is managed.

The objectives of this action are to:

- A. Consider the appropriate number of vessels in the directed longfin squid / *Illex* fisheries and design appropriate management measures for permitted vessels. The Council is considering this action because there is considerable latent effort in both fisheries - a relatively small portion of vessels with limited access (“moratorium”) squid permits account for the majority of landings in most years, and the Council is concerned that activation of latent permits in the squid fisheries could lead to excessive fishing effort (shortening seasons), and increased catch of non-target species.
- B. Re-evaluate the management of longfin squid in Trimester 2. The Council is considering this action because there is concern that the productivity of the longfin squid stock may be negatively impacted if excessive fishing in T2 does not allow sufficient spawning and/or egg hatching from egg mops.

After reviewing Advisory Panel and other public comments, the Council developed a range of alternatives and associated analyses described in this document. The Council plans to select from the alternatives described in this document at its June 2017 Council meeting. The Council will consider comments received during public hearings and a written comment period planned for spring 2017. During the selection of alternatives, the Council can also modify the alternatives given sufficient information and rationale.

The Council will then recommend the selected alternatives to NOAA Fisheries. Assuming the Council recommends some action alternatives, NOAA Fisheries will then publish a proposed rule along with an Environmental Assessment for public comment. After considering public comments on the proposed rule, NOAA Fisheries will publish a final rule with implementation details.

This document first provides general background and describes the alternatives. It then describes the environment and the fisheries that may be affected, and concludes with information about the likely impacts from the alternatives under considerations. An overview of the alternatives is provided in the table below (summary impacts will be added before public hearings).

Table 1. Summary of Alternatives. (Summary Impacts to Be Added)

Alternative Set/Issue	Alternative	Summary of Alternative and Impacts
Set 1: Longfin Squid Moratorium Permit Requalification Alternatives	1A - No action.	No changes would be made to longfin/butterfish moratorium permits. <i>Impacts: To be added</i>
	1B - 1997-2015/10,000 pounds best year	Requalify current longfin squid/butterfish permits if they landed at least 10,000 pounds in any year from 1997-2015. Permits in "Confirmation of Permit History" (CPH) could requalify if they have the required landings. <i>Impacts: To be added</i>
	1C - 1997-2013/10,000 pounds best year	Requalify current longfin squid/butterfish permits if they landed at least 10,000 pounds in any year from 1997-2013. Permits in "Confirmation of Permit History" (CPH) could requalify if they have the required landings. <i>Impacts: To be added</i>
	1D - 2003-2013/25,000 pounds best year	Requalify current longfin squid/butterfish permits if they landed at least 25,000 pounds in any year from 2003-2013. Permits in "Confirmation of Permit History" (CPH) could requalify if they have the required landings. <i>Impacts: To be added</i>
	1E - 1997-2013/50,000 pounds average	Requalify current longfin squid/butterfish permits if they landed at least 50,000 pounds on average during 1997-2013. Permits in "Confirmation of Permit History" (CPH) could requalify if they have the required landings. <i>Impacts: To be added</i>
<b>Issue</b>	<b>Alternative</b>	<b>Summary of Alternative and Impacts</b>
Set 2: Longfin Squid Moratorium Permit Requalification Sub-Alternatives	2A - No action.	No additional requalification options would be selected. <i>Impacts: To be added</i>
	2B - Longfin Swap	An entity that is currently issued more than one longfin squid/butterfish moratorium permit has a one-time opportunity to swap re-qualifying moratorium permits among vessels owned by that same entity that currently have longfin squid/butterfish moratorium permits. All baselines and histories would remain the same for all vessels. <i>Impacts: To be added</i>
	2C - Automatic incidental for non-requalifiers	If a vessel that currently has been issued a moratorium longfin squid/butterfish permit does not re-qualify, it would automatically be issued a limited access incidental permit if the Council makes the current open access incidental permit a limited access permit. <i>Impacts: To be added</i>
Set 3: Longfin Squid Incidental and Open Access Alternatives	3A - No action	The current open access incidental permits and associated trip limits would remain as they are. <i>Impacts: To be added</i>
	3B - Limited access Incidental 1997-2013/2,500 pounds best year	Create a new limited-access incidental longfin squid permit that cannot be reacquired if dropped. Qualification years would be from 1997-2013 and require landings of at least 2,500 pounds in any one year. The initial trip limit would be 2,500 pounds. This permit would also allow incidental catch of Illex and butterfish at the designated incidental trip limit (currently 10,000 pounds for Illex and 600 pounds for butterfish). <i>Impacts: To be added</i>
	3C - Limited access Incidental 1997-2013/5,000 pounds best year	Create a new limited-access incidental longfin squid permit that cannot be reacquired if dropped. Qualification years would be from 1997-2013 and require landings of at least 5,000 pounds in any one year. The initial trip limit would be 2,500 pounds. This permit would also allow incidental catch of Illex and butterfish at the designated incidental trip limit (currently 10,000 pounds for Illex and 600 pounds for butterfish). <i>Impacts: To be added</i>
	3D - 250 pound open access trip limit	Make the open-access longfin squid incidental trip limit 250 pounds. <i>Impacts: To be added</i>
	3E - 500 pound open access trip limit	Make the current open-access longfin squid incidental trip limit 500 pounds. <i>Impacts: To be added</i>

Table 1 (continued)

Issue	Alternative	Summary of Alternative and Impacts
Set 4: Longfin Squid Trimester 2 ("T2") Alternatives	4A - No action	No changes to Trimester 2 management would be made. <i>Impacts: To be added</i>
	4B - Eliminate roll-over to Trimester 2	Eliminate roll-over of longfin squid quota from T1 to T2 (all un-caught T1 quota would go to T3). <i>Impacts: To be added</i>
	4C - Reduce roll-over to Trimester 2	Reduce the maximum T1 to T2 rollover of longfin squid quota to 25% of the original T2 quota. The initial T2 quota is approximately 8.4 million pounds, so the maximum after rollover would be about 10.5 million pounds in T2. <i>Impacts: To be added</i>
	4D - 250-pound post T2 Closure trip limit	Implement a 250-pound trip limit for all longfin squid permits with higher initial trip limits when the T2 quota is predicted to be reached. <i>Impacts: To be added</i>
	4E - 500-pound post T2 Closure trip limit	Implement a 500-pound trip limit for all longfin squid permits with higher initial trip limits when the T2 quota is predicted to be reached. <i>Impacts: To be added</i>
	4F - Split T2 in half	Split the Trimester 2 quota, with half available May 1, and the additional half available July 1. Open access incidental and post-closure trip limits would remain as status quo or as specified in other alternatives in this action. <i>Impacts: To be added</i>
Set 5: Illex Squid Moratorium Permit Requalification Alternatives	5A - No action	No changes would be made to Illex moratorium permits. <i>Impacts: To be added</i>
	5B - 1997-2015/10,000 pounds best year	Requalify current Illex moratorium permits if they landed at least 10,000 pounds in any year from 1997-2015. Permits in "Confirmation of Permit History" (CPH) could requalify if they have the required landings. <i>Impacts: To be added</i>
	5C - 1997-2013/10,000 pounds best year	Requalify current Illex moratorium permits if they landed at least 10,000 pounds in any year from 1997-2013. Permits in "Confirmation of Permit History" (CPH) could requalify if they have the required landings. <i>Impacts: To be added</i>
	5D - 1997-2013/50,000 pounds best year	Requalify current Illex moratorium permits if they landed at least 50,000 pounds in any year from 1997-2013. Permits in "Confirmation of Permit History" (CPH) could requalify if they have the required landings. <i>Impacts: To be added</i>
	5E - 1997-2013/100,000 pounds best year	Requalify current Illex moratorium permits if they landed at least 100,000 pounds in any year from 1997-2013. Permits in "Confirmation of Permit History" (CPH) could requalify if they have the required landings. <i>Impacts: To be added</i>
	5F - 1997-2013/200,000 pounds best year	Requalify current Illex moratorium permits if they landed at least 200,000 pounds in any year from 1997-2013. Permits in "Confirmation of Permit History" (CPH) could requalify if they have the required landings. <i>Impacts: To be added</i>
Issue	Alternative	Summary of Alternative and Impacts
Set 6: Illex Squid Moratorium Permit Requalification Sub Alternatives	6A - No action	No additional requalification options would be selected. <i>Impacts: To be added</i>
	6B - Illex Swap	An entity that is currently issued more than one Illex moratorium permit has a one-time opportunity to swap re-qualifying moratorium permits among vessels owned by that same entity that currently have Illex moratorium permits. All baselines and histories would remain the same for all vessels. <i>Impacts: To be added</i>

## **2.0 LIST OF ACRONYMS AND ABBREVIATIONS**

<b>ABC</b>	<b>Acceptable Biological Catch</b>
<b>ACL</b>	<b>Annual Catch Limit</b>
<b>ACT</b>	<b>Annual Catch Target</b>
<b>ASMFC</b>	<b>Atlantic States Marine Fisheries Commission or Commission</b>
<b>B</b>	<b>Biomass</b>
<b>CFR</b>	<b>Code of Federal Regulations</b>
<b>CV</b>	<b>coefficient of variation</b>
<b>DAH</b>	<b>Domestic Annual Harvest</b>
<b>DAP</b>	<b>Domestic Annual Processing</b>
<b>EEZ</b>	<b>Exclusive Economic Zone</b>
<b>EFH</b>	<b>Essential Fish Habitat</b>
<b>EIS</b>	<b>Environmental Impact Statement</b>
<b>ESA</b>	<b>Endangered Species Act of 1973</b>
<b>F</b>	<b>Fishing Mortality Rate</b>
<b>FMP</b>	<b>Fishery Management Plan</b>
<b>FR</b>	<b>Federal Register</b>
<b>GB</b>	<b>Georges Bank</b>
<b>GOM</b>	<b>Gulf of Maine</b>
<b>IOY</b>	<b>Initial Optimum Yield</b>
<b>M</b>	<b>Natural Mortality Rate</b>
<b>MAFMC</b>	<b>Mid-Atlantic Fishery Management Council</b>
<b>MMPA</b>	<b>Marine Mammal Protection Act</b>
<b>MSA</b>	<b>Magnuson-Stevens Fishery Conservation and Management Act (as currently amended)</b>
<b>MSB</b>	<b>Atlantic Mackerel, Squid, Butterfish</b>
<b>MSY</b>	<b>Maximum Sustainable Yield</b>
<b>MT (or mt)</b>	<b>Metric Tons (1 mt equals about 2,204.62 pounds)</b>
<b>NE</b>	<b>Northeast</b>
<b>NEFSC</b>	<b>Northeast Fisheries Science Center</b>
<b>NEPA</b>	<b>National Environmental Policy Act</b>
<b>NMFS</b>	<b>National Marine Fisheries Service (NOAA Fisheries)</b>
<b>NOAA</b>	<b>National Oceanic and Atmospheric Administration</b>
<b>OFL</b>	<b>Overfishing Level</b>
<b>SARC</b>	<b>Stock Assessment Review Committee</b>
<b>SAW</b>	<b>Stock Assessment Workshop</b>
<b>SNE</b>	<b>Southern New England</b>
<b>SSC</b>	<b>Scientific and Statistical Committee</b>
<b>US</b>	<b>United States</b>
<b>VTR</b>	<b>Vessel Trip Report</b>

Notes: "Mackerel" refers to "Atlantic mackerel" unless otherwise noted. Longfin refers to "longfin squid."

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## 4.0 INTRODUCTION AND BACKGROUND

The Council's squid fisheries, longfin squid (longfin) and *Illex* squid (*Illex*), are highly variable but from 2012-2016, landings generated average nominal ex-vessel revenues of \$33.0 million for longfin and \$5.5 million for *Illex*. On average during these time periods, the longfin fishery landed 59% of its annual quota and the *Illex* fishery landed 29% of its quota. (Seasonal longfin closures in 2012 and 2016 suppressed annual landings in those years.) However, a relatively small portion of the directed permits account for most landings in both fisheries. Also, during peak landings in 2016 the longfin squid fishery landed up to 3.5 million pounds in a week, which means just the fleet that fished in 2016 has the power to land the entire annual quota in approximately 14 weeks. Likewise, in 2011 the *Illex* fishery caught as much as 4.5 million pounds in a week, which means just the fleet that fished in 2011 had the power to land the entire annual quota in approximately 11 weeks. Based on these observations some fishery participants requested that the Council consider removing latent permits from the directed fishery to ensure access to the quota for participants that have been active in the fishery and have come to depend on access to the squid fisheries. This is the focus of most of the alternatives in this action (generally Sets 1, 2, 3, 5, and 6).

Other alternatives (generally Set 4) address a concern raised by both some fishery participants and other interested parties that the productivity of the longfin squid stock may be negatively impacted if excessive fishing in Trimester 2 (T2, May-August) does not allow sufficient spawning and/or egg hatching from egg mops. These concerns relate to both overall productivity and the availability of longfin in local areas.

### 4.1 OBJECTIVES

Aligned with the issues identified in the Introduction, the objectives of this action are to:

- A. Consider the appropriate number of vessels in the directed longfin squid / *Illex* squid fisheries and design appropriate management measures for permitted vessels. The Council is considering this action because there is considerable latent (i.e. not regularly used) effort in both fisheries - a relatively small portion of vessels with limited access ("moratorium") squid permits account for the majority of landings in most years, and the Council is concerned that activation of latent permits in the squid fisheries could lead to excessive fishing effort (shortening seasons), and possibly increasing catch of non-target species if a race to fish overwhelms incentives to avoid bycatch.
- B. Re-evaluate the management of longfin squid in Trimester 2. The Council is considering this action because there is concern that the productivity of the longfin squid stock may be negatively impacted if excessive fishing in T2 does not allow sufficient spawning and/or egg hatching from egg mops.

### 4.2 REGULATORY AUTHORITY

As discretionary provisions of FMPs, the Magnuson-Stevens Fishery Conservation and Management Act (MSA) states that any FMP may establish a limited access system for the fishery in order to achieve optimum yield if, in developing such system, the Council and the Secretary take into account—

- (A) present participation in the fishery;
- (B) historical fishing practices in, and dependence on, the fishery;
- (C) the economics of the fishery;

- (D) the capability of fishing vessels used in the fishery to engage in other fisheries;
- (E) the cultural and social framework relevant to the fishery and any affected fishing communities;
- (F) the fair and equitable distribution of access privileges in the fishery; and
- (G) any other relevant considerations.

As discretionary provisions of FMPs the MSA also allows restriction of fishing by time/season. Both limited access and seasonal management have been previously incorporated into the MSB FMP and this action would modify the existing provisions.

### 4.3 FMP HISTORY AND MANAGEMENT OBJECTIVES

Management of the MSB fisheries began through the implementation of three separate FMPs (one each for mackerel, squid, and butterfish) in 1978. The plans were merged in 1983. Over time a wide variety of management issues have been addressed including stock rebuilding, habitat conservation, bycatch minimization, and limiting participation in the fisheries. The history of the plan and its amendments can be found at <http://www.mafmc.org/fisheries/fmp/msb>.

The management goals and objectives, as described in the current FMP are listed below.

1. Enhance the probability of successful (i.e., the historical average) recruitment to the fisheries.
2. Promote the growth of the U.S. commercial fishery, including the fishery for export.
3. Provide the greatest degree of freedom and flexibility to all harvesters of these resources consistent with the attainment of the other objectives of this FMP.
4. Provide marine recreational fishing opportunities, recognizing the contribution of recreational fishing to the national economy.
5. Increase understanding of the conditions of the stocks and fisheries.
6. Minimize harvesting conflicts among U.S. commercial, U.S. recreational, and foreign fishermen.

### 4.4 MANAGEMENT UNIT AND GEOGRAPHIC SCOPE

The management unit (fish stock definition) for the MSB FMP is all Atlantic mackerel (*Scomber scombrus*), Longfin squid (*Doryteuthis (Amerigo) pealeii*),<sup>1</sup> Illex squid (*Illex illecebrosus*), and butterfish (*Peprilus triacanthus*) under U.S. jurisdiction in the northwest Atlantic, with a core fishery management area from Maine to North Carolina.

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<sup>1</sup> For longfin squid there was a scientific name change from *Loligo pealeii* to *Doryteuthis (Amerigo) pealeii*. To avoid confusion, this document will utilize the common name "longfin squid" or just "longfin" wherever possible, but this squid is often referred to as "*Loligo*" by interested parties.

## 5.0 MANAGEMENT ALTERNATIVES

### 5.1 ALTERNATIVE SET 1: LONGFIN SQUID MORATORIUM PERMIT REQUALIFICATION ALTERNATIVES

Alternatives in this set could be selected in addition to alternatives in other sets or on their own if no action is selected for other sets. This action would not allow new entrants to qualify for a moratorium permit. The Council would only choose one action alternative within this set.

1A. No action. No changes would be made to longfin/butterfish moratorium permits. The existing system of longfin squid/butterfish moratorium permits and incidental permits would remain in place. In 2016 there were approximately 286 vessels with active moratorium permits and approximately another 97 that had their permits/histories held in CPH. There were approximately 1,500 incidental permits in 2016. A summary of regulations for these permits may be found at <https://www.greateratlantic.fisheries.noaa.gov/regs/info.html>.

1B. Requalify current longfin squid/butterfish permits if they landed at least 10,000 pounds in any year from 1997-2015. Permits in “Confirmation of Permit History” (CPH) could requalify if they have the required landings.

Rational: The general rationale for the longfin squid moratorium permit alternatives is that an influx of entrants may dilute the amount of quota available to those vessels that have become dependent on longfin squid fishing, so latent permits should be removed. This option would include a long qualifying period and a low threshold to enable more vessels to requalify; only the least active vessels would be impacted by this alternative. For example, 10,000 pounds could be landed in just four trips at the current incidental trip limit, so any vessels that would not re-qualify would have had very low activity during the re-qualification period. 2016 is not included due to the influx of effort in 2016. Catch data is most accurate after 1997 due to permitting and reporting requirements.

1C. Requalify current longfin squid/butterfish permits if they landed at least 10,000 pounds in any year from 1997-2013. Permits in “Confirmation of Permit History” (CPH) could requalify if they have the required landings.

Rational: The general rationale for the longfin squid moratorium permit alternatives is that an influx of entrants may dilute the amount of quota available to those vessels that have become dependent on longfin squid fishing, so latent permits should be removed. This option would include a relatively long qualifying period and a low threshold to enable more vessels to requalify; only the least active vessels or those entering after the control date<sup>2</sup> year would be impacted by this alternative. For example, 10,000 pounds could be landed in just four trips at the incidental trip limit, so any vessels that would

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<sup>2</sup> The current control date for the longfin squid fishery is May 16, 2013.

not re-qualify would have had very low activity during the re-qualification period. Using the control date excludes the newest entrants (or re-entrants) into the directed fishery (entry of new participants may dilute quota availability). Catch data is most accurate after 1997 due to permitting and reporting requirements.

1D. Requalify current longfin squid/butterfish permits if they landed at least 25,000 pounds in any year from 2003-2013. Permits in “Confirmation of Permit History” (CPH) could requalify if they have the required landings.

Rational: The general rationale for the longfin squid moratorium permit alternatives is that an influx of entrants may dilute the amount of quota available to those vessels that have become dependent on longfin squid fishing, so latent permits should be removed. This option would include a more recent qualifying period that ends at the recent control date year and has a moderately low requalifying threshold. For example, 25,000 pounds could be landed in ten trips at the incidental trip limit or 1-2 directed trips, so any vessels that would not re-qualify would have had relatively low activity during the re-qualification period. Beginning in 2003 means qualifying participation would have to be relatively recent. Using the control date excludes the newest entrants (or re-entrants) into the directed fishery (entry of new participants may dilute quota availability). A start date of 2003 was based on 2003 being a break point in the numbers of active vessels and 2003 being a long enough time period to encompass a range of squid fishery conditions.

1E. Requalify current longfin squid/butterfish permits if they landed at least 50,000 pounds on average during 1997-2013. Permits in “Confirmation of Permit History” (CPH) could requalify if they have the required landings.

Rational: The general rationale for the longfin squid moratorium permit alternatives is that an influx of entrants may dilute the amount of quota available to those vessels that have become dependent on longfin squid fishing, so latent permits should be removed. This option would include a higher landings threshold for directed fishing, but still considers a relatively long time period. A 50,000-pound average threshold means that qualifying vessels would have spent more effort directing on longfin squid than those that qualify under the lower threshold options. Using the control date excludes the newest entrants (or re-entrants) into the directed fishery (entry of new participants may dilute quota availability). Catch data is most accurate after 1997 due to permitting and reporting requirements.

## 5.2 ALTERNATIVE SET 2: LONGFIN SQUID MORATORIUM PERMIT REQUALIFICATION SUB-ALTERNATIVES

2B or 2C could be selected if an action alternative from Set 1 is selected. Alternatives in this set could also be selected in addition to alternatives from Sets 3, 4, 5, and 6. 2C would only apply if either 3B or 3C is selected. Within the action alternatives in this set, the Council could select both 2B and 2C or just one.

2A. No action. No additional requalification options would be selected.

2B. An entity that is currently issued more than one longfin squid/butterfish moratorium permit has a one-time opportunity to swap re-qualifying moratorium permits among vessels owned by that same entity that currently have longfin squid/butterfish moratorium permits. All baselines and histories would remain the same for all vessels.

Rational: This would help maximize potential fishing opportunities and associated revenue for entities that have been issued multiple moratorium permits on separate vessels. Allowing a one-time permit swap among vessels would allow an entity to place a moratorium permit on a vessel that would be more likely target squid based on other permits issued to that vessel. For example, a vessel issued moratorium squid permit and a limited access full-time Atlantic sea scallop permit is likely to concentrate fishing efforts on sea scallops due to the higher potential fishing revenue associated with the scallop fishery. This alternative may also mitigate the loss of a permit for entities that own multiple permits. Ultimately, the same number of permits would be removed from the fishery if 2B is selected, but this option could help entities balance their permit suites across vessels.

2C. If a vessel that currently has been issued a moratorium longfin squid/butterfish permit does not re-qualify, it would automatically be issued a limited access incidental permit if the Council makes the current open access incidental permit a limited access permit.

Rational: This alternative addresses the historical participation of vessels that qualified for the original longfin squid/butterfish moratorium permit, but would not have landings to re-qualify for a moratorium permit or a limited access incidental permit. Their historical participation would allow them a higher level of access than the proposed lower open access trip limits by qualifying them for the new limited access incidental permit.

### 5.3 ALTERNATIVE SET 3: LONGFIN SQUID INCIDENTAL AND OPEN ACCESS ALTERNATIVES

Alternatives in this set could be selected in addition to alternatives in other sets or on their own if no action is selected for other sets. Within the action alternatives in this set, the Council could select either 3B or 3C, possibly combined with either 3D or 3E.

3A. No action. The current open access incidental permits and associated trip limits would remain as they are.

3B. Create a new limited-access incidental longfin squid permit that cannot be reacquired if dropped. Qualification years would be from 1997-2013 and require landings of at least 2,500 pounds in any one year. The initial trip limit would be 2,500 pounds. This permit would also allow incidental catch of *Illex* and butterfish at the designated incidental trip limit (currently 10,000 pounds for *Illex* and 600 pounds for butterfish).

Rational: The current open access incidental permit can be dropped and added at any time within a year, allowing vessels to access Federal waters at times with the permit, and fish above Federal limits in state waters at other times without the permit. Making the permit a limited access permit that could not be dropped and re-issued at any time would eliminate this loophole. The qualification threshold would be low – the equivalent of only one incidental trip limit so that most vessels would qualify and would be minimally impacted besides closing the loophole. The current incidental possession limit would remain at 2,500 pounds per trip.

3C. Create a new limited-access incidental longfin squid permit that cannot be reacquired if dropped. Qualification years would be from 1997-2013 and require landings of at least 5,000 pounds in any one year. The initial trip limit would be 2,500 pounds. This permit would also allow incidental catch of *Illex* and butterfish at the designated incidental trip limit (currently 10,000 pounds for *Illex* and 600 pounds for butterfish).

Rational: The current open access incidental permit can be dropped and added at any time within a year, allowing vessels to access Federal waters at times with the permit, and fish above Federal limits in state waters at other times without the permit. Making the permit a limited access permit that could not be dropped and re-issued at any time would eliminate this loophole. The qualification threshold would be low – the equivalent of only two incidental trip limits so that most vessels would qualify and would be minimally impacted besides closing the loophole. The current incidental possession limit would remain at 2,500 pounds per trip.

3D. Make the open-access longfin squid incidental trip limit 250 pounds.

Rational: This option would reduce the current open access incidental trip limit from 2,500 pounds to reduce incentives to target longfin squid under this incidental permit, particularly once a trimester quota is caught. Catch following the closure of Trimester II in June 2016 resulted in harvest that was about 50% higher than the quota. However, some open access permit should still be available to minimize true regulatory discards.

3E. Make the current open-access longfin squid incidental trip limit 500 pounds.

Rational: This option would reduce the current open access incidental trip limit from 2,500 pounds to reduce incentives to target longfin squid under this incidental permit, particularly once a trimester quota is caught. Catch following the closure of Trimester II in June 2016 resulted in harvest that was about 50% higher than the quota. However, some open access permit should still be available to minimize true regulatory discards.

#### **5.4 ALTERNATIVE SET 4: LONGFIN SQUID TRIMESTER 2 (“T2”) ALTERNATIVES**

Alternatives in this set could be selected in addition to alternatives in other sets or on their own if no action is selected for other sets. Within the action alternatives in this set, the Council could select either 4B or 4C, possibly combined with either 4D or 4E, possibly combined with 4F.

4A. No action. The annual quota is divided among three 4-month trimesters, with the initial Trimester 2 (T2, May through August) allocation set at 17% of the annual quota (8.4 million pounds in 2017-2018). Any underages for T1 that are greater than 25 percent will be reallocated to Trimesters 2 and 3 (split equally between both trimesters) of the same year. The reallocation is limited, such that T2 may only be increased by 50 percent; the remaining portion of the underage will be reallocated to T3. Any underages for T1 that are less than 25 percent of the T1 quota will be applied to T3 of the same year. Any overages for T1 and T2 will be subtracted from T3 of the same year. This means that the post-rollover T2 quota can be as high as 12.6 million pounds (8.4 plus (half of 8.4) = 12.6). Also, the trip limit in Federal waters after a Trimester closure is 2,500 pounds.

4B. Eliminate roll-over of longfin squid quota from T1 to T2 (all un-caught T1 quota would go to T3).

Rational: There is concern that the productivity of the longfin squid stock may be negatively impacted if excessive fishing in T2 does not allow sufficient spawning and/or egg hatching from egg mops.

4C. Reduce the maximum T1 to T2 rollover of longfin squid quota to 25% of the original T2 quota. The initial T2 quota is approximately 8.4 million pounds, so the maximum after rollover would be about 10.5 million pounds in T2.

Rational: There is concern that the productivity of the longfin squid stock may be negatively impacted if excessive fishing in T2 does not allow sufficient spawning and/or egg hatching from egg mops.

4D. Implement a 250-pound trip limit for all longfin squid permits with higher initial trip limits when the T2 quota is predicted to be reached.

Rational: Substantial landings have occurred after T2 quota closures in recent years at the current 2,500 pound trip limit. Catch following the closure of Trimester II in June 2016 resulted in harvest that was about 50% higher than the quota. There is concern that the productivity of the longfin squid stock may be negatively impacted if excessive fishing in T2 does not allow sufficient spawning and/or egg hatching from egg mops.

4E. Implement a 500-pound trip limit for all longfin squid permits with higher initial trip limits when the T2 quota is predicted to be reached.

Rational: Substantial landings have occurred after T2 quota closures in recent years at the current 2,500 pound trip limit. Catch following the closure of Trimester II in June 2016 resulted in harvest that was about 50% higher than the quota. There is concern that the productivity of the longfin squid stock may be negatively impacted if excessive fishing in T2 does not allow sufficient spawning and/or egg hatching from egg mops.

4F. Split the Trimester 2 quota, with half available May 1, and the additional half available July 1. Open access incidental and post-closure trip limits would remain as status quo or as specified in other alternatives in this action.

Rational: Rapid landings in some recent years have caused a glut of squid in T2, which lowers product quality and prices. This alternative would force longfin squid fishing to occur over a longer time period in T2.



## 5.5 ALTERNATIVE SET 5: *ILLEX* SQUID MORATORIUM PERMIT REQUALIFICATION ALTERNATIVES

Alternatives in this set could be selected in addition to alternatives in other sets or on their own if no action is selected for other sets. This action would not allow new entrants to qualify for a moratorium permit. The Council would only choose one alternative within this set.

5A. No action. No changes would be made to *Illex* moratorium permits.

5B. Requalify current *Illex* moratorium permits if they landed at least 10,000 pounds in any year from 1997-2015. Permits in “Confirmation of Permit History” (CPH) could requalify if they have the required landings.

Rational: The general rationale for the *Illex* squid moratorium permit alternatives is that an influx of entrants may dilute the amount of quota available to those vessels that have become dependent on *Illex* squid fishing, so latent permits should be removed. This option would include a long qualifying period and a low threshold to enable more vessels to requalify; only the least active vessels would be impacted by this alternative. For example, 10,000 pounds could be landed in just one trip at the current incidental trip limit, so any vessels that would not re-qualify would have had very low activity during the re-qualification period. Catch data is most accurate after 1997 due to permitting and reporting requirements.

5C. Requalify current *Illex* moratorium permits if they landed at least 10,000 pounds in any year from 1997-2013. Permits in “Confirmation of Permit History” (CPH) could requalify if they have the required landings.

Rational: The general rationale for the *Illex* squid moratorium permit alternatives is that an influx of entrants may dilute the amount of quota available to those vessels that have become dependent on *Illex* squid fishing, so latent permits should be removed. This option would include a relatively long qualifying period that ends at the recent control date<sup>3</sup> year. 10,000 pounds could be landed in just one trip at the incidental trip limit, so any vessels that would not re-qualify would have had very low activity during the re-qualification period. Using the control date excludes newest entrants (or re-entrants) into the directed fishery (entry of new participants may dilute quota availability). Catch data is most accurate after 1997 due to permitting and reporting requirements.

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<sup>3</sup> The current control date for the *Illex* fishery is August 2, 2013

5D. Requalify current *Illex* moratorium permits if they landed at least 50,000 pounds in any year from 1997-2013. Permits in “Confirmation of Permit History” (CPH) could requalify if they have the required landings.

Rational: The general rationale for the *Illex* squid moratorium permit alternatives is that an influx of entrants may dilute the amount of quota available to those vessels that have become dependent on *Illex* squid fishing, so latent permits should be removed. This option would include a moderately low qualification threshold to identify vessels that have been somewhat more active in the fishery than the lowest thresholds. Using the control date excludes newest entrants (or re-entrants) into the directed fishery (entry of new participants may dilute quota availability). Catch data is most accurate after 1997 due to permitting and reporting requirements.

5E. Requalify current *Illex* moratorium permits if they landed at least 100,000 pounds in any year from 1997-2013. Permits in “Confirmation of Permit History” (CPH) could requalify if they have the required landings.

Rational: The general rationale for the *Illex* squid moratorium permit alternatives is that an influx of entrants may dilute the amount of quota available to those vessels that have become dependent on *Illex* squid fishing, so latent permits should be removed. This option would include a moderately high qualification threshold to identify vessels that have been more active in the fishery. Using the control date excludes newest entrants (or re-entrants) into the directed fishery (entry of new participants may dilute quota availability). Catch data is most accurate after 1997 due to permitting and reporting requirements.

5F. Requalify current *Illex* moratorium permits if they landed at least 200,000 pounds in any year from 1997-2013. Permits in “Confirmation of Permit History” (CPH) could requalify if they have the required landings.

Rational: The general rationale for the *Illex* squid moratorium permit alternatives is that an influx of entrants may dilute the amount of quota available to those vessels that have become dependent on *Illex* squid fishing, so latent permits should be removed. This option would include a relatively high qualification threshold to identify vessels that have been most active in the fishery. Using the control date excludes newest entrants (or re-entrants) into the directed fishery (entry of new participants may dilute quota availability). Catch data is most accurate after 1997 due to permitting and reporting requirements.

## 5.6 ALTERNATIVE SET 6: ILLEX SQUID MORATORIUM PERMIT REQUALIFICATION SUB ALTERNATIVES

6B could be selected if an action alternative from Set 5 is selected. Alternatives in this set could also be selected in addition to alternatives from Sets 1, 2, 3, and 4. The Council would only choose one alternative within this set.

6A. No action. No additional requalification options would be selected.

6B. An entity that is currently issued more than one *Illex* moratorium permit has a one-time opportunity to swap re-qualifying moratorium permits among vessels owned by that same entity that currently have *Illex* moratorium permits. All baselines and histories would remain the same for all vessels.

Rational: This would help maximize potential fishing opportunities and associated revenue for entities that have been issued multiple moratorium permits on separate vessels. Allowing a one-time permit swap among vessels would allow an entity to place a moratorium permit on a vessel that would be more likely target squid based on other permits issued to that vessel. For example, a vessel issued moratorium squid permit and a limited access full-time Atlantic sea scallop permit is likely to concentrate fishing efforts on sea scallops due to the higher potential fishing revenue associated with the scallop fishery. This alternative may also mitigate the loss of a permit for entities that own multiple permits. Ultimately, the same number of permits would be removed from the fishery if 6B is selected, but this option could help entities balance their permit suites across vessels.

## 5.7 CONSIDERED BUT REJECTED FROM FURTHER ANALYSIS

The Council considered the possibility of granting vessels from Maine new longfin squid permits based on a request from the State of Maine related to higher abundance of longfin squid off Maine in some recent years. However, the MSA does not allow measures that discriminate against residents of different states, and it would not appear fair to take permits from some current permit holders and give new permits to residents of just one state. Also, residents from Maine can purchase permits that could allow directed fishing on longfin squid. The Council also considered adding to the scope of the Amendment by looking at buffer areas south of Martha's Vineyard and Nantucket to resolve a user conflict that has developed there due to longfin squid fishing just outside Massachusetts state waters during the summer months (Trimester 2). Ultimately the Council decided to potentially consider this issue in a separate action, and it was added as a possible additional deliverable in the Council's 2017 Implementation Plan (<http://www.mafmc.org/strategic-plan/>). This approach allows the current Amendment to proceed in an efficient fashion, and the buffer area issue can be addressed separately. In addition, some of the possible measures in this action could indirectly address this user conflict issue by limiting overall squid catch/effort in Trimester 2.

## 6.0 DESCRIPTION OF THE AFFECTED ENVIRONMENT

The affected environment consists of those physical, biological, and human components of the environment that are or will be meaningfully connected to commercial longfin and *Illex* fishing operations, and are described below.

### 6.1 PHYSICAL ENVIRONMENT

The managed resources inhabit the Northeast U.S. Shelf Ecosystem, which has been described as including the area from the Gulf of Maine south to Cape Hatteras, extending from the coast seaward to the edge of the continental shelf, including the slope sea offshore to the Gulf Stream. The continental slope includes the area east of the shelf, out to a depth of 2000 m. Four distinct sub-regions comprise the NOAA Fisheries Northeast Region: the Gulf of Maine, Georges Bank, the Mid-Atlantic Bight, and the continental slope. The areas of interest in this action include the Mid-Atlantic Bight and the continental slope. The Mid-Atlantic Bight is comprised of the sandy, relatively flat, gently sloping continental shelf from southern New England to Cape Hatteras, NC. The continental slope begins at the continental shelf break and continues eastward with increasing depth until it becomes the continental rise.

The continental shelf slopes gently from shore out to between 100 and 200 km offshore where it transforms to the slope at the shelf break (100-200 m water depth), continuing eastward with increasing depth until it becomes the continental rise, and finally the abyssal plain. The width of the slope varies from 10-50 km, with an average gradient of 3-6°; however, local gradients can be nearly vertical. The base of the slope is defined by a marked decrease in seafloor gradient where the continental rise begins. The slope is cut by at least 70 large canyons between Georges Bank and Cape Hatteras and numerous smaller canyons and gullies, many of which may feed into the larger canyon systems.

On the slope, silty sand, silt, and clay predominate. A “mud line” occurs on the slope at a depth of 250-300 m, below which fine silt and clay-size particles predominate. Localized coarse sediments and rock outcrops are found in and near canyon walls, and occasional boulders occur on the slope because of glacial rafting. Sand pockets may also be formed because of downslope movements.

Submarine canyons are not spaced evenly along the slope, but tend to decrease in areas of increasing slope gradient. Canyons are typically “v” shaped in cross section and often have steep walls and outcroppings of bedrock and clay. The canyons are continuous from the canyon heads to the base of the continental slope. Some canyons end at the base of the slope, but others continue as channels onto the continental rise. Larger and more deeply incised canyons are generally significantly older than smaller ones, and there is evidence that some older canyons have experienced several episodes of filling and re-excavation.

Canyons can alter the physical processes in the surrounding slope waters. Fluctuations in the velocities of the surface and internal tides can be large near the heads of the canyons, leading to enhanced mixing and sediment transport in the area.

More information on the physical properties of the Northeast U.S. Shelf Ecosystem and the submarine canyon environments relevant to this action can be found in the NOAA Technical Memo “Characterization of the Fishing Practices and Marine Benthic Ecosystems of the Northeast U.S. Shelf, and an Evaluation of the Potential Effects of Fishing on Essential Fish Habitat” (Stevenson et al. 2004, available at: <http://www.nefsc.noaa.gov/publications/tm/tm181/>.)

## 6.2 BIOLOGICAL ENVIRONMENT

### 6.2.1 Description of the Managed Resources in the FMP

**Atlantic mackerel** is a semi-pelagic/semi-demersal (may be found near the bottom or higher in the water column) schooling fish species primarily distributed between Labrador (Newfoundland, Canada) and North Carolina. Additional life history information is detailed in the Essential Fish Habitat (EFH) document for the species, located at: <http://www.nefsc.noaa.gov/nefsc/habitat/efh/>. The status of Atlantic mackerel is unknown with respect to being overfished or not, and unknown with respect to experiencing overfishing or not. Recent results from the Northeast Fisheries Science Center (NEFSC) Spring Trawl survey (the spring survey catches the most mackerel) are highly variable, and are graphed in the “NEFSC Biological Update” that is created as part of the annual quota setting process. These are available at: <http://www.mafmc.org/ssc-meeting-documents/> (see May 2016 Meeting Materials). Atlantic mackerel has a stock assessment scheduled for 2017. Acceptable Biological Catches (ABCs) are set by the Council’s Scientific and Statistical Committee (SSC) to avoid overfishing given the best available science. See <http://www.mafmc.org/ssc> for details on how ABCs are set for this species.

**Atlantic butterfish** is a semi-pelagic/semi-demersal schooling fish species primarily distributed between Nova Scotia, Canada and Florida. Additional life history information is detailed in the EFH document for the species, located at: <http://www.nefsc.noaa.gov/nefsc/habitat/efh/>. The status of butterfish is not overfished (above target biomass) with no overfishing occurring according to a recently accepted assessment (NEFSC 2014, available at: <http://nefsc.noaa.gov/publications/crd/crd1403/>). Butterfish has a stock assessment update scheduled for 2017. ABCs are set by the Council’s SSC to avoid overfishing given the best available science. See <http://www.mafmc.org/ssc> for details on how ABCs are set for this species.

**Longfin squid** is a semi-pelagic/semi-demersal schooling cephalopod species primarily distributed between Georges Bank and Cape Hatteras, NC. Additional life history information is detailed in the EFH document for the species, located at: <http://www.nefsc.noaa.gov/nefsc/habitat/efh/>. Based on a new biomass reference point from a 2010 stock assessment, the longfin squid stock was not overfished in 2009, but overfishing status was not determined because no overfishing threshold was recommended (though the assessment did describe the stock as “lightly exploited”). The assessment documents are available at: <http://www.nefsc.noaa.gov/saw/reports.html>. Recent results from the NEFSC Trawl surveys are highly variable, and are graphed in the “NEFSC Biological Update” that is created as part of the annual quota setting process. These are available at: <http://www.mafmc.org/ssc-meeting-documents/> (see May 2016 Meeting Materials). Longfin has a stock assessment update scheduled for 2017. ABCs are set by the Council’s SSC to avoid overfishing given the best available science. See <http://www.mafmc.org/ssc> for details on how ABCs are set for this species.

***Illex* squid** is a semi-pelagic/semi-demersal schooling cephalopod species distributed between Newfoundland and the Florida Straits. Additional life history information is detailed in the EFH document for the species, located at: <http://www.nefsc.noaa.gov/nefsc/habitat/efh/>. The status of *Illex* is unknown with respect to being overfished or not, and unknown with respect to experiencing overfishing or not. Recent results from the NEFSC Trawl surveys are highly variable, and are graphed in the “NEFSC Biological Update” that is created as part of the annual quota setting process. These are available at: <http://www.mafmc.org/ssc-meeting-documents/> (see May 2016 Meeting Materials). ABCs are set by the Council’s SSC to avoid overfishing given the best available science. See <http://www.mafmc.org/ssc> for details on how ABCs are set for this species.

## 6.3 HUMAN COMMUNITIES AND ECONOMIC ENVIRONMENT

This section describes the socio-economic importance of the MSB fisheries, with a focus on the squid fisheries. Recent Amendments to the MSB FMP contain additional information about the MSB fisheries, especially demographic information on ports that land MSB species. See Amendments 11 and 14 at <http://www.mafmc.org/msb/> for more information or visit NMFS' communities page at: [http://www.nefsc.noaa.gov/read/socialsci/community\\_profiles/](http://www.nefsc.noaa.gov/read/socialsci/community_profiles/). In general, the MSB fisheries saw high foreign landings in the 1970s followed by a domestication of the fishery, and domestic landings have been lower than the peak foreign landings. The current regulations for the MSB fisheries are summarized by NMFS at <https://www.greateratlantic.fisheries.noaa.gov/regs/info.html>, and detailed in the Federal Register at <http://www.ecfr.gov/cgi-bin/text-idx?c=ecfr&SID=1e9802ffddb05d0243d9c657fade956c&rgn=div5&view=text&node=50:12.0.1.1.5&idno=50>.

### 6.3.1 Atlantic Mackerel

US commercial landings of mackerel increased steadily from roughly 3,000 metric tons (mt) in the early 1980s to greater than 31,000 mt by 1990. US mackerel landings declined to relatively low levels 1992-2000 before increasing in the early 2000s. The most recent years have seen a significant drop-off in harvest. Additional information on this fishery can be found in the specifications' Environmental Assessment, available at <http://www.greateratlantic.fisheries.noaa.gov/regs/2014/November/14msb2015174specspr.html>. The most recent Advisory Panel (AP) Fishery Information Document and AP Fishery Performance Report (available at <http://www.mafmc.org/ssc-meetings/2016/may-25-26>) also have recent details on fishery performance.

### 6.3.2 *Illex* Squid

The development and expansion of the US squid fisheries occurred primarily in the 1980s as the US industry developed the appropriate technology to catch and process squid in large quantities. The figure below illustrates the foreign fishery and the development of the domestic fishery relative to the current and recent quotas. 2016 data is preliminary and may be incomplete.

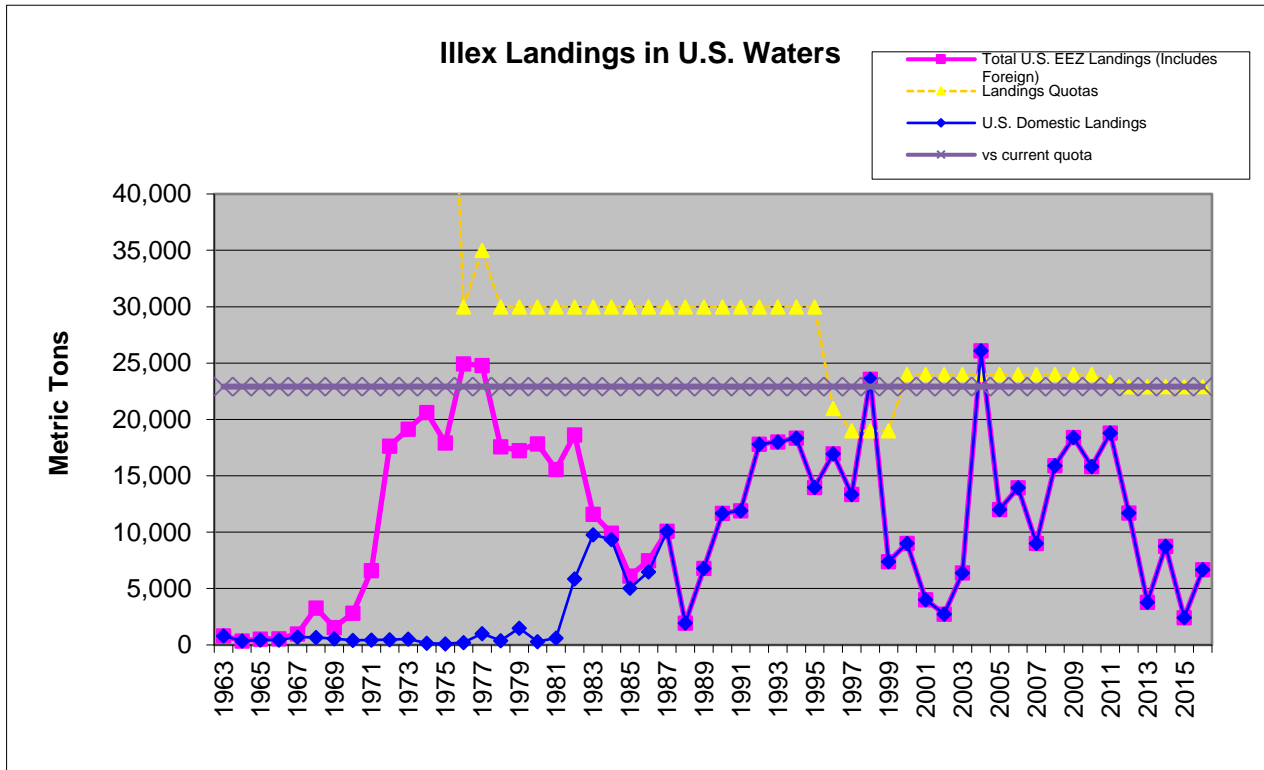


Figure 1. *Illex* Landings in U.S. Waters

The figures below provide more detail on ex-vessel revenues (nominal), and ex-vessel price (inflation adjusted) for *Illex* squid from 1982-2016 based on U.S. northeast dealer reports.

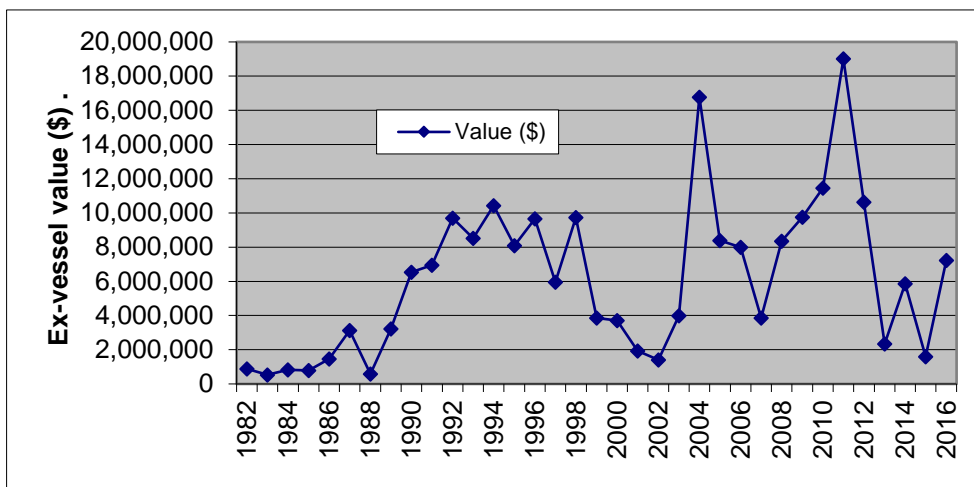


Figure 2. Nominal *Illex* Ex-Vessel Revenues Dealer Data

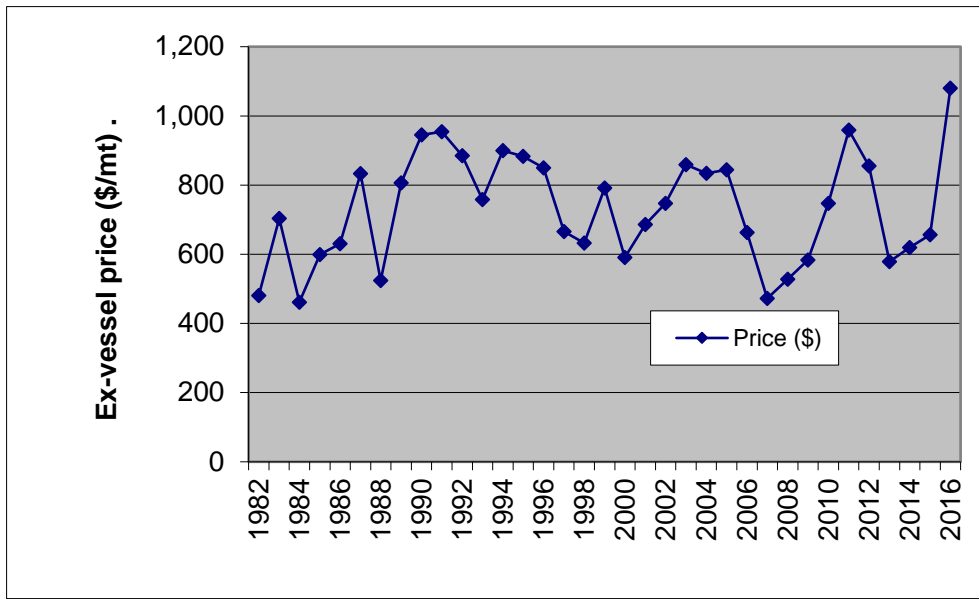


Figure 3. Inflation adjusted *Illex* Prices

The *Illex* fishery takes near the shelf break, as illustrated in the figure below. The fishery occurs annually in the summer and fall months when *Illex* are available to the U.S. fishery, almost entirely with bottom trawl gear.

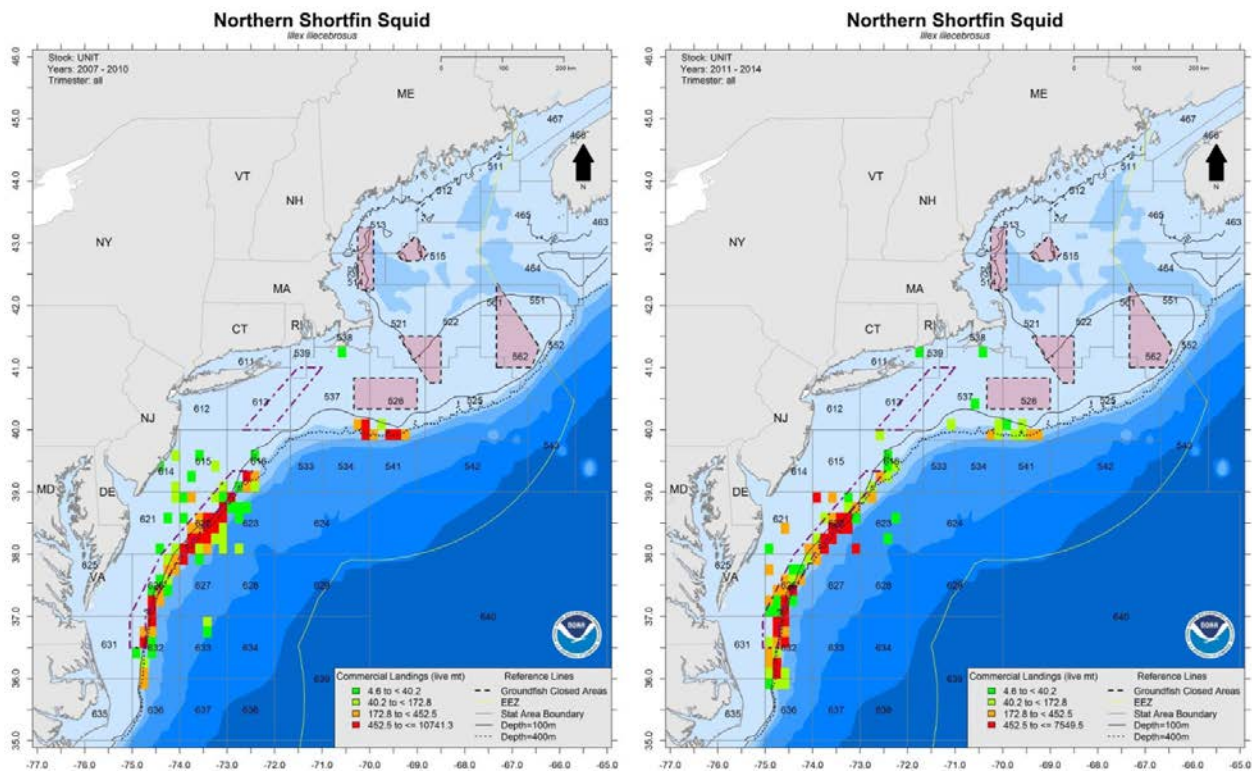


Figure 4. Distribution of landings (mt) from bottom trawl trips with *Illex* landings > 4.536 mt (10,000 lbs), by ten-minute square, during 2007-2010 and 2011-2014.



In recent years most *Illex* landings have been made in Rhode Island and New Jersey (see table below). Further breakdowns by port may violate data confidentiality rules.

Table 2. Recent *Illex* Landings by State

YEAR	NJ	RI	Other/NA
2014	3,786	4,668	313
2015	394	2,009	19
2016	1,757	4,720	208

There are approximately 79 vessels with *Illex* moratorium permits currently, but 15 of them are in CPH. Of the 64 vessels with active permits, their principal port states are listed below.

Table 3. Principal Port States (PPST) of Currently-Active *Illex* Vessels

PPST	Vessels
NJ	24
MA	12
RI	9
VA	7
NC	4
NY	4
CT	3
MD	1

A key driver for this amendment has been the concern by industry that additional participation by new entrants may compromise vessels that have become dependent on the squid fishery. The tables below describe the dependence on the *Illex* squid fishery for federally-permitted vessels in terms of the proportion of ex-vessel revenues from longfin squid versus other species and the numbers of Federally-permitted participants at various landings levels over time.

Table 4. Dependence on *Illex* by Federally-Permitted Vessels - 2016

Dependence on <i>Illex</i>	Number of Vessels in Each Dependency Category
1%-5%	7
5%-25%	4
25%-50%	4
More than 50%	0

Table 5. Activity in the *Illex* Fleet Over Time

YEAR	Vessels 500,000 +	Vessels 100,000 - 500,000	Vessels 50,000 - 100,000	Vessels 10,000 - 50,000
1982	7	7	0	10
1983	1	8	7	11
1984	4	15	4	6
1985	2	6	4	3
1986	8	6	4	3
1987	7	10	2	1
1988	3	3	1	2
1989	8	5	1	3
1990	12	3	0	1
1991	12	1	1	0
1992	16	1	0	1
1993	19	3	1	3
1994	21	7	5	8
1995	24	5	2	7
1996	24	5	6	4
1997	13	9	2	0
1998	25	4	1	3
1999	6	9	2	10
2000	7	7	0	2
2001	3	4	1	2
2002	2	3	1	1
2003	5	6	1	2
2004	23	5	2	0
2005	10	10	2	2
2006	9	8	1	2
2007	8	2	1	0
2008	12	4	0	0
2009	10	3	1	1
2010	12	3	0	6
2011	17	4	2	0
2012	8	3	2	2
2013	5	4	3	5
2014	5	3	2	2
2015	3	0	1	1
2016	4	3	3	2

### 6.3.3 Longfin Squid

The development and expansion of the US squid fisheries occurred primarily in the 1980s as the US industry developed the appropriate technology to catch and process squid in large quantities. The figure below illustrates the foreign fishery and the development of the domestic fishery relative to the current and recent quotas. 2016 data is preliminary and may be incomplete.

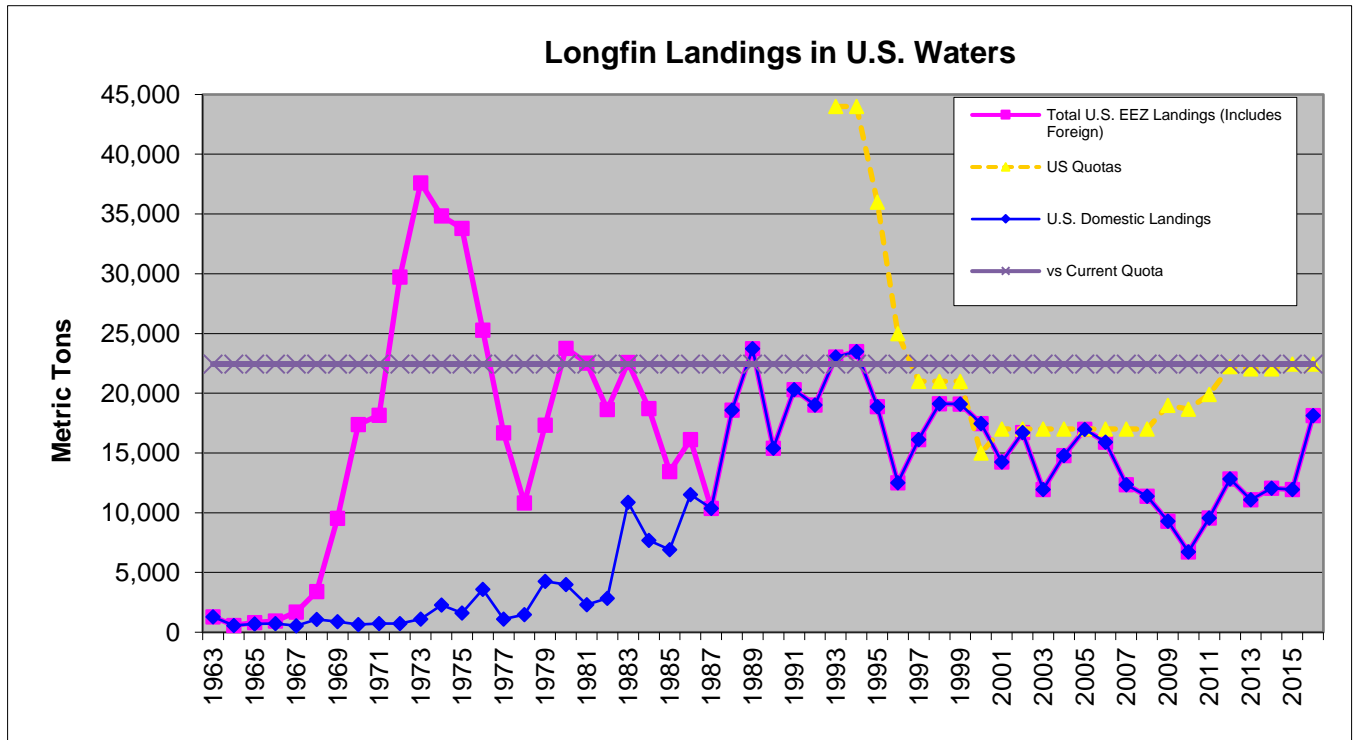


Figure 5. Longfin Squid Landings in U.S. Waters

The figures below provide more detail on ex-vessel revenues (nominal), and price (inflation adjusted) for longfin squid from 1982-2016 based on U.S. northeast dealer reports.

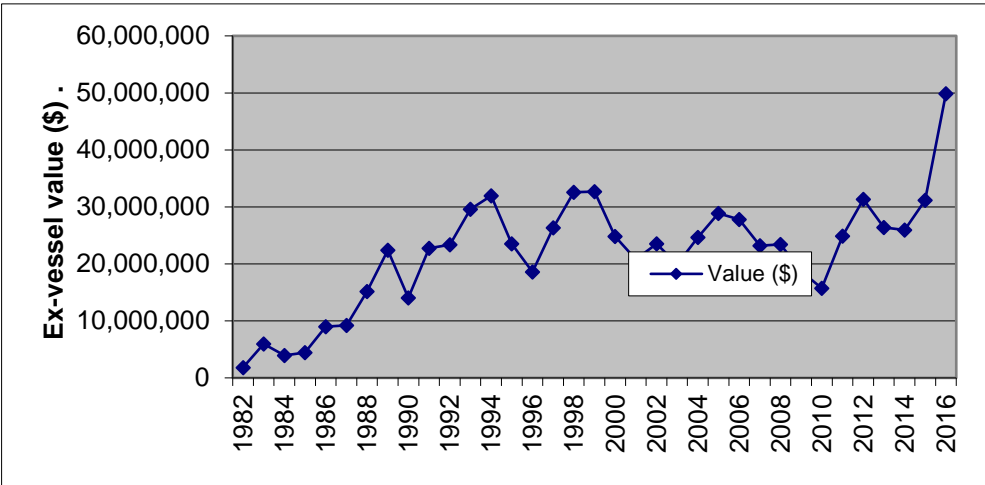


Figure 6. Nominal Longfin Ex-Vessel Revenues Dealer Data

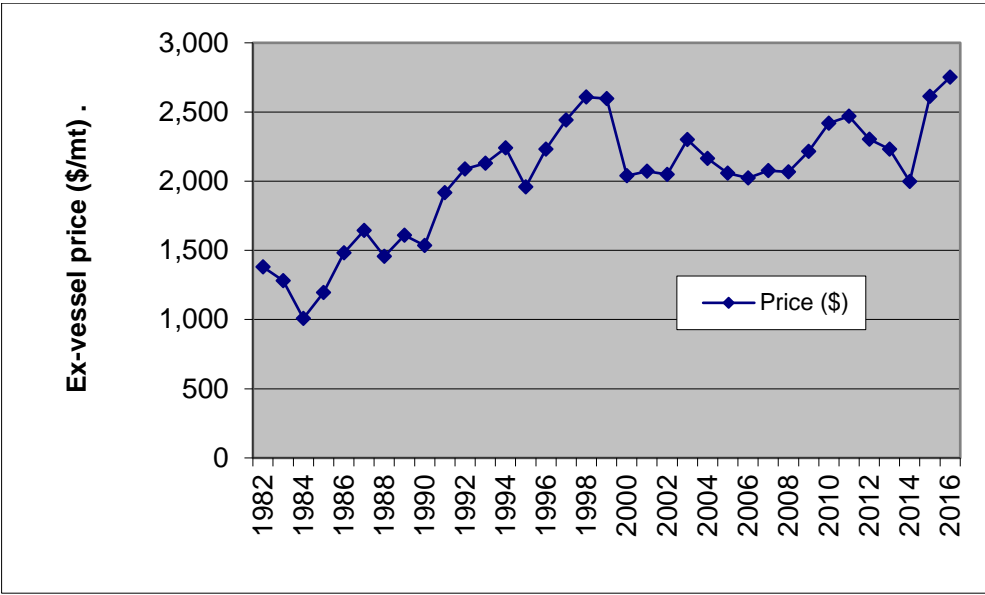
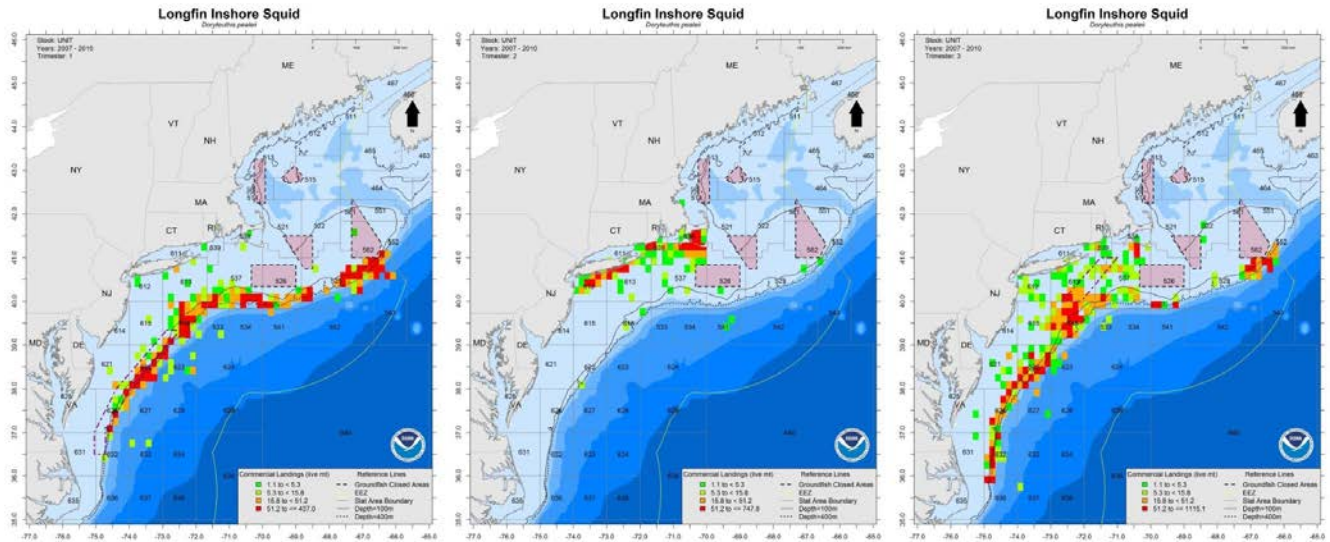


Figure 7. Inflation adjusted Longfin Prices

The longfin fishery has inshore and offshore components as illustrated in the figures below. The winter fishery is generally offshore, the summer fishery is generally inshore, and spring and fall can see a mixing of inshore and offshore activity. The fishery takes place predominantly with bottom trawl gear. The inshore fishery generally corresponds to the seasonal Trimesters (see below for details).



Distribution of landings (mt) from bottom trawl trips with longfin squid landings > 1.134 mt (2,500 lbs), by trimester and ten-minute squares during 2007-2010.

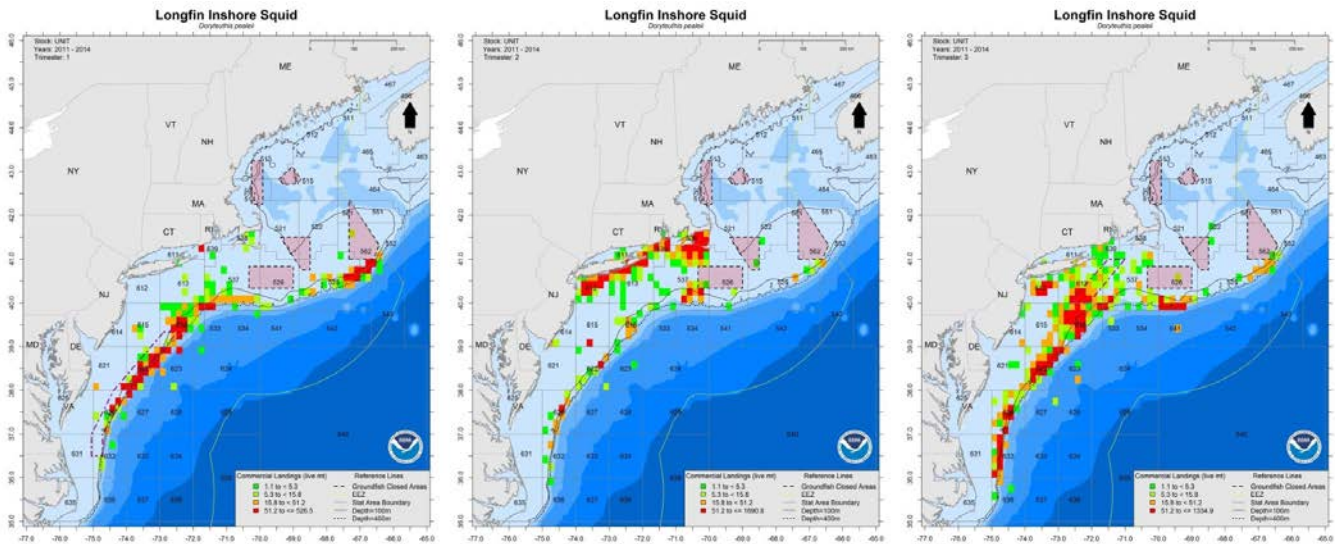


Figure 8. Distribution of landings (mt) from bottom trawl trips with longfin squid landings > 1.134 mt (2,500 lbs), by trimester and ten-minute squares during 2001-2014.

There is a strong seasonal aspect of the longfin squid fishery, partly due to the general variability in longfin abundance and availability, and partly due to the seasonal allocation of the annual quota, which regularly triggers seasonal closures. The figures and tables below describe the seasonal performance of the longfin fishery since 2007 when the Trimester system was implemented, which allocates 43% of the annual quota to Trimester 1 (January-April), 17% of the annual quota to Trimester 2 (May-August) and 40% of the annual quota to Trimester 3 (September-December). Quota is allowed to roll-over within a year with certain constraints. Any underages for T1 that are greater than 25 percent will be reallocated to Trimesters 2 and 3 (split equally between both trimesters) of the same year. The reallocation is limited, such that T2 may only be increased by 50 percent; the remaining portion of the underage will be reallocated to T3. Any underages for T1 that are less than 25 percent of the T1 quota will be applied only to T3 of the same year. Any overages for T1 and T2 will be subtracted from T3 of the same year - T3 simply becomes the annual quota so all overages or underages from earlier in the year are addressed in T3.

Since the Trimester system was implemented, Trimester 1 has only closed due to longfin squid catch once - in April of 2007<sup>4</sup>. Trimester 2 has closed in July of 2008, August of 2009, August of 2011, July of 2012, August of 2014, and June of 2016. While directed fishing at the post-closure trip limit of 2,500 pounds does occur, annual landings are likely suppressed in years when seasonal closures occur. While the Trimester allocations are based on historical catch and were primarily developed to optimize fishery operation, they do serve a biological purpose of spreading catch throughout the year, which is an important consideration given the short lifecycle of longfin squid (NEFSC 2011). The squid population is composed of overlapping micro-cohorts and avoiding excessive mortality on any one cohort reduces the chances of recruitment overfishing. The Trimester with the most landings varies from year to year, but Trimester 2 had the most landings in 2014, 2015, and 2016.

Table 6. Longfin Fishery Performance Since Trimesters (2007)

Year	Quota (mt)	Quota (pounds)	Commercial Landings (mt)	Commercial Landings (pounds)	% of Quota Landed	T1 Quota	T1 Land	T1%	T2 Quota	T2 Land	T2%	T3 Quota	T3 Land
2007	17,000	37,478,540	12,354	27,235,875	73%	15,632,318	15,487,194	99%	6,225,260	3,332,360	54%	Annual	8,391,050
2008	17,000	37,478,540	11,406	25,145,896	67%	16,093,745	8,405,764	52%	6,180,220	8,097,587	131%		8,595,268
2009	19,000	41,887,780	9,307	20,517,964	49%	17,892,717	7,390,668	41%	7,072,429	7,150,991	101%		5,975,911
2010	18,667	41,153,642	6,913	15,240,538	37%	17,696,506	3,131,395	18%	14,276,968	4,891,607	34%		6,783,709
2011	19,906	43,885,166	9,556	21,067,349	48%	18,871,570	7,887,388	42%	11,190,664	9,798,321	88%		3,377,556
2012	22,220	48,986,656	12,820	28,263,228	58%	21,065,169	5,291,094	25%	12,490,290	17,503,595	140%		5,461,598
2013	22,049	48,609,666	11,183	24,654,265	51%	20,902,027	1,658,898	8%	12,394,388	6,150,773	50%		16,628,444
2014	22,049	48,609,666	12,063	26,594,331	55%	20,674,951	7,331,327	35%	12,262,111	12,766,685	104%		6,488,956
2015	22,445	49,482,696	11,928	26,296,707	53%	21,276,813	5,404,923	25%	12,619,260	10,734,681	85%		10,211,533
2016	22,445	49,482,696	18,127	39,963,925	81%	21,276,813	12,228,889	57%	12,619,260	18,737,013	148%		8,997,660

<sup>4</sup> An April 2012 closure was due to the butterfish cap, which can shut the longfin squid fishery if excessive butterfish bycatch occurs but has only been triggered once – the butterfish cap is tracked here:

[https://www.greateratlantic.fisheries.noaa.gov/ro/fso/reports/ButterfishMortalityCapReport/butterfish\\_cap.htm](https://www.greateratlantic.fisheries.noaa.gov/ro/fso/reports/ButterfishMortalityCapReport/butterfish_cap.htm)

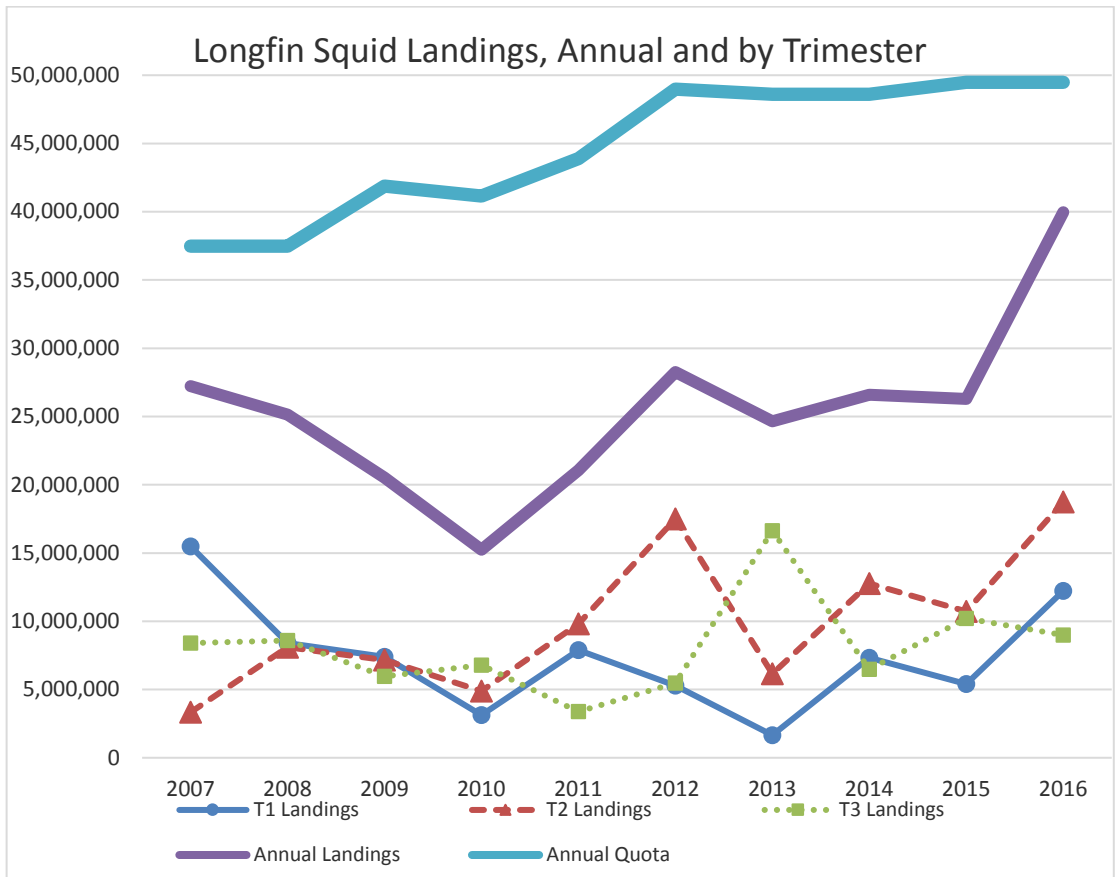


Figure 9. Longfin Fishery Performance Since Trimesters (2007)

In recent years most landings have been made in Rhode Island, with New York, New Jersey, Massachusetts, and Connecticut combining for less than Rhode Island’s landings (see table below). Landings are made at a variety of ports – the top ports are highlighted in a table below.

Table 7. Recent Longfin Landings by State

YEAR	CT	MA	NJ	NY	RI	Other/NA
2014	610	1,104	1,265	2,332	6,650	99
2015	597	855	1,201	1,932	7,287	81
2016	758	2,082	1,988	2,839	10,329	132

Table 8. Top longfin ports in rank of descending ex-vessel value, for ports that averaged at least \$25,000 in landed longfin squid over 2014-2016.

Port
POINT JUDITH RI
NORTH KINGSTOWN RI
MONTAUK NY
CAPE MAY NJ
HAMPTON BAYS NY
NEW BEDFORD MA
NEW LONDON CT
BARNSTABLE MA
STONINGTON CT
BOSTON MA
SHINNECOCK NY
POINT PLEASANT NJ
FALMOUTH MA
HYANNIS MA
HAMPTON VA
BELFORD NJ
WOODS HOLE MA
POINT LOOKOUT NY
EAST HAVEN CT
BABYLON NY
NEWPORT RI

Approximately 383 vessels with longfin squid/butterfish moratorium permits currently, but 97 of them are in CPH, leaving 286 active permits, with the following principal port states.

Table 9. Principal Port States (PPST) of Currently-Active Longfin Vessels

PPST	Vessels
NJ	74
MA	67
RI	49
NY	36
VA	23
NC	15
CT	10
ME	7
MD	3
AK	1
NH	1



A key driver for this amendment has been the concern by industry that additional participation by new entrants may compromise vessels that have become dependent on the squid fishery. The tables below describe the dependence on the longfin squid fishery for federally-permitted vessels in terms of the proportion of ex-vessel revenues from longfin squid versus other species and the numbers of Federally-permitted participants at various landings levels.

**Table 10. Dependence on Longfin by Federally-Permitted Vessels - 2016**

Dependence on Longfin	Number of Vessels in Each Dependency Category
1%-5%	80
5%-25%	79
25%-50%	64
More than 50%	42

**Table 11. Activity in the Longfin Fleet Over Time**

YEAR	Vessels 500,000 +	Vessels 100,000 - 500,000	Vessels 50,000 - 100,000	Vessels 10,000 - 50,000
1982	0	14	16	88
1983	1	64	36	108
1984	1	41	48	111
1985	2	44	34	89
1986	1	56	44	98
1987	3	39	44	103
1988	11	65	35	95
1989	15	68	51	83
1990	11	52	47	108
1991	17	54	34	107
1992	17	48	31	67
1993	21	73	32	92
1994	24	74	26	77
1995	15	79	40	96
1996	8	68	37	93
1997	13	87	55	65
1998	18	86	46	91
1999	18	85	36	119
2000	13	96	46	97
2001	12	65	44	84
2002	13	90	32	69
2003	8	64	25	59
2004	15	63	27	52
2005	19	62	19	46
2006	16	76	24	47
2007	16	44	30	68
2008	10	58	18	78
2009	8	52	26	64
2010	3	45	22	65
2011	7	55	32	46
2012	8	75	38	41
2013	10	56	20	37
2014	12	60	27	55
2015	13	49	21	50
2016	19	74	35	46

### 6.3.4 Butterfish

During the period 1965-1976, US Atlantic butterfish landings averaged 2,051 mt. From 1977-1987, average US landings doubled to 5,252 mt, with a historical peak of slightly less than 12,000 mt landed in 1984. Since then US landings have declined sharply. Low abundance and reductions in Japanese demand for butterfish probably had a negative effect on butterfish landings in the 1990s-early 2000s but regulations kept butterfish catches low from 2005-2014 and a directed fishery has been slow to develop with expanded quotas since 2015. Additional information on this fishery can be found in the specifications' Environmental Assessment at <http://www.greateratlantic.fisheries.noaa.gov/regs/2014/November/14msb2015174specspr.html>. The most recent Advisory Panel (AP) Fishery Information Document and AP Fishery Performance Report (available at <http://www.mafmc.org/ssc-meetings/2016/may-25-26>) also have recent details on fishery performance.

## 7.0 IMPACTS OF THE ALTERNATIVES

### 7.1 Managed Resources

The mackerel, butterfish, and *Illex* stocks are unlikely to be adversely or positively impacted by any of the alternatives. The fishing that results from the status quo or any of the action alternatives should continue to be limited to the Acceptable Biological Catches from the Council's Scientific and Statistical Committee to avoid overfishing based on the best available scientific information. There is substantial interaction with butterfish in the longfin squid fishery, but discarding in that fishery is directly limited through a discard cap with in-season management that is not proposed to change in this action. Regardless of any alternatives that are chosen, the sustainable management of these stocks should continue. While any fishing will lower the population of a stock compared to zero fishing, sustainable management should have a positive impact on these MSB stocks by avoiding overfishing, and overall sustainable management should continue for these stocks under any of the no action or action alternatives.

The same is generally true for longfin for most alternatives. Any of the permit moratorium reduction alternatives, from Sets 1, 2, 5, and 6 should still result in a fleet that can fully harvest the squid quotas (see socioeconomic impact discussion), but will be limited to those quotas, so the action alternatives in those Sets should have no impacts compared to no action, i.e. the positive impacts from sustainable management should persist. However, the action alternatives in Sets 3 and 4 may have additional impacts compared to no action and are described in more detail below.

Under no action for Sets 3 and 4, no measures would be implemented that could reduce excessive harvest of longfin squid in Trimester 2. Analyses conducted by NEFSC staff strongly suggest a significant negative correlation between annual effort (days fished on trips landing more than 40% longfin squid) during April-September and longfin squid landings-per-unit-effort (LPUE, mt per day fished) during the following October-March during 1983-2015. A similarly significant relationship was found between annual effort and LPUE for the October-March and April-September period, respectively. Ageing studies indicate that these two time periods represent the two primary seasonal cohorts; summer-hatched squid are taken in the winter fishery and vice versa (Brodziak and Macy 1996; Macy and Brodziak 2001). The negative relationship between the two seasonal cohorts is especially evident during 1983-1999 when in-season closures and the related trip limits were not in effect (Figure 10). The recruitment linkage between the two primary seasonal cohorts, the potential susceptibility of squid to recruitment overfishing due to their short-lived, semelparous life history and highly variable interannual abundance levels (Pierce and Guerra 1994), the Trimester 2 fishery operating on highly aggregated spawning squid (which exhibit complex communal mating and spawning behaviors), and the Trimester 2 fishery having higher squid egg mop bycatch<sup>5</sup> (see non-target impact section) suggest that excessive effort during Trimester 2 may have a negative impact on the longfin squid stock.

To the degree that current effort in Trimester 2 is having a negative impact on the squid stock, 3B and 3C may have low positive impacts because they should somewhat limit effort and catch after closures by limiting Federally-permitted vessels from fishing in state waters after closures. 3D and 3E would likely have similar low-positive impacts by limiting overall effort and catch. The greatest reduction to T2 effort/catch would occur by combining 4B and 4D. This would eliminate T1 to T2 rollover and reduce catch after a T2 closure by reducing the trip limit to 250 pounds. 4C (reducing T1 to T2 rollover)

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<sup>5</sup> Reduced egg survival from dislodgement and bycatch by bottom trawls has not been documented, but squid would be unlikely to attach their eggs to substrates unless doing so increased egg survivability.

and 4E (post-closure trip limit of 500 pounds) would also limit effort/catch in T2 but not as much. 4F (splitting T2 in half) would slow landings in Trimester 2 but not appreciably affect overall effort/catch.

A literature search for examples of spawning closures being used for squid management turned up several examples where such closures are used (Tasmania – Moltchaniwskyj et al 2002, California – Leos 1998), but no direct linkages between a spawning closure and future productivity have been established.

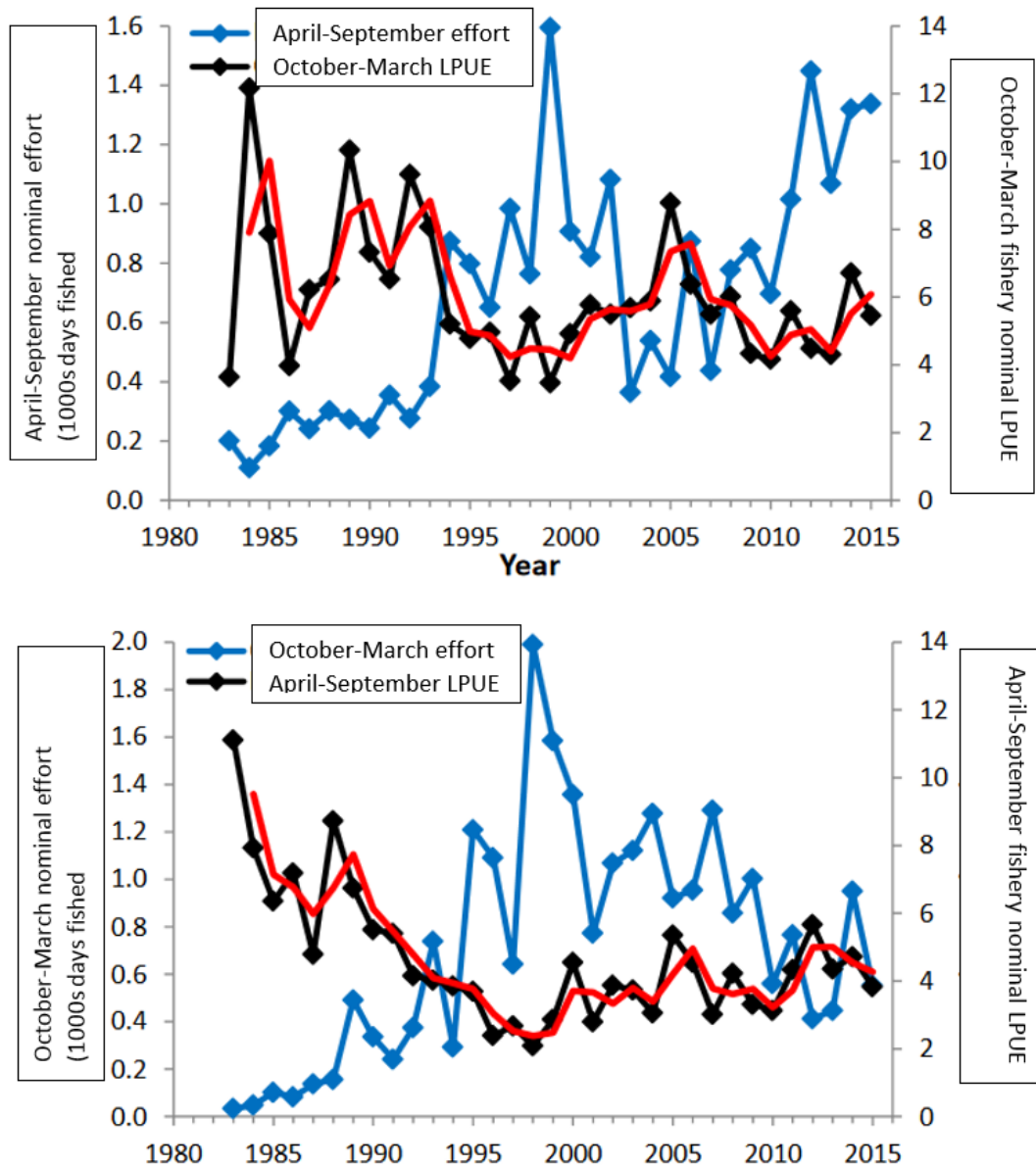


Figure 10. Relationship Between Current Effort and Future LPUE.

## 7.2 Habitat

The current impact on habitat/EFH by the MSB fisheries has been well described in previous analyses, including Amendments 9 (EFH), 14 (Monitoring), 16 (Deep Sea Corals), and various annual specifications analyses. The MSB Fisheries do predominantly use bottom-trawling; Amendment 9 summarized Stevenson et al. 2004's findings on bottom-trawling's habitat impacts as:

“In studies examining the effect of bottom otter trawling on a variety of substrate types, it was demonstrated that the physical effects of trawl doors contacting the bottom produced furrows and some shifts in surface sediment composition, although there is a large variation in the duration of these impacts. Typically the more dynamic environment and less structured bottom composition, the shorter the duration of impact. This type of fishing was demonstrated to have some effects on composition and biomass of benthic species in the effected areas, but the directionality and duration of these effects varied by study and substrate types.”

Because of previous efforts to reduce impacts to habitat<sup>6</sup> and the focus of the MSB fisheries on sand/mud bottoms, the impact of no action, i.e. the continuance of the MSB fisheries, is likely a continuing low negative. Alternative Sets 1, 2, 5, and 6 may impact who catches squid but they are unlikely to affect overall effort in the MSB fisheries so they would have no impact relative to the no action (i.e. continued low negative). Because the action alternatives in Set 3 and 4 may reduce bottom-trawling effort in the longfin squid fishery, those alternatives may have positive impacts on habitat. However since effort may just shift to other times of the year (from Trimester 2 to Trimester 3) due to the potential limitations from those Alternatives (if longfin squid are available later in the year), the impact is likely low.

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<sup>6</sup> In Amendment 9 the Council determined that bottom trawls used in MSB fisheries do have the potential to adversely affect EFH for some federally-managed fisheries in the region and closed portions of two offshore canyons (Lydonia and Oceanographer) to squid trawling. Subsequent closures were implemented in these and two other canyons (Veatch and Norfolk) to protect tilefish EFH by prohibiting all bottom trawling activity. The Council has also limited bottom trawling near known areas of dee-sea corals via Amendment 16 to the MSB FMP.

## 7.3 Protected Resources

### No Action

The MSB fisheries use a mix of gear types, some of which may have protected species interactions. Non-ESA and ESA no-action impacts are further discussed below.

#### *No-action Non-ESA Listed Species Impacts*

The MSB FMP fisheries do overlap with the distribution of non-ESA listed species of marine mammals (cetaceans and pinnipeds). As a result, marine mammal (non-ESA listed species) interactions with bottom or mid-water trawl gear are possible (see section 6.4); however, ascertaining the risk of an interaction and the resultant potential impacts of the No Action on cetaceans and pinnipeds (marine mammals) are difficult and somewhat uncertain, as quantitative analysis has not been performed. However, we have considered, to the best of our ability, available information on marine mammal interactions with commercial fisheries, of which, the MSB FMP is a component (Waring *et al.* 2014). Aside from harbor porpoise and several stocks of bottlenose dolphin, there has been no indication that takes of non-ESA listed species of marine mammals in commercial fisheries has gone above and beyond levels which would result in the inability of each species population to sustain itself over the last 5 years (Waring *et al.* 2014). Specifically, aside from harbor porpoise and several stocks of bottlenose dolphin, potential biological removal (PBR) has not been exceeded for any of the non-ESA listed marine mammal species identified in section 6.4 (Waring *et al.* 2014). Although harbor porpoise and several stocks of bottlenose dolphin have experienced levels of take that have resulted in the exceedance of each species PBR, take reduction plans have been implemented to reduce bycatch in the fisheries affecting these species (Harbor Porpoise Take Reduction Plan (HPTRP), effective January 1, 1999 (63 FR 71041); Bottlenose Dolphin Take Reduction Plan (BDTRP), effective April 26, 2006 (71 FR 24776)). These plans are still in place and are continuing to assist in decreasing bycatch levels for these species. Although the information presented is a collective representation of commercial fisheries interactions with non-ESA listed species of marine mammals, and does not address the effects of the MSB FMP specifically, the information does demonstrate that to date, operation of the MSB FMP, or any other fishery, has not resulted in a collective level of take that threatens the continued existence of non-ESA listed marine mammal populations.

Based on this information, and the fact that there is continual monitoring of non-ESA listed marine mammal species bycatch, and that voluntary measures exist that reduce serious injury and mortality to marine mammal species incidentally caught in trawl fisheries (see the Atlantic Trawl Gear Take Reduction Strategy, section 6.4.1.1), it is not expected that the No Action will introduce any new risks or additional takes to non-ESA listed marine mammal species that have not already been considered by

NMFS to date and therefore, is not expected to affect the continued existence of non-ESA listed species of marine mammals. For these reasons, no action is expected to have low negative impacts on non-ESA listed species of marine mammals, similar to past years.

### *No-action ESA Listed Species Impacts*

The MSB FMP fisheries do overlap with ESA listed species distribution. As a result, ESA listed species interactions with bottom or mid-water trawl gear are possible (see section 6.4); however, ascertaining the risk of an interaction and the resultant potential impacts of the No Action on ESA-listed species are difficult and somewhat uncertain, as quantitative analysis has not been performed. However, we have considered, to the best of our ability, how the fishery has operated in regards to listed species since 2013, when NMFS issued a Biological Opinion (Opinion) on the operation of seven commercial fisheries, including the MSB FMP (NMFS 2013). Specifically, we have focused on available information on ESA-listed species interactions with commercial fisheries, of which, the MSB FMP is a component (NMFS 2013; see section 6.4). The Opinion issued on December 16, 2013, included an incidental take statement authorizing the take of specific numbers of ESA listed species of sea turtles, Atlantic salmon, and Atlantic sturgeon. The MSB FMP is currently covered by the incidental take statement authorized in NMFS 2013 Opinion.

The 2013 biological opinion concluded that the MSB fisheries may affect, but not jeopardize the continued existence of any ESA listed species. The No Action will retain status quo operating conditions in the MSB FMP and therefore, changes in fishing effort or behavior would not be expected. As a result, the No Action is not expected to result in the introduction of any new risks or additional takes to ESA listed species that have not already been considered and authorized by NMFS to date (NMFS 2013). Further, the MSB FMP has not resulted in the exceedance of NMFS authorized take of any ESA listed species from 2013 to the present. Thus as concluded in the NMFS 2013 Opinion, No Action / the Status Quo is not expected to result in levels of take that would jeopardize the continued existence of ESA listed species. For these reasons, the no action is expected to have low negative impacts on ESA-listed species, similar to past years.

### Action Alternatives

Alternative Sets 1, 2, 5, and 6 may impact who catches squid but they are unlikely to affect overall effort in the MSB fisheries so they would have no impact relative to the no action (i.e. continued low negative). Because the action alternatives in Set 3 and 4 may reduce bottom-trawling effort in the longfin squid fishery those alternatives may have positive impacts on protected resources. However

since effort may just shift to other times of the year (from Trimester 2 to Trimester 3) due to the limitations from those Alternatives (if longfin squid are available later in the year), the impact is likely low. Additional analyses will be conducted to evaluate the potential impact of an effort timing shift, but in general reducing trawling effort during the summer time should benefit sea turtles, which would be less likely to be encountered later in the year if Trimester 3 remains open longer due to more quota being available due to T1/T2 rollover and/or underages.

## 7.4 Non-Target Resources

The MSB fisheries would continue to have impacts on non-target species under no action. This action focuses on the squid fisheries so for this public hearing document the focus is on the squid fisheries. Recent specifications analyses can be consulted for mackerel and butterfish. Previous analyses have shown that the *Illex* fishery has very low incidental catch (MAFMC 2015) and the action alternatives in this document are unlikely to affect overall effort in the *Illex* fishery, only who fishes. Alternative Sets 1, 2, 5, and 6 may impact who catches longfin squid but they are unlikely to affect overall effort in the longfin squid fishery so they would have no impact relative to the no action (i.e. continued low negative). Sets 3 and 4 however may affect the operation of the longfin squid fishery, so additional analysis for that fishery is necessary. 2016 observer program data is not yet fully available, so the analysis of observer data uses 2015 data as a terminal year. Trips that have a retained fish composition of greater than 40% longfin squid account for more than 90% of longfin squid landings, so that definition was used to examine similar observed trips. The longfin squid fishery has had 3%-8% of its landings observed and an overall discard rate between 31%-40% from 2007-2015. The discard rate is similar across Trimesters, though different species are discarded at different rates in different Trimesters (see tables below).

Table 12. Coverage and discard summary Longfin Squid Fishery - NEFOP Observer Trawl Data.

	Trips > 40% Longfin	
	% Landings Observed	% Overall Discarded
2007-2009	3%	40%
2010-2012	8%	34%
2013-2015	7%	31%

Table 13. Approximate Trimester Overall Discard Percentages - NEFOP Observer Trawl Data.

	Overall Discard Percentage 2007-2015
Tri 1	33%
Tri 2	35%
Tri 3	36%



Table 14. 2007-2009 Data From Trips >40% Longfin - Annual. Substantial Discard Species.

NESPP4	Observed Catch	Observed Discarded	% of total discards	Percent of particular species discarded	Common Name	Pounds Discarded per 100 pounds longfin retained	Rough annual discards (pounds) based on 24 million pounds of squid landings (average 2007-2009)
511	295,226	273,885	15%	93%	BUTTERFISH	11.7	2,807,025
3521	179,861	179,418	10%	100%	DOGFISH, SPINY	7.7	1,838,836
8020	169,176	168,533	9%	100%	SQUID, SHORT-FIN	7.2	1,727,281
5090	204,661	165,370	9%	81%	HAKE, SILVER (WHITING)	7.1	1,694,857
1520	147,690	134,196	7%	91%	HAKE, RED (LING)	5.7	1,375,365
6602	122,270	116,333	6%	95%	HAKE, SPOTTED	5.0	1,192,285
3660	102,672	102,189	6%	100%	SKATE, LITTLE	4.4	1,047,324
1270	74,181	74,013	4%	100%	FLOUNDER, FOURSPOT	3.2	758,550
2120	198,423	63,787	4%	32%	MACKEREL, ATLANTIC	2.7	653,744
3295	89,677	62,011	3%	69%	SCUP	2.6	635,544
3670	48,934	48,745	3%	100%	SKATE, WINTER (BIG)	2.1	499,584
8010	2,385,899	44,187	2%	2%	SQUID, ATL LONG-FIN	1.9	452,869
1219	58,136	39,159	2%	67%	FLOUNDER, SUMMER (FLUKE)	1.7	401,339
1685	26,812	26,661	1%	99%	HERRING, ATLANTIC	1.1	273,243
3511	24,808	23,101	1%	93%	DOGFISH, SMOOTH	1.0	236,760
4180	22,715	22,016	1%	97%	BASS, STRIPED	0.9	225,644
8009	24,973	20,379	1%	82%	SCALLOP, SEA	0.9	208,859
1200	17,955	17,434	1%	97%	FLOUNDER, WINTER (BLACKBACK)	0.7	178,681
1670	16,508	16,508	1%	100%	HERRING, NK	0.7	169,189
7010	15,585	15,585	1%	100%	CRAB, LADY	0.7	159,724
8171	13,685	13,685	1%	100%	SEAWEED, NK	0.6	140,257
1539	14,127	13,346	1%	94%	HAKE, WHITE	0.6	136,777
230	31,815	13,256	1%	42%	BLUEFISH	0.6	135,855
3350	14,615	11,167	1%	76%	SEA BASS, BLACK	0.5	114,449
124	18,730	10,110	1%	54%	MONKFISH (GOOSEFISH)	0.4	103,621
3420	10,421	9,964	1%	96%	SEA ROBIN, STRIPED	0.4	102,121
3680	9,007	8,946	0%	99%	SKATE, BARNDOR	0.4	91,689
3650	8,437	8,437	0%	100%	SKATE, NK	0.4	86,471
1880	10,424	7,272	0%	70%	DORY, BUCKLER (JOHN)	0.3	74,530
3720	6,925	6,868	0%	99%	SKATE, CLEARNOSE	0.3	70,386
6600	11,031	6,524	0%	59%	HAKE, NK	0.3	66,860
7110	5,782	5,775	0%	100%	CRAB, JONAH	0.2	59,185
8030	5,754	4,984	0%	87%	SQUID, NK	0.2	51,082
7270	6,676	4,934	0%	74%	LOBSTER, AMERICAN	0.2	50,563
1250	4,490	4,470	0%	100%	FLOUNDER, SAND DAB (WINDOWPANE)	0.2	45,816
7240	4,494	4,467	0%	99%	CRAB, HORSESHOE	0.2	45,784
3460	4,206	4,206	0%	100%	DOGFISH, CHAIN	0.2	43,103
900	3,850	3,661	0%	95%	CROAKER, ATLANTIC	0.2	37,522
1220	3,557	3,531	0%	99%	FLOUNDER, WITCH (GREY SOLE)	0.2	36,193
3400	3,398	3,394	0%	100%	SEA ROBIN, NORTHERN	0.1	34,783
6867	3,150	3,150	0%	100%	SPONGE, NK	0.1	32,282
6623	2,927	2,927	0%	100%	BOARFISH, DEEPBODY	0.1	29,993
4380	3,189	2,842	0%	89%	TAUTOG (BLACKFISH)	0.1	29,123
5080	2,774	2,596	0%	94%	WHITING, BLACK (HAKE, OFFSHORE)	0.1	26,610
6649	2,438	2,438	0%	100%	MACKEREL, NK	0.1	24,988
5260	1,982	1,939	0%	98%	FISH, NK	0.1	19,870
1477	1,880	1,880	0%	100%	HADDOCK	0.1	19,269
7120	1,761	1,757	0%	100%	CRAB, ROCK	0.1	18,006
8280	1,724	1,710	0%	99%	STARFISH, SEASTAR, NK	0.1	17,529
7150	1,535	1,535	0%	100%	CRAB, SPIDER, NK	0.1	15,734
3640	1,470	1,470	0%	100%	SKATE, ROSETTE	0.1	15,063
3474	1,396	1,329	0%	95%	SHAD, AMERICAN	0.1	13,617
3430	1,318	1,318	0%	100%	SEA ROBIN, ARMORED	0.1	13,506
6865	1,275	1,275	0%	100%	CRAB, SPECKLED, NK	0.1	13,067
1551	1,267	1,267	0%	100%	HAKE, RED/WHITE MIX	0.1	12,982

Table 15. 2010-2012 Data From Trips >40% Longfin - Annual. Substantial Discard Species.

NESPP4	Observed Catch	Observed Discarded	% of total discards	Percent of particular species discarded	Common Name	Pounds Discarded per 100 pounds longfin retained	Rough annual discards (pounds) based on 22 million pounds of squid landings (average 2010-2012)
511	664,802	614,920	19%	92%	BUTTERFISH	11.5	2,524,854
3521	469,942	465,140	15%	99%	DOGFISH, SPINY	8.7	1,909,859
6602	331,978	325,371	10%	98%	HAKE, SPOTTED	6.1	1,335,970
5090	492,892	324,927	10%	66%	HAKE, SILVER (WHITING)	6.1	1,334,145
8020	612,187	292,523	9%	48%	SQUID, SHORT-FIN	5.5	1,201,094
3295	229,724	154,620	5%	67%	SCUP	2.9	634,868
3660	152,673	149,586	5%	98%	SKATE, LITTLE	2.8	614,197
8010	5,456,177	98,146	3%	2%	SQUID, ATL LONG-FIN	1.8	402,984
7010	65,299	65,299	2%	100%	CRAB, LADY	1.2	268,115
1520	68,843	63,528	2%	92%	HAKE, RED (LING)	1.2	260,843
1270	60,168	60,168	2%	100%	FLOUNDER, FOURSPOOT	1.1	247,049
3400	47,683	47,587	1%	100%	SEA ROBIN, NORTHERN	0.9	195,390
1219	101,108	43,480	1%	43%	FLOUNDER, SUMMER (FLUKE)	0.8	178,529
3511	56,069	39,691	1%	71%	DOGFISH, SMOOTH	0.7	162,969
3670	35,348	33,415	1%	95%	SKATE, WINTER (BIG)	0.6	137,202
4180	27,172	26,551	1%	98%	BASS, STRIPED	0.5	109,020
8009	29,784	26,438	1%	89%	SCALLOP, SEA	0.5	108,553
124	41,740	25,293	1%	61%	MONKFISH (GOOSEFISH)	0.5	103,853
8171	24,568	24,568	1%	100%	SEAWEED, NK	0.5	100,877
1880	51,832	22,429	1%	43%	DORY, BUCKLER (JOHN)	0.4	92,094
1200	20,067	19,720	1%	98%	FLOUNDER, WINTER (BLACKBACK)	0.4	80,969
230	68,399	18,367	1%	27%	BLUEFISH	0.3	75,414
3420	18,231	17,809	1%	98%	SEA ROBIN, STRIPED	0.3	73,124
3350	29,046	17,147	1%	59%	SEA BASS, BLACK	0.3	70,404
3474	16,362	14,098	0%	86%	SHAD, AMERICAN	0.3	57,884
3640	14,051	14,051	0%	100%	SKATE, ROSETTE	0.3	57,692
1670	13,292	11,580	0%	87%	HERRING, NK	0.2	47,549
7270	14,622	10,884	0%	74%	LOBSTER, AMERICAN	0.2	44,690
1477	10,359	10,359	0%	100%	HADDOCK	0.2	42,536
1220	10,384	10,357	0%	100%	FLOUNDER, WITCH (GREY SOLE)	0.2	42,525
3680	9,405	9,405	0%	100%	SKATE, BARNDOR	0.2	38,616
1685	52,363	8,688	0%	17%	HERRING, ATLANTIC	0.2	35,672
1250	8,593	8,516	0%	99%	FLOUNDER, SAND DAB (WINDOWPANE)	0.2	34,967
3720	8,586	8,488	0%	99%	SKATE, CLEARNOSE	0.2	34,851
3460	8,340	8,340	0%	100%	DOGFISH, CHAIN	0.2	34,244
6600	9,732	8,136	0%	84%	HAKE, NK	0.2	33,406
2120	14,397	6,583	0%	46%	MACKEREL, ATLANTIC	0.1	27,030
6739	6,493	6,493	0%	100%	RAY, BULLNOSE	0.1	26,658
3650	6,421	6,421	0%	100%	SKATE, NK	0.1	26,363
4380	6,296	6,079	0%	97%	TAUTOG (BLACKFISH)	0.1	24,958
7110	6,301	5,988	0%	95%	CRAB, JONAH	0.1	24,588
5260	5,001	4,931	0%	99%	FISH, NK	0.1	20,247
8018	4,663	4,663	0%	100%	SQUID EGGS, ATL LONG-FIN	0.1	19,146
1120	4,657	4,657	0%	100%	HERRING, BLUEBACK	0.1	19,122
10	5,314	4,432	0%	83%	ALEWIFE	0.1	18,197
1551	3,981	3,981	0%	100%	HAKE, RED/WHITE MIX	0.1	16,346
1230	3,655	3,655	0%	100%	FLOUNDER, YELLOWTAIL	0.1	15,007
7120	3,477	3,477	0%	100%	CRAB, ROCK	0.1	14,276
6867	2,839	2,839	0%	100%	SPONGE, NK	0.1	11,658
3430	2,781	2,781	0%	100%	SEA ROBIN, ARMORED	0.1	11,420
6860	2,502	2,502	0%	100%	ANCHOVY, NK	0.0	10,274

Table 16. 2013-2015. Data From Trips >40% Longfin - Annual. Substantial Discard Species.

NESPP4	Observed Catch	Observed Discarded	% of total discards	Percent of particular species discarded	Common Name	Pounds Discarded per 100 pounds longfin retained	Rough annual discards (pounds) based on 26 million pounds of squid landings (average 2013-2015)
511	711,378	388,391	14%	55%	BUTTERFISH	7.5	1,961,493
6602	291,774	285,881	10%	98%	HAKE, SPOTTED	5.6	1,443,785
8020	345,605	248,680	9%	72%	SQUID, SHORT-FIN	4.8	1,255,908
3660	215,948	212,661	8%	98%	SKATE, LITTLE	4.1	1,074,003
3521	200,535	199,510	7%	99%	DOGFISH, SPINY	3.9	1,007,585
5090	284,782	172,782	6%	61%	HAKE, SILVER (WHITING)	3.4	872,602
8010	5,294,139	145,931	5%	3%	SQUID, ATL LONG-FIN	2.8	736,997
1520	128,942	120,556	4%	93%	HAKE, RED (LING)	2.3	608,844
3511	87,893	81,839	3%	93%	DOGFISH, SMOOTH	1.6	413,313
3295	191,291	80,550	3%	42%	SCUP	1.6	406,800
3670	76,811	73,796	3%	96%	SKATE, WINTER (BIG)	1.4	372,692
1270	54,519	54,419	2%	100%	FLOUNDER, FOURSPOT	1.1	274,833
8171	52,459	52,459	2%	100%	SEAWEED, NK	1.0	264,934
3400	48,075	47,870	2%	100%	SEA ROBIN, NORTHERN	0.9	241,757
1219	93,060	40,047	1%	43%	FLOUNDER, SUMMER (FLUKE)	0.8	202,251
3730	39,677	39,616	1%	100%	SKATE, LITTLE/WINTER, NK	0.8	200,072
3350	46,672	37,747	1%	81%	SEA BASS, BLACK	0.7	190,636
1477	37,397	37,389	1%	100%	HADDOCK	0.7	188,824
7010	36,173	36,173	1%	100%	CRAB, LADY	0.7	182,683
3650	35,176	34,821	1%	99%	SKATE, NK	0.7	175,856
2150	51,692	32,705	1%	63%	MACKEREL, CHUB	0.6	165,171
8009	27,958	21,605	1%	77%	SCALLOP, SEA	0.4	109,113
3720	18,986	18,188	1%	96%	SKATE, CLEARNOSE	0.4	91,856
124	26,011	17,360	1%	67%	MONKFISH (GOOSEFISH)	0.3	87,671
1880	32,482	15,998	1%	49%	DORY, BUCKLER (JOHN)	0.3	80,795
1200	16,130	15,867	1%	98%	FLOUNDER, WINTER (BLACKBACK)	0.3	80,134
230	24,502	13,583	0%	55%	BLUEFISH	0.3	68,600
1250	12,197	12,165	0%	100%	FLOUNDER, SAND DAB (WINDOWPANE)	0.2	61,437
3420	10,946	10,403	0%	95%	SEA ROBIN, STRIPED	0.2	52,539
3474	9,146	9,113	0%	100%	SHAD, AMERICAN	0.2	46,022
3680	8,992	8,992	0%	100%	SKATE, BARNDOR	0.2	45,413
3460	8,301	8,301	0%	100%	DOGFISH, CHAIN	0.2	41,923
7120	8,284	8,281	0%	100%	CRAB, ROCK	0.2	41,823
4180	8,633	7,999	0%	93%	BASS, STRIPED	0.2	40,399
1660	7,614	7,614	0%	100%	HERRING, ROUND	0.1	38,450
6626	7,391	7,391	0%	100%	BEARDFISH	0.1	37,327
10	7,183	7,079	0%	99%	ALEWIFE	0.1	35,749
4060	7,013	6,881	0%	98%	SPOT	0.1	34,753
3640	6,670	6,670	0%	100%	SKATE, ROSETTE	0.1	33,687
6867	6,059	6,059	0%	100%	SPONGE, NK	0.1	30,597
7110	5,977	5,621	0%	94%	CRAB, JONAH	0.1	28,386
3430	5,144	5,144	0%	100%	SEA ROBIN, ARMORED	0.1	25,977
6871	4,839	4,839	0%	100%	JELLYFISH, NK	0.1	24,436
2120	10,084	4,490	0%	45%	MACKEREL, ATLANTIC	0.1	22,673
1551	4,837	4,461	0%	92%	HAKE, RED/WHITE MIX	0.1	22,530
1220	4,453	4,445	0%	100%	FLOUNDER, WITCH (GREY SOLE)	0.1	22,450
1670	4,491	4,431	0%	99%	HERRING, NK	0.1	22,378
5260	4,482	4,429	0%	99%	FISH, NK	0.1	22,365
8018	4,397	4,397	0%	100%	SQUID EGGS, ATL LONG-FIN	0.1	22,204
2210	4,311	4,237	0%	98%	MENHADEN, ATLANTIC	0.1	21,396
7270	5,705	4,028	0%	71%	LOBSTER, AMERICAN	0.1	20,345
6739	3,118	3,118	0%	100%	RAY, BULLNOSE	0.1	15,744
7150	3,092	3,092	0%	100%	CRAB, SPIDER, NK	0.1	15,614
7240	3,527	3,039	0%	86%	CRAB, HORSESHOE	0.1	15,345
1230	2,926	2,838	0%	97%	FLOUNDER, YELLOWTAIL	0.1	14,335
1539	2,944	2,097	0%	71%	HAKE, WHITE	0.0	10,588
3310	2,046	1,992	0%	97%	SCAD, ROUGH	0.0	10,058

Table 17. 2007-2015. Data From Trips >40% Longfin – Trimester 1. Substantial Discard Species.

NESPP4	Observed Catch	Observed Discarded	% of total discards	Percent of particular species discarded	Common Name	Pounds Discarded per 100 pounds longfin retained
3521	510,585	510,135	18%	100%	DOG FISH, SPINY	10.7
511	558,052	488,395	18%	88%	BUTTERFISH	10.2
8020	624,425	347,156	13%	56%	SQUID, SHORT-FIN	7.3
5090	371,955	239,345	9%	64%	HAKE, SILVER (WHITING)	5.0
6602	170,857	161,285	6%	94%	HAKE, SPOTTED	3.4
1520	135,773	122,830	4%	90%	HAKE, RED (LING)	2.6
8010	4,901,760	117,440	4%	2%	SQUID, ATL LONG-FIN	2.5
1270	96,348	96,187	3%	100%	FLOUNDER, FOURSPOT	2.0
3295	203,756	73,089	3%	36%	SCUP	1.5
2120	208,599	66,803	2%	32%	MACKEREL, ATLANTIC	1.4
3400	60,558	60,538	2%	100%	SEA ROBIN, NORTHERN	1.3
8171	55,628	55,628	2%	100%	SEAWEED, NK	1.2
1219	102,543	52,179	2%	51%	FLOUNDER, SUMMER (FLUKE)	1.1
3670	42,676	42,378	2%	99%	SKATE, WINTER (BIG)	0.9
3660	32,961	31,720	1%	96%	SKATE, LITTLE	0.7
124	38,477	27,050	1%	70%	MONKFISH (GOOSEFISH)	0.6
3350	37,078	24,278	1%	65%	SEA BASS, BLACK	0.5
3420	24,225	23,960	1%	99%	SEA ROBIN, STRIPED	0.5
230	65,454	23,881	1%	36%	BLUEFISH	0.5
1880	43,708	23,165	1%	53%	DORY, BUCKLER (JOHN)	0.5
1685	64,032	20,606	1%	32%	HERRING, ATLANTIC	0.4
3511	19,211	18,813	1%	98%	DOG FISH, SMOOTH	0.4
1220	17,052	17,006	1%	100%	FLOUNDER, WITCH (GREY SOLE)	0.4
3680	16,276	16,215	1%	100%	SKATE, BARNDOR	0.3
1539	12,255	11,356	0%	93%	HAKE, WHITE	0.2
3474	11,357	10,220	0%	90%	SHAD, AMERICAN	0.2
1670	9,233	9,233	0%	100%	HERRING, NK	0.2
3460	9,197	9,197	0%	100%	DOG FISH, CHAIN	0.2
3640	7,723	7,723	0%	100%	SKATE, ROSETTE	0.2
7110	6,939	6,715	0%	97%	CRAB, JONAH	0.1
3430	6,468	6,468	0%	100%	SEA ROBIN, ARMORED	0.1
6600	11,121	4,971	0%	45%	HAKE, NK	0.1
8009	5,126	4,550	0%	89%	SCALLOP, SEA	0.1
1551	3,981	3,981	0%	100%	HAKE, RED/WHITE MIX	0.1
7120	3,246	3,246	0%	100%	CRAB, ROCK	0.1
1477	2,666	2,658	0%	100%	HADDOCK	0.1

Table 18. 2007-2015. Data From Trips >40% Longfin – Trimester 2. Substantial Discard Species.

NESPP4	Observed Catch	Observed Discarded	% of total discards	Percent of particular species discarded	Common Name	Pounds Discarded per 100 pounds longfin retained
3660	228,422	224,849	13%	98%	SKATE, LITTLE	7.6
3295	248,446	190,212	11%	77%	SCUP	6.4
511	169,514	145,604	9%	86%	BUTTERFISH	4.9
3521	142,253	137,814	8%	97%	DOGFISH, SPINY	4.6
7010	114,113	114,113	7%	100%	CRAB, LADY	3.8
3670	102,599	100,252	6%	98%	SKATE, WINTER (BIG)	3.4
3511	104,187	85,030	5%	82%	DOGFISH, SMOOTH	2.9
5090	96,766	68,538	4%	71%	HAKE, SILVER (WHITING)	2.3
8010	3,019,577	53,231	3%	2%	SQUID, ATL LONG-FIN	1.8
8020	51,249	51,131	3%	100%	SQUID, SHORT-FIN	1.7
4180	52,476	50,565	3%	96%	BASS, STRIPED	1.7
1219	81,696	43,910	3%	54%	FLOUNDER, SUMMER (FLUKE)	1.5
1200	43,051	42,180	2%	98%	FLOUNDER, WINTER (BLACKBACK)	1.4
3730	37,811	37,810	2%	100%	SKATE, LITTLE/WINTER, NK	1.3
8171	34,715	34,715	2%	100%	SEAWEED, NK	1.2
3650	33,851	33,717	2%	100%	SKATE, NK	1.1
3350	39,838	31,565	2%	79%	SEA BASS, BLACK	1.1
3400	27,120	26,889	2%	99%	SEA ROBIN, NORTHERN	0.9
6602	23,315	22,677	1%	97%	HAKE, SPOTTED	0.8
1270	18,318	18,307	1%	100%	FLOUNDER, FOURSPOT	0.6
3720	19,218	18,265	1%	95%	SKATE, CLEARNOSE	0.6
1250	17,623	17,519	1%	99%	FLOUNDER, SAND DAB (WINDOWPANE)	0.6
1520	13,834	11,344	1%	82%	HAKE, RED (LING)	0.4
2150	16,173	10,619	1%	66%	MACKEREL, CHUB	0.4
4380	10,088	9,472	1%	94%	TAUTOG (BLACKFISH)	0.3
3420	9,907	9,429	1%	95%	SEA ROBIN, STRIPED	0.3
8018	8,874	8,874	1%	100%	SQUID EGGS, ATL LONG-FIN	0.3
6867	8,200	8,200	0%	100%	SPONGE, NK	0.3
7120	7,038	7,036	0%	100%	CRAB, ROCK	0.2
7270	9,652	7,013	0%	73%	LOBSTER, AMERICAN	0.2
4060	7,014	6,882	0%	98%	SPOT	0.2
6739	6,876	6,876	0%	100%	RAY, BULLNOSE	0.2
7150	4,988	4,988	0%	100%	CRAB, SPIDER, NK	0.2
2120	6,769	4,024	0%	59%	MACKEREL, ATLANTIC	0.1
7110	3,670	3,670	0%	100%	CRAB, JONAH	0.1
10	3,447	3,347	0%	97%	ALEWIFE	0.1
5260	3,249	3,249	0%	100%	FISH, NK	0.1
230	21,265	3,143	0%	15%	BLUEFISH	0.1
1670	2,997	2,996	0%	100%	HERRING, NK	0.1
1120	2,619	2,595	0%	99%	HERRING, BLUEBACK	0.1
6871	2,317	2,317	0%	100%	JELLYFISH, NK	0.1
6882	2,197	2,197	0%	100%	SHELL, NK	0.1
3474	2,057	2,036	0%	99%	SHAD, AMERICAN	0.1
7240	2,442	1,952	0%	80%	CRAB, HORSESHOE	0.1
8280	1,648	1,648	0%	100%	STARFISH, SEASTAR, NK	0.1
8050	1,603	1,603	0%	100%	SEA URCHIN, NK	0.1
8009	2,656	1,514	0%	57%	SCALLOP, SEA	0.1

Table 19. 2007-2015. Data From Trips >40% Longfin – Trimester 3. Substantial Discard Species.

NESPP4	Observed Catch	Observed Discarded	% of total discards	Percent of particular species discarded	Common Name	Pounds Discarded per 100 pounds longfin retained
511	943,841	643,197	20%	68%	BUTTERFISH	12.6
6602	551,849	543,623	17%	99%	HAKE, SPOTTED	10.7
5090	513,614	355,195	11%	69%	HAKE, SILVER (WHITING)	7.0
8020	451,294	311,450	10%	69%	SQUID, SHORT-FIN	6.1
3660	209,909	207,866	6%	99%	SKATE, LITTLE	4.1
3521	197,500	196,119	6%	99%	DOG FISH, SPINY	3.8
1520	195,869	184,106	6%	94%	HAKE, RED (LUNG)	3.6
8010	5,214,879	117,593	4%	2%	SQUID, ATL LONG-FIN	2.3
1270	74,203	74,105	2%	100%	FLOUNDER, FOURSPOT	1.5
8009	74,933	62,358	2%	83%	SCALLOP, SEA	1.2
1477	46,431	46,431	1%	100%	HADDOCK	0.9
3511	45,372	40,788	1%	90%	DOG FISH, SMOOTH	0.8
3295	58,490	33,880	1%	58%	SCUP	0.7
1219	68,065	26,598	1%	39%	FLOUNDER, SUMMER (FLUKE)	0.5
124	42,973	25,268	1%	59%	MONKFISH (GOOSEFISH)	0.5
2150	36,572	23,139	1%	63%	MACKEREL, CHUB	0.5
1880	49,925	21,960	1%	44%	DORY, BUCKLER (JOHN)	0.4
1670	22,061	20,290	1%	92%	HERRING, NK	0.4
230	37,997	18,182	1%	48%	BLUEFISH	0.4
1685	16,218	15,420	0%	95%	HERRING, ATLANTIC	0.3
3650	15,546	15,325	0%	99%	SKATE, NK	0.3
3720	13,956	13,956	0%	100%	SKATE, CLEARNOSE	0.3
3640	13,455	13,455	0%	100%	SKATE, ROSETTE	0.3
3670	15,819	13,326	0%	84%	SKATE, WINTER (BIG)	0.3
7270	16,448	12,612	0%	77%	LOBSTER, AMERICAN	0.2
3474	13,489	12,283	0%	91%	SHAD, AMERICAN	0.2
3400	11,478	11,424	0%	100%	SEA ROBIN, NORTHERN	0.2
3460	10,906	10,906	0%	100%	DOG FISH, CHAIN	0.2
6600	15,919	10,772	0%	68%	HAKE, NK	0.2
1200	10,834	10,722	0%	99%	FLOUNDER, WINTER (BLACKBACK)	0.2
3350	13,417	10,219	0%	76%	SEA BASS, BLACK	0.2
3680	9,730	9,730	0%	100%	SKATE, BARNDOR	0.2
1660	7,613	7,613	0%	100%	HERRING, ROUND	0.1
7110	7,450	6,999	0%	94%	CRAB, JONAH	0.1
10	7,862	6,976	0%	89%	ALEWIFE	0.1
6626	6,953	6,953	0%	100%	BEARDFISH	0.1
1250	6,968	6,944	0%	100%	FLOUNDER, SAND DAB (WINDOWPANE)	0.1
7240	6,921	6,897	0%	100%	CRAB, HORSESHOE	0.1
8030	15,206	6,881	0%	45%	SQUID, NK	0.1
5260	6,393	6,268	0%	98%	FISH, NK	0.1
1230	6,135	6,032	0%	98%	FLOUNDER, YELLOWTAIL	0.1
1551	6,100	5,724	0%	94%	HAKE, RED/WHITE MIX	0.1
6871	4,942	4,942	0%	100%	JELLYFISH, NK	0.1
3420	5,466	4,788	0%	88%	SEA ROBIN, STRIPED	0.1
1539	5,476	4,684	0%	86%	HAKE, WHITE	0.1
6623	4,604	4,604	0%	100%	BOARFISH, DEEPBODY	0.1
4180	4,492	4,449	0%	99%	BASS, STRIPED	0.1
2120	7,536	4,033	0%	54%	MACKEREL, ATLANTIC	0.1
5080	4,861	3,975	0%	82%	WHITING, BLACK (HAKE, OFFSHORE)	0.1
900	7,852	3,869	0%	49%	CROAKER, ATLANTIC	0.1
2210	3,598	3,383	0%	94%	MENHADEN, ATLANTIC	0.1
7120	3,237	3,233	0%	100%	CRAB, ROCK	0.1
6867	3,194	3,194	0%	100%	SPONGE, NK	0.1
6649	3,211	3,190	0%	99%	MACKEREL, NK	0.1
6739	2,895	2,895	0%	100%	RAY, BULLNOSE	0.1
7010	2,758	2,758	0%	100%	CRAB, LADY	0.1
6860	2,672	2,561	0%	96%	ANCHOVY, NK	0.1

Because the action alternatives in Set 3 and 4 may reduce bottom-trawling effort in the longfin squid fishery those alternatives may have positive impacts on non-target species. However since effort may shift to other times of the year (from Trimester 2 to Trimester 3) due to the limitations from those Alternatives (if longfin squid are available later in the year), the impact depends on species' relative encounter rates between Trimesters 2 and 3 – overall discard rates are similar. From the tables above, species which have high T2 discard rates and positive discard impact differentials (higher to lower rates) from shifting from T2 to T3 include little skate, scup, lady crab, winter skate, smooth dogfish, striped bass, summer flounder, winter flounder, and black sea bass. Species which have high T3 discard rates and negative discard impact differentials (lower to higher rates) from shifting from T2 to T3 include butterfish, hakes, fourspot flounder, scallops, and haddock.

Overall impacts on non-targets are likely to be low-positive because in some years the transferred quota from T2 to T3 will not be used due to low availability later in the year in some years, which means that over time overall catch/effort will likely be somewhat lower with the action alternatives in Sets 3 and 4. 3B and 3C may have low positive impacts because they should somewhat limit effort and catch after closures by limiting Federally-permitted vessels from fishing in state waters after closures. 3D and 3E would likely have similar low-positive impacts by limiting overall effort and catch. The greatest reduction to T2 effort/catch would occur by combining 4B and 4D. This would eliminate T1 to T2 rollover and reduce catch after a T2 closure by reducing the trip limit to 250 pounds. 4C (reducing T1 to T2 rollover) and 4E (post-closure trip limit of 500 pounds) would also limit effort/catch in T2 but not as much. 4F (splitting T2 in half) would slow landings in Trimester 2 but may not appreciably affect overall effort/catch.

## **7.5 Socioeconomic Impacts**

Since all of the alternatives have varying degrees of socioeconomic impacts, they are each addressed separately.

### **7.5.1 ALTERNATIVE SET 1: LONGFIN SQUID MORATORIUM PERMIT REQUALIFICATION ALTERNATIVES**

Alternatives in this set could be selected in addition to alternatives in other sets or on their own if no action is selected for other sets. This action would not allow new entrants to qualify for a moratorium permit. The Council would only choose one action alternative within this set.

1A. No action. No changes would be made to longfin/butterfish moratorium permits.

Under no action, there would continue to be socioeconomic benefits to those who participate in the longfin squid fishery. Participation in the longfin squid fishery is described in Section 6. It is possible that an influx of effort could occur. This would benefit the new entrants but dilute the amount of quota available to existing participants. In 2016 there were approximately 286 vessels with active permits and approximately another 97 that had their permits/histories held in CPH. In 2016 there were 106 of these vessels that derived at least 25% of their revenues from longfin and 42 that derived at least 50% of their revenues from longfin, so there are a number of vessels that appear quite dependent on the longfin squid fishery. Additional closures due to higher effort would be most likely to impact those vessels most. The distribution of the 286 active vessels by principal port are described in the table below.

From 1997-2015 Federal Moratorium vessels accounted for approximately 74% of longfin squid landings, with the rest caught by vessels with incidental or state-only permits (vessels can be in both categories over the course of a year).

Table 20. Principal Port States (PPST) of Currently-Active Longfin Vessels

PPST	Vessels
NJ	74
MA	67
RI	49
NY	36
VA	23
NC	15
CT	10
ME	7
MD	3
AK	1
NH	1



1B. Requalify current longfin squid/butterfish permits if they landed at least 10,000 pounds in any year from 1997-2015. Permits in “Confirmation of Permit History” (CPH) could requalify if they have the required landings.

Of the 383 moratorium permits that are active or in CPH, 269 had some landings in the qualifying period, and 224 would requalify, 24 of which are in CPH. Of the 200 active requalifying permits, their principal ports are identified in the table below.

Table 21. Principal Port States (PPST) of Requalifying Vessels for 1B.

PPST	Requalifying_Vessels
NJ	57
RI	47
MA	34
NY	33
VA	11
CT	8
NC	5
ME	3
MD	2

Of the 159 vessels that would not requalify most had no landings in the last 3 years (2014-2016). 32 did have landings in 2014-2016, but only 6 had total landings greater than 20,000 pounds over that time period (full range of 18 pounds to 237,181pounds) and would be most likely to be impacted if they were restricted by an incidental trip limit. Most of the landings that would be affected were from 2016 (after the qualifying period). The sum of the qualifying vessels best years catches from 1997-2015 equals 62,420,514 pounds. 17 of the non-requalifying vessels also had butterfish landings 2014-2016, with 4 vessels landing over 10,000 pounds of butterfish (overall range 31 pounds to 51,353 pounds).

Compared to the no-action, this alternative would have a positive impact on re-qualifiers because they would have more secure access to the squid quota and the value of their permit would likely increase. Compared to the no-action, this alternative would have a negative impact on non-re-qualifiers because they would lose directed fishing access to the squid quota and would lose the value of their permit. Permits are generally sold as packages (Federal and state) so it is difficult to determine the value of just the squid permit, but staff’s research and discussions with individuals involved in permit transactions suggests the added value of a longfin squid/butterfish moratorium permit may be in the range of \$25,000-\$75,000 depending on the history associated with the permit. At this threshold and year range, there are few vessels that would be impacted in terms of their recent landings pattern.

1C. Requalify current longfin squid/butterfish permits if they landed at least 10,000 pounds in any year from 1997-2013. Permits in “Confirmation of Permit History” (CPH) could requalify if they have the required landings.

Of the 383 moratorium permits that are active or in CPH, 265 had some landings in the qualifying period, and 214 would requalify, 23 of which are in CPH. Of the 191 active requalifying permits, their principal ports are identified in the table below.

Table 22. Principal Port States (PPST) of Requalifying Vessels for 1C.

PPST	Requalifying_Vessels
NJ	54
RI	46
NY	32
MA	31
VA	10
CT	8
NC	5
ME	3
MD	2

Of the 169 vessels that would not requalify most had no landings in the last 3 years (2014-2016). 42 did have landings in 2014-2016, and 16 had total landings greater than 20,000 pounds over that time period (full range of 18 pounds to 522,748 pounds) and would be most likely to be impacted if they were restricted by an incidental trip limit. The sum of the qualifying vessels best years catches from 1997-2015 equals 61,859,629 pounds. 26 of the non-requalifying vessels also had butterfish landings 2014-2016, with 6 vessels landing over 10,000 pounds of butterfish (overall range 6 pounds to 51,353 pounds).

Compared to the no-action, this alternative would have a positive impact on re-qualifiers because they would have more secure access to the squid quota and the value of their permit would likely increase. Compared to the no-action, this alternative would have a negative impact on non-re-qualifiers because they would lose directed fishing access to the squid quota and would lose the value of their permit. Permits are generally sold as packages (Federal and state) so it is difficult to determine the value of just the squid permit, but staff’s research and discussions with individuals involved in permit transactions suggests the added value of a longfin squid/butterfish moratorium permit may be in the range of \$25,000-\$75,000 depending on the history associated with the permit. At this threshold and year range, there are few vessels that would be impacted in terms of their recent landings pattern, but more than with 1B.

1D. Requalify current longfin squid/butterfish permits if they landed at least 25,000 pounds in any year from 2003-2013. Permits in “Confirmation of Permit History” (CPH) could requalify if they have the required landings.

Of the 383 moratorium permits that are active or in CPH, 244 had some landings in the qualifying period, and 164 would requalify, 17 of which are in CPH. Of the 147 active requalifying permits, their principal ports are identified in the table below.

Table 23. Principal Port States (PPST) of Requalifying Vessels for 1D.

PPST	Requalifying_Vessels
RI	43
NJ	35
NY	30
MA	22
CT	7
VA	5
NC	3
ME	2

Of the 219 vessels that would not requalify most had no landings in the last 3 years (2014-2016). 70 did have landings in 2014-2016, and 25 had total landings greater than 20,000 pounds over that time period (full range of 6 pounds to 522,748 pounds) and would be most likely to be impacted if they were restricted by an incidental trip limit. The sum of the qualifying vessels best years catches from 1997-2015 equals 55,232,223 pounds. 46 of the non-requalifying vessels also had butterfish landings 2014-2016, with 9 vessels landing over 10,000 pounds of butterfish (overall range 1 pounds to 77,538 pounds).

Compared to the no-action, this alternative would have a positive impact on re-qualifiers because they would have more secure access to the squid quota and the value of their permit would likely increase. Compared to the no-action, this alternative would have a negative impact on non-re-qualifiers because they would lose directed fishing access to the squid quota and would lose the value of their permit. Permits are generally sold as packages (Federal and state) so it is difficult to determine the value of just the squid permit, but staff’s research and discussions with individuals involved in permit transactions suggests the added value of a longfin squid/butterfish moratorium permit may be in the range of \$25,000-\$75,000 depending on the history associated with the permit. At this threshold and year range, there is a moderate number of vessels that would be impacted in terms of their recent landings pattern, more than with 1B or 1C.

1E. Requalify current longfin squid/butterfish permits if they landed at least 50,000 pounds on average during 1997-2013. Permits in “Confirmation of Permit History” (CPH) could requalify if they have the required landings.

Of the 383 moratorium permits that are active or in CPH, 265 had some landings in the qualifying period, and 93 would requalify, 5 of which are in CPH. Of the 88 active requalifying permits, their principal ports are identified in the table below.

Table 24. Principal Port States (PPST) of Requalifying Vessels for 1E.

PPST	Requalifying_Vessels
RI	33
NY	18
NJ	16
MA	12
CT	4
VA	3
ME	1
NC	1

Of the 290 vessels that would not requalify most had no landings in the last 3 years (2014-2016). 128 did have landings in 2014-2016, and 70 had total landings greater than 20,000 pounds over that time period (full range of 6 pounds to 1,125,768 pounds) and would be most likely to be impacted if they were restricted by an incidental trip limit. The sum of the qualifying vessels best years catches from 1997-2015 equals 49,154,718 pounds. 101 of the non-requalifying vessels also had butterfish landings 2014-2016, with 32 vessels landing over 10,000 pounds of butterfish (overall range 1 pounds to 95,362 pounds).

Compared to the no-action, this alternative would have a positive impact on re-qualifiers because they would have more secure access to the squid quota and the value of their permit would likely increase. Compared to the no-action, this alternative would have a negative impact on non-re-qualifiers because they would lose directed fishing access to the squid quota and would lose the value of their permit. Permits are generally sold as packages (Federal and state) so it is difficult to determine the value of just the squid permit, but staff’s research and discussions with individuals involved in permit transactions suggests the added value of a longfin squid/butterfish moratorium permit may be in the range of \$25,000-\$75,000 depending on the history associated with the permit. At this threshold and year range, there is a relatively high number of vessels that would be impacted in terms of their recent landings pattern, more than with 1B, 1C, or 1D.

## 7.5.2 ALTERNATIVE SET 2: LONGFIN SQUID MORATORIUM PERMIT REQUALIFICATION SUB-ALTERNATIVES

2B or 2C could be selected if an action alternative from Set 1 is selected. Alternatives in this set could also be selected in addition to alternatives from Sets 3, 4, 5, and 6. 2C would only apply if either 3B or 3C is selected. Within the action alternatives in this set, the Council could select both 2B and 2C or just one.

2A. No action. No additional requalification options would be selected.

By not allowing the limited permit swap afforded under 2B, owners of vessels may have a less efficient fleet than under 2B. Assuming that the Council moves forward with a new limited access incidental longfin permit, not granting current moratorium permits that do not requalify for a moratorium permit a new limited access incidental longfin permit will be a negative for those vessels that would not otherwise qualify based on their landings.

2B. An entity that is currently issued more than one longfin squid/butterfish moratorium permit has a one-time opportunity to swap re-qualifying moratorium permits among vessels owned by that same entity that currently have longfin squid/butterfish moratorium permits. All baselines and histories would remain the same for all vessels.

It cannot currently be determined how many vessels this might apply to. Owners of multiple vessels with longfin/butterfish moratorium permits who are going to lose at least one longfin/butterfish moratorium permit could realize some benefit by being able to somewhat re-balance their permit portfolio on their vessels. Thus there would likely be a low-positive socioeconomic benefit compared to no action for such entities. However, this kind of permit swap will mean that there is more fishing power in the overall fleet, especially if swapping can occur without respect to baselines.

2C. If a vessel that currently has been issued a moratorium longfin squid/butterfish permit does not requalify, it would automatically be issued a limited access incidental permit if the Council makes the current open access incidental permit a limited access permit.

For the longfin squid requalification options, approximately 159-290 vessels would not requalify. In those cases, approximately 150 vessels would not even meet the proposed criteria for the incidental permit and without this option could have to obtain the proposed open access permit, which is proposed to have a 250-500 pound trip limit versus the 2,500 pound trip limit that the incidental is proposed to have. For those 150 vessels, this option would provide a benefit both in terms of the possibility of landing squid at a higher level, and because the incidental permit would have some value.

### 7.5.3 ALTERNATIVE SET 3: LONGFIN SQUID INCIDENTAL AND OPEN ACCESS ALTERNATIVES

Alternatives in this set could be selected in addition to alternatives in other sets or on their own if no action is selected for other sets. Within the action alternatives in this set, the Council could select either 3B or 3C, possibly combined with either 3D or 3E.

3A. No action. The current open access incidental permits and associated trip limits would remain as they are.

Under no action, individuals who switch between having and not having an incidental permit to target longfin squid in Federal or state waters as the optimal case for their situation could continue to do so. Conversely, less restricted fishing in state waters after a Federal closure reduces the available quota later in the season for Federal moratorium permit holders. New participants could also acquire incidental permits to land up to 2,500 pounds of longfin squid without cost.

3B. Create a new limited-access incidental longfin squid permit that cannot be reacquired if dropped. Qualification years would be from 1997-2013 and require landings of at least 2,500 pounds in any one year. The initial trip limit would be 2,500 pounds. This permit would also allow incidental catch of *Illex* and butterfish at the designated incidental trip limit (currently 10,000 pounds for *Illex* and 600 pounds for butterfish).

With these criteria, there would be approximately 400 Federally-permitted vessels that would qualify for a new limited-access incidental longfin squid permit. Currently state-only licensed vessels may also apply. Since the proposed trip limit is the same as the best year qualification threshold, requiring this permit should not limit participants' fishing. It would create a cost to new participants who wanted/needed to purchase a limited access permit from an existing holder to catch the proposed 2,500 pound trip limit. It also would create a cost to dropping the incidental permit to fish in state waters when Federal waters close, which is the primary point of this alternative. Staff will add additional information about the extent of this issue before public hearings.

3C. Create a new limited-access incidental longfin squid permit that cannot be reacquired if dropped. Qualification years would be from 1997-2013 and require landings of at least 5,000 pounds in any one year. The initial trip limit would be 2,500 pounds. This permit would also allow incidental catch of *Illex* and butterfish at the designated incidental trip limit (currently 10,000 pounds for *Illex* and 600 pounds for butterfish).

With these criteria, there would be approximately 350 Federally-permitted vessels that would qualify for a new limited-access incidental longfin squid permit. Currently state-only licensed vessels may

also apply. Since the proposed trip limit is half of the best year qualification threshold, requiring this permit should not limit participants' fishing. It would create a cost to new participants who wanted/needed to purchase a limited access permit from an existing holder to catch the proposed 2,500 pound trip limit. It also would create a cost to dropping the incidental permit to fish in state waters when Federal waters close, which is the primary point of this alternative. Staff will add additional information about the extent of this issue before public hearings.

3D. Make the open-access longfin squid incidental trip limit 250 pounds.

Because the qualification threshold for a new limited-access incidental longfin squid permit would be low (2,500 pounds or 5,000 pounds in any one year 1997-2013), only vessels with minimal landings would not qualify for the new limited-access incidental longfin squid permit. Therefore this alternative should not affect current substantial participants because they would get at least the new limited-access incidental longfin squid permit. This permit would address truly incidental, small scale catch.

3E. Make the current open-access longfin squid incidental trip limit 500 pounds.

Because the qualification threshold for a new limited-access incidental longfin squid permit would be low (2,500 pounds or 5,000 pounds in any one year 1997-2013), only vessels with minimal landings would not qualify for the new limited-access incidental longfin squid permit. Therefore this alternative should not affect current substantial participants because they would get at least the new limited-access incidental longfin squid permit. This permit would address truly incidental, small scale catch.

#### **7.5.4 ALTERNATIVE SET 4: LONGFIN SQUID TRIMESTER 2 (“T2”) ALTERNATIVES**

Alternatives in this set could be selected in addition to alternatives in other sets or on their own if no action is selected for other sets. Within the action alternatives in this set, the Council could select either 4B or 4C, possibly combined with either 4D or 4E, possibly combined with 4F.

4A. No action. The annual quota is divided among three 4-month trimesters, with the initial Trimester 2 (T2, May through August) allocation set at 17% of the annual quota (8.4 million pounds in 2017-2018). Any underages for T1 that are greater than 25 percent will be reallocated to Trimesters 2 and 3 (split equally between both trimesters) of the same year. The reallocation is limited, such that T2 may only be increased by 50 percent; the remaining portion of the underage will be reallocated to T3. Any underages for T1 that are less than 25 percent of the T1 quota will be applied to T3 of the same year. Any overages for T1 and T2 will be subtracted from T3 of the same year. This means that the post-

rollover T2 quota can be as high as 12.6 million pounds (8.4 plus (half of 8.4) = 12.6). Also, the trip limit in Federal waters after a Trimester closure is 2,500 pounds.

4B. Eliminate roll-over of longfin squid quota from T1 to T2 (all un-caught T1 quota would go to T3).

Compared to the no action, this could reduce the available quota in T2 but increase the available quota in T3. However, squid are highly mobile and availability can be fleeting, so there is no guarantee that squid not caught in T2 would be available for harvest in T3. Currently approximately 4.2 million pounds of longfin squid can be rolled over from T1 to T2. If that squid can no longer be rolled-over, at 2016 prices that could amount to approximately \$5.2 million in lost revenues in years with roll-over and sufficient squid abundance/availability. If catching less squid in any given T2 leads to increased squid productivity (through there being more squid to spawn or better hatching of eggs due to less bottom trawling on spawning grounds), there could be benefits related to higher future commercial catches, improved recreational opportunities (fishing/whale-watching), or additional ecosystem services via squid's role in the ecosystem. However, since the quantitative relationships between catching roll-over squid and the general abundance/productivity of squid are not known, these possible benefits from reduced squid fishing cannot be quantified. The analyses above regarding correlations between squid fishing effort and later catch per unit of effort do suggest that limiting catch will have a general positive effect on future squid abundance however, and spreading out catch throughout the year to some degree is advisable given the short-lived and overlapping micro-cohort characteristics of longfin squid.

4C. Reduce the maximum T1 to T2 rollover of longfin squid quota to 25% of the original T2 quota. The initial T2 quota is approximately 8.4 million pounds, so the maximum after rollover would be about 10.5 million pounds in T2.

Compared to the no action, this could reduce the available quota in T2 but increase the available quota in T3. However, squid are highly mobile and availability can be fleeting, so there is no guarantee that squid not caught in T2 would be available for harvest in T3. Currently approximately 4.2 million pounds of longfin squid can be rolled over from T1 to T2. If half of that squid can no longer be rolled-over, at 2016 prices that could amount to approximately \$2.6 million in lost revenues in years with roll-over and sufficient squid abundance/availability. If catching less squid in any given T2 leads to increased squid productivity (through there being more squid to spawn or better hatching of eggs due to less bottom trawling on spawning grounds), there could be benefits related to higher future commercial catches, improved recreational opportunities (fishing/whale-watching), or additional ecosystem services via squid's role in the ecosystem. However, since the quantitative relationships between catching roll-over squid and the general abundance/productivity of squid are not known, these possible benefits from reduced squid fishing cannot be quantified. The analyses above regarding correlations between squid fishing effort and later catch per unit of effort do suggest that limiting catch will have a general positive effect on future squid abundance however, and spreading out catch



throughout the year to some degree is advisable given the short-lived and overlapping micro-cohort characteristics of longfin squid.

4D. Implement a 250-pound trip limit for all longfin squid permits with higher initial trip limits when the T2 quota is predicted to be reached.

Compared to the no action, this alternative would reduce revenues in T2 in some years when T2 closes. Directed fishing at a 2,500 pound trip limit does occur after closures and can lead to substantial T2 quota overages. For example, in T2 of 2016, an additional 6.1 million pounds of longfin squid beyond the quota were caught, generating approximately \$8 million in ex-vessel sales. However, the same concerns about rolling over squid into Trimester 2 would apply to T2 quota overages, as the result is the same (more squid caught). If the overage is above and beyond a roll-over increased quota then concern would be even higher. In addition, Council staff received multiple reports from some fishery participants about high-grade discarding of squid post-closure at the 2,500 pound trip limit during T2 of 2016.

Based on consensus input from the Council's Advisory Panel, it is expected that substantially less directed fishing would occur in Federal waters if the trip limit is reduced to 250 pounds. If catching less squid in any given T2 leads to increased squid productivity (through there being more squid to spawn or better hatching of eggs due to less bottom trawling on spawning grounds), there could be benefits related to higher future commercial catches, improved recreational opportunities (fishing/whale-watching), or additional ecosystem services via squid's role in the ecosystem. However, since the quantitative relationships between catching squid beyond the quota and the general abundance/productivity of squid are not known, these possible benefits from reduced squid fishing cannot be quantified. The analyses above regarding correlations between squid fishing effort and later catch per unit of effort do suggest that limiting catch will have a general positive effect on future squid abundance however, and spreading out catch throughout the year to some degree is advisable given the short-lived and overlapping micro-cohort characteristics of longfin squid.

4E. Implement a 500-pound trip limit for all longfin squid permits with higher initial trip limits when the T2 quota is predicted to be reached.

Compared to the no action, this alternative would reduce revenues in T2 in some years when T2 closes. Directed fishing at a 2,500 pound trip limit does occur after closures and can lead to substantial T2 quota overages. For example, in T2 of 2016, an additional 6.1 million pounds of longfin squid beyond the quota were caught, generating approximately \$8 million in ex-vessel sales. However, the same concerns about rolling over squid into Trimester 2 would apply to T2 quota overages, as the result is the same (more squid caught). If the overage is above and beyond a roll-over increased quota then

concern would be even higher. In addition, Council staff received multiple reports from some fishery participants about high-grade discarding of squid post-closure at the 2,500 pound trip limit during T2 of 2016.

Based on consensus input from the Council's Advisory Panel, it is expected that substantially less directed fishing would occur in Federal waters if the trip limit is reduced to 250 pounds. If catching less squid in any given T2 leads to increased squid productivity (through there being more squid to spawn or better hatching of eggs due to less bottom trawling on spawning grounds), there could be benefits related to higher future commercial catches, improved recreational opportunities (fishing/whale-watching), or additional ecosystem services via squid's role in the ecosystem. However, since the quantitative relationships between catching squid beyond the quota and the general abundance/productivity of squid are not known, these possible benefits from reduced squid fishing cannot be quantified. The analyses above regarding correlations between squid fishing effort and later catch per unit of effort do suggest that limiting catch will have a general positive effect on future squid abundance however, and spreading out catch throughout the year to some degree is advisable given the short-lived and overlapping micro-cohort characteristics of longfin squid.

4F. Split the Trimester 2 quota, with half available May 1, and the additional half available July 1. Open access incidental and post-closure trip limits would remain as status quo or as specified in other alternatives in this action.

Compared to the no action, splitting the Trimester 2 quota should not have a substantial impact on overall squid catch. However, Council staff received multiple reports from some fishery participants about fish spoilage during the 2016 T2 season because processors could not keep up with landings. A split Trimester 2 could slow the pace of landings and avoid such spoilage. However, the amount of spoilage and any possible benefits to avoiding such spoilage cannot be quantified with the available information.

### 7.5.5 ALTERNATIVE SET 5: *ILLEX* SQUID MORATORIUM PERMIT REQUALIFICATION ALTERNATIVES

Alternatives in this set could be selected in addition to alternatives in other sets or on their own if no action is selected for other sets. This action would not allow new entrants to qualify for a moratorium permit. The Council would only choose one alternative within this set.

5A. No action. No changes would be made to *Illex* moratorium permits.

Under no action, there would continue to be socioeconomic benefits to those who participate in the *Illex* squid fishery. Participation in the *Illex* squid fishery is described in Section 6. It is possible that an influx of effort could occur. This would benefit the new entrants but dilute the amount of quota available to existing participants. In 2016 there were approximately 64 vessels with active permits and approximately another 15 that had their permits/histories held in CPH. From 2014-2016 there were 4 of these vessels that derived at least 25% of their revenues from *Illex*, so there are some vessels that appear somewhat dependent on the *Illex* squid fishery. Closures due to higher effort would be most likely to impact those vessels most. The distribution of the 64 active vessels by principal port are described in the table below.

Table 25. Principal Port States (PPST) of Currently-Active *Illex* Vessels

PPST	Vessels
NJ	24
MA	12
RI	9
VA	7
NC	4
NY	4
CT	3
MD	1

From 1997-2015 Federal Moratorium vessels accounted for approximately 93% of *Illex* squid landings, with almost all of the rest caught by vessels with incidental permits (this is an offshore fishery, state-only landings are minimal).

5B. Requalify current *Illex* moratorium permits if they landed at least 10,000 pounds in any year from 1997-2015. Permits in “Confirmation of Permit History” (CPH) could requalify if they have the required landings.

Of the 79 moratorium permits that are active or in CPH, 49 had some landings in the qualifying period, and 38 would requalify, 5 of which are in CPH. Of the 33 active requalifying permits, their principal ports are identified in the table below.

Table 26. Principal Port States (PPST) of Requalifying Vessels for 5B

PPST	Requalifying_Vessels
NJ	17
RI	5
MA	4
NC	2
NY	2
VA	2
CT	1

Of the 41 vessels that would not requalify most had no landings in the last 3 years (2014-2016). 7 did have landings in 2014-2016, but none had more than 20,000 pounds total. The sum of the qualifying vessels best years catches from 1997-2015 equals 77,540,354 pounds.

Compared to the no-action, this alternative would have a positive impact on re-qualifiers because they would have more secure access to the squid quota and the value of their permit would likely increase. Compared to the no-action, this alternative would have a negative impact on non-re-qualifiers because they would lose directed fishing access to the squid quota and would lose the value of their permit. Permits are generally sold as packages (Federal and state) so it is difficult to determine the value of just the squid permit, but staff’s research and discussions with individuals involved in permit transactions suggests the added value of an *Illex* moratorium permit may be in the range of \$XY,000-\$AB,000 (still researching) depending on the history associated with the permit. At this threshold and year range, there is a relatively low number of vessels that would be impacted in terms of their recent landings pattern.

5C. Requalify current *Illex* moratorium permits if they landed at least 10,000 pounds in any year from 1997-2013. Permits in “Confirmation of Permit History” (CPH) could requalify if they have the required landings.

Of the 79 moratorium permits that are active or in CPH, 47 had some landings in the qualifying period, and 37 would requalify, 5 of which are in CPH. Of the 32 active requalifying permits, their principal ports are identified in the table below.

Table 27. Principal Port States (PPST) of Requalifying Vessels for 5C

PPST	Requalifying_Vessels
NJ	17
RI	5
MA	3
NC	2
NY	2
VA	2
CT	1

Of the 42 vessels that would not requalify most had no landings in the last 3 years (2014-2016). 8 did have landings in 2014-2016, but only 1 had more than 20,000 pounds total (About 92,000 pounds). The sum of the qualifying vessels best years catches from 1997-2015 equals 77,448,424 pounds.

Compared to the no-action, this alternative would have a positive impact on re-qualifiers because they would have more secure access to the squid quota and the value of their permit would likely increase. Compared to the no-action, this alternative would have a negative impact on non-re-qualifiers because they would lose directed fishing access to the squid quota and would lose the value of their permit. Permits are generally sold as packages (Federal and state) so it is difficult to determine the value of just the squid permit, but staff’s research and discussions with individuals involved in permit transactions suggests the added value of an *Illex* moratorium permit may be in the range of \$XY,000-\$AB,000 (still researching) depending on the history associated with the permit. At this threshold and year range, there is a relatively low number of vessels that would be impacted in terms of their recent landings pattern.

5D. Requalify current *Illex* moratorium permits if they landed at least 50,000 pounds in any year from 1997-2013. Permits in “Confirmation of Permit History” (CPH) could requalify if they have the required landings.

Of the 79 moratorium permits that are active or in CPH, 47 had some landings in the qualifying period, and 35 would requalify, 5 of which are in CPH. Of the 30 active requalifying permits, their principal ports are identified in the table below.

Table 28. Principal Port States (PPST) of Requalifying Vessels for 5D

PPST	Requalifying_V essels
NJ	17
RI	5
MA	2
NC	2
VA	2
CT	1
NY	1

Of the 44 vessels that would not requalify most had no landings in the last 3 years (2014-2016). 8 did have landings in 2014-2016, but only 1 had more than 20,000 pounds total (About 92,000 pounds). The sum of the qualifying vessels best years catches from 1997-2015 equals 77,425,081 pounds.

Compared to the no-action, this alternative would have a positive impact on re-qualifiers because they would have more secure access to the squid quota and the value of their permit would likely increase. Compared to the no-action, this alternative would have a negative impact on non-re-qualifiers because they would lose directed fishing access to the squid quota and would lose the value of their permit. Permits are generally sold as packages (Federal and state) so it is difficult to determine the value of just the squid permit, but staff’s research and discussions with individuals involved in permit transactions suggests the added value of an *Illex* moratorium permit may be in the range of \$XY,000-\$AB,000 (still researching) depending on the history associated with the permit. At this threshold and year range, there is a relatively low number of vessels that would be impacted in terms of their recent landings pattern.

5E. Requalify current *Illex* moratorium permits if they landed at least 100,000 pounds in any year from 1997-2013. Permits in “Confirmation of Permit History” (CPH) could requalify if they have the required landings.

Of the 79 moratorium permits that are active or in CPH, 47 had some landings in the qualifying period, and 34 would requalify, 4 of which are in CPH. Of the 30 active requalifying permits, their principal ports are identified in the table below.

Table 29. Principal Port States (PPST) of Requalifying Vessels for 5E

PPST	Requalifying_Vessels
NJ	17
RI	5
MA	2
NC	2
VA	2
CT	1
NY	1

Of the 45 vessels that would not requalify most had no landings in the last 3 years (2014-2016). 8 did have landings in 2014-2016, but only 1 had more than 20,000 pounds total (About 92,000 pounds). The sum of the qualifying vessels best years catches from 1997-2015 equals 77,374,216 pounds.

Compared to the no-action, this alternative would have a positive impact on re-qualifiers because they would have more secure access to the squid quota and the value of their permit would likely increase. Compared to the no-action, this alternative would have a negative impact on non-re-qualifiers because they would lose directed fishing access to the squid quota and would lose the value of their permit. Permits are generally sold as packages (Federal and state) so it is difficult to determine the value of just the squid permit, but staff’s research and discussions with individuals involved in permit transactions suggests the added value of an *Illex* moratorium permit may be in the range of \$XY,000-\$AB,000 (still researching) depending on the history associated with the permit. At this threshold and year range, there is a relatively low number of vessels that would be impacted in terms of their recent landings pattern.

5F. Requalify current *Illex* moratorium permits if they landed at least 200,000 pounds in any year from 1997-2013. Permits in “Confirmation of Permit History” (CPH) could requalify if they have the required landings.

Of the 79 moratorium permits that are active or in CPH, 47 had some landings in the qualifying period, and 33 would requalify, 4 of which are in CPH. Of the 29 active requalifying permits, their principal ports are identified in the table below.

Table 30. Principal Port States (PPST) of Requalifying Vessels for 5F

PPST	Requalifying_Vessels
NJ	17
RI	5
MA	2
VA	2
CT	1
NC	1
NY	1

Of the 46 vessels that would not requalify most had no landings in the last 3 years (2014-2016). 9 did have landings in 2014-2016, but only 1 had more than 20,000 pounds total (About 92,000 pounds). The sum of the qualifying vessels best years catches from 1997-2015 equals 77,263,237 pounds.

Compared to the no-action, this alternative would have a positive impact on re-qualifiers because they would have more secure access to the squid quota and the value of their permit would likely increase. Compared to the no-action, this alternative would have a negative impact on non-re-qualifiers because they would lose directed fishing access to the squid quota and would lose the value of their permit. Permits are generally sold as packages (Federal and state) so it is difficult to determine the value of just the squid permit, but staff’s research and discussions with individuals involved in permit transactions suggests the added value of an *Illex* moratorium permit may be in the range of \$XY,000-\$AB,000 (still researching) depending on the history associated with the permit. At this threshold and year range, there is a relatively low number of vessels that would be impacted in terms of their recent landings pattern.



### 7.5.6 ALTERNATIVE SET 6: ILLEX SQUID MORATORIUM PERMIT REQUALIFICATION SUB ALTERNATIVES

6B could be selected if an action alternative from Set 5 is selected. Alternatives in this set could also be selected in addition to alternatives from Sets 1, 2, 3, and 4. The Council would only choose one alternative within this set.

6A. No action. No additional requalification options would be selected.

By not allowing the limited permit swap afforded under 6B, owners of vessels may have a less efficient fleet than under 6B.

6B. An entity that is currently issued more than one *Illex* moratorium permit has a one-time opportunity to swap re-qualifying moratorium permits among vessels owned by that same entity that currently have *Illex* moratorium permits. All baselines and histories would remain the same for all vessels.

It cannot currently be determined how many vessels this might apply to. Owners of multiple vessels with *Illex* moratorium permits who are going to lose at least one *Illex* moratorium permit (not likely to be many) could realize some benefit by being able to somewhat re-balance their permit portfolio on their vessels. Thus there would be a low-positive socioeconomic benefit compared to no action. However, this kind of permit swap will mean that there is more fishing power in the overall fleet, especially if swapping can occur without respect to baselines.

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