

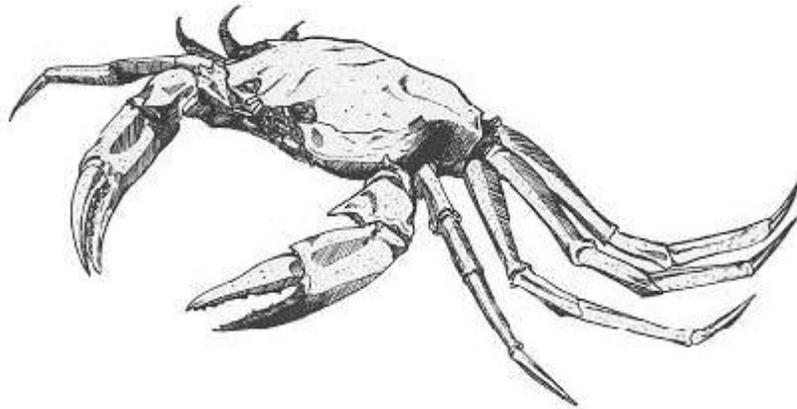
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**Amendment 3**

**To the**

**Fishery Management Plan for Deep-Sea Red Crab**

**DRAFT FOR PUBLIC HEARING**



**Prepared by the New England Fishery Management Council in consultation with National  
Marine Fisheries Service**

**XXXXXXXX 2010**

NEFMC Approval Date: \_\_\_\_\_ NEFMC Submission Date: \_\_\_\_\_

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## LIST OF ACRONYMS

ABC	Allowable Biological Catch
ACL	Annual Catch Limit
ACT	Annual Catch Target
ALWTRP	Atlantic Large Whale Take Reduction Plan
AM	Accountability Measure
B	Biomass
BRP	Biological Reference Point
CEA	Cumulative Effects Assessment
CEQ	Council on Environmental Quality
DAS	Days-at-Sea
DCAC	Depletion-Correction Average Catch
EA	Environmental Assessment
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EO	Executive Order
ESA	Endangered Species Act of 1973
F	Fishing Mortality Rate
FMP	Fishery Management Plan
FONSI	Finding of No Significant Impact
FW	Framework Adjustment
FY	Fishing Year
IRFA	Initial Regulatory Flexibility Analysis
M	Natural Mortality Rate
MFMT	Maximum Fishing Mortality Threshold
MMPA	Marine Mammal Protection Act
MSA	Magnuson-Stevens Fishery Conservation and Management Act
MSST	Minimum Stock Size Threshold
MSY	Maximum Sustainable Yield
NAO	NOAA Administrative Order
NEFMC	New England Fishery Management Council
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NS	National Standard
OFL	Overfishing Limit
OY	Optimum Yield
PRA	Paperwork Reduction Act
RFA	Regulatory Flexibility Act
RIR	Regulatory Impact Review
SAFE	Stock Assessment and Fishery Evaluation
SDC	Status Determination Criteria
SSC	Science and Statistical Committee
TAC	Total Allowable Catch
TAL	Total Allowable Landings
VECs	Valued Ecosystem Components

## 1.0 EXECUTIVE SUMMARY

The Atlantic Deep-Sea Red Crab (*Chaceon quinque-dens*) Fishery Management Plan (FMP) was developed by the New England Fishery Management Council (Council) and implemented by NOAA's National Marine Fisheries Service (NMFS) in October of 2002, bringing this fishery under regulation for the first time. Framework Adjustment (FW) 1 changed the schedule for setting specifications for the fishery from every year to every three years. Amendment 1 incorporated the Standardized Bycatch Reporting Methodology Omnibus Amendment into the FMP and was implemented on February 27, 2008. Amendment 2 is under development and will incorporate the Essential Fish Habitat Omnibus Amendment into the FMP. The proposed action will be Amendment 3 to the Red Crab FMP and will meet two separate and distinct needs that are addressed in Sections 4.0 and 5.0 of this document. Together, these provisions are intended to bring the red crab FMP into full compliance with the Magnuson-Stevens Fishery Conservation and Management Act (MSA), as reauthorized in 2007. This action introduces new terms that relate to new requirements of the MSA and the National Standard Guidelines. Section 5.0 will establish specifications for FY2011-2013.

The MSA now requires, among other things, that all FMPs establish Annual Catch Limits (ACLs) and measures to ensure accountability (AMs) for staying within those catch limits. For stocks not subject to overfishing, such as red crab, the MSA set a deadline of 2011 for the implementation of ACLs and AMs. The law requires the regional fishery management councils to set an ACL that does not exceed the allowable biological catch (ABC) recommended by its Scientific and Statistical Committee (SSC). In 2009, NMFS published revised National Standard (NS) 1 Guidelines that the councils have used to develop ACLs and AMs for all FMPs. The primary purpose of this amendment is to bring the Red Crab FMP into compliance with the new MSA requirements by implementing an ACL and AMs.

The Council is considering multiple alternatives in both Section 4.0 and Section 5.0, including a "no action" or "status quo" alternative for both the management measures and the specifications. The no action alternative is intended to provide a point of comparison between the proposed alternatives and the regulations in place for FY 2010. Whereas the Council is required by law to make certain changes to the management regime and is prohibited from setting a catch limit that exceeds that recommended by the Council's SSC, the no action alternative may not be permissible under the law. Section 4.0 also includes proposed alternatives that would replace the target total allowable catch (TAC) and days-at-sea (DAS) allocation to the red crab fleet with a total allowable landings (TAL) limit. The proposed action includes both pro-active and reactive AMs. The pro-active AM would close the fishery during the fishing season as the landings approached the TAL. The reactive AM would require a catch overage in one year to be deducted from the next year's TAL. One alternative would also eliminate the trip limits that are currently in place. Another would modify the regulatory language that is currently in place pertaining to trap limits and trap design. Another alternative that would create a framework for how female landings could potentially be incorporated into the FMP, should sufficient scientific information become available regarding the sustainability of such a change, was considered and rejected prior to the analysis of alternatives. Section 5.0 of this action would establish specifications for the 2011-2013 fishing years (FY). This action is needed to put new specifications in place for FY 2011, beginning on March 1, 2011. Table 1 provides a brief description of the management measure alternatives that are under consideration in this action.

**Table 1- Management measure alternatives included in Section 4.0.**

SECTION		ALTERNATIVES	OPTIONS
4.1	Effort Control Alternatives		
4.1.1		Hard TAL without DAS	
4.1.2		Status Quo/No Action Alternative (Target TAC with DAS)	
4.2	Trip Limit Alternatives		
4.2.1		Eliminate Trip Limits	
4.2.2		Status Quo/No Action Alternative (Maintain trip limits)	
4.3	Trap Limit Language Alternatives		
4.3.1		Modify Trap Limit Regulatory Language	
4.3.1.1		Status Quo/No Action Alternative (Maintain existing trap limit language)	
4.3.2	Accountability Measures		
4.3.2.1		Proactive AMs	
4.3.2.2			In-season closure authority
4.3.3		Reactive Accountability Measures	
4.3.4			Next Year In-Season Adjustment Option
4.4			"Leap-frog" Specifications Adjustment Option
4.4.1		Combinations of both Proactive and Reactive AMs	
4.4.2		Status Quo/No Action (Payback provisions in FMP would continue)	
4.6	Modifications to the Specification-Setting Process		
		Modify the Specification-Setting Process to Include the SSC	
		Status Quo/No Action (Does not mention the SSC)	
	Considered But Rejected		

	Alternatives		
4.7	Measures to Control the Landing of Female Crabs		
4.8		Remove the prohibition on landing more than one standard tote of female crabs and bring female crabs into the procedure for setting ABC and ACL, separate from that for males.	
		Status Quo/No Action This option would maintain the prohibition on landing more than one standard tote of female crabs.	
4.9	Preferred Alternatives		
4.10	Rationale for Preferred Alternatives		

The specification alternatives proposed in this action are shown in Table 2.

**Table 2- Red crab specification alternatives for fishing year 2011-2013 described in Section 5.0.**

	Hard TAL with No DAS	No Action/ Status Quo
MSY (mt)	Undetermined	2,830
OFL (mt)	Undetermined	Undetermined
OY (mt)	Undetermined	2,688
ABC (mt)	1,775	1,775
ACL (mt)	1,775	n/a
Target TAC (mt)	n/a	1,775
Fleet DAS	n/a	665*
TAL (mt)	1,775	n/a

\*Using the most recent calculation of average landings-per-DAS charged (5,882 lb/DAS (2,668 kg/DAS) charged from FY 200562009)

The impacts of the proposed action and those of the other alternatives are described in subsequent sections of this document.

The proposed ACL for male crab will allow landings that are higher than the most recent landings and equal to the long-term average level of landings that was determined to be sustainable by the

SSC. The SSC determined that long-term average landings and the discards associated with those landings were sustainable. However, the SSC was unable to quantify the level of dead discards and so the ABC is in terms of landings only. It is presumed that the discarding practices of the fleet have not changed significantly over the time period for which long-term average landings were calculated (1974-2008). The SSC did not recommend an ABC that included female crab because the basis for the ABC was based on landings, and the fishery has been male crab only over that time period. The SSC reported to the Council that: **“Including female landings of red crab in catch limits requires an evaluation of sustainability of a male and female fishery and a more explicit decision on management strategy.”** In the absence of a proposed change in the management strategy, the SSC has no reason to undertake the scientific evaluation necessary to establish an ABC for female red crab. This document includes a “considered but rejected” alternative that would have removed the prohibition on landing more than one standard tote of female crab and created a procedure to bring female crab under a similar but separate procedure for setting an ABC , ACL, and TAL for female crab.

The impacts of the proposed alternatives on valued ecosystem components has been divided into two sections, one that applies to the management alternatives proposed in Section 4.0 of this document and one that applies to the specification alternatives proposed in Section 5.0 of this document. The sum of the effects from the implementation of all fishing and non-fishing actions is expected to be negligible for biological valued environmental components (VECs) and positive for human communities. The qualitative effects of the proposed management actions are shown in Table 3.

**Table 3 – Summary of qualitative impacts of the management measure alternatives on valued ecosystem components.**

Management Measure Options		Valued Ecosystem Component (VEC)				
		Managed Resource (Red Crab)	Non-target/Bycatch Species	Habitat (including EFH)	Protected Resources	Human Communities
Effort Control Options		Negligible	Negligible	Negligible	Negligible	Positive
	Hard TAL without DAS	A hard TAL would provide greater certainty that landings would be limited to the level that was determined to be sustainable by the Data Poor Stocks Working Group and by the SSC.	The catch rate of non-target and bycatch species is very low. The hard TAL would assure that fishing would stop at the specified landing limit, even if more DAS were available. Impacts would lower than those analyzed in the FMP.	There is little data regarding impacts of deep-sea pots on the environment. Gear impacts on habitat are not known to be adverse. Impacts would be lower than those analyzed in the FMP because the landings would be firmly limited at a lower level than analyzed.	Interactions with protected species are already very low and a hard TAL would cause fishing to stop at the TAL even if additional DAS remained.	This option would remove the additional costs and safety concerns associated with DAS management. The hard TAL will assure effective conservation that will provide positive long-term impacts.
	Status Quo/No Action (Maintain Target TAC and DAS)	No Impact	No Impact	No Impact	No Impact	No Impact
Trip Limit		Negligible	Negligible	Negligible	Negligible	Positive

Options	Eliminate Trip Limits	This option would not affect the total landings. The potential to land more crabs per trip might result in less total annual trap immersion time.	The catch rate of non-target and bycatch species is very low. The potential to land more crabs per trip might result in less total annual trap immersion time.	There is little data regarding impacts of deep-sea pots on the environment. Gear impacts on habitat are not known to be adverse. Impacts would be lower than those analyzed in the FMP. The potential to land more crabs per trip might result in less total annual trap immersion time.	Interactions with protected species are already very low. The potential to land more crabs per trip might result in less total annual trap immersion time.	This option has the potential to reduce the costs associated with increased time at sea required by trip limits.
	Status Quo/No Action (Maintain Trip Limits)	No Impact	No Impact	No Impact	No Impact	No Impact
		Negligible	Negligible	Negligible	Negligible	Positive
Trap Limit Language Options	Modify the Regulatory Language Pertaining to Trap Limits and Trap Design	This option would not affect the total landings.	The catch rate of non-target and bycatch species is very low. This option would leave in place the 600-trap limit for	There is little data regarding impacts of deep-sea pots on the environment. Gear impacts on habitat	Interactions with protected species are already very low.	This option would provide more flexibility to the red crab fleet, particularly those vessels that have

			red crab vessels.	are not known to be adverse.		permits for the lobster trap fishery.
	Status Quo/No Action (Maintain Trap Limits)	No Impact	No Impact	No Impact	No Impact	No Impact
		Positive	Negligible	Negligible	Negligible	Negligible
Accountability Measure Options	Proactive - In-season Closure Authority Granted to Regional Administrator	This option would provide additional assurance that the landings would stay within the TAL and ACL.	The catch rate of non-target and bycatch species is very low. This option would assure that fishing would stop when the TAL had been landed.	There is little data regarding impacts of deep-sea pots on the environment. Gear impacts on habitat are not known to be adverse. Impacts would be lower than those analyzed in the FMP. This option would assure that fishing would stop when the TAL had been landed.	Interactions with protected species are already very low. This option would assure that fishing would stop when the TAL had been landed.	This option would avoid the imposition of payback requirements that might result from landings in excess of the TAL.
		Negligible	Negligible	Negligible	Negligible	Negligible
	Reactive Accountability Measures - Next Year In-Season Adjustment Option	This option would provide the fastest payback in the event the TAL was exceeded.	The catch rate of non-target and bycatch species is very low and would not be affected by this option.	There is little data regarding impacts of deep-sea pots on the environment. Gear impacts on habitat are not known to be adverse and would not	Interactions with protected species are already very low and would not change under this option.	This option might require in-season adjustments to annual fishing plans to accommodate an in-season payback of an ACL overage.

				be affected by this option.		
		Negligible	Negligible	Negligible	Negligible	Positive
	"Leap Frog" Specifications Adjustment Option	This option would delay the payback of an aCL overage until the second year after the overage.	The catch rate of non-target and bycatch species is very low and would not be affected by this option.	There is little data regarding impacts of deep-sea pots on the environment. Gear impacts on habitat are not known to be adverse and would not be affected by this option.	Interactions with protected species are already very low and would not change under this option.	This option would provide additional lead time in which the red crab industry could plan for the payback of an ACL overage.
		Positive	Negligible	Negligible	Negligible	Positive
	Combinations of both Proactive and Reactive AMs	This option would provide the greatest assurance that landings would be kept within the TAL and ACL and that any overage would be paid back.	The catch rate of non-target and bycatch species is very low and would not be affected by this option.	There is little data regarding impacts of deep-sea pots on the environment. Gear impacts on habitat are not known to be adverse and would not be affected by this option.	Interactions with protected species are already very low and would not change under this option.	This option provides the greatest assurance that the conservation program would be effective.
	Status Quo/No Action (Maintain the existing authority)	No Impact	No Impact	No Impact	No Impact	No Impact

	given to the Regional Administrator to implement an in-season adjustment in DAS to keep the catch within the target TAC.)					
		Positive	Negligible	Negligible	Negligible	Positive
Measures to Control the Landing of Female Crabs	Replace the prohibition on landing more than one standard tote of female crabs per trip with a scientifically determined ABC, ACL, and TAL.	This option would bring female crabs under the scientific assessment process that now applies to male crabs only.	The catch rate of non-target species is very low and would not be affected by this option.	There is little data regarding impacts of deep-sea pots on the environment. Gear impacts on habitat are not known to be adverse and would not be affected by this option.	Interactions with protected species are already very low and would not change under this option.	This option has the potential to increase the revenue, efficiency, and profitability of the red crab fleet. This option would also improve the scientific basis for red crab management, which should have positive long-term impacts.
	Status Quo/No Action (Would maintain the existing prohibition on landing more than one standard tote	No Impact	No Impact	No Impact	No Impact	No Impact

	of females per trip.)					
		Positive	Negligible	Negligible	Negligible	Positive
Modifications to the Specification-Setting Process	Modify the specification-setting process to include a recommendation from the SSC on the ABC	This option would bring the specification-setting process into line with current legal requirements.	The catch rate of non-target and bycatch species is very low and would not be affected by this option.	There is little data regarding impacts of deep-sea pots on the environment. Gear impacts on habitat are not known to be adverse and would not be affected by this option.	Interactions with protected species are already very low and would not change under this option.	This option has the potential to improve the scientific basis for red crab management, which should have positive long-term impacts.
	Status Quo/No Action (Would maintain the existing language that does not mention the SSC.)	No Impact	No Impact	No Impact	No Impact	No Impact

The qualitative effects of the proposed specifications as they might be incorporated into the proposed alternatives are shown in Table 4.

**Table 4 – Examples of the effects of the Specification Alternatives on VECs using the Hard TAL with No DAS Alternative and the No Action/Status Quo Alternative for comparison.**

Specification Alternatives		Valued Ecosystem Component (VEC)				
		Managed Resource (Red Crab)	Non-target/Bycatch Species	Habitat (including EFH)	Protected Resources	Human Communities
Hard TAL with No DAS		Negligible	Negligible	Negligible	Negligible	Positive
	MSY = Undetermined	This level of landings was determined to be sustainable by the Data Poor Stocks Working Group and by the SSC.	The catch rate of non-target and bycatch species is very low. The lower TAC compared to that specified in the FMP would result in lower impacts than those analyzed in the FMP.	There is little data regarding impacts of deep-sea pots on the environment. Gear impacts on habitat are not known to be adverse. Impacts would be lower than those analyzed in the FMP.	Interactions with protected species are already very low and this level of fishing is expected to have no measurable impact on the probability that an interaction might occur.	This alternative would allow some expansion in landings compared to the average landings from 2002-2008. Effective management will provide positive long-term impacts.
	ABC = 1,775 mt (3.91 million lb)					
	ACL = 1,775 mt (3.91 million lb)					
	TAL* = 1,775 mt (3.91 mill lb)					
DAS = N/A						
Status Quo or No Action		Negligible	Negligible	Negligible	Negligible	Positive
	MSY = Undetermined	This level of landings was determined to be sustainable by the Data Poor Stocks Working Group and by the SSC.	The catch rate of non-target and bycatch species is very low. The lower TAC compared to that specified in the FMP would result in lower impacts than those analyzed in the FMP.	There is little data regarding impacts of deep-sea pots on the environment. Gear impacts on habitat are not known to be adverse. Impacts would be lower than those analyzed in the FMP.	Interactions with protected species are already very low and this level of fishing is expected to have no measurable impact on the probability that an interaction might occur.	This alternative would allow some expansion in landings compared to the average landings from 2002-2008. Effective management will provide positive long-term impacts.
	ABC = N/A					
	Target TAC = 1,775 mt (3.91 mill lb)					
DAS = 665**						

\*TAL - Total Allowable Landings refers to the portion of the ACL that can be landed.

\*\* Based on average landings-per-DAS charged (5,882 lb/DAS (2,668 kg/DAS) from FY 2005-2009.

DRAFT

## 2.0 BACKGROUND

The reauthorized MSA requires the Council to establish ACLs and AMs to assure that catches do not exceed the biologically sustainable levels. The NS 1 Guidelines expand upon the requirements in the law. The proposed modifications to the Red Crab FMP are intended to bring the FMP into compliance with the MSA. This document also proposes specifications for red crab for FY 2011-2013, as required by the MSA and the FMP. It also contains the supporting analysis required by the National Environmental Policy Act (NEPA) in an Environmental Assessment (EA), the Regulatory Flexibility Act (RFA) in an Initial Regulatory Flexibility Analysis (IRFA), and Executive Order (E.O.)12866 in a Regulatory Impact Review (RIR), and other applicable laws. NEPA requires the analysis of the "no action" alternative even if the "no action" alternative is not allowed under the law. The "no action" alternative provides a benchmark, enabling decision-makers to compare the magnitude of environmental effects of the action alternatives. Inclusion of such an analysis is necessary to inform the Congress, the public, and the President as intended by NEPA (Section 1500.1(a)).

### 2.1 Summary of items to include in FMPs related to NS1

The Councils must evaluate and describe the following items in their FMPs and amend the FMPs, if necessary, to align their management objectives to end or prevent overfishing (as specified at 50 CFR 600.310, NS 1 Guidelines):

- (1) Maximum sustainable yield (MSY), the overfishing level (OFL), and status determination criteria (SDC).
- (2) Optimum yield (OY) at the stock, stock complex, or fishery level and provide the OY specification analysis.
- (3) ABC control rule.
- (4) Mechanisms for specifying ACLs in relationship to the ABC.
- (5) AMs.
- (6) Stocks and stock complexes that have statutory exceptions from ACL. (Note: red crab does not have a statutory exception, so this part does not apply.)

#### 2.1.1 *Maximum Sustainable Yield (MSY)*

The MSA establishes MSY as the basis for fishery management and requires that: The fishing mortality rate does not jeopardize the capacity of a stock or stock complex to produce MSY; the abundance of an overfished stock or stock complex shall be rebuilt to a level that is capable of producing MSY; and, OY must not exceed MSY. MSY is the largest long-term average catch or yield that can be taken from a stock or stock complex under prevailing ecological, environmental conditions and fishery technological characteristics (e.g. gear selectivity).  $F_{MSY}$  is the fishing mortality rate that, if applied over the long term, would result in MSY.  $B_{MSY}$  means the long-term

average size of the stock or stock complex that would be achieved by fishing at  $F_{MSY}$ . Because MSY is a long-term average, it need not be estimated annually, but it must be based on the best scientific information available. When data are insufficient to estimate MSY directly, Councils should adopt other measures of reproductive potential that can serve as reasonable proxies for MSY,  $F_{MSY}$  and  $B_{MSY}$ , to the extent possible.

**The SSC has determined that “the information available for red crab is insufficient to estimate MSY or OFL.” Therefore, no MSY is established at this time.**

### ***2.1.2 Overfishing Limit (OFL)***

OFL means the annual amount of catch that corresponds to the estimate of the maximum fishing mortality threshold (MFMT) applied to a stock's abundance and is expressed in terms of numbers or weight of fish. OFL is an estimate of the catch level above which overfishing is occurring, and corresponds to the level that jeopardizes the capacity of a stock to produce MSY on a continuing basis. In contrast to MSY, which is a long-term average catch that does not vary with normal fluctuations in stock size, OFL goes up and down with variations in stock size. As such, OFL becomes the operational reference point that takes the place of MSY in setting annual specifications. OFL may be higher or lower than MSY, depending on whether a stock is above or below  $B_{MSY}$ .

The SSC has determined that “the information available for red crab is insufficient to estimate MSY or OFL.” In its report to the Council on April 28, 2010, the SSC concluded that “an interim ABC based on long-term average landings is safely below an overfishing threshold and adequately accounts for scientific uncertainty.”

### ***2.1.3 Status Determination Criteria (SDC)***

SDC mean the quantifiable factors, namely the maximum fishing mortality threshold (MFMT), OFL, and minimum stock size threshold (MSST), or their proxies that are used to determine if overfishing has occurred, or if the stock or stock complex is overfished. “Overfishing” pertains to a rate or level of removal of fish from a stock above the threshold rate, while “overfished” relates to biomass size below the threshold biomass. Overfishing is expected to lead to a stock being overfished. Overfishing may be occurring when a stock is not overfished and a stock may be overfished but not subject to overfishing. SDC must be expressed in a way that enables the Council to monitor each stock, and determine annually, if possible, whether overfishing is occurring and whether the stock is overfished. In specifying SDC, a Council must provide an analysis of how the SDC were chosen and how they relate to reproductive potential. Each FMP must specify, to the extent possible, objective and measurable SDC.

The NS1 Guidelines and the FMP take into consideration the data availability for different fisheries and leaves the decision on which data to use to the assessment scientists. The FMP defines overfishing as follows:

*Definition of Overfishing:* Overfishing is defined as any rate of exploitation such that the ratio of current exploitation to an idealized exploitation under MSY conditions exceeds a value of 1.0. The actual measure of exploitation used will be determined by the availability of suitable data (CPUE data, landings, etc.).

The most readily available SDC for red crab is landings. The FMP defines overfishing as landings that exceed MSY. In the case of red crab, MSY and OFL are undetermined. Therefore, no changes to the SDC for red crab are proposed in this action.

OY is a long-term average amount of desired yield from a stock, stock complex or fishery. The MSA defines optimum, with respect to the yield from a fishery, as the amount of fish which will provide the greatest overall benefit to the Nation, particularly with respect to food production and recreational opportunities, and taking into account the protection of marine ecosystems and which is prescribed as such on the basis of the maximum sustainable yield from the fishery, as reduced by any relevant economic, social, or ecological factor. OY must also provide for the rebuilding of overfished stocks to a level consistent with the production of maximum sustainable yield. The NS1 Guidelines state that "Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield (OY) from each fishery for the U.S. fishing industry." For red crab, MSY is undefined, therefore, so is OY.

When an estimate of OFL is available, ABC results from a reduction applied to OFL to account for scientific uncertainty in the estimate of OFL. In other words, the OFL may be overestimated, which would result in overfishing if the OFL were caught. Conversely, the OFL may be underestimated, which would result in underfishing if the catch were limited to the OFL. Some sources of scientific uncertainty would result in an estimate of OFL that was high in some years and low in others, while other sources of scientific uncertainty might have a consistent bias that would result in a similarly consistent high or low estimate of OFL. Whereas the precautionary principle stresses the fact that overfishing is likely to have more deleterious long-term effects than would underfishing, the NS1 Guidelines require the Council and its SSC to reduce the risk of overfishing that is associated with an uncertain OFL. The risk of overfishing is reduced by applying a buffer between OFL and ABC. ABC should be expressed in terms of catch, but may be expressed in terms of landings as long as bycatch and any other fishing mortality not accounted for in the landings are treated consistently in the determination of ABC and remain constant during the period of time covered by the specifications, as specified in 50 CFR 600.310(f)(3)(i). For stocks with low scientific uncertainty, ABC may equal, but may not exceed OFL. In the case of red crab, the SSC concluded that an ABC based on long-term average landings is safely below an undetermined OFL, and adequately accounts for scientific uncertainty, including an uncalculated level of dead discards, provided that the fishing operations regarding discarding do not change significantly.

The ABC control rule means a specified approach to setting the ABC in response to changes in stock status. Control rules are policies that define limits and set target fishing levels. Control rules are established by fishery managers in consultation with fisheries scientists, particularly the SSC. The determination of ABC should be based, when possible, on a probability of 50 percent or less, that a catch equal to ABC would result in overfishing. The ABC control rule must articulate how ABC will be set compared to the OFL based on the scientific knowledge about the stock, the scientific uncertainty in the estimate of OFL, and any other scientific uncertainty. An SSC may recommend an ABC that differs from the result of the ABC control rule calculation, based on factors such as data uncertainty, recruitment variability, declining trends in population variables, and other factors, but must explain why. The SSC was unable to recommend an ABC control rule for red crab; therefore, no control rule is established. The ABC for red crab should be considered an interim ABC, until otherwise modified by the SSC and the Council.

ACL may equal but cannot exceed the ABC, and may be set annually or on a multiyear basis. The buffer between ABC and ACL represents the expectation that the management system will be unable to constrain the catch to the ACL. If ACL were set equal to ABC and that expectation proved correct, the catch would exceed the ABC. ACL rather than ABC is the level of annual catch of a stock that serves as the basis for invoking AMs. In the case of red crab, the unique characteristics of the fishery reduce the likelihood that data concerning the actual catch will be wrong or delayed and that the management system will be unable to stop fishing when the desired catch is achieved. The relevant characteristics of the fishery include the small fleet size, the location of the resource beyond the depth range of most potential sources of bycatch, and reporting requirements for vessels and dealers. Therefore, for red crab, this action proposes to set the ACL equal to the ABC, as the management uncertainty is very low.

The TAL is the level of landings that the commercial red crab fleet would be permitted to land in a given year. It is a *öhardö* limit, in that the directed fishery would be closed for the year when the limit is projected to have been landed. For red crab, the total amount of catch (landings plus discards) is undetermined; therefore, this action proposes to monitor and manage the fishery primarily based on landings.

In addition to the fleet of limited access permit vessels, the FMP also includes provisions for an open access permit that allows a fishing vessel to possess and land up to 500 lb of whole weight equivalent red crab per fishing trip. Although several hundred fishing vessels initially requested and obtained this open access permit, total landings of red crab by vessels with an open access permit remain negligible relative to the landings by the limited access fleet. That's because the fishing grounds used by other fisheries do not overlap with areas of significant red crab densities.

#### *2.1.3.1 Accountability Measures (AMs)*

AMs are management controls that are intended to prevent the catch from exceeding ACLs, including sector ACLs, and to correct or mitigate overages of the ACL, if they occur. NMFS identifies two categories of AMs, in-season AMs that take effect before an ACL is exceeded, and AMs that take effect after an ACL has been exceeded. [**Note:** for purposes of this amendment, the two categories are referred to as “**proactive**” and “**reactive**” AMs, respectively].

##### *In-season or Proactive AMs*

FMPs should include in-season monitoring and management measures to prevent catch from exceeding ACLs. In-season AMs could include, but are not limited to: Triggers that bring about the closure of a fishery; triggers that bring about closure of specific areas; triggers that bring about changes in gear; triggers that bring about changes in trip size or bag limits; triggers that bring about reductions in effort; or, other appropriate management controls. FMPs should contain in-season closure authority, giving NMFS the ability to close fisheries if it determines, based on data that are deemed sufficiently reliable, that an ACL is projected to be reached, and that closure of the fishery is necessary to prevent overfishing (note that it is the probability of overfishing that increases as the ABC is approached or exceeded).

This action proposes to give the NMFS Regional Administrator authority to close the landing of red crab by limited access vessels when the Regional Administrator projects that the TAL is projected to have been achieved.

## Reactive AMs

On an annual basis, the NMFS must determine as soon as possible after the fishing year if an ACL was exceeded. If an ACL was exceeded, AMs must be implemented as soon as possible to correct the operational issue that caused the overage, as well as any biological consequences to the stock resulting from the overage when it is known (note that the risk of biological consequences increases as the catch exceeds ABC and approaches OFL, which is unknown in the case of red crab). These AMs could include, among other things, modifications of in-season AMs or overage adjustments. NS1 Guidelines require that if catch exceeds the ACL for a given stock more than once in the last four years, the system of ACLs and AMs should be re-evaluated, and modified if necessary to improve its performance and effectiveness. This action proposes two options for reactive AMs. The first option would require a reduction in the TAL for the limited access vessels in the year following any year when the landings of that fleet exceeded the TAL. The second option would require a reduction in the TAL for the limited access vessels in the second year following any year when the landings of that fleet exceeded the TAL. For catches in excess of the ABC resulting from a cause other than an excess of commercial, limited access landings beyond the TAL (e.g. unforeseen increase in bycatch in other fisheries), the Council would institute a framework action to address the source of the excess catch.

## 2.2 Status of the Stock

The management unit specified in the Red Crab FMP includes red crab (*Chaceon quinque-dens*) in U.S. waters of the Atlantic Ocean from 35° 15.3'N. lat. (the latitude of Cape Hatteras Light, North Carolina) northward to the U.S./Canada border. The most recent peer-reviewed scientific advice that is applicable to the red crab fishery was produced by the Data Poor Species Working Group (DPSWG) and the associated Peer Review Panel, which met in December 2008 and issued its report on January 20, 2009. The DPSWG was tasked with recommending biological reference points (BRPs), measurable BRPs and MSY proxies for several species, as well as advising on the scientific uncertainty and risks for the SSC to consider when recommending catch limits. The DPSWG was also asked to comment on what can be done to improve the information and assessments of the species involved in the review.

Red crab is considered a data poor stock in part because regularly scheduled research cruises do not sample the depths at which red crabs live. For that reason, there is a deficiency in fishery independent data. The primary sources of fishery independent data for the red crab resource consist of one combination camera and trawl survey that was done in 1974 and another that was done in 2003-2005. Fishery dependent data for red crab are influenced by more than just biological factors because the fishery is small and changes in individual vessel operations and market availability have a large influence on the fleet performance. Fishery dependent data are also influenced by the interpretation of VTR requirements by vessel captains, making it difficult to interpret VTR data at present. Additionally, there is uncertainty concerning discard rates, discard mortality, and biological trends in growth and recruitment. For these reasons, the DPSWG explored alternative methods of estimating sustainable yield for red crab.

The methods used by the DPSWG are explained in a working paper that is available at <http://www.nefsc.noaa.gov/publications/crd/crd0902> . The DPSWG produced estimates of sustainable yield that approximated recent and long-term average annual landings, leading the DPSWG to recommend a catch limit that mimics both recent and long term mean annual landings. Although the methods used by the DPSWG estimated sustainable yield, rather than *maximum* sustainable yield, the Review Panel recommended that MSY be set between 3.75 and 4.19 million lb (1,700 to 1,900 mt) based primarily on the congruence between long-term average landings and the results of sustainable yield estimates from the Depletion Corrected Average Catch Model (DCAC). This is a nearly 40% reduction from the MSY estimate of 6.24 million lb (2,830 mt) that guided the fishery between 2002 and 2008.

The PDT further analyzed the methodology employed by the DPSWG and determined that estimates of sustainable yield from the DCAC model are likely to be less than MSY. In its report to the Council on April 28, 2010, the SSC agreed that the PDT demonstrated that the DCAC model developed by the DPSWG provides an estimate of sustainable yield that underestimates maximum sustainable yield (MSY). The SSC, therefore, concluded that the information available for red crab is insufficient to estimate MSY or OFL. In lieu of an estimate of OFL, the SSC recommended an interim ABC based on the long-term average landings of male red crab. The SSC noted that the two survey estimates of abundance and their variance do not provide evidence of significant depletion from 1974 to 2003-2005. The SSC, therefore, concluded that the historical landings of male red crab and historical discarding practices appear to be sustainable and that an interim ABC based on long-term average landings (1,775 mt) is safely below an undetermined overfishing threshold and adequately accounts for scientific uncertainty.

The SSC further reported to the Council that a research plan is needed to improve the scientific basis of management. Specifically, estimates of MSY and OFL are needed to replace the interim ABC recommendation so that an ABC control rule can be based on OFL, its uncertainty and the Council's desired risk tolerance.

In most fisheries the ABC would include dead discards. In the red crab fishery the continuous monitoring of discards and discard mortality is not feasible and there is insufficient data to determine the historic level of discards that accompanied the historic landings that were used to establish the ABC. There is no reason to expect discards to increase compared to historical practices. Rather, the adoption of escape vents in traps and increasing knowledge of resource distribution can be expected to decrease discards. Improved handling practices, informed by cooperative research, has the potential to reduce discard mortality. The red crab industry recently received funding to develop and field-test an enhanced electronic catch recording system that promises to provide improved data on catch and effort by depth and location. The red crab industry has supported continuing research on all aspects of the fishery and the resource since the implementation of the FMP in 2002.

### **2.3 Current Management Measures**

NMFS issued regulations on October 10, 2002, implementing measures contained in the Red Crab FMP effective October 21, 2002 (67 FR 63222). Included in the measures was a limited access program for the directed fishery with a target TAC of 5.928 million lb and a DAS allocation of 780 fleet DAS. The target TAC was set at 95% of MSY, which was intended to achieve OY by

approximating the maximum economic yield. The regulations also require the Council to review the status of the deep-sea red crab stock and the fishery every year, and to prepare a Stock Assessment and Fishery Evaluation (SAFE) Report every three years, and specifications for MSY, OY, TAC, and DAS allocations at least every third year. Framework Adjustment (FW) 1 (August 31, 2005, 70 FR 44066) established a multi-year specifications process and established the specifications through FY 2007. The specifications established for FY 2007 were continued without action into FY 2008, as allowed under the regulations, because there was no new information that would have indicated a change to the specifications was required.

On April 6, 2009, NOAA's National Marine Fisheries Service (NMFS) implemented an emergency action for the red crab fishery that adjusted the target TAC and, as a result, the DAS allocations. The emergency rule was needed in order to be in compliance with NS 2 of the MSA by using the best available scientific information for this fishery, i.e., the results of the DPSWG that were released in January 2009. The emergency action reduced the MSY for red crab from 6.24 million lb established by the FMP to 3.75 million lb. The emergency action also established a new target TAC of 3.56 million lb and reduced the fleet DAS from 780 to 582. On August 24, 2009 the emergency rule was extended through February 28, 2010.

On May 14, 2010, NMFS published specifications for the red crab fishery for FY 2010 that had been developed by the Council based on recommendations received from the SSC on September 23, 2009. These regulations put in place a target TAC of 3.56 million lb (1,615 mt) and 582 fleet DAS, divided equally among the vessels that have not declared out of the fishery.

At the request of the Council, the SSC reconsidered its ABC recommendation for red crab at its March 16-17, 2010, meeting. On April 28, 2010, the SSC reported to the Council that it had concluded that "an interim ABC based on long-term average landings is safely below an overfishing threshold and adequately accounts for scientific uncertainty." The SSC recommended an interim ABC for male red crab landings of 3.91 million lb (1,775 mt). On June 22, 2010, NMFS published a proposed rule to implement the SSC's revised recommended catch level as the adjusted target TAC for the FY 2010 red crab fishery. This rule included a target TAC of 3.91 million pounds (1,775 mt) with a corresponding fleet DAS allocation of 665.

Other management measures that were not affected by the emergency action or the specifications for FY 2010, include: trip limits, trap/pot restrictions, a prohibition on landing more than an incidental level of female crabs (an experimental fishing permit currently in effect provides for limited harvesting of female crabs to support research on growth and fecundity), and restrictions on at-sea processing and mutilation. In addition, the specific permitting and reporting requirements that were implemented by the FMP, including an Interactive Voice Response (IVR) system for limited access vessels and Vessel Trip Reports (VTRs) that must be filled out by all vessels with a red crab permit were unchanged under the most recent rulemakings. A dealer reporting requirement also remains in effect. The regulations also provide for allocation of the fleet DAS equally among the limited access permit holders. Incidental catch trip limits remained at 500 lb per trip for non-limited access vessels. All of these management measures were intended either to prevent overfishing in the red crab fishery or to avoid the "race for fish" that can be stimulated by unrestricted competitive fishing for a quota.

The management specifications for the target TAC and DAS that are expected to be effective in FY 2010 are shown under the no action option in Table 2 in the Summary. The environmental impacts of the current measures, including the current management specifications, were previously analyzed in accordance with the National Environmental Policy Act (NEPA) and National Oceanic and Atmospheric Administration Administrative Order (NAO) 216-6, "Environmental Review Procedures for Implementing the National Environmental Policy Act."

## **2.4 Alternatives Considered**

The red crab fishery has undergone significant changes since the development and implementation of the FMP in 2002. One of the five limited access permits has been declared out of the fishery in each year since 2004. All of the permits are signatory to a cooperative harvesting agreement through which the permit holders endeavor to harvest the target TAC in the most economically beneficial manner consistent with the regulations. All permit holders share in the profits that accrue from the cooperative approach. The cooperative harvesting agreement reportedly requires member vessels to stop fishing when the target TAC has been landed. If the vessels abide by the harvesting agreement, the uncertainty that would normally surround a target TAC that is implemented through controls on DAS would be reduced. However, this cooperative agreement is not regulated or codified by NMFS.

This Amendment includes alternatives that bring the FMP into compliance with the requirements of the reauthorized MSA. The Amendment therefore modifies the specification-setting process to incorporate the SSC role in recommending an ABC to the Council. The Amendment includes an alternative that would establish a TAL that would be implemented as a hard landings limit. The Amendment also includes alternatives for proactive and reactive accountability measures. The Amendment also includes alternatives that would eliminate measures that regulate fishing strategy, such as DAS and trip limits. This action also proposed an alternative that would replace the prohibition on landing more than one tote of females with a procedure through which the harvest of females would be determined on the basis of scientific information and a recommendation from the SSC and a vote by the Council, as is the case with male red crab. This alternative was considered and rejected.

## **3.0 PURPOSE AND NEED OF ACTION**

The need for this action is to comply with provisions of the MSA that require the Council to establish an annual catch limit and accountability measures. The FMP also requires the Council to review the status of the stock and the fishery every year and to prepare a SAFE Report and set the target TAC and DAS specifications at least every three years. Whereas the best scientific information available was still being analyzed when the SAFE Report and specifications for FY 2010 were being prepared, this action is needed to implement specifications for FY 2011 through 2013.

The purpose of this action is to set appropriate specifications to ensure that the landings do not exceed sustainable levels, including the ABC recommended by the SSC and an ACL set by the Council.

## 4.0 MANAGEMENT MEASURE ALTERNATIVES

**Table 5- Management Alternatives under Consideration.**

SECTION		ALTERNATIVES	OPTIONS
4.1	Effort Control Alternatives		
4.1.1		Hard TAL without DAS	
4.1.2		Status Quo/No Action Alternative (Target TAC with DAS)	
4.2	Trip Limit Alternatives		
4.2.1		Eliminate Trip Limits	
4.2.2		Status Quo/No Action Alternative (Maintain trip limits)	
4.3	Trap Limit Language Alternatives		
4.3.1		Modify Trap Limit Regulatory Language	
4.3.1.1		Status Quo/No Action Alternative (Maintain existing trap limit language)	
4.3.2	Accountability Measures		
4.3.2.1		Proactive AMs	
4.3.2.2			In-season closure authority
4.3.3		Reactive Accountability Measures	
4.3.4			Next Year In-Season Adjustment Option
4.4			"Leap-frog" Specifications Adjustment Option
4.4.1		Combinations of both Proactive and Reactive AMs	
4.4.2		Status Quo/No Action (Payback provisions in FMP would continue)	
4.6	Modifications to the Specification-Setting Process		
		Modify the Specification-Setting Process to Include the SSC	
		Status Quo/No Action (Does not mention the	

		SSC)	
	Considered But Rejected Alternatives		
4.7	Measures to Control the Landing of Female Crabs		
4.8		Remove the prohibition on landing more than one standard tote of female crabs and bring female crabs into the procedure for setting ABC and ACL, separate from that for males.	
		Status Quo/No Action This option would maintain the prohibition on landing more than one standard tote of female crabs.	
4.9	Preferred Alternatives		
4.10	Rationale for Preferred Alternatives		

#### 4.1 Effort Control Alternatives

##### 4.1.1 *Hard TAL without DAS Alternative*

This alternative would eliminate the target TAC and DAS controls that are currently in the FMP and replace them with a TAL in the form of a landings limit. The hard TAL alternative responds to industry concerns about the problematic nature of DAS controls in terms of business planning, flexibility, operational safety, and capability to allow the fleet to catch the ACL/TAL without exceeding it. The ACL and TAL would be set by the specifications. This alternative would include authority for the Regional Administrator to close the landing of red crabs by limited access vessels when landings are projected to achieve the TAL.

##### 4.1.2 *Status Quo/No Action Alternative*

This alternative would maintain the combination of a target TAC and DAS that are currently in the FMP.

## **4.2 Trip Limit Alternatives**

### **4.2.1 *Eliminate Trip Limits***

This alternative would eliminate the trip limits that are currently in the FMP.

### **4.2.2 *Status Quo/No Action***

The Status Quo/No Action alternative would maintain the trip limits that are currently in the FMP.

## **4.3 Trap Limit Regulatory Language Alternatives**

### **4.3.1 *Modify the Regulatory Language Pertaining to Trap Limits***

### **4.3.2 *Status Quo/No Action Alternative (Maintain Existing Regulatory Language Pertaining to Trap Limits)***

## **4.4 Accountability Measures**

### **4.4.1 *Proactive Accountability Measures***

#### **4.4.1.1 *In-season Closure Authority Granted to the Regional Administrator.***

This action would give the Regional Administrator the authority to close the landing of red crab by the limited access fleet when landings were projected to reach the TAL. . Vessels at sea when the closure is announced would be allowed to complete their trips, with the expectation that their landings would not cause the TAL to be exceeded. The Council believes that the procedures for closing the fishery can be streamlined by allowing the Regional Administrator to close the fishery by direct notice to the fishery participants. Further, the Council believes that the subsequent closure announcement to the public via publication in the *Federal Register* should not impede prompt closure of the fishery, but should be accomplished on as timely a basis as practicable.

This alternative proposes prompt closure of the fishery by authorizing the Regional Administrator to 1) determine, on the basis of information received from Federal dealers, when the TAL will be reached, 2) notify both the permit holder and operator of each fishing vessel of the specific date after which fishing for red crab above the incidental limit would be prohibited, and 3) make the closure notice announcement not less than 24 hours prior to the effective date of the closure.

### **4.4.2 *Reactive Accountability Measures***

#### **4.4.2.1 *Next Year In-Season Adjustment Option***

Under this option, after the end of the fishing year, NMFS would determine whether the limited access red crab fleet had exceeded the ACL. If the ACL had been exceeded, NMFS would use the appropriate rule-making procedure to adjust the specifications for the year following the overage to pay back the overage on a pound for pound basis.

#### **4.4.2.2 *“Leap Frog” Specifications Adjustment Option***

Under this option, an overage in one year would be paid back on a pound for pound basis by adjusting the specifications for the second year following the overage.

#### ***4.4.3 Combinations of Both Proactive and Reactive AMs***

This alternative would combine the in-season closure authority with one of the reactive AM options.

#### ***4.4.4 Status Quo/No Action Alternative***

This alternative would leave in place the provisions in the FMP that give the Regional Administrator the authority to adjust fishing days to achieve the target TAC and to make in-season adjustments to the specifications for purposes that are consistent with the Atlantic Deep-Sea red crab FMP objectives and other FMP provisions.

### **4.5 Specification Setting Process and Components Alternatives**

#### ***4.5.1 Modify Process for Setting Specifications***

The current regulations define the "Process for setting specifications" in 50 CFR 648.260. This process requires minor modifications to be in compliance with new requirements of the MSA. This alternative would require the SAFE Report prepared by the PDT every three years, together with recommended specifications, to be presented to the Council's SSC for review prior to presentation to the Council. As outlined in the NS 1 and 2 Guidelines, the SSC shall recommend an ABC to the Council after the Council has informed the SSC concerning the acceptable level of risk of exceeding the OFL that the Council wishes to use. Any recommended changes to the specifications resulting from the PDT's annual review of the status of the stock and the fishery shall also be submitted to the SSC.

#### ***4.5.2 Status Quo/No Action Alternative***

The Status Quo/No Action Alternative for the specification setting process would leave in place the current process, which does not require the SSC to recommend an ABC to the Council.

#### ***4.5.3 Modified Specification Components Alternative***

This alternative would add ABC, ACL, and TAL to the Specification Components. The components of the specifications will include the following values as long as they continue to be regulated by the FMP:

- ABC
- ACL
- TAL
- TTAC
- DAS

#### 4.5.4 *Status Quo/No Action Alternative*

The Status Quo/No Action Alternative for the Specification Components would leave in place the current components of the specifications, which do not include ABC, ACL, and TAL.

### 4.6 **Considered But Rejected Alternatives**

#### 4.7 **Landing of Female Crabs**

This option proposed the elimination of the prohibition on landing female crab in excess of one standard tote conditioned on a recommendation from the SSC concerning the inclusion of female crab in the ABC and Council approval of specifications that include female crab. Under this alternative, the landing of female crabs would be treated similarly to the landing of male crabs in terms of scientific advice. The PDT would provide information to the SSC that the SSC would use to recommend or not recommend an ABC for female crabs. If the council wanted to allow the landing of female crab, it would include an ACL for females in the specifications. If the PDT and the SSC determined that the harvest of female crabs was not desirable in any year, the ACL could be set to zero or as close to zero as is practicable. In any year in which the ACL was zero, the landing of female crabs would be limited to one standard tote per trip to allow for inadvertent retention of an incidental number of females.

#### 4.8 **Preferred Alternatives**

TBD

#### 4.9 **Rationale for Proposed Management Measures**

Goal 2 of the red crab FMP is to create a management system so that fleet capacity will be commensurate with resource status so as to achieve the dual goals of economic efficiency and biological conservation. Economic efficiency is enhanced by the ability of businesses to adjust the production process to obtain the combination of inputs that produces the highest value of production for the least cost. With a stable fishery that is driven largely by market demand and a change to a hard TAL control, DAS as effort controls are no longer necessary.

The FMP currently includes a **trip limit** that was based on a perceived need to minimize the potential for a derby fishery that may be associated with the setting of a TAC. The FMP also points out that trip limits would contribute to inefficiency in the red crab fleet. The FMP also indicates that trip limits have disproportionate effects by vessel size class, creating more inefficiencies for larger vessels than for smaller vessels. The FMP states that higher productivity vessels are more constrained by trip limits compared to vessels with lower LPUE and that trip limits are likely to make trip costs higher than necessary for more productive vessels. The FMP also notes that trip limits help to control fishing effort and fishing mortality when combined with DAS limits and that trip limits would not be necessary if the calculation of DAS were accurate. If the Hard TAL alternative is adopted, the role of trip limits in controlling fishing mortality becomes moot.

The red crab industry has requested the removal of the trip limits to allow the fleet to adopt the most efficient harvesting strategy. Potential cost savings include reductions in fuel consumption

per pound of crab landed and reduced steaming time for red crab crews and vessels. Industry concerns about increases in fishing capacity stimulated by competitive fishing that existed when the FMP was initially developed no longer exist. The fishery has stabilized at 3-4 active vessels. The requirements of the processing sector make it unlikely that a derby fishery would develop. At present, all of the vessels participate in a cooperative harvesting agreement through which all permit holders share in any increased profits that result from savings in harvesting costs. Under current and reasonably foreseeable conditions in the red crab fishery, permit holders believe that there are no longer any benefits from trip limits and that the increased costs associated with trip limits are not justifiable.

The red crab industry has requested a modification of the **trap limit** language in the regulations. Another reason to consider a modification to the trap limit language is that some of the restrictions apply when on a red crab DAS. If the Council adopts the Hard TAL with No DAS Alternative, the regulations that restrict trap numbers and trap design when fishing under a red crab DAS will require modification or will become moot. The intent of the industry request is not to increase the number of crab traps that a red crab vessel can fish, but to allow vessels with both a limited access red crab permit and a limited access lobster trap permit to resume the fishing strategy that was employed before the implementation of the red crab FMP. Prior to the FMP, a red crab vessel could haul red crab traps on the same trip that it hauled lobster traps, increasing efficiency and saving costs during the switchover from one fishery to the other. The red crab regulations, apparently inadvertently, made that strategy illegal.

The red crab regulations currently state that: "No vessel may haul or harvest red crab from any fishing gear other than red crab traps/pots, marked as specified by paragraph (a)(5) of this section, when on a red crab DAS." The prohibition on hauling gear other than specifically marked red crab traps is the troublesome phrase in this regulation. The apparent intent was to prevent red crab vessels from getting around the trap limit and other gear restrictions by harvesting red crabs with other gear.

The regulations further state that: "A vessel owner or operator of a vessel that holds a valid limited access red crab permit may fish with, deploy, possess, haul, harvest red crab from, or carry on board a vessel, up to a total of 600 traps/pots when fishing for, catching, or landing red crab." This regulation is troublesome for combination vessels because they are prohibited from fishing lobster traps in excess of their 600 crab traps when they are on a red crab DAS, or have red crabs on board.

The regulations further state that: "No person may haul or remove lobster, red crab, or fish from parlor traps/pots when fishing under a red crab DAS." If DAS are eliminated as a component of the red crab management program, a plain reading of the regulation would indicate that the prohibition on the use of parlor traps/pots in the red crab fishery would also expire. The intent is to keep the prohibition on parlor traps, which provides an easily identifiable distinction between red crab and lobster traps.

The following proposed language would eliminate the problem facing combination boats and would maintain the intent of the red crab gear restrictions:

- 1) No limited access red crab vessel may harvest red crab from any fishing gear other than red crab traps/pots, marked as specified by paragraph (a)(5) of this section.
- 2) A vessel owner or operator of a vessel that holds a valid limited access red crab permit may not deploy more than 600 traps/pots in water depths greater than 400 meters (219 fathoms) and may not harvest red crab in water depths less than 400 meters.
- 3) No limited access red crab vessel may deploy parlor traps/pots in water depths greater than 400 meters (219 fathoms).

**Female red crab** are an unavoidable and potentially valuable part of the catch. Until recently, there was no market for female red crab because the average size of females is below that which makes them attractive for processing for meat. There is now interest in female crab for specialty markets. The biomass of both male and female red crabs increased between the 1974 and 2003-2005 surveys. Some harvest of female crab may be sustainable. The alternative that removes the prohibition on landing more than a standard tote of female crabs would have created a procedure by which the PDT and the SSC would develop specifications for female crab in a manner similar to that which develops specifications for male crabs. The SSC discussion and report to the Council implied that the SSC required an explicit decision by the Council to indicate that the Council intended to change the harvest strategy that has limited the fishery to males only before the SSC would undertake to establish the scientific basis for a female harvest. This alternative was considered an rejected at this time but the Council may consider this proposal in a future action.

#### **4.10 The ABC Control Rule**

Fishery independent data on the red crab resource is lacking because most surveys do not extend into the depths at which red crab are found. On April 28, 2010, the SSC reported to the Council that "the best scientific information available for red crab is insufficient to advise on an ABC control rule." Therefore, no ABC control rule will be implemented for red crab at this time. Until such time as sufficient scientific information becomes available, an interim ABC will be used for red crab.

### **5.0 PROPOSED 2011-2013 SPECIFICATIONS**

The proposed action would specify ABC, ACL, and a TAL for FY2011-2013. The specifications are dependent upon the selection of preferred alternatives by the Council. The examples below indicate how the specification may be structured, however, they are subject to change in order to implement the Council's intended management measures

#### **5.1 Specifications Under the "Hard TAL with No DAS" Alternative**

The "Hard TAL with No DAS" alternative recognizes that the SSC could not determine MSY and OFL. This alternative sets ABC, ACL, and TAL at 3.91 million lb (1,775 mt) of male crab landings.

**Table 6 – Specifications under the "Hard TAL with No DAS" alternative (specifications apply to landings of male crabs).**

	Hard TAL, No DAS Specifications
MSY (mt)	Undetermined
OFL (mt)	Undetermined
OY (mt)	Undetermined
ABC (mt)	1,775
ACL (mt)	1,775
Target TAC (mt)	n/a
Fleet DAS	n/a
TAL (mt)	1,775

## 5.2 Specifications Under the No Action/Status Quo Alternative

The No Action/Status Quo alternative would leave in place the MSY and OY values in the FMP and would continue the target TAC and DAS values specified for FY2010 as shown in Table 7.

**Table 7 - Specifications under the No Action/Status Quo Alternative (specifications apply to landings of male crabs).**

	No Action/ Status Quo
MSY (mt)	2,830
OFL (mt)	Undetermined
OY (mt)	2,688
ABC (mt)	1,775
ACL (mt)	n/a
Target TAC (mt)	1,775
Fleet DAS	665
TAL (mt)	n/a

## 5.3 Rationale for Proposed Specification Alternative

TBD when the Council selects a preferred alternative.

## 6.0 AFFECTED ENVIRONMENT

This section is a description of the Affected Environment supporting this action. A complete description of the affected environment was part of the Red Crab FMP and Environmental Impact Statement (EIS) (NEFMC, March 2002: Section 8.0). Any new information collected about the status of the stock that has undergone peer review, or the economic and social changes that have occurred since the implementation of the FMP, are described in this section. There is little new biological information that would suggest that red crab distribution has changed since the FMP was implemented.

The Valued Ecosystem Components (VECs) potentially affected by the alternatives include the target species (red crab), non-target/bycatch species, habitat including EFH, protected resources, and human communities, all of which are described below.

## 6.1 Biological Factors

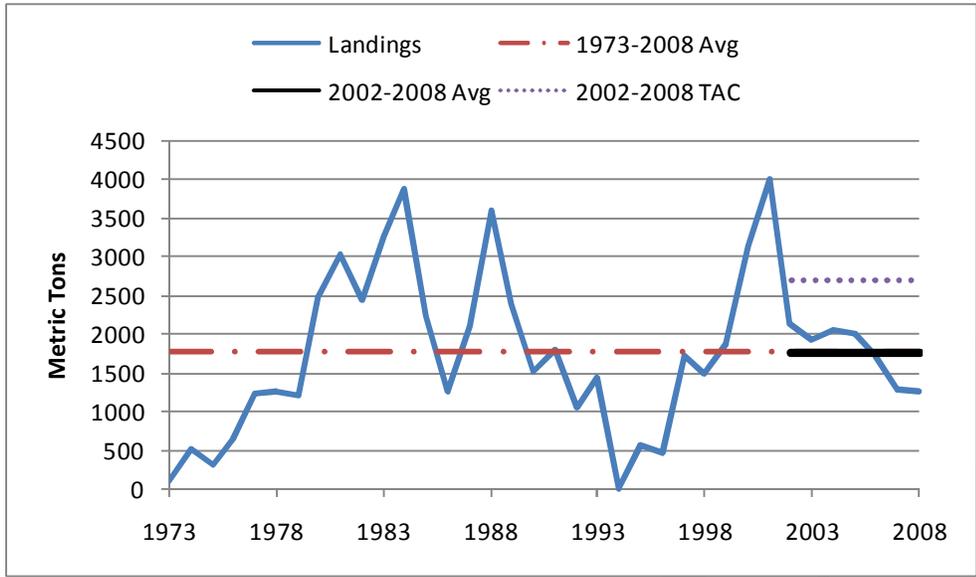
### 6.1.1 Target Species

In general, the Atlantic deep-sea red crab (*Chaceon quinque-dens*) is a slow-growing crustacean. Serchuk and Wigley (1982) estimated a life span of fifteen years or more, implying a natural mortality rate of 0.2. Recent assumptions concerning natural mortality suggest that red crabs may live considerably longer than fifteen years.

The red crab is patchily distributed along the continental shelf edge and slope of the western Atlantic, primarily at depths of 400-1800 meters. A genetically distinct stock of *Chaceon quinque-dens* exists in the Gulf of Mexico (Weinberg et al., 2003). A closely related species, *Geryon maritae*, is also commonly referred to as red crab and supports a fishery off the west coast of Africa (Melville-Smith 1989). Juvenile red crab live in deeper waters than adult red crab, and for the majority of the year, males are generally distributed in deeper waters than females.

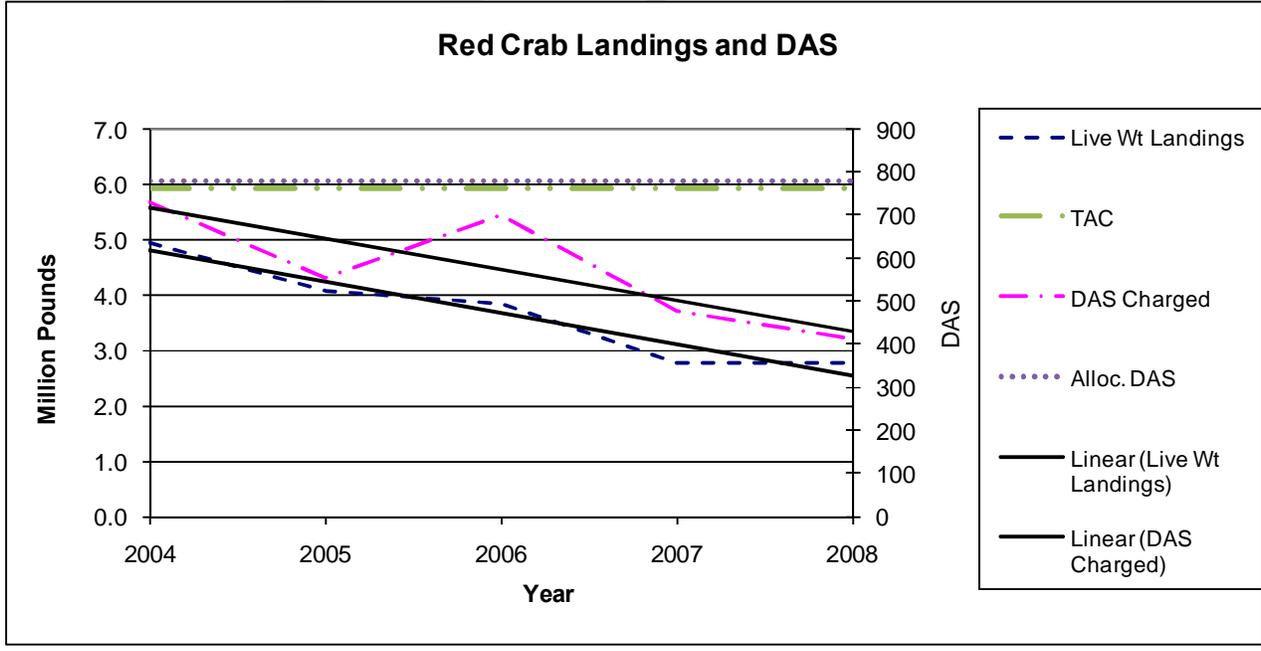
Since implementation of the FMP in 2002, the biological and economic information about the red crab resource and fishery has been updated in the 2004 SAFE Report, through the 2006 Stock Assessment Workshop, and through the January 2009 DPSWG and Review Panel Report. These reports provide additional data to supplement the red crab assessment completed over 30 years ago (Wigley et al, 1975). Researchers have used both trawl- and camera-based sampling methods to determine whether the abundance, size structure, and sex composition of the population has changed since the 1974 survey. Preliminary findings suggest that the overall population density estimates of red crab are higher than the previous survey, but the proportion of large male red crabs (larger than 114 mm carapace width (CW)) is less than the 1974 survey (Wahle et al., 2004). Whereas the 1974 survey represented an unexploited stock, a reduction in size composition of males subject to fishing would be expected with any level of exploitation. The apparent market-shift down to smaller male red crabs (90+ mm CW) indicates that the market as it existed in prior years is unlikely to serve as an appropriate constraint on the minimum size of landed red crabs. The red crab fishery obtained Marine Stewardship Council Certification in September 2009. The concern for the decline in the proportion of large males was reflected in the conditions placed on Marine Stewardship Certification for the red crab fishery, including a requirement that the red crab industry increase the average size of male red crab in the landings.

Landings in the red crab fishery have fluctuated widely since the 1970s, when the fishery began. From 1978 through 1990 the predominant red crab fleet operated out of Fall River, MA and was responsible for most of the landings during those years.



**Figure 1- Live weight red crab landings 1973-2008 showing multi-year average landings and the target TAC that was in effect from 2002 through 2008.**

In recent years, landings have decreased from over 4 million lb in 2005 to less than 3 million lb in 2007 and 2008. Members of the Red Crab Advisory Panel report that the decline in landings is the result of reduced market demand, rather than lower availability of marketable red crabs. The trend in DAS matches the trend in landings, supporting the industry explanation for the decline in landings (Figure 2). Note that red crab DAS are charged on a calendar day basis. That is, for any day or portion of a day fished, DAS are charged as a whole day.



**Figure 2 – Red crab landings and DAS charged 2004-2008.**

Section 3.1.2.1 of the 2004 SAFE Report describes the bycatch of red crab in other fisheries from the data available. As mentioned in the FMP, there may be considerable potential for bycatch of red crab in the offshore monkfish fishery, but the program under which monkfish trawl vessels would be allowed to fish in the primary red crab fishing area qualified zero vessels, significantly reducing the likelihood that monkfish vessels would impact the red crab resource.

More recently, Amendment 1 to the tilefish FMP prohibited bottom-tending mobile gear from four submarine canyons along the edge of the continental shelf off New England. These closures reduce the likelihood that monkfish or other deep-water trawl fisheries would catch significant quantities of red crab. If other fisheries extend their operations into red crab habitat, more research through observers will be needed to determine the level of red crab bycatch in other fisheries. At present the bycatch of red crab in other fisheries is minimal and insignificant.

Additional information on red crab bycatch in other fisheries and estimated discard mortality was compiled for the purpose of including dead discards in the estimate of ABC. The SSC deemed this information to be insufficient to determine the magnitude of discards and discard mortality but concluded that the historical level of discards was sustainable in combination with the long-term average landings.

#### 6.1.1.1 *Overfishing Definition*

The Red Crab FMP/EIS established criteria to determine whether the red crab stock was either in an overfished condition, subject to overfishing, or both. The previously approved overfishing and overfished definitions are as follows:

*Definition of Overfishing:* Overfishing is defined as any rate of exploitation such that the ratio of current exploitation to an idealized exploitation under MSY conditions exceeds a value of 1.0. The actual measure of exploitation used will be determined by the availability of suitable data (CPUE data, landings, etc.).

*Definition of Overfished:* The red crab stock will be considered to be in an overfished condition if one of the following three conditions are met:

Condition 1 ó The current biomass of red crab is below  $\frac{1}{2} B_{MSY}$  in the New England Council's management area.

Condition 2 ó The annual fleet average CPUE, measured as marketable crabs landed per trap haul, continues to decline below a baseline level ( $\frac{1}{2} CPUE_0$ ) for three or more consecutive years.

Condition 3 ó The annual fleet average CPUE, measured as marketable crabs landed per trap haul, falls below a minimum threshold level ( $\frac{1}{4} CPUE_0$ ) in any single year.

The current status of red crab with respect to the definition of overfishing and the definition of overfished is shown in Table 8. Application of both of these definitions is dependent upon the availability of suitable data on which to determine whether overfishing is occurring or the stock is overfished. The FMP/EIS established two types of proxies that could be used to assess whether overfishing is occurring. The first, in its simplest form, relies upon a comparison of current landings, adjusted for current fleet average CPUE, with MSY, adjusted for the expected CPUE

under MSY conditions. If CPUE data are not available, the second proxy allows for a straightforward comparison of current landings to MSY (i.e., if the ratio  $L:MSY > 1.0$ , then overfishing is considered to be occurring; otherwise, overfishing is not considered to be occurring). Using this proxy, it is possible to make at least a crude assessment of whether overfishing is occurring in the red crab fishery, as landings are always known and the FMP developed an estimate of MSY.

In order to make an assessment as to whether the red crab stock is overfished, either an estimate of current biomass or fleet average per trap haul CPUE is required. Red crab vessels fill out VTRs that include information on catch and fishing effort, but that information is not easy to analyze and is not regularly used to determine trends in CPUE. At the time the FMP/EIS was developed, it was expected that NMFS and the industry would implement a voluntary sub-sampling protocol to collect trap-level data for a representative sample of trap hauls on each red crab fishing trip. The purpose of this sub-sampling was to collect data on per trap CPUE, derived from the number and size of all crabs (male, female, and juvenile) brought up in the sampled trap, and the composition of any bycatch also brought up in the sampled trap. Averaged across all trips by all participating vessels, the intent was to be able to estimate an annual fleet-wide per trap CPUE, which could be used in assessing the status of the red crab stock. Unfortunately, this sub-sampling program has yet to be initiated, although progress is being made in the development of an appropriate protocol through a study currently in progress by Dr. Richard Wahle of the University of Maine, in collaboration with Dr. Yong Chen and Jon Williams (New England Red Crab Harvesters Association.)

**Table 8- Current Overfishing Definition Reference Points and Status for Red Crab.**

Definition	Criteria	Reference Point	Proxy	Value	Status
Overfishing	F	F:FMSY > 1	CPUE MSY: CPUE L	Not Available	Overfishing Not Occurring
			L* : MSY	0.67-.74	
Overfished	B	B < ½ BMSY	None	Not Available	Unknown
	CPUE	CPUE < ½ CPUE0	N/A	Not Available	
		CPUE < ¼ CPUE0	N/A	Not Available	

\*Landings

*6.1.1.2 Current Stock Status*

*6.1.1.3 Description of Resource and Current Data Collection Efforts*

The stock of red crabs is patchily distributed along the continental shelf edge and slope of the western Atlantic at depths of 400-1800 meters between Emerald Bank, Nova Scotia and the Gulf of Mexico, as well as parts of the Gulf of Maine. The physical environment is described in more detail in Section 8.2.1 of the Red Crab FMP. Overall, the continental slope north of Cape Hatteras contains many submarine canyons and small gullies.

The biological environment is described in more detail in Section 8.1 of the Red Crab FMP. Early reports indicated that red crabs may live for fifteen years or more and they are slow growing (Serchuk and Wigley, 1982). More recent scientific opinion seems to favor a longer life span and a lower natural mortality rate. Since 2001, almost 11,000 red crabs have been sampled dockside. These port samples are used to monitor the size and sex distribution of catch. Based on a comparison of information from the late 1970s with current port sampling data, size at recruitment appears to have decreased from 114 mm CW (Serchuk, 1977) in 1977, thought to be a minimum landed size, to a mean width very close to 102 mm CW (Table 9). The proportion of male red crabs landed that are smaller than 102 mm CW, the recruit size stated in the FMP, increased steadily from 2001 through 2007 and then declined in 2008. These results may suggest that the availability of large males for harvest may be down, or the selectivity practiced by the industry has changed and the boats have been landing smaller red crabs than the FMP anticipated. Either way the size and sex distribution of the catch is important to monitor. NMFS (2006) calculated fishery selectivity for red crab during 2004-2005 and determined that selectivity was near 0% at sizes less than 80 mm CW and increased rapidly to nearly 100% by 120 mm CW. The size at 50% selectivity was determined to be about 90-94 mm CW.

A small percentage of the total landings sampled were female; the FMP prohibits the landing of female red crabs in more than incidental levels (no more than 1 standard tote, or 100 lb, per trip.)

**Table 9– Summary of red crab carapace width (mm) from port sampling measurements of landed crabs. (Source: NMFS Commercial Fish Data, 2009)**

<b>Year</b>	<b>Male</b>	<b>Female</b>	<b>Unknown</b>	<b>%female</b>	<b>Total samples</b>	<b>Mean width</b>	<b>%&lt;102mm</b>
2001			243		243	108.4	17.3
2002	362	5	883	0.40	1250	106.4	27.4
2003	1477	7		0.47	1484	104.9	34.4
2004	1228	8		0.65	1236	107.2	26.3
2005	1729	12		0.69	1741	104.0	38.7
2006	1671	15	100	0.85	1786	102.1	52.5
2007	1431	6	207	0.37	1644	101.0	54.9
2008	1307	1	185	0.07	1493	111.4	27.9

The red crab industry has supported research efforts aimed at improving data availability for red crab. In 2003-2005, data were collected to update the first red crab assessment completed in 1977. Dr. Richard Wahle (Bigelow Laboratories), Dr. Yong Chen (University of Maine) and Jon Williams (F/V Krystle James) received funding from several sources to gather demographic information on the red crab resource in order to develop an updated stock assessment of the resource. The researchers used both trawl and camera-based sampling methods to determine whether the abundance, size structure, and sex composition of the population has changed since the 1974 survey. The findings suggest that the overall population density estimates of red crab are higher than the previous survey, but the proportion of males larger than 114 mm CW is less than the 1974 survey.

In addition, this research team has tagged approximately 8,000 red crabs since 2003. The tag return rate has been very low so far, but based on the crabs with tags that have been returned, there is very little evidence of growth (Wahle et al, 2004). Size distribution, growth data, and fishing mortality rates are important to monitor in order to prevent recruitment overfishing.

In July 2009, NMFS approved an exempted fishing permit for up to four red crab vessels. The permit allows the taking of a limited number of female red crabs (no more than 1 million lb, over two years) and is intended support additional data collection that meets the following objectives:

- 1) Characterize regional variability in the reproductive characteristics of the red crab population along the geographic range of the fishery on the New England and mid-Atlantic shelf break;
- 2) Conduct tagging to evaluate growth rates that will facilitate the development of growth and yield and egg production models for the fishery; and
- 3) Develop yield and egg per recruit models to identify potential biological reference points for red crab stock assessment and to evaluate impacts of fishing on the female red crab resource.

The genetic subdivisions of red crabs in the North Atlantic and the Gulf of Mexico have been assessed (Weinberg et al., 2003). Genetic differences between red crabs in the Gulf of Mexico and southern New England were large enough to conclude that they are different fishery stocks. More locations need to be sampled from the Gulf of Mexico to the Gulf of Maine to get a better understanding of the pattern of divergence.

## 6.1.2 *Bycatch*

### 6.1.2.1 *Bycatch of red crab in other fisheries*

Red crab inhabit water depths of 400-800 meters. This depth range is beyond that in which most fishing activity with the potential for red crab bycatch takes place. The most recent analysis of bycatch of red crab in other fisheries can be found in the 2010 Fishing Year Specifications (March 1, 2010 to February 28, 2011) and Stock Assessment and Fishery Evaluation (SAFE) Report, available on the Council web site at <http://nefmc.org/crab/index.html>.

### 6.1.2.2 *Bycatch of other species in the red crab fishery*

There is very little bycatch of other species in the red crab fishery. In general, the red crab fishery has little interaction with non-target species and does not have significant levels of bycatch, if any. The 2005 SAFE report (Section 4.1.2.2) explains that initial reports from industry members indicate that there is very little, if any, bycatch of other species in the directed red crab fishery. The VTR database indicates that lobster and Jonah crab are rare bycatch species. The FMP did identify that the bycatch of red crab in other fisheries may be a more significant issue.

Tallack (2007) investigated bycatch in the red crab fishery and reported that: "From 450 gear trial trap hauls, a total of 16 non-target organisms were recorded; this equates to 0.001% of the total catch of target species ( $n = 11\ 257$ ). The organisms captured included golden crab (*C. fenneri*,  $n = 2$ ), Jonah crab (*Cancer borealis*,  $n = 8$ ), unidentified whelk spp. ( $n = 3$ ), ocean pout (*Macrozoarces americanus*,  $n = 1$ ), and wrymouth (*Cryptacanthodes maculatus*,  $n = 1$ )."<sup>1</sup>

## 6.1.3 *Canadian Red Crab Fishery*

The northern edge of red crab distribution is in deep waters off Nova Scotia; therefore, it is important to also monitor the Canadian red crab fishery and trends in stock status within Canadian waters. The fishery in Canada began in the late 1960s, but has been sporadic over the years. In 1998, there were five exploratory licenses for red crab in Canada. The fishery is managed with size and effort controls with a TAC, and there is 100% dockside monitoring. The fishing grounds were considered fully exploited with evidence of stock depletion in 2005. According to the Canadian Department of Fisheries and Oceans (DFO), landings and effort (number of trips) have increased slightly in recent years (2001, 2002 and 2003), but the fishery is described as prone to short periods of abundance followed by periods of low abundance. The Council's Advisory Panel reports that the Canadian red crab license holders have not been active in recent years. Table 10 describes the landings of red crab by the limited number of license holders in Canada. Most of the reported effort is from NAFO areas 4X, 5ze and 4W (Figure 3).

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<sup>1</sup> The discrepancy between the 16 non-target organisms indicated and the 15 listed is noted.

Table 10– Annual Landings in the Canadian Red Crab Fishery (Source: DFO)

Year	Landings
1996	683.2 mt (1,506,198 lb.)
1997	343.7 mt (757,729 lb.)
1998	25.7 mt (56,659 lb.)
1999	32.0 mt (70,548 lb.)
2000	54.6 mt (120,372 lb.)
2001	123.5 mt (272,271 lb.)
2002	66.5 mt (146,607 lb.)
2003 (PRELIMINARY DATA)	74.9 mt (165,126 lb.)

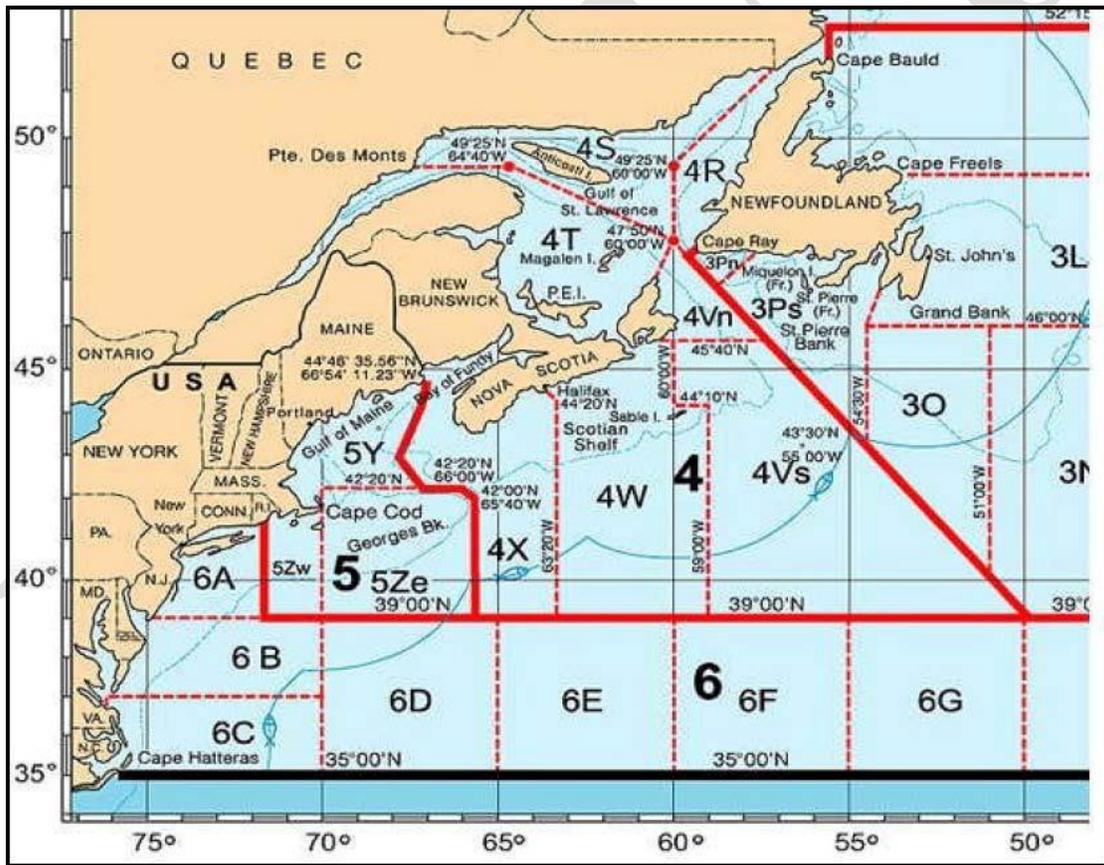


Figure 3 – NAFO Statistical Areas

Source: NAFO website <http://www.nafo.ca/About/Frames/AbFrMand.html>

## 6.2 Ecological Factors

### 6.2.1 Essential Fish Habitat (EFH)

#### 6.2.1.1 Red Crab

The EFH designation for red crab has not changed since implementation of the FMP; however, the designations for red crab EFH are being reevaluated as part of the next Omnibus Habitat Amendment, a multi-year process to review and update all EFH designations, as well as other requirements related to essential fish habitat regulations. This Amendment is not yet implemented. The proposed Omnibus Habitat Amendment prepared by the NEFMC does recommend some additions to red crab EFH.

Section 3.7.4 of the FMP describes the EFH text and map definition for each life stage. EFH for red crab is based primarily on known depth affinities from Cape Hatteras to the Hague line. Figures 5 through 8 of the FMP, display where red crab EFH is spatially; but, in general, EFH for red crab eggs is benthic habitats on the continental slope between 200-400 meters, larvae is from 200-1800 meters, juvenile EFH is from 700-1800 meters, and adult EFH is defined as 200-1300 meters. Additional information about red crab EFH can be found in Appendix A of the FMP, which is the EFH source document prepared for red crab. Table 1 in that document summarizes the life history and habitat characteristics of red crab for each life stage. Characteristics such as growth, substrate, temperature, salinity, prey and predator species are provided, but some information is unknown about this species.

Since development of the Red Crab FMP, there is some additional information about red crab habitat from the camera sled that Wahle et al. (2004) have developed. The camera images document red crabs scurrying out of burrow-like structures on the ocean floor. The implications of this finding are unclear, however, and additional information is necessary to determine whether this affects the aforementioned EFH designations for red crab. The researchers have also documented that more juvenile crabs live in deeper waters than larger crabs, confirming previous observations that red crabs sizes are segregated by depth (Wigley et al. 1975). In a comparison of surveys conducted in July and again in August 2003 at the same sites, Wahle et al. observed a significant upslope movement of small crabs.

The red crab fishery is entirely a pot/trap fishery, and, as stated in the FMP (Section 8.2.3), pots have relatively little impact on the habitats and communities where they are fished. There is, however, little information regarding the impacts of deep-water pots on benthic habitats. Further, because the fishery is limited to 5 vessels (with only 4 active at present) and a maximum pot limit of 600 per vessel, the impact of the red crab fishery on habitat is minimal.

### 6.2.1.2 *Other Northeast Region Species*

The area where the Red Crab fishery takes place is primarily between 400 and 800 meters along the continental shelf from Maine to North Carolina. There are a handful of species in this region that overlap with this fishery. Table 1 in Appendix 1 summarizes the EFH text descriptions for all benthic (demersal) life stages for federally-managed species in the Northeast region. The species with EFH that potentially overlap with the red crab fishery (based on depth) are in bold face. The only species that have benthic EFH defined in waters that potentially overlap with the primary red crab fishing zone (400-800 meters) are halibut, redfish, witch flounder, spiny dogfish, golden crab, and most skate species.

### 6.2.2 *Protected Resources*

The protected species and marine mammals that may be found in the environment utilized by the red crab fishery are described in Section 8.7.1 of the Red Crab FMP/EIS. The list of species protected by either the Endangered Species Act or the Marine Mammal Protection Act that may be found in the environment utilized by the deep-sea red crab fishery are cetaceans (14 different species), sea turtles (5 different species), fish (2 species), and birds (2 species). However, since the red crab fishery is limited to the narrow shelf edge of the continental shelf, the extent of interaction between the fishery and protected species is not expected to be significant, and the fishery is not expected to adversely affect these populations. Section 8.7.4.6 of the Red Crab FMP concludes that the Red Crab FMP will affect, but is not likely to jeopardize the continued existence of right whales, humpback whales, fin whales, blue whales, sei whales, sperm whales, or leatherback turtles. Furthermore, the Agency has determined that the red crab fishery will not affect the endangered roseate tern, piping plover, loggerhead, ridley, and hawksbill sea turtles, shortnose sturgeon or Atlantic salmon.

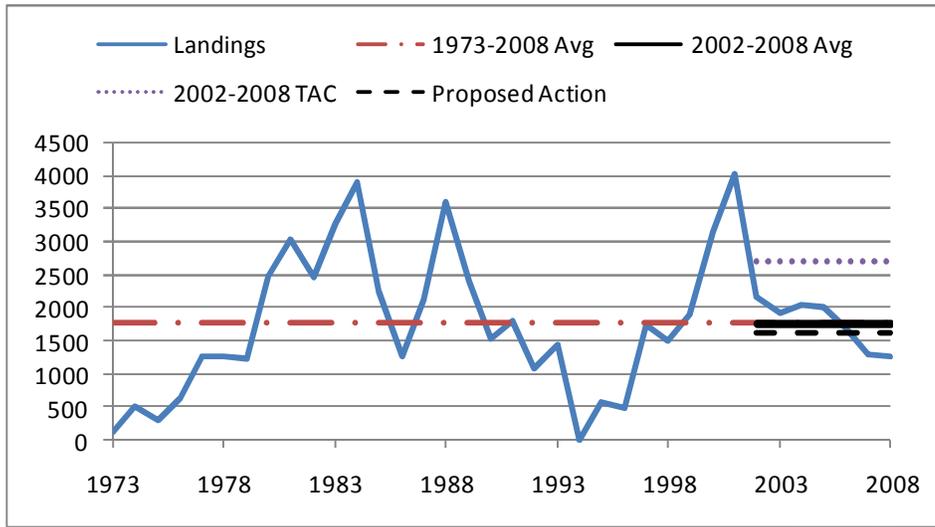
The Atlantic Large Whale Take Reduction Plan (ALWTRP) is a program to reduce the risk of serious injury to or mortality of large whales due to incidental entanglement in U.S. commercial fishing gear. The plan is required by the MMPA and has been developed by NMFS. The ALWTRP focuses on the critically endangered North Atlantic right whale, but is also intended to reduce entanglements of endangered humpback and fin whales and to benefit non-endangered minke whales. For the purposes of ALWTRP, the red crab fishery is considered part of the Atlantic Mixed Species Trap/Pot fishery, and takes place primarily in the Offshore Trap/Pot Area. Regulations pertaining to this area, in addition to the universal requirements, include gear marking and weak links, which are designed to reduce injury should an interaction occur. The red crab fishery is considered a Category II fishery under the MMPA, which means occasional incidental interactions and serious injury may occur, however, given the small scale of the fleet and the management measures that restrict the number of traps a vessel may use, interaction with protected species is rare.

There is no new information that reveals effects of this action may affect listed species or critical habitat in a manner or to an extent not previously considered and no new species have been listed or critical habitat designated that may be affected by the red crab fishery.

## 6.3 **Economic and Social Factors**

The red crab resource has been commercially exploited since the 1970s. During the 1960s and 1970s, the resource was considered an underutilized species, and several U.S. vessels began experimenting in the early 1970s to develop a red crab fishery. Interest in the red crab resource coincided with the introduction of the hydraulic trap hauler and the development of the offshore lobster trap fishery. The directed red crab fishery is entirely a trap fishery that takes place at the edge of the continental shelf, beyond the depths in which almost all

other U.S. Atlantic coast fisheries are prosecuted. The fishery has fluctuated widely over the years in terms of the number of vessels pursuing red crab and the annual landings (Figure 4).



**Figure 4- Annual landings of red crab in metric tons, 1973-2008 with average landings for 1973-2008 and average landings for 2002-2008, the TAC for 2002-2008, and the TAC specified in the proposed action.**

Landings in the 1980s and in 2000 and 2001 exceeded the ABC recommended by the SSC. Red crab is marketed as picked meat and, until recently, red crab meat competed in an undifferentiated worldwide commodity market for crab meat. Demand and price for red crab was determined by the supply of crab meat from other fisheries and by general economic conditions as they affected demand for restaurant meals and upscale foods like picked crab meat. Landings averaged 3.92 million lb (1,776 mt) from 1973 through 2007. Average landings for different time periods are shown in Table 11.

**Table 11- Average landings of red crab in metric tons and million pounds**

	Metric Tons	Million Pounds
Average 073 ó -07	1,776	3,915,667
Average 000 ó -07	2,281	5,027,352
Average 002 ó -07	1,853	4,083,277
Average 074--08	1,810	3,990,214
Average 000 ó -08	2,175	4,795,525
Average 002 ó -08	1,778	3,919,472

On March 1, 2000, a control date was established to discourage speculative entry into the fishery while the FMP was under development. During 2000 and 2001, two large catcher-processing vessels entered the red crab fishery and increased landings. The FMP was implemented on October 21, 2002. Five vessels were granted limited access red crab permits, but only four of those vessels have reported landings since 2002.

For the current fishing year, five vessels were once again granted directed red crab permits, and about 1,100 incidental red crab permits were issued. One of the five limited access vessels has opted out of the fishery each

year since 2004; allowing the fleet DAS to be equally divided among the four active vessels. Further, in response to the reduced target TAC and DAS implemented by the Emergency Action on April 6, 2009, a second permit opted out for FY 2009, leaving three active boats during that year. Four vessels have fished to date in FY 2010.

### *6.3.1 Update of Commercial Landings and DAS Usage*

Because one vessel has opted out of the fishery each year since 2004, the four active vessels received an equal portion of the total 780 fleet DAS allocated (195 DAS per vessel) in each year from 2004 through 2008. Table 13 describes the DAS usage and total landings for the fleet from 2004 to 2008. In recent years, landings have decreased as the result of depressed market conditions. Landings declined from over 5 million lb in 2004 to less than 3 million lb in 2007 and 2008. DAS usage showed the same declining trend, as shown in Figure 2. Table 12 lists both DAS used and DAS charged, by quarter. DAS used are calculated by subtracting the date and time that the vessel left the dock from the date and time that the vessel returned. DAS used are actual time at sea. DAS charged count any portion of a day as a full day.

In addition to the limited access directed fishery red crab permits, the FMP provided for open-access incidental catch red crab permits that allow a vessel to land 500 lbs of whole red crab per trip. According to the VTR and dealer weighout database, landings by vessels with incidental red crab permits are insignificant.

**Table 12- DAS used and charged by quarter and year from 2004-2008.**

Qtr	Fishing Year	Used	Charged	Live Wt Lbs
MAM		136	149	
JJA		184	206	
SON		165	187	
DJF		169	186	
	2004	654	728	4,930,204
MAM		91	101	
JJA		110	120	
SON		161	181	
DJF		139	153	
	2005	501	555	4,079,670
MAM		56	62	
JJA		136	150	
SON		246	277	
DJF		189	209	
	2006	626	698	3,841,577
MAM		44	48	
JJA		65	73	
SON		208	232	
DJF		109	121	
	2007	426	474	2,771,501
MAM		34	39	
JJA		81	94	
SON		195	219	
DJF		52	58	
	2008	362	410	2,762,239

**Table 13- DAS usage, total landings, and landings per DAS charged 2004-2008.**

Fishing Year	Allocated DAS	DAS Charged	Live wt landings (lbs) from weighout database	Total RC landings per DAS charged for the entire fleet
2004	780	728	4,930,204	6,772
2005	780	555	4,079,670	7,351
2006	780	698	3,841,577	5,504
2007	780	474	2,771,501	5,847
2008	780	410	2,762,239	6,737

The total landings and DAS used by quarter and month are described in Table 12 as well as Figure 5 and Figure 6. The average landings per DAS used varies by quarter, apparently as the result of both seasonal catch rates and processing availability. Members of the Red Crab Advisory Panel report that new marketing arrangements require a more stable year-around supply to be processed and distributed fresh to supermarkets. This change in processing and marketing may also require a change in fishing strategy that would change the average catch per DAS and monthly and quarterly distribution of landings. The industry has reported that catch per unit of effort increases in the summer and fall, and that is also when average landings per DAS are highest according to these data. Average landings per DAS are 10,227 lb/DAS on trips in September through November, and drop to

4,697 lb/DAS on trips in December through February. However, further analysis is needed to evaluate the affects of seasonality on the CPUE of individual vessels by area in this fishery.

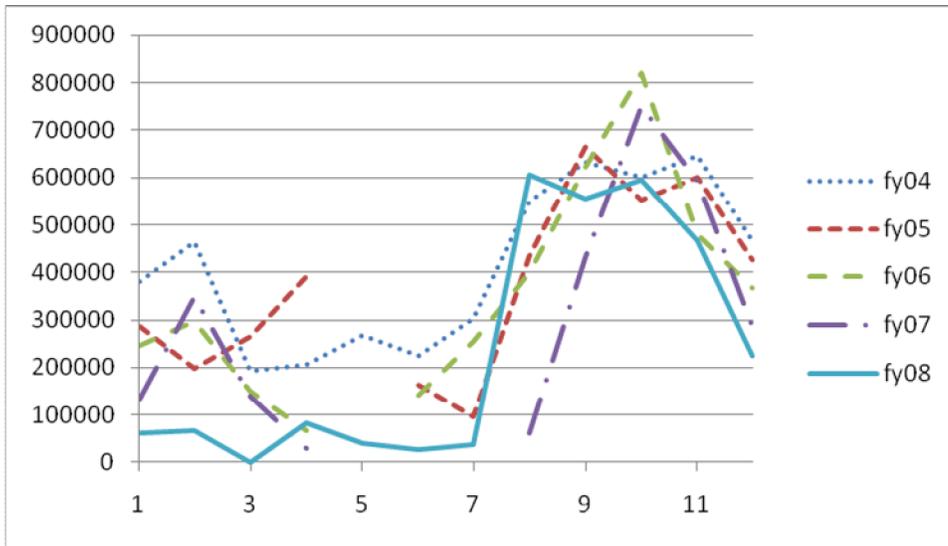


Figure 5- Landings by month for fishing years 2004-2008.

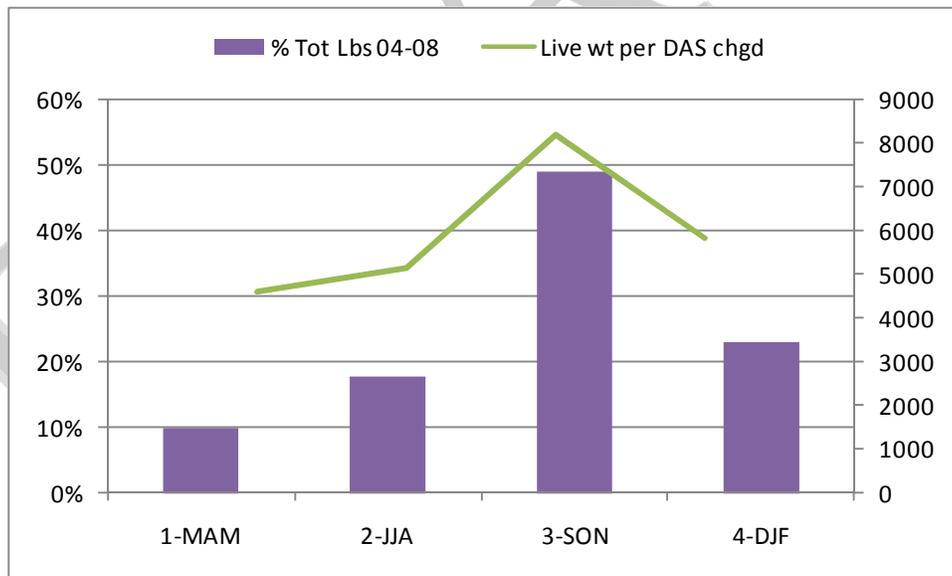


Figure 6- Relative landings by quarter from 2004-2008 (shown in bars), along with the average pounds of red crab landed per DAS charged per quarter (shown in line).

Source: NMFS DAS database and Dealer Weighout database

In addition to reporting to the IVR database, each vessel also submits a VTR to NMFS after each fishing trip. The VTR database is useful to help determine where vessels are generally fishing. Captains are required to fill in a location for each trip. Figure 7 displays the vessel locations for all red crab trips reported to the VTR

database from 2002 through October 19, 2009. According to these data, effort is primarily concentrated along the continental shelf between depths of 200 to 500 fathoms.

### *6.3.2 Description of the fishery since implementation of the FMP*

A report on the social and economic baseline information for the red crab fishery was completed in 2001 during the development of the Red Crab FMP (Appendix B within the FMP). A detailed survey was completed, and the Red Crab Advisory Panel supplied information such as demographics of the fleet, dependence on the fishery, community infrastructure, and crew information. The character of the fishery has not changed significantly since 2002. The most significant changes have been the establishment of a new processing plant in New Bedford in August of 2009 and the retirement of the largest boat and only semi-processing vessel in the red crab fleet, also in 2009.

#### *6.3.2.1 Harvesting Sector*

Since implementation of the FMP, four vessels have harvested the total red crab landings. However, in early 2009 the largest of the four vessels suffered significant mechanical damage and has been replaced by a smaller vessel. Although this is a small fishery in terms of the number of vessels that participate, the individuals that are involved in this fishery have a very high dependence on the red crab resource. The handful of vessels that received limited access permits were surveyed during the development of the FMP, and the majority of harvesters reported that revenues from the red crab fishery make up the vast majority of their annual income. Since implementation of the FMP, vessel owners still report red crab as the primary fishery that supports their annual income. In 2008, all of the red crab permits joined together in an informal harvesting cooperative. The cooperative harvesting agreement allows the permits and boats to be allocated in the most efficient manner within the constraints of the regulations. The cooperative harvesting agreement provides for the distribution of profits from the fishery among all of the permitted vessels. Under the terms of the cooperative harvesting agreement, the vessels agree to stop fishing when the target TAC has been landed, regardless of whether they have DAS remaining. Whereas the TAC has never been reached since the cooperative harvesting agreement has been in existence, this provision in the agreement has never been utilized.

One of the red crab vessels that was involved in the offshore lobster fishery in 2002 was not involved in the red crab fishery in 2008 and 2009, but has fished for red crab again in FY 2010. One vessel has participated in the hagfish fishery, but has no plans to engage in that fishery in the near future. Currency exchange rates have not been favorable for hagfish in recent months and the fishery is unlikely to provide a profitable alternative for a boat that freezes at sea. There have been some changes in terms of vessel replacement, vessel participation, vessel ownership and landing ports since the FMP was adopted.

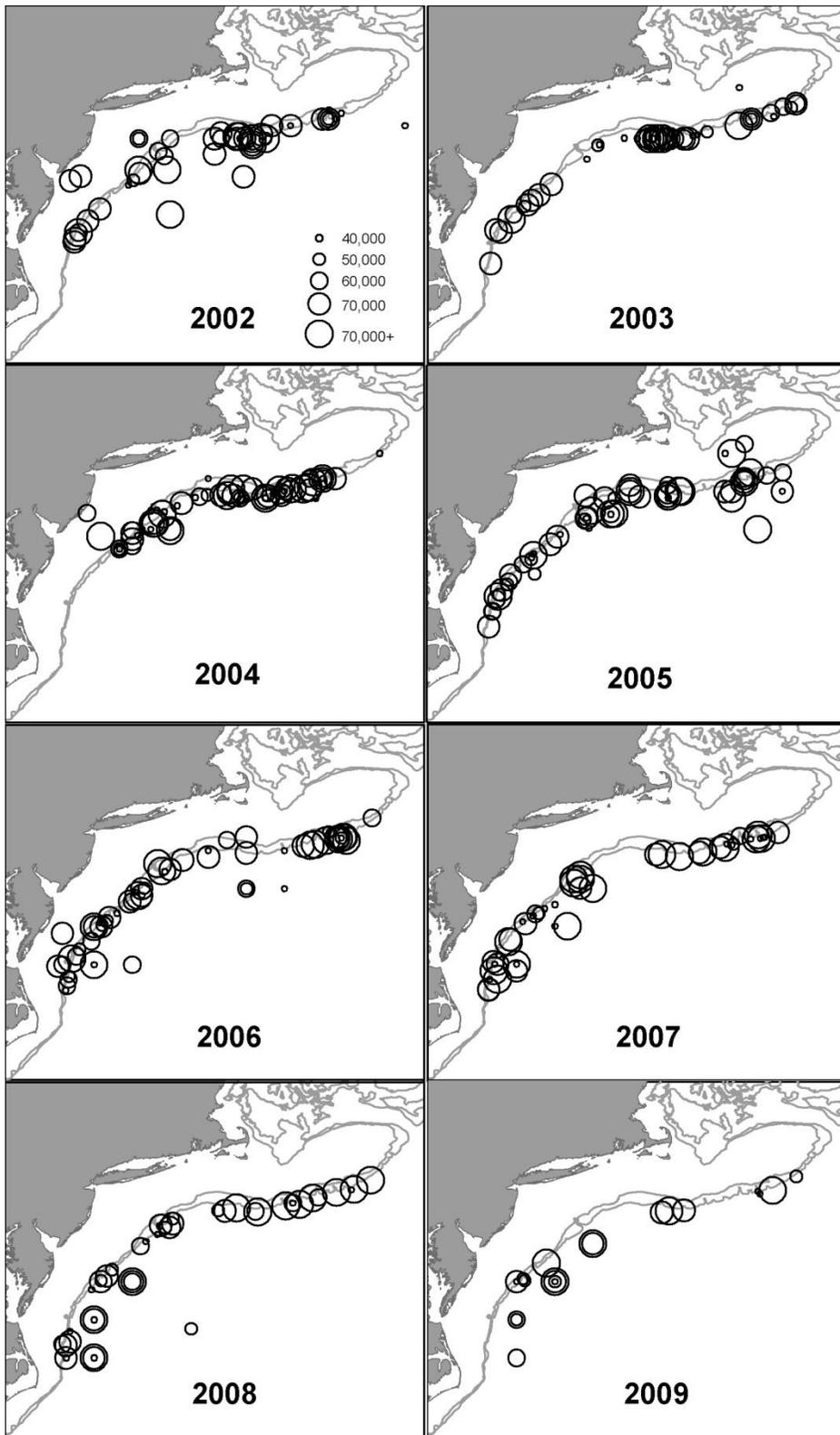


Figure 7- Locations of reported red crab trips 2002-2009 (partial). *Note: some reported trip locations overlap and some reported trip locations are obviously incorrect.*

Six ports were identified in the FMP as primary ports of vessel operations and mooring including: Fall River, Gloucester, and New Bedford, MA; Bristol, ME; and Portsmouth and Tiverton, RI. According to the industry, all limited access vessels landed exclusively in Fall River, MA from 2004 through 2006. During 2007 and 2008, some crabs were landed in Hampton, VA in response to high fuel costs. In August of 2009, a new red crab processing plant opened in New Bedford, MA and all of the active red crab boats are expected to land their catch in New Bedford in the future. The average number of crew per vessel has not changed since implementation of the FMP, and some of the crew members are the same. Advisors report that crew turnover is increasing. Crew income is no longer attractive enough to keep the same crew on a continuing basis. Most crew in this fleet are from New England, but there are some crew members from Seattle, WA.

The average length of vessels prior to the FMP was 105ø ranging from 72ø to 150ø. Since implementation of the FMP, one of the vessels has been replaced and the largest boat has been retired, leaving the average length slightly lower, at about 98ø. During the development of the FMP the fleet reported that, on average, vessels landed 63,000 lb of red crab per trip and received an average of approximately \$42,000 per trip in gross revenue. The weighout data for 2008 indicate that average pounds per trip was 52,732 lb (ignoring trips of less than 1,000 lb). Gross revenues per trip averaged \$53,371. Average annual revenue from red crab for the red crab fleet for the years 2004-2008 was \$3.44 million. The gear used by the limited access fleet did not change from 2002 through 2008. The vessel that retired in 2009 used a rectangular wooden trap, and the other three vessels use a conical trap. In general, the overall capacity represented by limited access permits is the same as before the FMP was implemented. The major change in capacity since implementation of the FMP is that vessels that were not granted a limited access permit are no longer harvesting red crab in this region. Active capacity in the red crab fishery was initially reduced when one permit was declared out of the fishery in 2004. A second permit was declared out of the fishery in 2009, but has since been replaced, and four vessels are active in FY 2010. The active vessels are also limited by the processing capacity of the new processing plant in New Bedford. The fleet and the plant are now focused on maintaining a steady, year-round supply of fresh crab meat to supermarkets, rather than supplying a bulk, frozen, food-service market as was the case between 2002 and 2009. The industry members still involved in the red crab fishery believe that this resource could not have withstood the level of effort working in this region prior to implementation of the FMP. Recent estimates of sustainable yield are substantially lower than the landings that took place in the two years prior to the FMP, which averaged 7.86 million lb (3,566 mt).

Industry reports that fishing costs have increased. The prices for fuel and oil based products have increased dramatically since the FMP was implemented. Fuel prices peaked in 2008 at approximately \$4.00 per gallon, but have declined to approximately \$2.30 per gallon in 2009. Insurance rates increased by about 50% from 2002 to 2005, but have since stabilized. The price for red crab increased between 2002 and 2005, but has since stabilized at approximately \$.95-\$1.00 per pound, depending on meat yield.

#### *6.3.2.2 Processing Sector*

The processing sector for red crabs was relatively small prior to the FMP, and all crabs were processed at one facility in Nova Scotia, Canada from 2004 through 2007. The Canadian processor sold the picked crab meat to one large restaurant chain. The crab was sold primarily as generic crabmeat and cocktail claws. This processor is also involved in lobster, snow crab, and mussels.

On average, the Canadian processor experienced about a 2% dead loss of the live crabs during transport from Fall River to Nova Scotia. Once the red crab were at the plant, about 100 individuals were employed to process the crab; 25-30 individuals killed and butchered the crab, and about 60 more cooked and packed the

crab. Since implementation of the FMP, the processor worked with the industry and their clients to reduce costs. For example, they developed a creative way to change the packing of red crab to reduce costs, which enabled the processor to pay the vessels approximately ten cents more a pound than was previously the case. The demand for red crab meat by the primary buyer has declined in recent years as the result of menu changes and alternative supplies, primarily from the Centolla crab fishery in Chile.

The red crab industry has always been limited by the market. Until recently, red crab meat has competed in an undifferentiated world-wide commodity market for picked crab meat. During the last six years the red crab industry has invested substantial amounts of time and money in an effort to improve the status of red crab in the market and to find new markets.

One result of that effort was the certification of the red crab fishery as sustainable by the Marine Stewardship Council. Red crab is the first fishery on the Atlantic coast of the U.S. to be certified. The red crab industry has also put into operation a new, state-of-the-art crab processing plant in New Bedford, MA. This plant has the potential to improve the quality and quantity of red crab that can be sold into upscale markets. This plant began production in August 2009, and is expected to employ approximately 65 workers when fully operational. The Canadian processor has provided assistance in the development of this additional processing capacity and broader markets. The new processing plant has entered into a marketing contract with a major seafood distributor and red crab are expected to be marketed as fresh crab meat through supermarkets, and will carry the MSC logo, informing consumers that the fishery has been certified as sustainable by the Marine Stewardship Council. The seafood distributor has made a commitment to take all of the red crab that the plant can produce. Prior to April 6, 2009, the maximum sustainable yield for red crab was set at 6.24 million pounds and the target TAC was 5.928 million lb. This action would maintain the reduced target TAC as a TAL of 3.91 million pounds, as recommended by the SSC, based on average annual long-term landings.

## **7.0 ENVIRONMENTAL CONSEQUENCES AND ASSESSMENTS OF THE IMPACTS**

This document contains two distinct action categories: Section 4.0 describes the alternative management measures that are under consideration. Section 5.0 describes the alternative specifications that are being considered for FY2011-2013. The discussion of the environmental consequences and assessments of the impacts are similarly divided.

Table 14 defines the impact categories and qualifiers that are used in the narrative and tables of this EA to describe the direct and indirect impacts of the various alternatives on the valued ecosystem components (VECs) described in Section 6.0 - Affected Environment.

**Table 14 – Valued Ecosystem Component impact categories and qualifiers.**

<b>Impact Definition</b>			
<b>VEC</b>	<b>Direction</b>		
	<b>Positive (+)</b>	<b>Negative (-)</b>	<b>Negligible (NEGL)</b>
<b>Habitat</b>	Actions that improve the quality or reduce disturbance of habitat	Actions that degrade the quality or increase disturbance of habitat	Actions that have no positive or negative impact on habitat quality
<b>Target Species, Non-Target Species, Bycatch, Protected Resources</b>	Actions that increase stock/population size	Actions that decrease stock/population size	Actions that have little or no positive or negative impact on stocks/populations
<b>Human Communities</b>	Actions that increase revenue and social well being of fishermen and/or associated businesses	Actions that decrease revenue and social well being of fishermen and/or associated businesses	Actions that have no positive or negative impact on revenue and social well-being of fishermen and/or associated businesses.
<b>Impact Qualifiers:</b>			
<b>Low (L; as in low positive or low negative):</b>	To a lesser degree		
<b>High (H; as in high positive or high negative):</b>	To a substantial degree		
<b>Likely</b>	Some degree of uncertainty associated with the impact		
<b>ND</b>	Impacts could not be determined at time of this writing		

NEGL = Negligible

## 7.1 Effort Control Alternatives

### 7.1.1 *Hard TAL with No DAS Alternative*

The Hard TAL with No DAS Alternative would set specifications as shown in Table 2.

#### 7.1.1.1 *Impacts to the Red Crab Stock*

This alternative would be positive for the red crab resource because it would provide additional assurance that landings would stay within the recommended limits.

#### 7.1.1.2 *Impacts to Bycatch/Non-target Species, Habitat, Protected Resources*

##### – Impacts to Bycatch/Non-target Species

As discussed in Section 4.1.2.2, there is little, if any, bycatch of other species in the red crab fishery. The Hard TAL with No DAS Alternative would have negligible impacts on the amount of bycatch or non-target species caught. This alternative would assure that fishing stopped when the TAL had been caught, in contrast to DAS management.

##### – Impacts to Habitat

Red crab fishing activity occurs in a limited area and narrow depth range (400 to 800 meters) along the continental slope of the United States, from the southern flank of Georges Bank south to Cape Hatteras, North Carolina. As described above in Section 4.3.1.1, there is relatively low impact on habitat in pot fisheries. There are little data regarding the impacts that deep-sea pots have on their environment. The range of this activity occurs across designated EFH for a number of species managed by the New England, Mid-Atlantic, or the South Atlantic Fishery Management Councils. The list of species with EFH that potentially overlap with the red crab are halibut, redfish, witch flounder, spiny dogfish, golden crab, white hake, whiting, tilefish, monkfish, offshore hake, red hake and most skate species. The EFH Assessment in the Red Crab FMP/EIS determined that there are no adverse impacts to the EFH of any species in the region for the following reasons: (1) this fishery has a small number of limited access vessels (five or less), (2) the gear for the limited access fleet is restricted to pots (which do not have adverse impacts on EFH), and (3) the number of pots per vessel is limited.

The Hard TAL with No DAS Alternative would have negligible impact on habitat compared to the No Action/Status Quo Alternative.

##### – Impacts to Protected Resources

As stated in the FMP (Section 8.7; NEFMC 2002), the primary geographic area affected by the red crab fishery includes Northeast and Mid-Atlantic waters, and, while the red crab pots are very similar to those used in the lobster fishery, the red crab fishery is limited to the narrow shelf edge habitat. There are several species that are protected under the ESA and the MMPA in the area of the red crab fishery. However, because of small size and scope of the fishery and regulatory limits on the number of pots allowed per vessel, the red crab fishery is not expected to adversely affect those populations in any way.

The impacts to protected resources from implementing the Hard TAL with No DAS Alternative would be negligible.

#### *7.1.1.3 Impacts to Human Communities*

The Hard TAL with No DAS Alternative would have a positive impact on human communities because the need to adjust fishing strategies to a limited number of DAS would be removed and the fleet may become more efficient. The red crab fleet would also enjoy less uncertainty because the number of DAS allocated each year would not vary in response to daily catch rates in previous years.

#### *7.1.2 Status Quo or No Action Alternative – Maintain Target TAC and DAS*

The Status Quo alternative would maintain a management system based on a target TAC with limited DAS designed to prevent the fleet from exceeding the target TAC. The Status Quo/No Action Alternative is neutral by definition because the current regulations remain in place and the proposed alternatives are compared to the Status Quo/No Action Alternative.

## **7.2 Trip Limit Alternatives**

### *7.2.1 Eliminate Trip Limits*

#### *7.2.1.1 Impacts to the Red Crab Stock*

The elimination of trip limits would have a negligible impact on the red crab stock.

#### *7.2.1.2 Impacts to Bycatch/Non-target Species, Habitat, Protected Resources*

##### *Impacts to Bycatch/Non-target Species*

As discussed in Section 4.1.2.2, there is little, if any, bycatch of other species in the red crab fishery. The elimination of trip limits would have negligible impacts on the amount of bycatch or non-target species caught. This alternative might result in less total annual trap immersion time by allowing red crab vessels to take more crabs in less trips, thereby reducing the soak time between trips that would occur with more trips.

### Impacts to Habitat

The elimination of trip limits would have negligible impacts on habitat. This alternative might result in less total annual trap immersion time by allowing red crab vessels to take more crabs in less trips, thereby reducing the soak time between trips that would occur with more trips.

### Impacts to Protected Resources

The elimination of trip limits would have negligible impacts on protected resources. This alternative might result in less total annual trap immersion time by allowing red crab vessels to take more crabs in less trips, thereby reducing the soak time between trips that would occur with more trips.

### Impacts to Human Communities

The elimination of trip limits would have a positive impact on human communities because the fleet may become more efficient, with reduced costs, more profitability and less time at sea.

#### ***7.2.2 Status Quo/No Action – Maintain Trip Limits***

The Status Quo/No Action Alternative is neutral by definition because the current regulations remain in place and the proposed alternatives are compared to the Status Quo/No Action Alternative.

### **7.3 Trap Limit Regulatory Language Alternatives**

#### ***7.3.1 Modify Trap Limit Regulatory Language***

##### ***7.3.1.1 Impacts to the Red Crab Stock***

This alternative would have no impacts on the red crab stock.

##### ***7.3.1.2 Impacts to Bycatch/Non-target Species, Habitat, Protected Resources***

### Impacts to Bycatch/Non-target Species

As discussed in Section 4.1.2.2, there is little, if any, bycatch of other species in the red crab fishery. This alternative would have negligible impact on bycatch and non-target species.

... Impacts to Habitat

This alternative would have no impacts on habitat.

... Impacts to Protected Resources

This alternative would have negligible impacts on protected resources.

*7.3.1.3 Impacts to Human Communities*

The proposed changes in the regulatory language pertaining to trap limits and trap design would have a positive impact on human communities by allowing combination vessels to operate with less cost and greater efficiency.

*7.3.2 Status Quo/No Action Alternative (Maintain Existing Trap Limit Language)*

*7.3.2.1 Impacts to the Red Crab Stock*

This alternative would have no impacts on the red crab stock.

*7.3.2.2 Impacts to Bycatch/Non-target Species, Habitat, Protected Resources*

... Impacts to Bycatch/Non-target Species

As discussed in Section 4.1.2.2, there is little, if any, bycatch of other species in the red crab fishery. This alternative would have no impacts on the amount of bycatch or non-target species caught.

... Impacts to Habitat

This alternative would have no impact on habitat.

... Impacts to Protected Resources

This alternative would have no impact on protected resources.

*7.3.2.3 Impacts to Human Communities*

This alternative would have no impact on human communities.

## **7.4 Accountability Measures**

### **7.4.1 Proactive Accountability Measures**

#### *7.4.1.1 In-season Closure Authority Granted to the Regional Administrator.*

#### *7.4.1.2 Impacts to the Red Crab Stock*

In-season closure authority would be positive for the red crab resource because it would provide additional assurance that landings would stay within the recommended limits.

#### *7.4.1.3 Impacts to Bycatch/Non-target Species, Habitat, Protected Resources*

##### *Impacts to Bycatch/Non-target Species*

As discussed in Section 4.1.2.2, there is little, if any, bycatch of other species in the red crab fishery. In-season closure authority would have negligible impacts on the amount of bycatch or non-target species caught. This alternative would assure that fishing stopped when the TAL had been caught, in contrast to DAS management.

##### *Impacts to Habitat*

In-season closure authority would have negligible impact on habitat compared to the No Action/Status Quo Alternative.

##### *Impacts to Protected Resources*

The impacts to protected resources from implementing the in-season closure authority would be negligible.

#### *7.4.1.4 Impacts to Human Communities*

In-season closure authority would have a positive impact on human communities because the potential for landings that exceed the TAL with subsequent payback requirements would be reduced.

### **7.4.2 Reactive Accountability Measures**

#### *7.4.2.1 Next Year In-Season Adjustment Option.*

#### *7.4.2.2 Impacts to the Red Crab Stock*

A reactive accountability measure that pays back any TAL overage in the year following the overage would be positive for the red crab resource because it would provide the quickest possible payback of an overage.

#### *7.4.2.3 Impacts to Bycatch/Non-target Species, Habitat, Protected Resources*

##### *Impacts to Bycatch/Non-target Species*

As discussed in Section 4.1.2.2, there is little, if any, bycatch of other species in the red crab fishery. A reactive accountability measure that pays back any TAL overage in the year following the overage would have negligible impacts on the amount of bycatch or non-target species caught.

##### *Impacts to Habitat*

A reactive accountability measure that pays back any TAL overage in the year following the overage would have negligible impact on habitat compared to the No Action/Status Quo Alternative.

##### *Impacts to Protected Resources*

The impacts to protected resources from implementing a reactive accountability measure that pays back any TAL overage in the year following the overage would be negligible.

#### *7.4.2.4 Impacts to Human Communities*

A reactive accountability measure that pays back any TAL overage in the year following the overage would have negligible impact on human communities compared to the No Action/Status Quo Alternative because the current regulations include a provision for in-season adjustment of DAS to offset any TAC overage in the preceding year.

#### *7.4.2.5 “Leap Frog” Adjustment Option.*

#### *7.4.2.6 Impacts to the Red Crab Stock*

A reactive accountability measure that pays back any TAL overage in the second year following the overage would be slightly negative for the red crab resource because the No Action/Status Quo Alternative provides for an adjustment in the year following the overage.

#### *7.4.2.7 Impacts to Bycatch/Non-target Species, Habitat, Protected Resources*

...           Impacts to Bycatch/Non-target Species

As discussed in Section 4.1.2.2, there is little, if any, bycatch of other species in the red crab fishery. A reactive accountability measure that pays back any TAL overage in the second year following the overage would have negligible impacts on the amount of bycatch or non-target species caught.

...           Impacts to Habitat

A reactive accountability measure that pays back any TAL overage in the second year following the overage would have negligible impact on habitat compared to the No Action/Status Quo Alternative.

...           Impacts to Protected Resources

The impacts to protected resources from implementing a reactive accountability measure that pays back any TAL overage in the second year following the overage would be negligible.

*7.4.2.8 Impacts to Human Communities*

A reactive accountability measure that pays back any TAL overage in the second year following the overage would have slightly positive impact on human communities compared to the No Action/Status Quo Alternative because the red crab industry would not face a possible in-season adjustment to annual fishing plans.

*7.4.3 Combinations of Both Proactive and Reactive Accountability Measures*

*7.4.3.1 Impacts to the Red Crab Stock*

A combination of proactive and reactive accountability measures would be positive for the red crab resource because it would provide the greatest assurance that landings would stay within the ABC.

*7.4.3.2 Impacts to Bycatch/Non-target Species, Habitat, Protected Resources*

...           Impacts to Bycatch/Non-target Species

As discussed in Section 4.1.2.2, there is little, if any, bycatch of other species in the red crab fishery. A combination of proactive and reactive accountability measures would have negligible impacts on the amount of bycatch or non-target species caught.

...           Impacts to Habitat

A combination of proactive and reactive accountability measures would have negligible impact on habitat compared to the No Action/Status Quo Alternative.

*Impacts to Protected Resources*

The impacts to protected resources from implementing a combination of proactive and reactive accountability measures would be negligible.

*7.4.3.3 Impacts to Human Communities*

A combination of proactive and reactive accountability measures would have positive impact on human communities compared to the No Action/Status Quo Alternative because there would be less likelihood of an in-season adjustment.

*7.4.3.4 Status Quo/No Action Alternative – Maintain TAC Overage Deduction for the Purpose of Calculating DAS*

The Status Quo/No Action Alternative is neutral by definition because the current regulations remain in place and the proposed alternatives are compared to the Status Quo/No Action Alternative.

Table 15- Qualitative summary of the expected impacts of various alternatives for the red crab action.

**Table 16**

Management Measure Options		Valued Ecosystem Component (VEC)				
		Managed Resource (Red Crab)	Non-target/Bycatch Species	Habitat (including EFH)	Protected Resources	Human Communities
		Negligible	Negligible	Negligible	Negligible	Positive
Effort Control Options	Hard TAL without DAS	A hard TAL would provide greater certainty that landings would be limited to the level that was determined to be	The catch rate of non-target and bycatch species is very low. The hard TAL would assure that fishing would stop at the specified landing limit,	There is little data regarding impacts of deep-sea pots on the environment. Gear impacts on habitat are not known to be	Interactions with protected species are already very low and a hard TAL would cause fishing to stop at the TAL even if	This option would remove the additional costs and safety concerns associated with DAS management. The hard TAL will assure

		sustainable by the Data Poor Stocks Working Group and by the SSC.	even if more DAS were available. Impacts would be lower than those analyzed in the FMP.	adverse. Impacts would be lower than those analyzed in the FMP because the landings would be firmly limited at a lower level than analyzed.	additional DAS remained.	effective conservation that will provide positive long-term impacts.
	Status Quo/No Action (Maintain Target TAC and DAS)	No Impact	No Impact	No Impact	No Impact	No Impact
		Negligible	Negligible	Negligible	Negligible	Positive
Trip Limit Options	Eliminate Trip Limits	This option would not affect the total landings. The potential to land more crabs per trip might result in less total annual trap immersion time.	The catch rate of non-target and bycatch species is very low. The potential to land more crabs per trip might result in less total annual trap immersion time.	There is little data regarding impacts of deep-sea pots on the environment. Gear impacts on habitat are not known to be adverse. Impacts would be lower than those analyzed in the FMP. The potential to land more crabs per trip might result in less total	Interactions with protected species are already very low. The potential to land more crabs per trip might result in less total annual trap immersion time.	This option has the potential to reduce the costs associated with increased time at sea required by trip limits.

				annual trap immersion time.		
	Status Quo/No Action (Maintain Trip Limits)	No Impact	No Impact	No Impact	No Impact	No Impact
		No Impact	Negligible	Negligible	Negligible	Positive
Trap Limit Regulatory Language Options	Modify Trap Limit Regulatory Language	This option would not affect the total landings.	The catch rate of non-target and bycatch species is very low.	There is little data regarding impacts of deep-sea pots on the environment. Gear impacts on habitat are not known to be adverse.	Interactions with protected species are already very low.	This option would provide more flexibility to the red crab fleet, particularly those vessels that have permits for the lobster trap fishery.
	Status Quo/No Action (Maintain Existing Trap Limit Regulatory Language)	No Impact	No Impact	No Impact	No Impact	No Impact
		Positive	Negligible	Negligible	Negligible	Negligible
Accountability Measure Options	Proactive - In-season Closure Authority Granted to Regional Administrator	This option would provide additional assurance that the landings would stay within the TAL and ACL.	The catch rate of non-target and bycatch species is very low. This option would assure that fishing would stop when the TAL had been landed.	There is little data regarding impacts of deep-sea pots on the environment. Gear impacts on habitat are not known to be adverse. Impacts would be lower than those analyzed in the FMP.	Interactions with protected species are already very low. This option would assure that fishing would stop	This option would avoid the imposition of payback requirements that might result from landings in excess of the TAL.

				This option would assure that fishing would stop when the TAL had been landed.	when the TAL had been landed.	
		Negligible	Negligible	Negligible	Negligible	Negligible
	Reactive Accountability Measures - Next Year In-Season Adjustment Option	This option would provide the fastest payback in the event the TAL was exceeded.	The catch rate of non-target and bycatch species is very low and would not be affected by this option.	There is little data regarding impacts of deep-sea pots on the environment. Gear impacts on habitat are not known to be adverse and would not be affected by this option.	Interactions with protected species are already very low and would not change under this option.	This option might require in-season adjustments to annual fishing plans to accommodate an in-season payback of an ACL overage.
		Negligible	Negligible	Negligible	Negligible	Positive
	"Leap Frog" Specifications Adjustment Option	This option would delay the payback of an aCL overage until the second year after the overage.	The catch rate of non-target and bycatch species is very low and would not be affected by this option.	There is little data regarding impacts of deep-sea pots on the environment. Gear impacts on habitat are not known to be adverse and would not be affected by this option.	Interactions with protected species are already very low and would not change under this option.	This option would provide additional lead time in which the red crab industry could plan for the payback of an ACL overage.
		Positive	Negligible	Negligible	Negligible	Positive
	Combinations of both Proactive and Reactive AMs	This option would provide the greatest assurance that landings	The catch rate of non-target and bycatch species is very low and	There is little data regarding impacts of deep-sea pots	Interactions with protected species are already very	This option provides the greatest assurance that the

		would be kept within the TAL and ACL and that any overage would be paid back.	would not be affected by this option.	on the environment. Gear impacts on habitat are not known to be adverse and would not be affected by this option.	low and would not change under this option.	conservation program would be effective.
	Status Quo/No Action (Maintain the existing authority given to the Regional Administrator to implement an in-season adjustment in DAS to keep the catch within the target TAC.)	No Impact	No Impact	No Impact	No Impact	No Impact
		Positive	Negligible	Negligible	Negligible	Positive
Measures to Control the Landing of Female Crabs	Replace the prohibition on landing more than one standard tote of female crabs per trip with a scientifically determined ABC, ACL, and TAL.	This option would bring female crabs under the scientific assessment process that now applies to male crabs only.	The catch rate of non-target and bycatch species is very low and would not be affected by this option.	There is little data regarding impacts of deep-sea pots on the environment. Gear impacts on habitat are not known to be adverse and would not be affected by this option.	Interactions with protected species are already very low and would not change under this option.	This option has the potential to increase the revenue, efficiency, and profitability of the red crab fleet. This option would also improve the scientific basis for red crab management,

						which should have positive long-term impacts.
	Status Quo/No Action (Would maintain the existing prohibition on landing more than one standard tote of females per trip.)	No Impact	No Impact	No Impact	No Impact	No Impact
		Positive	Negligible	Negligible	Negligible	Positive
Modifications to the Specification-Setting Process	Modify the specification-setting process to include a recommendation from the SSC on the ABC	This option would bring the specification-setting process into line with current legal requirements.	The catch rate of non-target species is very low and would not be affected by this option.	There is little data regarding impacts of deep-sea pots on the environment. Gear impacts on habitat are not known to be adverse and would not be affected by this option.	Interactions with protected species are already very low and would not change under this option.	This option has the potential to improve the scientific basis for red crab management, which should have positive long-term impacts.
	Status Quo/No Action (Would maintain the existing language that does not mention the SSC.)	No Impact	No Impact	No Impact	No Impact	No Impact

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## 7.5 Cumulative Effects Analysis

The need for a cumulative effects analysis (CEA) is referenced in the Council on Environmental Quality (CEQ) regulations implementing NEPA (40 CFR Part 1508.25). CEQ regulations define cumulative impacts as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other action.” The purpose of a CEA is to consider the effects of the proposed action and the combined effects of many other actions on the human environment over time that would be missed if each action were evaluated separately. CEQ guidelines recognize that it is not practical to analyze the cumulative effects of an action from every conceivable perspective, but, rather, the intent is to focus on those effects that are truly meaningful. The CEA Baseline in this case consists of combined effects of the proposed action and non-fishing actions which are described in Sections 6.4.1 through 6.4.3.

This CEA assesses the combined impact of the direct and indirect effects of the Alternatives with the impact from the past, present, and reasonably foreseeable future actions as well as factors external to the red crab fishery that affect the physical, biological, and socioeconomic resource components of the red crab environment. The analysis is focused on the VECs (see below) and compares the impacts of fishing under the Alternatives with the impacts of fishing under the No Action Alternative. The cumulative impacts of the management plan, according to the principles of CEA from CEQ were previously assessed in the EIS associated with the FMP (Section 12.10.7.2 of the FMP/EIS). Several fishery actions have been implemented in this region since the FMP was implemented, but most do not have cumulative impacts on this resource. The monkfish FMP had the effect of reducing directed monkfish fishing in areas where red crab might be a significant bycatch. Amendment 1 to the tilefish FMP reduced mobile gear fishing in red crab habitat. The monkfish, herring, and lobster FMPs have all implemented new restrictions on entry and fishing effort since the red crab FMP was implemented in 2002. The most recent actions implemented under the Red Crab FMP were the Emergency Action on April 6, 2009, and was the fishery specifications for FY 2010.

### 7.5.1 Valued Ecosystem Components (VECs):

The cumulative effects analysis focuses on the VECs:

- Target Species (Red crab);
- Non-Target and Bycatch species;
- Habitat (including EFH);
- Protected resources/Endangered species; and
- Human communities.

#### 7.5.1.1 Temporal and Geographic Scope of the Analysis:

In terms of past actions for fisheries, habitat and economic and social impacts, the temporal scope of this analysis is primarily focused on actions that have taken place since implementation of the Red Crab FMP in 2002. For endangered and other protected species, the context is largely focused on the 1980s and 1990s, when NMFS began generating stock assessments for marine mammals and turtles that inhabit waters of the U.S. EEZ. In terms of future actions, the analysis examines the period between implementation of this action (expected implementation date of March 1, 2011) until the next amendment to the red crab FMP is prepared by the New England Fisheries Management Council. The geographic scope of the analysis of impacts to fish species and habitat for this action is the range of the red crab resource in the Western Atlantic Ocean, as described in the Affected Environment and Environmental Consequences sections of the document (Sections 6.0 and 7.0). For endangered and protected species the geographic range is the total range of each species. The geographic range for the human environment is defined as those fishing communities bordering the range of the red crab fishery (Section 6.1) from the southern flank of Georges Bank south to Cape Hatteras, North Carolina.

### ***7.5.2 Fishing Impacts: Past, Present and Reasonable Foreseeable Future Actions***

#### ***7.5.2.1 Red Crab***

Since the FMP, there have been three specification packages for FY 2004, FY 2005, and FY 2010, as well as the implementation of Framework Adjustment 1 (FW 1) in 2005, and an Emergency Action on April 6, 2009. FW 1 allowed specifications to be set for up to 3 years at a time, and maintained the target TAC established by the FMP of 5.93 million lb and 780 fleet DAS for FY 2006 and FY 2007. These target TAC and DAS allocations were consistent with the specifications allowed in FY 2004 and 2005, as well as in the FMP. Because no specifications were set for FY 2008, the specifications defaulted to what was written in the FMP, which have been in place since its implementation in 2002. The Emergency Action reduced the target TAC to 3.56 million lb and the fleet DAS to 582. The specifications and an in-season adjustment in FY 2010 established a target TAC of 3.91 million lb and 665 fleet DAS. It is unclear what the impacts of the FMP, the specifications packages, FW 1 and the Emergency Action have had on the resource, other than eliminating the potential for the continuation of high landings that occurred with unregulated fishing effort in 2000 and 2001. Whereas the FMP and subsequent actions first capped and then reduced fishing effort and landings, it is likely that they have had a positive effect on the resource. The present action will assure that average landings in the future will not exceed, and will likely fall short of, average landings from 1973 through 2008. Improvements in red crab science are likely to provide better estimates of MSY and OFL, with the potential to increase the ABC, ACL and TAL. More complete scientific information is also likely to provide guidance on the harvest of female crab.

Only a handful of fisheries occur in deep waters that potentially overlap with the red crab fishery, specifically tilefish, monkfish, and offshore lobster fisheries. All of these fisheries are under management plans that assess the impacts of that fishery on the red crab resource for red crab. As explained in the FMP (Section 6.6, NEFMC 2002), due to the offshore, deep water nature of the fishery, there are very few known interactions

between the fishery and other fisheries. This also results in very few interactions expected between this FMP and other fisheries, with the exception of the specific cases identified above. None of these interactions, however, are expected to be significant.ö

One action that may impact the red crab resource is Tilefish Amendment 1. This Amendment changed the management of the Tilefish FMP into an Individual Transferable Quota (ITQ) system. Only a handful of vessels qualified for this ITQ, and this system of management is intended to result in a more efficient fleet; therefore, incidental catch of red crab by this fishery, which is minimal to non-existent, is not expected to increase. Tilefish Amendment 1 also prohibited mobile gear fishing in certain tilefish EFH, which overlaps with red crab habitat. A reduction in mobile gear fishing in red crab habitat should reduce red crab bycatch.

#### *7.5.2.2 Non-Target/Bycatch Species*

As discussed previously, the FMP explains that initial reports from industry members indicate that there is very little, if any, bycatch of other species in the directed red crab fishery. According to the 2004 SAFE report, the only species reported to the VTR database as bycatch by the limited access red crab fleet are red crab, and on rare occasion, lobster and blue [sic] crab. Tallack (2007) provides a more quantitative, if still limited, assessment of bycatch in the red crab fishery.

Since the catch of non-target and bycatch species is already very low in the red crab fishery, past, present and reasonably foreseeable future fishing actions likely have had minimal (if any) impact on any other species.

#### *7.5.2.3 Habitat*

When the draft Omnibus Amendment is finalized, it is expected to update, identify, and delineate information on the EFH for red crab. The Omnibus Amendment recommends few, minor adjustments to red crab EFH. No past, present or reasonably foreseeable future fishing action has had or is expected to have a significant impact on red crab habitat.

#### *7.5.2.4 Protected Resources*

Because this fishery relies on pots to which buoys are attached by lines in the water, there may be some interactions with protected resources, particularly whales, sea turtles, and other marine mammals. Those interactions have been determined to be minimal primarily due to the small scale of the fishery and strict limits on the number of pots allowed. In addition, ALWTRP regulations pertaining to this area include gear marking and weak links, which are designed to reduce injury should an interaction occur.

#### *7.5.2.5 Social/Economic Impacts to Human Communities*

On April 6, 2009, NMFS promulgated an Emergency Action that reduced the target TAC and DAS allocations by 40% for the vessels involved in the red crab fishery. The reduction in the target TAC and DAS required individuals who depend on the red crab

fishery to adjust their expectations and plans that were based on the previous specifications. The specifications that were put in place by the Emergency Action affected the potential for the red crab industry to take full advantage of the marketing opportunities provided by MSC certification, which was awarded in September 2009. Although the annual landings did not approach the previous target TAC in FY 2007 and 2008, the red crab industry has made a substantial investment in processing capacity and marketing arrangements that were expected to allow for increased landings in future years. On the positive side, the reduction in the TAC improved the likelihood that the red crab fishery would remain sustainable.

This Amendment to the Red Crab FMP proposes an ACL and AMs, as required by the MSA and specifications based on the best available science as recommended by the SSC. The proposed action would allow the same level of landings as are authorized for FY 2010. The proposed TAL would allow peak landings equal to the average landings from 1973-2007, which are approximately equal to average landings from 2002-2008. The average long-term landings consisted of some years in which landings were double the proposed TAL and other years of much lower landings. Landings in the future are unlikely to average out at the proposed TAL because the TAL will create an upper limit that will not allow higher years to be averaged with lower years. Whereas marginal profitability increases rapidly after fixed costs are met, years with high landings contribute more to overall profitability than do average years. On the other hand, a steady supply of crabs will make it easier to develop steady markets with more predictable prices.

Amendment 3 also includes alternatives that modify the existing management measures for the purpose of improving the sustainability of the fishery and responding to current conditions in the fishery. These measures are expected to improve the efficiency of the red crab fishery with resulting increases in profitability. Continuing responsiveness of the fishery management system will increase the likelihood that the fishery will deliver greater overall benefits to the Nation.

### ***7.5.3 Direct and Indirect Impacts of the Proposed Action on Red Crab***

As discussed in Section 7.0, the proposed action is expected to have negligible impact on the red crab stock, and negligible impacts on bycatch/non-target species, protected resources, and habitat, including EFH. After adjustments to recent reductions in the allowable catch, there is expected to be a positive impact on the human community as a result of more flexible management measures and effective management of the red crab resource.

### ***7.5.4 Non-Fishing Impacts: Past, Present, and Reasonably Foreseeable Future Actions on Red Crab***

In Section 8.2.3 of the Red Crab FMP, the primary threats to the chemical, physical, and biological ecosystem of the red crab resource were described. In summary, there are several chemical threats identified to have detrimental impacts on offshore habitats including release of oil, heavy metals, pesticides, and excessive amounts of suspended

particles in the water column. Biological threats include invasion of non-indigenous species, increased levels of nutrients, and pathogens that could cause shell disease. Several physical threats identified in the FMP are sand and gravel mining, oil exploration, offshore discharging, and disposal of dredged materials. Despite all these threats to offshore habitats, red crab live very deep in the water column, so there are very few, if any, direct impacts to the red crab resource. The only non-fishing activities identified in the FMP as having potential significant concerns are offshore oil and mineral exploration, the installation of fiber optic and electrical cables, and the potential release of toxic chemicals from any activities described above. At this time, there are no known proposals for any of these activities. Individually, any one of these types of projects may not have a significant effect, but there may be cumulative effects to the red crab resource if multiple projects are approved.

#### **7.5.5 *Summary of Cumulative Effects***

There are no significant cumulative impacts of fishery actions on the red crab resource, non-target/bycatch species, habitat/EFH, or protected resources that have occurred since the FMP was implemented, or are expected in the reasonably foreseeable future. Cumulative impacts on human communities from recent reductions in the TAC and DAS have been negative in terms of requiring adjustments to business plans but are likely to be positive in the long-term because they will assure the sustainability of the resource. The proposed action would have negligible to positive impacts on the physical and biological environment, and on human communities. No significant cumulative effects are expected from non-fishing actions due to the remote habitat and the lack of proposed projects (e.g., offshore oil and mineral exploration, the installation of fiber optic and electrical cables) in the area of the red crab resource. The sum of the effects from implementation of the proposed action and other fishing and non-fishing actions is expected to be negligible for red crab stock, non-target/bycatch, habitat/EFH, protected resources, and positive for human communities. The sum of the long-term effects from implementation of the proposed action is expected to be positive for human communities in the long-term through the maintenance of a sustainable resource that is expected to provide a reliable source of future income.

## **8.0 APPLICABLE LAW**

### **8.1 Regulatory Flexibility Act/E.O. 12866**

#### **8.1.1 *Regulatory Impact Review***

##### **8.1.1.1 *Background***

In compliance with Executive Order (E.O.) 12866, NOAA's National Marine Fisheries Service (NMFS) requires the preparation of a Regulatory Impact Review (RIR) for all regulatory actions or for significant policy changes that are of public interest. E.O. 12866 was signed on September 30, 1993, and established guidelines for Federal agencies promulgating new regulations and reviewing existing regulations.

An RIR is a required component of the process of preparing and reviewing fishery management plans (FMPs) or amendments and provides a comprehensive review of the economic impacts associated with the proposed regulatory action. An RIR addresses many of the concerns posed by the regulatory philosophy and principles of E.O. 12866. An RIR also serves as the basis for assessing whether or not any proposed regulation is a "significant regulatory action" under criteria specified in E.O. 12866. According to the "Guidelines for Economic Analyses of Fishery Management Actions," published by NMFS in August 2000, an RIR must include the following elements: (1) A description of the management objectives of the regulatory action; (2) a description of the fishery affected by the regulatory action; (3) a statement of the problem the regulatory action is intended to address; (4) a description of each selected alternative, including the "no action" alternative; and (5) an economic analysis of the expected effects of each selected alternative relative to the baseline.

The Atlantic Deep-Sea Red Crab FMP was developed by the New England Fishery Management Council (Council) and was implemented by NMFS on October 21, 2002 (67 FR 63222). The FMP was intended to manage the red crab fishery at sustainable levels, prevent overfishing of the red crab resource, and prevent overcapitalization of the red crab fishing fleet. The management unit specified in the FMP includes red crab (*Chaceon quinque-dens*) in U.S. waters of the Atlantic Ocean from 35° 15.3' N. lat. (the latitude of Cape Hatteras Light, North Carolina) northward to the U.S./Canada border. The FMP established a limited access permit program, per trip possession limits, gear requirements, and a days-at-sea (DAS) program for the limited access permit vessels, among other measures. DAS are assigned to each limited access permit holder based on a fleet-wide allocation of DAS that is calculated to achieve, but not exceed, a target total allowable catch (TAC). Every year from 2002 when the FMP was implemented through 2008, the target TAC was 5.928 million lb (2,689 mt), and the limited access fleet was allocated 780 DAS, divided evenly among the limited access permit vessels. The Red Crab FMP was adjusted once, by Framework Adjustment (FW) 1 (70 FR 44066) and again by the FY 2009 Emergency Action. FW 1 established a multi-year specifications process and established the specifications through fishing year FY 2007. The specifications established for FY 2007 were continued without action into FY 2008, as allowed under the regulations, because there was no new information that would have indicated a change was required.

In the fall of 2008, NMFS's Northeast Fisheries Science Center convened a panel of stock assessment biologists, the DPSWG, to evaluate the biological reference points and status of several fishery stocks that have proven challenging to assess using traditional stock assessment methods. The results and recommendations of the DPSWG were peer-reviewed by a panel of outside scientists (Review Panel) composed of relevant experts primarily from the Scientific and Statistical Committees (SSCs) of the Mid-Atlantic and New England Fishery Management Councils. One of the stocks considered by the DPSWG was Atlantic deep-sea red crab, a deep-water crustacean that lives off the continental shelf along the east coast of the United States and supports a small but valuable fishery.

As stated above, although the Review Panel was not able to recommend new biological

reference points for the stock due to the existing data limitations, it noted substantial uncertainty in all reference point estimates and recommended consideration of additional fishery-independent survey work as well as several avenues of research that would be useful for management. Most significant to the subject action, the Review Panel agreed with the DPSWG that the estimate of maximum sustainable yield (MSY) developed for the original FMP is no longer reliable as a foundation for setting biological reference points. The Review Panel concluded that an MSY in the range of 3.75 million ó 4.19 million lb (1,700 ó 1,900 mt), instead of the estimate of 6.24 million lb (2,830 mt) in the FMP, represents the best available science for the stock. This was a 33- to 40-percent reduction in MSY from the original FMP.

Because the results of the Data Poor Stocks Workshop and peer review were not available until January 20, 2009, and the next fishing year was scheduled to start on March 1, 2009, there was insufficient time for the Council to consider this new scientific information and prepare and submit revised specifications for the 2009 fishing year. Also, because a 33- to 40-percent reduction in the target TAC, with a similar reduction in the DAS allocation, was required in order to bring the management measures into compliance with the best available science on the red crab stock and to minimize the risk that overfishing might occur, on April 6, 2009 NMFS implemented emergency measures under section 305(c) of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act). Section 305(c) of the Magnuson-Stevens Act provides that, if an emergency or overfishing exists, NMFS, acting on behalf of the Secretary of Commerce, may implement measures for a fishery to address the emergency or overfishing. The emergency measures were limited to a decrease in the target TAC and a concomitant decrease in the number of DAS allocated to the fishery for the 2009 fishing year. The Emergency Action reduced the maximum sustainable yield (MSY) for red crab from the 6.24 million lb (2,830 mt) level established by the FMP to 3.75 million lb (1,700 mt), the lower bound of the 3.75-4.19 million lb (1,700 ó 1,900 mt) MSY estimate recommended by the Peer Review Panel of the DPSWG. The Emergency Action also established a new optimum yield value of 3.56 million lb (1,615 mt), which is 95% of the MSY value, as specified in the red crab FMP. As noted above, the primary constraint on the directed, limited access red crab fishery is a DAS program that is based on the annual target TAC. Based on the annual target TAC for the fishery of 3.56 million lb, the annual DAS allocated to the fleet was also reduced from 780 DAS to 582 DAS for FY 2009.<sup>2</sup> The Red Crab FMP established a fishing year that begins on March 1 of each year, through the last day of February.

The Fishery Management Plan (FMP) for Deep Sea Red Crab requires the Council to review the status of the deep-sea red crab stock and the fishery every year, and to prepare a Stock Assessment and Fishery Evaluation (SAFE Report) and specifications for MSY, optimum yield (OY), target TAC, and DAS allocations at least every third year. The

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<sup>2</sup> Rather than a simple proportional reduction in the DAS allocation (i.e., a 33- to 40-percent reduction from the current 780 DAS), the DAS specification was based on average landings per DAS in the red crab fishery for the fishing years 2005-2008.

regulations governing the red crab fishery, found at subpart M of 50 CFR part 648, stipulate that "The target TAC for each fishing year will be 5.928 million lb [2,689 mt], unless modified pursuant to this paragraph," and that "Each limited access permit holder shall be allocated 156 DAS (780 DAS divided between the five limited access permit holders) unless . . . the TAC is adjusted." The TAC and DAS were adjusted through Emergency Action on April 6, 2009. That Emergency Action was extended on August 24, 2009 and expired on February 28, 2010.

In keeping with the requirements of the Magnuson-Stevens Act that will become effective for the red crab fishery in fishing year 2011, the SSC met on August 11, 2009 to consider an appropriate method for calculating the overfishing limit (OFL) and allowable biological catch (ABC) for red crab. The SSC met again on September 16, 2009 to finalize its recommendations for OFL and ABC. The SSC relied heavily on the report of the Peer Review Panel of the DPSWG. On September 23, 2009 the SSC reported to the Council that its recommendation for an interim ABC for 2010 only for red crab would be 2.83 million lb (1,284 mt), based on 2007 landings as representing recent catch. The report of the SSC is attached to this document as ATTACHMENT A.

On September 23, 2009, the Council received the report of the SSC. Council members heard testimony from the red crab industry explaining that 2007 was not representative of recent landings from the fishery. Rather, 2007 was the lowest year of landings during the last decade for the sole reason that the single buyer of red crab meat had reduced their order for that year. The Council was also informed that there was not a quorum present during the last part of the SSC meeting when the choice of year was made. After discussing the SSC report the Council voted unanimously to "send the red crab ABC back to the SSC for further analysis after new peer review information is available and that a quorum is present throughout the SSC deliberation."

The Council met again on November 19, 2009 to consider alternative specifications for FY 2010. After considerable discussion concerning the best science available, the Council voted to adopt the Status Quo Alternative, which would have maintained the 3.75 million lb (1,700 mt) MSY and the 3.56 million lb (1615 mt) target TAC specifications that were put in place through Emergency Action on April 6, 2009. Fleet DAS would be set at 582 as established by the Emergency Action.

The Council based the target TAC directly on the advice from the DPSWG rather than that recommended by the SSC because the Council thought this advice provided an acceptably low risk of avoiding overfishing. According to the National Standard 1 guidelines, it is the role of the Council to determine an acceptable level of risk of overfishing after receiving scientific information about what is the level of overfishing. (National Standard 1 Guidelines (Federal Register Vol. 74, No. 11, January 16, 2009, p. 3192).

The Council did not accept the SSC's choice of the lowest single year in recent history as being a scientifically valid representation of recent landings. The SSC report to the Council on September 23, 2009 noted that:

“The SSC would prefer to base the ABC recommendation on a longer series of recent catch (e.g., the average catch from 2002-2007, the most reliable series of catch statistics). However, this magnitude of catch is at the upper end of the range of approximate values of OFL recommended by the DPSWG. Given that there should be a substantial buffer between OFL and ABC for data-poor stocks, an ABC based on the 2002-2007 average landings would contradict the DPSWG advice.”

These comments make it clear that the SSC chose 2007 landings without policy guidance from the Council on the appropriate level of precaution.

The proposed National Standard 2 Guidelines (DOC NOAA 2009) clarify the distinction between scientific input and policy that is at issue in this Council decision. The Guidelines point out that the amount of uncertainty that is acceptable or the amount of precaution used in an analysis are policy considerations that are in the purview of the Secretary and the Councils. The National Standard 1 Guidelines (Federal Register Vol. 74, No. 11, January 16, 2009, p. 3192) also make it clear that:

“Determining the level of risk of overfishing that results from scientific uncertainty is the policy issue. The SSC must recommend an ABC to the Council after the Council advises the SSC what would be the acceptable probability that a catch equal to the ABC would result in overfishing. This risk policy is part of the required ABC control rule.”

In the case of red crab, because the stock is not overfished and overfishing is not occurring, the Council had not yet considered or advised the SSC concerning the acceptable probability that a catch equal to the ABC would result in overfishing. In effect, the Council made this policy decision on November 19, 2009 when it voted on the specifications for FY 2010, establishing a 5% buffer between the target TAC and the low end of the recommended MSY range, and a 15% buffer between the TAC and the high end of the MSY range. Council members judged the risk of overfishing to be low with only three vessels fishing at a level below that which was determined to be sustainable by both the DPSWG and the SSC. The SSC did not offer any guidance to the Council concerning the risk of overfishing that was associated with its recommendation. The report of the DPSWG does indicate the precautionary nature of the sustainable yield estimates produced by the DPSWG:

“There is appreciable risk that reference points in this report will result in unnecessarily foregone catches” because “some of the methods used to calculate biological reference points in this report rely heavily on landings data collected during a period when exploitation levels were relatively low. Historical catches may understate MSY to the extent that fishing mortality has been less than  $F_{MSY}$  during recent years.”

Council members also took into consideration the fact that both the DPSWG and the SSC characterized historical landings as sustainable and the fact that NMFS had determined

that the specifications that were implemented through emergency action were precautionary and sustainable.

In response to the Council's September 23, 2009 motion requesting the SSC to reconsider its ABC recommendation when new information became available, the PDT compiled new information and analysis regarding the productivity of the red crab resource and the methodology employed by the DPSWG. The PDT determined that estimates of sustainable yield from the DCAC model are likely to be less than MSY. The PDT analysis was presented to the SSC on March 16, 2010. In its report to the Council on April 28, 2010, the SSC agreed that "the PDT demonstrated that the DCAC model developed by the DPSWG provides an estimate of sustainable yield that underestimates maximum sustainable yield (MSY)." The SSC, therefore, concluded that "the information available for red crab is insufficient to estimate MSY or OFL." In lieu of an estimate of OFL, the SSC recommended an interim ABC based on the long-term average landings of male red crab. The SSC noted that the two survey estimates of abundance and their variance do not provide evidence of significant depletion from 1974 to 2003-2005. The SSC, therefore, concluded that the historical landings of male red crab and historical discarding practices appear to be sustainable and that an interim ABC based on long-term average landings (1,775 mt) is safely below an undetermined overfishing threshold and adequately accounts for scientific uncertainty.

The SSC further reported to the Council that "a research plan is needed to improve the scientific basis of management. Specifically, estimates of MSY and OFL are needed to replace the interim ABC recommendation so that an ABC control rule can be based on OFL, its uncertainty and the Council's desired risk tolerance."

On May 14, 2010, NMFS published specifications for the red crab fishery for FY 2010 that had been developed by the Council based on recommendations received from the SSC on September 23, 2009. These regulations put in place a target TAC of 3.56 million lb (1,615 mt) and 582 fleet DAS, divided equally among the vessels that have not declared out of the fishery. On June 22, 2010, NMFS published a proposed rule to implement the SSC's revised recommended catch level as the adjusted target TAC for the FY 2010 red crab fishery. This rule included a target TAC of 3.91 million pounds (1,775 mt) with a corresponding fleet DAS allocation of 665.

Other management measures that were not affected by the Emergency Action or the specifications for FY 2010, include: trip limits, trap/pot restrictions, a prohibition on landing more than an incidental level of female crabs (an experimental fishing permit currently in effect provides for limited harvesting of female crabs to support research on growth and fecundity), and restrictions on at-sea processing and mutilation. In addition, the specific permitting and reporting requirements that were implemented by the FMP, including an Interactive Voice Response (IVR) system for limited access vessels and Vessel Trip Reports (VTRs) that must be filled out by all vessels with a red crab permit were unchanged under the most recent rulemakings. The regulations also provide for allocation of the fleet DAS equally among the limited access permit holders. Incidental catch trip limits remained at 500 lb per trip for non-limited access vessels. All of these management measures were intended either to prevent overfishing in the red crab fishery

or to avoid the ðrace for fishð that can be stimulated by unrestricted competitive fishing for a quota.

In most fisheries the ABC would include dead discards. On June 22, 2010 the SSC reviewed information presented by the Red Crab PDT and concluded that the available monitoring data on magnitude of discards and research on discard mortality are inadequate for reliably estimating the magnitude of dead discards. In the red crab fishery the continuous monitoring of discards and discard mortality is not feasible and there is insufficient data to determine the historic level of discards that accompanied the historic landings that were used to establish the ABC. There is no reason to expect discards to increase compared to historical practices. Rather, the adoption of escape vents in traps and increasing knowledge of resource distribution can be expected to decrease discards. Improved handling practices, informed by cooperative research, has the potential to reduce discard mortality. The red crab industry recently received funding to develop and field-test an enhanced electronic catch recording system that promises to provide improved data on catch and effort by depth and location. The red crab industry has supported continuing research on all aspects of the fishery and the resource since the implementation of the FMP in 2002.

In its report to the Council on June 23, 2010, the SSC repeated its previous recommendations that: ð1) Landings of male red crabs should be limited to an interim ABC of 1775 mt; and 2) Sustainability of future landings at a or below the recommended ABC is conditional on not exceeding past discard rates.ð

#### *8.1.1.2 Statement of the Problem and Management Objectives of the Regulatory Action*

This action is necessary to ensure that the management measures for this fishery are consistent with current law, based on the best available science, and appropriate for current conditions in the fishery. Specifically, the Council must specify an ACL that does not exceed the ABC recommended by its SSC and must incorporate AMs into the FMP. The Council is also considering changes to the management measures requested by the red crab industry. The objectives of this action are to minimize the risk that overfishing will occur, to comply with federal law, and to improve the efficiency of red crab harvesting.

#### *8.1.1.3 Description of the Affected Fishery*

During the 1960s and 1970s, the red crab resource was considered underutilized, and several vessels began experimenting in the early 1970s to develop a deep-sea red crab fishery in this region. The directed red crab fishery is entirely a trap fishery. According to the Stock Assessment Workshop 43 (SAW 43, 2006) report, red crab landings are primarily from specially designed crab traps, although some landings occur as incidental catch in offshore lobster traps. The primary fishing zone for red crab, as reported by the fishing industry, is at a depth of 400-800 meters along the continental shelf in the Northeast region, and is limited to waters north of 35° 15.3øN lat (Cape Hatteras, NC) and south of the Hague Line. Prior to implementation of the FMP, the fishery fluctuated widely both in terms of the number of vessels pursuing red crab and in terms of the

annual landings. Until September of 2009, red crab was sold in a commodity market for picked crab meat. Demand for red crab fluctuated with economic conditions and with the supply of crab meat from other sources. Fluctuations in red crab fishery participation from 1973 through 2002 reflected the profitability of the fishery because the fishery was open access during that time. Fluctuations in landings after 2002 continued to reflect market demand because all of the landings were processed into crab meat and the market dictated how much crab would be purchased by the processor. In August 2009 a new red crab processing plant went into operation with state-of-the-art processing techniques that are expected to produce a higher quality product. Beginning in 2009, red crab products will be distributed by a major seafood wholesaler and sold through retail outlets.

The FMP was implemented on October 21, 2002, and included limited access permit criteria intended to constrain the number of vessels that could harvest red crab in a directed fishery. Based on the landings history-based criteria in the FMP, five fishing vessels qualified for a limited access permit. The Red Crab FMP regulations established a limited access permit program for the directed fishery with a target TAC of 5.93 million lb (2,689 mt) and a DAS allocation of 780 fleet days to harvest the TAC. Management measures include trip limits, limit on the number of traps permitted per vessel, a prohibition against harvesting female crabs, and several other measures intended to prevent overfishing. Although this is a small fishery in terms of the number of vessels that participate, ex-vessel revenues have ranged from \$2.43-4.22 million dollars a year since 2004 (Table 17). The majority of individuals that are involved in the harvesting sector of this fishery report almost complete economic dependence on red crab as their primary fishery, although some vessels have participated in the offshore lobster fishery and, in recent years, red crab vessels have participated in the hagfish fishery on a sporadic basis. Vessel owners still report red crab as the primary fishery that supports their annual income. There have been some changes in terms of vessels, ownership and ports since implementation of the FMP.

**Table 17- Live weight landings, revenue, average price per pound, DAS charged, and dollars per DAS charged by fishing year for the limited access red crab fleet for fishing years 2004 through 2008.**

Year	Live wt landed	Revenue	Price/lb	DAS Chg	\$/DAS Chg
FY 04	4,930,204	\$ 4,218,888	\$ 0.86	728	\$ 5,795
FY 05	4,079,670	\$ 3,376,211	\$ 0.83	555	\$ 6,083
FY 06	3,841,577	\$ 3,581,651	\$ 0.93	698	\$ 5,131
FY 07	2,771,501	\$ 2,527,576	\$ 0.91	474	\$ 5,332
FY 08	2,857,162	\$ 2,429,309	\$ 0.85	410	\$ 5,925
Average	3,696,023	\$ 3,226,727	\$ 0.88	573	\$ 5,653

All limited access vessels are now docked out of New Bedford, MA in response to the opening of a new red crab processing plant in August 2009. Prior to that, all of the red crab vessels had operated from Fall River, MA, but some also landed in Newport News, VA when high fuel costs made it more economical to truck landed crabs the extra distance rather than running the boats back to their home port. The processing sector for red crabs was relatively small and sporadic prior to the FMP. From 2002 through July 2009 almost all crabs were processed at one facility in Nova Scotia, Canada. This processor then sold the entire red crab product to one large restaurant chain in the U.S.

During that time, the red crab product was primarily sold as frozen, generic crabmeat and cocktail claws. A new crab processing plant began operations in New Bedford, MA in August 2009. The new processing plant is expecting to take advantage of the fact that the Atlantic deep sea red crab fishery received MSC certification in September 2009. The Atlantic Red Crab Company has recently contracted with a major seafood distribution company to market fresh picked crab meat to retail customers through supermarkets.

During the development of the FMP, the fleet reported that on average vessels landed 63,000 lb of red crab per trip and received an average of approximately \$42,000 per trip in gross revenue. The dealer weigh-out data for 2003 report that average pounds per trip ranged from about 43,000 to 77,000 lb. Gross revenues per trip averaged between \$34,000 and \$71,000. Landings in 2003-2005 were between 4.2 and 4.5 million lb (1,905 to 2,041 mt). In 2008, landings totaled 2.86 million lb (1,296 mt) worth \$2.43 million. The NMFS weighout data for 2008 indicate that average pounds per trip were 52,732 lb (ignoring trips of less than 1,000 lb). Gross revenues per trip averaged \$53,371. Ex-vessel prices reported by the industry have risen from \$0.44-0.57 per lb in 1982-1999 to \$0.90 per lb in 2005 (\$0.45 when adjusted for inflation since 1982) and to \$0.95-\$1.00 per lb depending on meat yield in 2009 (\$0.43-0.45 in 1982 dollars).

Since implementation of the FMP in October 2002, reporting of red crab landings has improved, and all vessels that have red crab permits are now required to report total landings by trip. Gross revenues to the fleet from red crab exclusively were approximately \$3.23 million annually for FY2004-FY2008. Some of the red crab vessels have also participated in the hagfish fishery. Hagfish revenue was substantial during the period March 2007 to January 2008, but is unlikely to contribute to fleet revenue in FYs 2009 and 2010 because of market and exchange rate conditions.

There is a provision in the Red Crab FMP that if one or more limited access permit holders formally declares out of the directed red crab fishery for an entire fishing year, the DAS that would otherwise be allocated to that permit are to be distributed equally to the remaining permit holders. As has occurred each year since 2003, one of the limited access permits has been declared out of the fishery for the 2010 fishing year.

In addition to the fleet of limited access permit vessels, the FMP also includes provisions for an open access, incidental catch red crab permit. This permit allows a fishing vessel to possess and land up to 500 lb of whole weight equivalent red crab per fishing trip. Although several hundred fishing vessels initially requested and obtained this open access permit, total landings of red crab by vessels with an open access permit remain negligible relative to the landings by the limited access fleet. That's because the fishing grounds used by other fisheries do not overlap with areas of significant red crab densities. Vessels with an open access, incidental catch red crab permit are unaffected by this action.

Additional information on the red crab fishery is provided in the report prepared by the Data Poor Stocks Working Group, available at <http://www.nefsc.noaa.gov/publications/crd/crd0902/>.

#### *8.1.1.4 Description of the Management Measure Alternatives*

##### – Effort Control Alternatives

###### **8.1.1.4.1.1 Hard TAL without DAS Alternative**

This alternative would eliminate the target TAC and DAS controls that are currently in the FMP and replace them with a TAL in the form of a landings limit. The hard TAL alternative responds to industry concerns about the problematic nature of DAS controls in terms of business planning, flexibility, operational safety, and capability to allow the fleet to catch the ACL/TAL without exceeding it. The ACL and TAL would be set by the specifications. This alternative would include authority for the Regional Administrator to close the landing of red crabs by limited access vessels when landings are projected to achieve the TAL.

###### **8.1.1.4.1.2 Status Quo/No Action Alternative**

The Status Quo/No Action Alternative for effort control would maintain the combination of a target TAC and DAS that are currently in the FMP.

##### – Trip Limit Alternatives

###### **8.1.1.4.2.1 Eliminate Trip Limits**

This alternative would eliminate the trip limits that are currently in the FMP.

###### **8.1.1.4.2.2 Status Quo/No Action**

The Status Quo/No Action alternative for trip limits would maintain the trip limits that are currently in the FMP.

##### – Trap Limit Regulatory Language Alternatives

###### **8.1.1.4.3.1 Modify the Regulatory Language Pertaining to Trap Limits**

The current regulations prevent combination red crab/offshore lobster boats from fishing both lobster traps and crab traps on the same trip, as they did before the FMP was implemented. The proposed modifications to the regulatory language would restore that flexibility to combination boats.

###### **8.1.1.4.3.2 Status Quo/No Action**

The Status Quo/No Action alternative would maintain the existing regulatory language pertaining to trap limits that are currently in the FMP.

###### **8.1.1.4.3.3**

##### – Accountability Measures

###### **8.1.1.4.4.1 Proactive Accountability Measures**

8.1.1.4.4.1.1 In-season Closure Authority Granted to the Regional Administrator.

This alternative would give the Regional Administrator the authority to close the landing of red crab by the limited access fleet when landings were projected to reach the TAL. . Vessels at sea when the closure is announced would be allowed to complete their trips, with the expectation that their landings would not cause the TAL to be exceeded. The Council believes that the procedures for closing the fishery can be streamlined by allowing the Regional Administrator to close the fishery by direct notice to the fishery participants. Further, the Council believes that the subsequent closure announcement to the public via publication in the *Federal Register* should not impede prompt closure of the fishery, but should be accomplished on as timely a basis as practicable.

This alternative proposes prompt closure of the fishery by authorizing the Regional Administrator to 1) determine, on the basis of information received from Federal dealers, when the TAL will be reached, 2) notify both the permit holder and operator of each fishing vessel of the specific date after which fishing for red crab above the incidental limit would be prohibited, and 3) make the closure notice announcement not less than 24 hours prior to the effective date of the closure.

#### **8.1.1.4.4.2 Reactive Accountability Measures**

##### **8.1.1.4.4.2.1 Next Year In-Season Adjustment Option**

Under this option, after the end of the fishing year, NMFS would determine whether the limited access red crab fleet had exceeded the ACL. If the ACL had been exceeded, NMFS would use the appropriate rule-making procedure to adjust the specifications for the year following the overage to pay back the overage on a pound for pound basis.

##### **8.1.1.4.4.2.2 ðLeap Frogö Specifications Adjustment Option**

Under this option, an overage in one year would be paid back on a pound for pound basis by adjusting the specifications for the second year following the overage.

#### **8.1.1.4.4.3 Combinations of Both Proactive and Reactive AMs**

This alternative would combine the in-season closure authority with one of the reactive AM options.

#### **8.1.1.4.4.4 Status Quo/No Action Alternative**

The Status Quo/No Action Alternative for accountability measures would leave in place the provisions in the FMP that give the Regional Administrator the authority to adjust fishing days to achieve the target TAC and to make in-season adjustments to the specifications for purposes that are consistent with the Atlantic Deep-Sea red crab FMP objectives and other FMP provisions.

### **Specification Setting Process and Components Alternatives**

#### **8.1.1.4.5.1 Modify Process for Setting Specifications Alternative**

The current regulations define the ðProcess for setting specificationsö in 50 CFR 648.260. This process requires minor modifications to be in compliance with new requirements of the MSA. This alternative would require the SAFE Report prepared by the PDT every three years, together with recommended specifications, to be presented to the Council.

SSC for review prior to presentation to the Council. As outlined in the NS 1 and 2 Guidelines, the SSC shall recommend an ABC to the Council after the Council has informed the SSC concerning the acceptable level of risk of exceeding the OFL that the Council wishes to use. Any recommended changes to the specifications resulting from the PDT's annual review of the status of the stock and the fishery shall also be submitted to the SSC.

#### **8.1.1.4.5.2 Status Quo/No Action Alternative**

The Status Quo/No Action Alternative for the specification setting process would leave in place the current process, which does not require the SSC to recommend an ABC to the Council.

#### **8.1.1.4.5.3 Modified Specification Components Alternative**

This alternative would add ABC, ACL, and TAL to the Specification Components. The components of the specifications will include the following values as long as they continue to be regulated by the FMP:

- ABC
- ACL
- TAL
- TTAC
- DAS

#### **8.1.1.4.5.4 Status Quo/No Action Alternative**

The Status Quo/No Action Alternative for the Specification Components would leave in place the current components of the specifications, which do not include ABC, ACL, and TAL.

### *8.1.1.5 Expected Economic Effects of the Management Measure Alternatives*

#### *Effort Control Alternatives*

##### **8.1.1.5.1.1 Hard TAL without DAS Alternative**

This alternative would eliminate the target TAC and DAS controls that are currently in the FMP and replace them with a TAL in the form of a landings limit. The hard TAL alternative responds to industry concerns about the problematic nature of DAS controls in terms of business planning, flexibility, operational safety, and capability to allow the fleet to catch the ACL/TAL without exceeding it. Under the current DAS control, fishing businesses must consider their DAS allocation as a constrained input to be combined with other inputs in the most cost-efficient manner. Because DAS are constrained, other inputs may be used in ways that would not result in maximum efficiency if DAS were not constrained. In the absence of a detailed production function for red crab fishing, no quantitative estimates of the economic impact of the removal of the DAS constraint can be made. Qualitatively, we can expect the red crab fleet to adopt the least cost combination of inputs in the absence of a regulatory constraint on DAS.

##### **8.1.1.5.1.2 Status Quo/No Action Alternative**

The Status Quo/No Action Alternative for effort control would maintain the combination of a target TAC and DAS that are currently in the FMP. Whereas DAS are likely to be more constraining in the future than they have been in the past, we would expect the continuation of the DAS regulation to create more economic inefficiencies.

## **8.2 Trip Limit Alternatives**

### **8.2.1 *Eliminate Trip Limits***

This alternative would eliminate the trip limits that are currently in the FMP. The FMP points out that trip limits would contribute to inefficiency in the red crab fleet. The FMP also indicates that trip limits have disproportionate effects by vessel size class, creating more inefficiencies for larger vessels than for smaller vessels. The FMP states that higher productivity vessels are more constrained by trip limits compared to vessels with lower LPUE and that trip limits are likely to make trip costs higher than necessary for more productive vessels.

The rationale for trip limits in the FMP includes a desire to minimize the derby fishery that might occur when vessels compete for an unallocated quota. The FMP states that trip limits will spread the catch out over space and time but it is not clear how trip limits spread the catch over space. The FMP also notes that trip limits help to control fishing effort and fishing mortality when combined with DAS limits and that trip limits would not be necessary if the calculation of DAS were accurate. If the Council adopts the Hard TAL Alternative, the role of trip limits in controlling fishing mortality becomes moot.

The red crab industry has requested the removal of the trip limits to allow the fleet to adopt the most efficient harvesting strategy. Potential cost savings include reductions in fuel consumption per pound of crab landed and reduced steaming time for red crab crews and vessels. Industry concerns about increases in fishing capacity stimulated by competitive fishing that existed when the FMP was initially developed no longer exist. The fishery has stabilized at 3-4 active vessels. The requirements of the processing sector make it unlikely that a derby fishery would develop. At present, all of the vessels participate in a cooperative harvesting agreement through which all permit holders share in any increased profits that result from savings in harvesting costs. Under current and reasonably foreseeable conditions in the red crab fishery, permit holders believe that there are no longer any benefits from trip limits and that the increased costs associated with trip limits are not justifiable.

### **8.2.2 *Status Quo/No Action***

The Status Quo/No Action alternative for trip limits would maintain the trip limits that are currently in the FMP. The costs associated with inefficiencies caused by trip limits make it more difficult for the red crab fishery to compete with other crab products in the market place.

## 8.3 Trap Limit Regulatory Language Alternatives

### 8.3.1 *Modify the Regulatory Language Pertaining to Trap Limits*

The red crab industry has requested a modification of the **trap limit** language in the regulations. Another reason to consider a modification to the trap limit language is that some of the restrictions apply when on a red crab DAS. If the Council adopts the Hard TAL with No DAS Alternative, the regulations that restrict trap numbers and trap design when fishing under a red crab DAS will require modification or will become moot. The intent of the industry request is not to increase the number of crab traps that a red crab vessel can fish, but to allow vessels with both a limited access red crab permit and a limited access lobster trap permit to resume the fishing strategy that was employed before the implementation of the red crab FMP. Prior to the FMP, a red crab vessel could haul red crab traps on the same trip that it hauled lobster traps, increasing efficiency and saving costs during the switchover from one fishery to the other. The red crab regulations, apparently inadvertently, made that strategy illegal.

The red crab regulations currently state that: "No vessel may haul or harvest red crab from any fishing gear other than red crab traps/pots, marked as specified by paragraph (a)(5) of this section, when on a red crab DAS." The prohibition on hauling gear other than specifically marked red crab traps is the troublesome phrase in this regulation. The apparent intent was to prevent red crab vessels from getting around the trap limit and other gear restrictions by harvesting red crabs with other gear.

The regulations further state that: "A vessel owner or operator of a vessel that holds a valid limited access red crab permit may fish with, deploy, possess, haul, harvest red crab from, or carry on board a vessel, up to a total of 600 traps/pots when fishing for, catching, or landing red crab." This regulation is troublesome for combination vessels because they are prohibited from fishing lobster traps in excess of their 600 crab traps when they are on a red crab DAS, or have red crabs on board.

The regulations further state that: "No person may haul or remove lobster, red crab, or fish from parlor traps/pots when fishing under a red crab DAS." If DAS are eliminated as a component of the red crab management program, a plain reading of the regulation would indicate that the prohibition on the use of parlor traps/pots in the red crab fishery would also expire. The intent is to keep the prohibition on parlor traps, which provides an easily identifiable distinction between red crab and lobster traps.

The following proposed language would eliminate the problem facing combination boats and would maintain the intent of the red crab gear restrictions:

- 1) No limited access red crab vessel may harvest red crab from any fishing gear other than red crab traps/pots, marked as specified by paragraph (a)(5) of this section.
- 2) A vessel owner or operator of a vessel that holds a valid limited access red crab permit may not deploy more than 600 traps/pots in water depths greater than 400 meters (219 fathoms) and may not harvest red crab in water depths less than 400 meters.

3) No limited access red crab vessel may deploy parlor traps/pots in water depths greater than 400 meters (219 fathoms).

### ***8.3.2 Status Quo/No Action on Regulatory Language Pertaining to Trap Limits***

The Status Quo/No Action Alternative on regulatory language pertaining to trap limits would leave in place the language that prevents combination boats from achieving the efficiencies that could be gained from being allowed to haul both lobster and crab traps on the same trip.

## **8.4 Accountability Measures**

### ***8.4.1 Proactive Accountability Measures***

#### ***8.4.1.1 In-season Closure Authority Granted to the Regional Administrator.***

This alternative would give the Regional Administrator the authority to close the landing of red crab by the limited access fleet when landings were projected to reach the TAL. Vessels at sea when the closure is announced would be allowed to complete their trips, with the expectation that their landings would not cause the TAL to be exceeded. The small size of the red crab fleet makes it practical for the Regional Administrator to close the fishery by direct notice to the fishery participants. An in-season closure of the red crab fishery is unlikely to disrupt the fishery because of the nature of the red crab fishery. The small size of the fleet and the processing sector makes it likely that the industry will plan the harvest in a way that will avoid disruption by a closure.

### ***8.4.2 Reactive Accountability Measures***

#### ***8.4.2.1 Next Year In-Season Adjustment Option***

Under this option, after the end of the fishing year, NMFS would determine whether the limited access red crab fleet had exceeded the ACL. If the ACL had been exceeded, NMFS would use the appropriate rule-making procedure to adjust the specifications for the year following the overage to pay back the overage on a pound for pound basis. This option may require a quicker adjustment to a change in the TAL than would be required by the leap frog approach, but the small size of the fleet and the processing sector makes it likely that the industry can react quickly to an overage.

#### ***8.4.2.2 "Leap Frog" Specifications Adjustment Option***

Under this option, an overage in one year would be paid back on a pound for pound basis by adjusting the specifications for the second year following the overage. This option would give the red crab industry more time to adjust to a reduced TAL resulting from an overage.

**8.4.3 Combinations of Both Proactive and Reactive AMs**

This alternative would combine the in-season closure authority with one of the reactive AM options. No additional economic impacts are foreseen from a combination of AMs.

**8.4.4 Status Quo/No Action Alternative**

The Status Quo/No Action Alternative for accountability measures would leave in place the provisions in the FMP that give the Regional Administrator the authority to adjust fishing days to achieve the target TAC and to make in-season adjustments to the specifications for purposes that are consistent with the Atlantic Deep-Sea red crab FMP objectives and other FMP provisions. No economic impacts would be expected from this alternative.

**8.5 Specification Setting Process and Components Alternatives**

**8.5.1 Modify Process for Setting Specifications**

No economic impacts would be expected from this alternative.

**8.5.2 Status Quo/No Action Alternative**

The Status Quo/No Action Alternative for the specification setting process would not be expected to have any economic impacts.

**8.5.3 Modified Specification Components Alternative**

This alternative would add ABC, ACL, and TAL to the Specification Components. No economic impacts would be expected from this alternative.

**8.5.4 Status Quo/No Action Alternative**

The Status Quo/No Action Alternative for the Specification Components would not be expected to have any economic impacts.

**8.5.4.1 Description of the Specification Alternatives**

**8.6 Specifications under the “Hard TAL with No DAS” Alternative**

The “Hard TAL with No DAS” alternative recognizes that the SSC could not determine MSY and OFL. This alternative sets ABC, ACL, and TAL at 3.91 million lb (1,775 mt) of male crab landings.

**Table 18 – Specifications under the “Hard TAL with No DAS” alternative (specifications apply to landings of male crabs).**

	Hard TAL, No DAS Specifications
MSY (mt)	Undetermined
OFL (mt)	Undetermined

OY (mt)	Undetermined
ABC (mt)	1,775
ACL (mt)	1,775
Target TAC (mt)	n/a
Fleet DAS	n/a
TAL (mt)	1,775

### 8.7 Specifications under the No Action/Status Quo Alternative

The No Action/Status Quo alternative would leave in place the MSY and OY values in the FMP and would continue the target TAC and DAS values specified for FY2010 as shown in Table 7.

**Table 19 - Specifications under the No Action/Status Quo Alternative (specifications apply to landings of male crabs).**

	No Action/ Status Quo
MSY (mt)	2,830
OFL (mt)	Undetermined
OY (mt)	2,688
ABC (mt)	1,775
ACL (mt)	n/a
Target TAC (mt)	1,775
Fleet DAS	665
TAL (mt)	n/a

#### 8.7.1.1 Expected Economic Effects of the Specification Alternatives

Expected Economic Effects of the Specifications under the Hard TAL with No DAS Alternative or the Status Quo/No Action Specification Alternative

The allowable landings are expected to be the same under either specification alternative. The Status Quo/No Action Alternative poses some uncertainty because the allocated DAS may not produce the expected landings. On the assumption that the DAS would produce the expected landings, both the Hard TAL with No DAS Alternative and the Status Quo/No Action Alternative would result in 3.91 million lb (1,775 mt) of male crab landings. The proposed target TAC/TAL is approximately equal to the average red crab landings from 2002-2008. The economic impacts of the alternative management measures are considered above. This section provides a qualitative analysis of the landing level proposed in the specifications for FY2011-2013.

Predicting future impacts of specification alternatives is difficult without accurate information on the trends of the resource, the market, and the alternatives available to red crab permit holders. The fleet caught more than the proposed TTAC/TAL from 2002

through 2005 and less than the proposed TTAC/TAL in 2006, 2007, and 2008. The Council's Red Crab Advisory Panel attributes the low landings in recent years to a lack of market demand by the single buyer that had been taking all of the red crab production from 2002 through 2009.

The red crab industry has made significant investments in branding and processing in recent years in an attempt to improve the marketing opportunities for red crab. In September 2009 the U.S. Atlantic Deep-Sea Red Crab fishery was certified as a sustainable fishery by the Marine Stewardship Council. Major seafood marketers are seeking MSC certified products and the red crab fishery is one of only two crab fisheries that have MSC certification. The other certified crab fishery is a small fishery for snow crab that is sold exclusively within Japan (the Kyoto, Japan Danish Seine Snow Crab fishery lands approximately 220 mt per year).

Prior to August 2009, all U.S. red crab landings were trucked to Canada for processing. In August 2009 a new red crab processing plant, The Atlantic Red Crab Company, began operation in New Bedford, MA. In early 2010 the Atlantic Red Crab Company entered into a marketing agreement with Slade Gorton, Inc. a major distributor of seafood products. Production potential in 2010 is uncertain because the new processing plant will still be training workers and developing new products and markets. During this period the plant will likely require regular deliveries of smaller quantities than the fleet has customarily landed. With a new processing plant and new market outlets, the economic impacts of the proposed specifications for FY2011-2013 are uncertain and the extent to which the proposed TAL will constrain potential landings is unknown.

**Table 20- Comparison of possible specification alternatives, contingent upon the Council's choice of management measure alternatives.**

	Hard TAL, No DAS Specifications	No Action/ Status Quo
MSY (mt)	Undetermined	2,830
OFL (mt)	Undetermined	Undetermined
OY (mt)	Undetermined	2,688
ABC (mt)	1,775	1,775
ACL (mt)	1,775	n/a
Target TAC (mt)	n/a	1,775
Fleet DAS	n/a	665*
TAL (mt)	1,775	n/a

\*Using the most recent calculation of average landings-per-DAS charged (5,882 lb/DAS (2,668 kg/DAS) charged from FY 2005/2009)

**Table 21-** Alternative target TAC/TAL compared to actual landings, 2005-2008.

	2011-2013 TTAC/TAL	Percent Change compared to 2005 landings	Percent Change compared to 2006 landings	Percent Change compared to 2007 landings	Percent Change compared to 2008 landings	Percent Change compared to Average landings 2005-2008
		(4.44 million lb)	(3.78 million lb)	(2.83 million lb)	(3.12 million lb)	(3.54 million lb)
Hard TAL with No DAS - SSC Recommended Male Landings ABC						
	3,913,165	12 % decrease	4 % increase	38% increase	25 % increase	10 % increase
Status Quo (No Action) - FY2010 Specifications						
	3,913,165	12 % decrease	4 % increase	38% increase	25 % increase	10 % increase

### 8.7.2 *Determination of Significance Under E.O. 12866*

E.O. 12866 requires that the Office of Management and Budget review proposed regulatory programs that are considered to be significant. A "significant regulatory action" is one that is likely to: (1) Have an annual effect on the economy of \$100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, safety, or state, local, or tribal Governments or communities; (2) create a serious inconsistency or otherwise interfere with an action taken or planned by another agency; (3) materially alter the budgetary impact of entitlements, grants, user fees, or loan programs, or the rights and obligations of recipients thereof; or (4) raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in this Executive Order.

A regulatory program is "economically significant" if it is likely to result in the effects described above. The RIR is designed to provide information to determine whether the proposed regulation is likely to be "economically significant."

The Council has determined that, based on the information presented above, this action (for fishing year 2010 only) is expected to have no material economic effect. Because none of the factors defining "significant regulatory action" are triggered by this action, the action has been determined to be not significant for the purposes of E.O. 12866.

#### 8.7.2.1 *E.O. 12866 Criteria*

NMFS Guidelines provide criteria to be used to evaluate whether a proposed action is significant. A significant regulatory action means any regulatory action that is likely to result in a rule that may:

1. *Have an annual effect on the economy of \$100 million or more, or adversely effect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local or tribal governments or communities.*

This action is not expected to have either an annual effect on the economy of \$100 million, or adversely effect in a material way the economy, a sector of the economy, productivity, competition, the environment, public health or safety, or State, local, tribal governments or communities. During fishing years 2004 through 2008, gross red crab revenues averaged approximately \$3.23 million per fishing year. The value of the measures are not fully estimated, but the impact on the National economy, if any, is expected to be well below \$100 million. This action is not expected to result in forgone revenues from red crab landings relative to fishing year 2009 or 2010.

2. *Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency.*

The proposed action does not create an inconsistency or otherwise interfere with an action taken or planned by another agency. The activity that would be allowed under this action involves commercial fishing for red crab in Federal waters of the EEZ, for which NMFS is the sole agency

responsible for regulation. Therefore, there is no interference with actions taken by another agency. Furthermore, this action would create no inconsistencies in the management and regulation of commercial fisheries in the Northeast.

3. *Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof.*

This action will not materially alter the budgetary impact of entitlements, grants, user fees or loan programs, or the rights and obligations of their participants.

4. *Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.*

This action does not raise novel legal or policy issues arising out of the President's priorities, or the principles set forth in E.O. 12866.

## **9.0 LIST OF PREPARERS AND PERSONS/AGENCIES CONSULTED**

This document was prepared by New England Fishery Management Council staff (Richard Allen) with assistance from National Marine Fisheries Service staff in the Sustainable Fisheries Division (Moirá Kelly), National Environmental Policy Group (Brian Hooper) and Northeast Fishery Science Center (Antonie Chute and Barbara Rountree). In addition, this document was reviewed by NMFS staff in the following divisions:

Habitat Conservation Division, Northeast Regional Office, Gloucester, MA  
Protected Resources Division, Northeast Regional Office, Gloucester, MA  
Sustainable Fisheries Division, Northeast Regional Office, Gloucester, MA  
NEPA Group, Northeast Regional Office, Gloucester, MA

The following persons/agencies were consulted in the preparation of this document:

NEFMC Red Crab Plan Development Team

NEFMC Red Crab Advisory Panel

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**12.0 ATTACHMENTS**

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ATTACHMENT A: NEW ENGLAND FISHERY MANAGEMENT COUNCIL SSC  
REPORT ON ABC FOR RED CRAB - April 28, 2010

12. SSC (April 27-29, 2010)-M



#5

New England Fishery Management Council

50 WATER STREET | NEWBURYPORT, MASSACHUSETTS 01950 | PHONE 978 465 0492 | FAX 978 465 3116  
John Pappalardo, *Chairman* | Paul J. Howard, *Executive Director*

**To:** Paul J. Howard, Executive Director  
**From:** Dr. Steve Cadrin, Chairman, Scientific and Statistical Committee  
**Date:** April 28, 2010

**Subject: Review of Red Crab PDT MSY Proxy Reevaluation and Development of ABC Recommendations to Council**

The Scientific and Statistical Committee (SSC) was asked to: 1) Review the Plan Development Team's (PDT) MSY Proxy Reevaluation; 2) Provide the Council with the overfishing limit (OFL) and Acceptable Biological Catch (ABC) alternatives for red crab, together with guidance on the risk associated with each ABC alternative; and 3) Recommend an ABC control rule for inclusion in Amendment 3 to the Fishery Management Plan for Red Crab.

On September 23, 2009 the SSC provided the following recommendations to the Council:

1. *The overfishing limit (OFL) for red crab is approximated as 1,700-1,900 mt based on long-term average landings and depletion-adjusted average catch analyses from the 2008 Data Poor Stocks Working Group; however, both approaches to deriving OFL have technical problems that should be addressed to improve the basis of catch advice;*
2. *The interim Acceptable Biological Catch (ABC) for red crab for 2010 is 1,284 mt based on 2007 landings until the OFL estimate is reevaluated; and*
3. *The improvement of fishery and resource monitoring information is needed to derive estimates of MSY reference points and an ABC control rule.*

On March 16, 2010 the SSC reviewed information and associated presentations developed by the Red Crab PDT:

1. PDT MSY Reevaluation;
2. Report on Deep Sea Red Crab prepared for the Northeast Data Poor Stocks Working Group Meeting, Woods Hole, MA, December 8-12, 2008. (Chute A., Jacobson L. and Rago P.); and
3. Report by the Peer Review Panel for the Northeast Data Poor Stocks Working Group, Woods Hole, MA, January 20, 2009. (Thomas Miller, Chair, Robert Muller, Bob O'Boyle and Andrew Rosenberg)

The PDT demonstrated that the Depletion-Adjusted Average Catch model developed by the Data Poor Stocks Working Group provides an estimate of sustainable yield that underestimates maximum sustainable yield (MSY). Therefore, the information available for red crab is insufficient to estimate MSY or OFL. In lieu of an estimate of OFL, the SSC recommendation for an interim ABC is based on the long-term average landings of males, which is the same result as provided by Depletion Adjusted Average Catch model that assumes no depletion. The two survey estimates of abundance and their variance do not provide evidence of significant depletion from 1974 to 2003-2005. The SSC concludes that an interim ABC based on long-term average landings is safely below an overfishing threshold and adequately accounts for scientific uncertainty.

Historical landings of male red crab and historical discarding practices appear to be sustainable. Sustainability of future catches at or below the recommended ABC is conditional on not exceeding past discard rates. Estimates of discards would be needed to provide advice on total catch. If the ABC is intended to include total catch, it would have to be increased to include discards.

A research plan is needed to improve the scientific basis of management. Specifically, estimates of MSY and OFL are needed to replace the interim ABC recommendation so that an ABC control rule can be based on OFL, its uncertainty and the Council's desired risk tolerance.

The SSC's response to each Term of Reference is as follows:

- 1) *Review the PDT MSY Proxy Reevaluation* - The SSC agrees with the PDT that Depletion-Adjusted Average Catch model underestimates Maximum Sustainable Yield (MSY), and MSY is unknown.
- 2) *Provide the Council with the overfishing limit (OFL) and Acceptable Biological Catch (ABC) alternatives for red crab together with guidance on the risk that is associated with each ABC alternative* - In lieu of an OFL estimate, the interim ABC recommendation is based on a data-poor approximation of sustainable catch. There is no apparent depletion from the observed exploitation history and long-term average landings.
- 3) *Recommend an ABC control rule for inclusion in Amendment 3 to the Fishery Management Plan for Red Crab* - The best scientific information available for red crab is insufficient to advise on an ABC control rule.
- 4) *Advise the Council on an appropriate way to include female red crabs in the calculation of ABC* - No information was provided to the SSC on the female red crab catch.

**The SSC recommends that:**

- 1. Given the data-poor condition of the assessment of the red crab fishery, OFL cannot be estimated;**
- 2. Landings of male red crabs should be limited to an interim ABC of 1775 mt;**
- 3. Sustainability of future landings at or below the recommended ABC is conditional on not exceeding past discard rates; and**
- 4. Estimates of discards will be needed to provide advice on total catch.**

ATTACHMENT B: NEW ENGLAND FISHERY MANAGEMENT COUNCIL SSC  
REPORT ON ABC FOR RED CRAB - June 23, 2010



New England Fishery Management Council

50 WATER STREET | NEWBURYPORT, MASSACHUSETTS 01950 | PHONE 978 465 0492 | FAX 978 465 3116

John Pappalardo, *Chairman* | Paul J. Howard, *Executive Director*

**To:** Paul J. Howard, Executive Director

**From:** Steve Cadrin, Chairman, Scientific and Statistical Committee

**Date:** June 23, 2010

**Subject: Acceptable Biological Catch of Red Crab, including Discards and Females**

The Scientific and Statistical Committee (SSC) was asked to: 1) Review the information provided by the Red Crab Plan Development Team on historical dead discards of red crab in the directed trap fishery and in bycatch fisheries and recommend an ABC that includes both landings and dead discards; and 2) Review the information provided by the Red Crab PDT and develop recommendations concerning the potential inclusion of female red crab landings in the Acceptable Biological Catch (ABC).

On April 28, 2010 the SSC provided the following recommendations to the Council:

- 1 *Given the data-poor condition of the assessment of the red crab fishery, OFL cannot be estimated;*
- 2 *Landings of male red crabs should be limited to an interim ABC of 1775 mt;*
- 3 *Sustainability of future landings at or below the recommended ABC is conditional on not exceeding past discard rates; and*
- 4 *Estimates of discards will be needed to provide advice on total catch.*

On June 22, 2010 the SSC reviewed information and associated presentations developed by the Red Crab PDT:

- 1 PDT discussion paper titled: "Options for Potential Female Red Crab Harvest for Inclusion in the ABC and ACL."
- 2 PDT discussion paper titled: "Estimates of Historical Discards and Discard Mortality Rates in Fisheries for which Red Crab is Caught Incidentally."
- 3 PDT discussion paper titled: "PDT Analysis of Dead Discards and Potential Female Allowable Landings to be added to the Interim ABC for Red Crab."
- 4 "Escape ring selectivity, bycatch, and discard survivability in the New England fishery for deep-water red crab, *Chaceon quinquedentatus*, S. M. L. Tallack

National Standard 1 Guidelines indicate that ABC should include removals from all sources: "Catch includes fish that are retained for any purpose, as well as mortality of fish that are discarded." Therefore, conformance with NS1 guidelines would require that the ABC for red crab be increased to include the volume of dead discards and female landings.

Term of Reference #1 ó Dead Discards The PDT reviewed data concerning discards and discard mortality from a variety of sources. Those sources include the 2006 stock assessment, the Report of the Data Poor Stocks Working Group, the 2009 SAFE Report, and data from observed trips in both the directed red crab fishery and for fisheries for which red crab discards have been recorded. The SSC concludes that the available monitoring data on magnitude of discards and research on discard mortality are inadequate for reliably estimating the magnitude of dead discards. Therefore, despite guidance on including dead discards in catch limits, the best scientific information available for deriving ABC is the time series of landings.

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Term of Reference #2 Female Landings In response to a request from the red crab industry and from red crab researchers, the National Marine Fisheries Service approved an exempted fishery permit (EFP) that exempts four vessels from the prohibition on landing more than one standard tote of female crab per trip. The EFP allows for landing of no more than 1 million lb of female red crab over two years. The long-term purpose of the EFP is sustainable female landings, but it is not clear whether the experimental fishery will support an evaluation of sustainable female landings.

The basis of the SSC's previous recommendation on ABC is that there is no evidence of population depletion since the beginning of the fishery, and the time series of male landings provides an estimate of sustainable yield of males only. This inference of sustainability is conditional on the male-only fishing strategy that existed during the observed time series. If the Council desires that the ABC include landings of females, the SSC would need to reconsider the inference of sustainability and derive a new scientific basis for the ABC recommendation. For example, results from the experimental female fishery, current cooperative research projects, and the monitoring required as a condition of the Marine Stewardship Council certification should be examined.

The Fishery Management Plan for deep sea red crab prohibits the landings of females, and the Council has not explicitly decided to revise that management strategy. Allowing the landing of females is being considered through an experimental fishery. Therefore, results of the experiment and other research should be evaluated in comparison to the performance of the male-only harvest strategy.

**The SSC repeats its previous recommendations:**

- 1 Landings of male red crabs should be limited to an interim ABC of 1775 mt; and
- 2 Sustainability of future landings at or below the recommended ABC is conditional on not exceeding past discard rates;

**In response to the terms of reference, the SSC recommends that:**

- 1 Inclusion of dead discards in red crab catch limits requires improved monitoring of the magnitude of discards and research on discard mortality.
- 2 Including female landings of red crab in catch limits requires an evaluation of sustainability of a male and female fishery and a more explicit decision on management strategy.

**ATTACHMENT B: List of Species Under NMFS Jurisdiction Protected by Endangered Species Act or Marine Mammal Protection Act**

There are numerous species that inhabit the environment within the red crab management unit and are afforded protection under the Endangered Species Act of 1973 (ESA; i.e., for those designated as threatened or endangered) and/or the Marine Mammal Protection Act of 1972 (MMPA). Fourteen are classified as endangered or threatened under the ESA, while the remainder is protected by the provisions of the MMPA. The Council has determined that the following list of species protected either by the ESA and the MMPA may be found in the environment inhabited by spiny dogfish:

**Cetaceans**

<u>Species</u>	<u>Status</u>
Northern right whale ( <i>Eubalaena glacialis</i> )	Endangered
Humpback whale ( <i>Megaptera novaeangliae</i> )	Endangered
Fin whale ( <i>Balaenoptera physalus</i> )	Endangered
Blue whale ( <i>Balaenoptera musculus</i> )	Endangered
Sei whale ( <i>Balaenoptera borealis</i> )	Endangered
Sperm whale ( <i>Physeter macrocephalus</i> )	Endangered
Minke whale ( <i>Balaenoptera acutorostrata</i> )	Protected
Beaked whales ( <i>Ziphius</i> and <i>Mesoplodon</i> spp.)	Protected
Risso's dolphin ( <i>Grampus griseus</i> )	Protected
Pilot whale ( <i>Globicephala</i> spp.)	Protected
White-sided dolphin ( <i>Lagenorhynchus acutus</i> )	Protected
Common dolphin ( <i>Delphinus delphis</i> )	Protected
Spotted and striped dolphins ( <i>Stenella</i> spp.)	Protected
Bottlenose dolphin ( <i>Tursiops truncatus</i> )	Protected

**Sea Turtles**

<u>Species</u>	<u>Status</u>
Leatherback sea turtle ( <i>Dermochelys coriacea</i> )	Endangered
Kemp's ridley sea turtle ( <i>Lepidochelys kempii</i> )	Endangered
Green sea turtle ( <i>Chelonia mydas</i> )	Endangered
Hawksbill sea turtle ( <i>Eretmochelys imbricata</i> )	Endangered
Loggerhead sea turtle ( <i>Caretta caretta</i> )	Threatened

**Fish**

<u>Species</u>	<u>Status</u>
Shortnose sturgeon ( <i>Acipenser brevirostrum</i> )	Endangered
Atlantic salmon ( <i>Salmo salar</i> )	Endangered
Smalltooth sawfish ( <i>Pristis pectinata</i> )	Endangered

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