

infrastructure, or the safety of any fishery participants. There appears to be general support for this type of measure among the participants in the directed fishery, and this measure is not expected to decrease the flexibility or stability, or increase the uncertainty, of the participants in the directed fishery.

The only option that may be associated with any potential social impacts to the participants of the directed red crab fishery is the proposed requirement that the directed fishery be regulated as a trap-only fishery. No one in the fishery currently uses any type of fishing gear other than traps, but there is some concern among the members of the fishery that potential future participants may use mobile gear such as trawls and dredges. The members of the industry are opposed to the use of such gear and so they support this option. In spite of the concerns of members of the red crab industry over the potential use of otter trawls and dredges, the actual potential for these gears being used at directed levels is fairly small. Implementation of this option may also result in an increased sense of stability and a reduction in any uncertainty (knowing that trawl and dredge gear will not be allowed in the fishery).

5.3.6.6 Impacts of the Measure on Protected Species

Most of the gear requirements being proposed under this measure are for the protection of the red crab resource and have no impact on protected species. The ALWTRP currently requires a suite of gear modifications for the red crab fishery. There will be no additional beneficial effect on marine mammals and other protected species associated with these measures except for the buoy marking requirement. Buoy marking will provide the potential for the identification of red crab gear found on an entangled whale. The prohibition on all non-trap gear for use in the directed red crab fishery is not beneficial to marine mammals and other protected species as alternatives to traditional trap gear may reduce the likelihood of interactions between protected species and red crab fishing gear.

5.3.7 **Total Allowable Catch**

This measure establishes a target total allowable catch (TAC) for the directed red crab fishery. Option 5, the Vessel-Based TAC, cannot be implemented as an actual vessel-based TAC, as that is in essence an individual vessel quota, which is prohibited under current law. This type of system could be done as a vessel-category-based TAC, where the overall TAC is split into two or more TACs allocated to different categories of vessels (e.g., a catcher-processor TAC and a whole crab TAC).

5.3.7.1 Biological and Ecological Impacts of the Measure on Red Crab

In many of the proposed measures, the overall allowable level of red crab catch is the primary control on the fishery. The level of the TAC determines the expected effects on the resource. A TAC set at or very close to the best estimate of MSY for the resource incurs higher levels of risk to the resource than a TAC set at a precautionary percentage of the MSY level. The higher the TAC, the higher the probability that the resource may be subject to overfishing and become overfished.

An issue related to the actual size of the TAC (and, therefore, the amount of the red crab stock likely to be removed from the population during the fishing year) is the timing of the fishing effort. If there are no other controls on the fishery, then a derby-type fishery is likely to develop. This could end up as a fishery that opens at the start of the fishing year and closes a few months later when the TAC is reached. This type of management program would constrain all the year's fishing effort into a much shorter timeframe. This could have either adverse or beneficial effects on the resource, depending on several factors.

If the fishing effort is concentrated during times of heavy molting and reproduction, more females may be caught and damaged than normal. This could limit successful reproduction. If the fishing effort is concentrated just prior to any annual cycle of molting, then the loss of a significant portion of the large males could reduce the number of males available for mating, also limiting successful reproduction. There may be times of the year, however, when concentrated fishing effort does not have any deleterious effects on the resource.

If the use of an overall TAC for the fishery is combined with other measures intended to reduce the likelihood of a derby fishery and spread the landings out over the entire year, then there are unlikely to be any significant impacts to the resource above and beyond the impacts expected due to the level of the TAC.

5.3.7.2 Ecological Impacts of the Measure on Other Species and Communities

Very little is known about the interactions of the deep-sea red crab with other species and their associated communities. The directed red crab fishery has no known interactions with other species or their associated communities, as the bycatch of other species in the red crab fishery is minimal. The impacts of this fishery on other species or their communities are expected to be minimal to non-existent. This proposed measure would not affect this conclusion.

If new information becomes available that suggests this conclusion may be incorrect, the Council will review the information and consider whether or not additional action may be necessary. Future assessments of this type will consider all new information regarding the interactions of the red crab fishery with other species and their communities and consider mitigation, if necessary, at the appropriate time.

5.3.7.3 Impacts of the Measure to Essential Fish Habitat

This measure may have an indirect effect on the habitat of the region by establishing an upper limit on the amount of fishing effort allowed in the directed red crab fishery. A hard TAC, where the fishery is closed upon landings reaching the TAC, would constrain the overall fishing effort for the year, whether that effort is allocated via some number of trips, DAS, IVQ, etc., or is not allocated at all. Limiting the total amount of allowable fishing effort could have an effect on habitat if there were any adverse impacts to this habitat associated with the directed red crab fishery. Since there are no known adverse impacts associated with this fishery as it is currently prosecuted, it

is unlikely that this measure would have any effect on the EFH of any managed species. The use of a target TAC, where fishing effort is not controlled directly, would have no effect on habitat, even indirectly.

5.3.7.4 Economic Impacts of the Measure on the Fishery

The FMP will establish a target TAC for the red crab fishery. The hard TAC option would establish an upper limit for annual landings in the fishery, and once this limit was reached, the fishery would be shut down for the remainder of the year. Used alone, this would create conditions leading to a “derby”-type fishery. Because this is generally known, it would have to be paired with a suite of management measures that keeps fishing effort and mortality low enough to obviate the need for a shutdown early in the year. Under the hard TAC option, in a manner similar to the emergency action, there would need to be a data collection system for determining when the TAC has been reached and notification procedures for shutting down the fishery. Under the preferred target TAC option, the Council will need to specify a data collection system and protocols for establishing the following year's TAC based on current year harvest levels.

A hard TAC alone would traditionally bring about a derby style of fishing activity. It would favor the vessels that could harvest the greatest volume of red crab in the shortest time. The larger vessels or particularly those with the largest hold capacity would have disproportionate benefits. A trip limit combined with a TAC would allow for spreading out the TAC over a specified time frame, but would still create a derby type situation. The purpose of a trip limit, in combination with a TAC, is to spread out the TAC so that the landings do not occur solely at the beginning, or solely by the vessels capable of landing the most efficiently. If trip limits were used in addition to a TAC, the number of trips allowed per vessel would have to be considered. If the resulting number of trips was very restrictive, it could exclude a whole class of vessels -- those that are capable of landing far more to stay within the TAC than the trip limit.

Rather than establish an overall TAC for the entire fishery, the target yield could be divided and assigned to individual vessels or categories of vessels (e.g., large catcher-processors and small catcher vessels). Each vessel or category of vessels would be allocated a certain amount of landings for the year and when they reached this amount of landings, would have to stop fishing for the remainder of the year. In order for this option to be considered, it must be used with a category of vessels. If a TAC were assigned to individual vessels, it would be an IVQ which is already a separate alternative. See Section 5.3.11 for a discussion of this option. Considered as a sole measure, a TAC assigned to categories of vessels may have some economic benefits, especially given the small number of participants that would be in each category. In other fisheries, situations such as this have prompted successful use of producer co-ops, where vessel owners within a category can negotiate and agree on their share of a group allocation.

The preferred alternative chosen was the creation of a target TAC equal to the most current estimate of optimum yield for the fishery, adjusted annually. This would minimize the potential for a derby fishery, and have the best chance of maintaining a twelve-month fishery.

A race to fish for the harvesters causes a race to process for the processors, since red crab is a perishable product. Placing an upper limit on total landings would place a limit on the amount of red crab available to be processed and would influence whether or not there was a steady supply of product. This may affect the quality of red crab available, if processors are forced to deal with supply fluctuations. All of the processors report relying on some other products in addition to red crab so that their revenue is not completely dependent on the continuous supply of red crab. On average, red crab accounts for 11.5% of their fishery-related processing operations. Most processing employees also work on other fishery-related products or at least do not work exclusively on red crab. See Appendix B for a further discussion of the processing sector.

There are no economic impacts to fishery-dependent service industries expected as a result of a total allowable catch measure. The current suppliers of these types of services would easily handle any change in services needed. Given the small number of fishing vessels involved, it is unlikely that providing a change in services to red crab vessels would account for a change to any service industry's fishery-related revenue.

Any change which has an effect on the amount of red crab product landed will in turn have an effect on the markets. In this case, the amount of red crab landed will be reduced to a level that may be consistent with prior years. In the absence of a demand function for red crab, it is hard to predict what effect a lower quantity of product would have on price. There are no known economic impacts to fishing communities expected as a result of this proposed measure. Since the size of the fishery is so small, and so few vessels participate, the impact on any change in the red crab fishery is overwhelmed in the community by the influence of larger fisheries, which generate greater revenue.

5.3.7.5 Social/Cultural Impacts of the Measure

There are no data available with which to evaluate the potential impacts of this measure on the social and cultural aspects of New England and Mid-Atlantic fishing communities. The small size, few participants, and distributed nature of this fishery, however, suggests that any social or cultural impacts to these fishing communities will be negligible. Based on information provided by members of the red crab fishing industry in response to a survey collecting baseline information on the fishery, few consider the communities in which they live to be fishing communities, and fewer still consider their communities to be significantly dependent upon fishing activities (see Appendix B). The implementation of new management programs for the red crab fishery, therefore, would not be expected to significantly disrupt the social frameworks of these communities.

The proposed measure to manage the directed red crab fishery through the use of a target TAC could result in adverse social impacts on the current participants of the fishery. There are two aspects of this proposed measure that are related to potential social impacts. First, the TAC may have to be set significantly lower than the level of landings to which the current fishery participants are accustomed. This would in turn reduce their revenues, with a potential reduction in occupational opportunities for some fishermen, and a general decrease in flexibility and stability associated with this fishery, in turn increasing the uncertainty felt by the participants.

Second, without other complementary controls, the simple establishment of an overall TAC for the fishery could create a derby-type fishery, where the participants fish much harder and more frequently than they would under other conditions in an attempt to harvest as much of the available TAC as they can before the TAC is reached and the fishery is closed down. Depending on the number of participants in the fishery and the level of the TAC, this “race to fish” could result in significant decreases in flexibility and stability in the fishery, as well as significant increases in the uncertainty associated with the fishery and the availability of the resource (e.g., “I better fish hard today, because the TAC might be gone tomorrow.”).

Derby-type fishing is also associated with decreases in safety levels in most fisheries where they occur, as participants fish harder, more frequently, for longer durations, and are less likely to adjust their fishing practices to account for changes in weather or potential mechanical difficulties. Lastly, derby fishing is also associated with labor problems from the view of the vessel owners and operators who may be forced to lay off crew members once the annual TAC is reached, possibly for significant portions of the year, and then may have trouble finding qualified crew when the fishery starts up again for the next year. Derby fishing is also associated with labor problems from the perspective of the crew members, who may find themselves facing unemployment for significant periods of time while the fishery is closed.

Although there is general support within the industry for some sort of TAC as an upper limit on the overall fishing effort allowed in the directed red crab fishery, the TAC must be implemented in conjunction with other measures that would serve to prevent a derby-type fishery.

5.3.7.6 Impacts of the Measure on Protected Species

Any overall TAC set lower than current fishing levels would reduce the overall fishing effort and be beneficial to protected species. The target TAC will be set at 5,928,000 pounds of whole red crab or their equivalent. This TAC level is equivalent to the total catch reported in 1999 and represents a 25% decrease from 2001 levels. Therefore, an overall benefit to protected species can be expected.

There is concern that a derby fishery would result from some of the options that were proposed unless specific measures were adopted to mitigate this concern. However, a derby fishery would not necessarily be adverse for marine mammals and other protected species if the fishery is timed to occur during periods when the fishing grounds are little used by protected species. The beginning of the fishing year has been set at March 1 when most large whales have moved north into the Gulf of Maine and before other odontocetes arrive at the shelf edge. The DAS limits should also mitigate against development of a derby fishery. Therefore the overall impact of the selected TAC level and fishing year is beneficial to protected species.

5.3.8 **Trip Limits**

This measure will establish limits on the amount of red crab that may be landed on

each fishing trip taken by a vessel participating in the directed red crab fishery.

5.3.8.1 Biological and Ecological Impacts of the Measure on Red Crab

Trip limits alone are unlikely to have any direct effects on the red crab resource. The options proposed in this measure potentially constrain the fishing power of individual vessels on a per-trip basis, but do not necessarily constrain the fishing power of the entire fleet over the entire fishing year. For example, a trip limit of 50,000 pounds coupled with no overall limit on catch and no control on the number of trips taken could allow for significant overfishing if all vessels made many trips at the trip limit (e.g., 7 vessels each making 30 trips at 50,000 pounds per trip = 10.5 million pounds of landings). A much higher trip limit, on the other hand, coupled with a strict limit on overall catch or the number of trips each vessel may make, would constrain the fishing power of the fleet (e.g., a trip limit of 200,000 pounds would likely not result in overfishing if the overall TAC was set equal to MSY).

5.3.8.2 Ecological Impacts of the Measure on Other Species and Communities

Very little is known about the interactions of the deep-sea red crab with other species and their associated communities. The directed red crab fishery has no known interactions with other species or their associated communities, as the bycatch of other species in the red crab fishery is minimal. The impacts of this fishery on other species or their communities are expected to be minimal to non-existent. This proposed measure would not affect this conclusion.

If new information becomes available that suggests this conclusion may be incorrect, the Council will review the information and consider whether or not additional action may be necessary. Future assessments of this type will consider all new information regarding the interactions of the red crab fishery with other species and their communities and consider mitigation, if necessary, at the appropriate time.

5.3.8.3 Impacts of the Measure to Essential Fish Habitat

This measure was considered primarily as a mechanism to spread out the overall fishing effort throughout the year and to avoid creation of a derby-type fishery. It is expected that the overall fishing effort, on an annual basis, would not change as a result of this measure. Generally, the implementation of trip limits of any kind would not be expected to have a direct effect on the habitat of the region. Trip limits could have an indirect effect on the habitat of the Northeast by controlling the amount of fishing effort associated with the fishery, assuming that fishing effort ceases as soon as the trip limit is reached and does not continue with the intent of "high-grading." However, this fishery is not considered to contribute any adverse impacts to the habitat of the region under any circumstances and this measure does nothing to alter this conclusion.

5.3.8.4 Economic Impacts of the Measure on the Fishery

From an economic point of view, this measure has a drawback compared to a limitation of effort. Trip limits act by reducing the efficiency of the fishing activity, by

forcing fishermen to come back to port before they would otherwise. They reduce catches without any associated reduction of costs, and therefore result in reduced profitability at least in the short term.

However, trip limits have been used in conjunction with a TAC to minimize the potential for a derby fishery (although certainly not eliminating it) that may be associated with the setting of a TAC alone. In a quota fishery, trip limits provide a way to spread out the catch over the year, providing for a more orderly fishery and limiting market gluts. The balancing of enforcement concerns versus conservation rationale for trip limits will need to be considered. For each option specified under this measure, the trip limit would be considered to be in whole weight equivalent (i.e., a vessel that partially processes or butchers crabs at sea would use a specified recovery rate conversion formula and determine the whole weight equivalent of the weight of their crab product). The specification of reasonable and straightforward conversion rates will be critical to the success of this potential measure.

The non-preferred trip limit option of 65,000 pounds was based on the average trips taken by the traditional red crab vessels. Another non-preferred option would offer differential trip limits for different vessels (of the vessel's choice) and allocate a maximum number of trips per year to each vessel depending on the category of trip limit they choose. Each directed red crab vessel would be allocated a certain number of fishing trips and a maximum trip limit, providing a tiered approach to vessel trip limits, such that a vessel might declare into a 60,000 pound trip limit category, a 120,000 pound trip limit category, or a 180,000 pound trip limit category, depending on which amount of landings is most economical for their vessel. Each vessel would then be allocated a certain number of trips such that the ratio of landings to trip limit category would be the same. For example, under the above categories of trip limits, vessels declaring into the 60,000 pound category would be allocated twice as many trips as vessels in the 120,000 pound category and three times as many trips as the vessels in the 180,000 pound category. Smaller vessels may opt for more trips at higher trip limits while larger vessels may opt for fewer trips at lower trip limits. This method would offer vessels the ability to operate their vessel in a more efficient manner than if there was one trip limit that applied to every size vessel.

A differential trip limit and authorized number of trips would provide trip allocations to vessels in the red crab fishery similar to what is occurring in the controlled access fishery for scallops in re-opened management areas. Vessels would be able to know, up front, what they could land with no further restrictions. This would force vessels to be efficient in two ways. The individual vessels would be allowed to utilize their full holding capacity; it would allow larger vessels to participate at a higher level of landings. Because this measure would ultimately be combined with a hard TAC, it is not known how much of the TAC that each participating vessel would ultimately receive.

The benefits of this option would be determined by several factors: the number of vessels, the corresponding number of trips, and the trip limit criteria. We know that the final number of trips allowed per year would be significantly less than vessels in this fishery have historically taken. This would mean that these vessels would have to do

other things to remain profitable, either fish for red crabs on a part-time basis or fish in other regions outside of the Northeast. The red crab resource is widespread and it is very possible that vessels would fish for red crab elsewhere. This option would severely limit the number of trips that vessels could take. Given our limited data, it is clear that this would limit vessels that have been in the fishery, and presumably would limit vessels that have recently entered or were planning on entering the fishery. However, they would have the flexibility to plan their fishing activities such that they use the trips to their advantage and plan other revenue-generating activity, from fishing or other activities.

Another non-preferred variety of differential trip limit could also be used that establishes trip limit categories (e.g., 60,000 pounds and 100,000 pounds). All vessels participating in the directed fishery would be subject to the 60,000 pound trip limit unless they could show evidence of a past trip with landings of 100,000 pounds or greater prior to the control date. This would allow vessels with a history of higher than average per trip landings, which may be necessary to remain economically viable in the fishery, to continue fishing at that level. Other vessels without the history of higher than average per trip landings would not be allowed to increase their effort but would be constrained to a lower level of per trip landings more in line with the rest of the fleet.

The catch per trip and the number of trips must be considered concurrently to determine the impact on the red crab fishery. Trip limits will tend to increase the number of trips taken and spread the harvest out during the year. If trip limits are constraining to a vessel, it will raise the cost per crab harvested. Assuming an annual TAC of 5 million pounds, a trip limit of 75,000 pounds of live crab would imply a total of 67 trips per year for all participants. According to the social and economic survey that was voluntarily completed by members of industry, the average number of red crab trips taken was just under 32. Clearly, if more than two vessels were participating in the fishery and they were allocated an equal number of trips, they would all have to cut back from their prior activity level. The decrease in revenue that vessels would experience would depend on the specific trip limit and corresponding number of trips allotted.

In the past, most boats landed whole crabs and the average catch per trip ranged from 38,000 to 100,000. Therefore, setting a trip limit below 100,000 would not affect all boats equally. Vessels that have recently entered the fishery reportedly have higher harvesting capacity than the other boats, and could be most restricted by a trip limit. A trip limit of 65,000 pounds equates to the average landings of the red crab vessels fishing in this fishery prior to the March 1, 2000, control date. Vessels that land whole crabs and that have a hold capacity of approximately 65,000 pounds would be able to continue fishing trips at historical levels, but in a safer manner than under a TAC without trip limits. Vessels that butcher or process crabs at sea and that have hold capacities of greater than 65,000 pounds could still fish, but would likely be constrained by this trip limit over what they could have harvested and landed based on their hold capacities.

A derby fishery not only is economically inefficient, but creates safety concerns as vessels may feel pressure to take more risk and fish in poor weather conditions so that they do not lose their opportunities before the TAC is reached and the fishery closed. Without a trip limit, a vessel that can process at sea and land finished product, especially

those vessels with hold capacities in excess of 100,000 pounds, could remain at sea for as long as necessary to harvest as much red crab as possible and may harvest a significant portion of the overall TAC on each trip. This could also create an incentive for the rest of the red crab vessels to fish as hard and as fast as possible in an effort to secure as large a share of the TAC as possible.

Under this FMP, vessels will be prohibited from transferring red crab at sea. A prohibition against transfers at sea prevents vessels from transferring red crab at sea in excess of the trip limit and, thereby, circumventing the red crab trip limit restriction. This may be an important factor.

The preferred alternative will allow for a baseline possession limit for all controlled access vessels of 75,000 pounds of whole red crab (or the equivalent). Based upon public comments, the preferred option was selected that would allow vessels to operate at their best historical level. If a vessel can show proof of a trip higher than 75,000 pounds during the controlled access qualification period, then that vessel will qualify for a trip limit equal to the larger trip, rounded to the nearest 5,000 pounds. It is not always possible for a vessel to duplicate their highest level of landings, so that their average will be less than their individual trip limit. This form of differential trip limit will enable vessels to operate at their peak efficiency, in the most economical way possible, within the constraints necessary for the resource.

Placing an upper limit on landings per trip will place a limit on the amount of red crab available to be processed at any one time. This will limit the amount of red crab available to processors to a lesser quantity than processors may currently have available to them. This may also influence whether or not there was a steady supply of product. This may affect the quality of red crab available, if processors are forced to deal with supply fluctuations. All of the processors report relying on some other products in addition to red crab so that their revenue is not completely dependent on the continuous supply of red crab. On average, red crab accounts for 11.5% of their fishery-related processing operations. Most processing employees work either on other fishery-related products or at least do not work exclusively on red crab. See Appendix B for a further discussion of the processing sector.

There are no known economic impacts to fishery-dependent service industries expected as a result of a trip limit. The current suppliers of these types of services would easily handle any change in services needed. Given the small number of fishing vessels involved, it is unlikely that providing a change in services to red crab vessels would account for much of a change to any service industry's fishery-related revenue.

Trip limits may force some vessels to operate in an inefficient manner and raise their costs. Any change which has an effect on the efficiency of red crab vessels will in turn have an effect on the markets. It is unknown how great an impact this forced inefficiency may have on the markets.

There are no known economic impacts to fishing communities expected as a result of this proposed measure. Since the size of the fishery is so small, and so few vessels

participate, the impact on any change in the red crab fishery is overwhelmed in the community by the influence of larger fisheries, which generate greater revenue.

5.3.8.5 Social/Cultural Impacts of the Measure

There are no data available with which to evaluate the potential impacts of this measure on the social and cultural aspects of New England and Mid-Atlantic fishing communities. The small size, few participants, and distributed nature of this fishery, however, suggests that any social or cultural impacts to these fishing communities will be negligible. Based on information provided by members of the red crab fishing industry in response to a survey collecting baseline information on the fishery, few consider the communities in which they live to be fishing communities, and fewer still consider their communities to be significantly dependent upon fishing activities (see Appendix B). The implementation of new management programs for the red crab fishery, therefore, would not be expected to significantly disrupt the social frameworks of these communities.

The use of trip limits is primarily intended to reduce the likelihood of a derby-type fishery developing in response to an established TAC, largely by limiting the amount of red crab that could be landed on a per trip basis and spreading out the effort into more fishing trips than would otherwise be necessary to harvest the TAC. Thus, implementation of this measure may mitigate some of the impacts identified for the previous measure. However, that does not mean that there may not be any social impacts potentially associated with proposed options under this measure.

Any option that significantly changes the fishing practices of a vessel participating in the directed red crab fishery could increase the level of adverse social impacts. It may be possible to establish a trip limit so low that vessels cannot break even on any fishing trips. This would increase the general levels of stress in the fishery and may force some participants out of the fishery. This level of trip limit would be expected to decrease flexibility and stability and significantly increase uncertainty. Occupational opportunities may be decreased if owners are forced to reduce their crew to accommodate the lower trip limits. Fewer crew on a vessel may have safety implications, as will any other “cost-cutting” measure adopted by the vessel owner in attempt to work within the trip limit.

Also, while trip limits set too low will increase the level of social impacts in the fishery, if the trip limits are set too high, then nothing will be achieved in the attempt to prevent a derby fishery. For example, a trip limit that allows the participants to continue to land red crabs to their vessels’ capacities will not affect fishing practices and will do nothing to abate the potential “race to fish.” Thus, any trip limits selected for the red crab fishery must be low enough to be effective in the prevention of a derby fishery, but not too low to cause other unintended consequences.

The option that allows vessels to choose a differential trip limit (one that matches or is close to their vessel’s capacity) would mitigate the concern over unintended consequences if the trip limit is set too low, and the specific number of allocated trips per vessel would mitigate the concern over the potential for creating a derby fishery. All vessels would be able to fish at a level appropriate for their vessel and by having a

specific number of fishing trips allowed each year, all incentives to race to fish are removed. This option would be expected to contribute beneficial social impacts to the participants of the fishery.

Under the differential trip limit option, flexibility of when and where to fish is retained, stability is increased as the number of annual trips is known, and uncertainty would be decreased as there is no question as to when and how quickly will the fishery be closed down if the TAC is reached. The safety and occupational concerns identified previously will be mitigated.

5.3.8.6 Impacts of the Measure on Protected Species

The proposed trip limit of 75,000 pounds does not, by itself, constrain the overall fishing effort. The overall TAC and subsequent DAS allocation system under which vessels will be operating will provide adequate control on fishing effort. Trip limits may serve to control the size of vessels that participate in the fishery, thus serving to limit the amount of gear used by each vessel. Therefore, the overall effect of the proposed measure on marine mammals and other protected species can be stated as not likely to increase the existing entanglement threat to those species.

5.3.9 **Controlled Access Program**

This measure proposes a variety of qualification criteria to be used to determine the vessels authorized to participate in the directed red crab fishery.

5.3.9.1 Explanation of Analysis

Background

The Magnuson-Stevens Act allows for the development of a limited (or controlled) access system for a fishery, but to do so requires the Council to take several issues into account, as follows:

Discretionary Provisions [16 U.S.C. 1853 § 303]:

Any fishery management plan which is prepared by any Council, or by the Secretary, with respect to any fishery, may --

- (6) establish a limited access system for the fishery in order to achieve optimum yield if, in developing such system, the Council and the Secretary take into account --
 - (A) present participation in the fishery,
 - (B) historical fishing practices in, and dependence on, the fishery,
 - (C) the economics of the fishery,
 - (D) the capability of fishing vessels used in the fishery to engage in other fisheries,
 - (E) the cultural and social framework relevant to the fishery and any affected fishing communities, and
 - (F) any other relevant considerations.

The analyses and descriptions of potential impacts that follow, primarily in the economic and social impacts sections, are intended to address each of these points

Overview

Data were available from the vessel trip report (VTR) and dealer weighout (Dealer) databases on reported landings of deep-sea red crab. Because the reporting of red crab was not required prior to the implementation of the NMFS emergency regulations, all landings data reported in this analysis should not be considered as absolute landings but only as the minimum landings. Vessels without federal permits that required landing reports or dealers not federally licensed would not be required to report their landings of red crab and may not have done so. Thus it is important to understand that the number of vessels identified below is the minimum number of vessels as other vessels not reporting may also have had similar landings.

The VTR and Dealer databases were used to identify all individual vessels with more than one pound of reported red crab landings during the years 1991 - 2001, inclusive. Where there was a discrepancy between the amount of landings in the VTR data and the amount in the Dealer data, the greater of the two was used. There were 86 individual vessels that reported some landings of red crab during this period. Of these, 47 reported less than 1,000 pounds of landings total over the eleven year period. Of the remaining vessels, 22 had total landings of more than 1,000 pounds but less than 10,000 pounds. Only one of these 22 vessels had less than 1,000 pounds of landings in each of the eleven years, but only two vessels had 5,000 pounds or more in any one year.

There were four vessels that reported between 10,000 and 100,000 pounds of landings during this period. Three of these vessels only reported landings in a single year and the fourth vessel reported landings in only two of the years. There were another six vessels with reported landings between 100,000 and 1,000,000 pounds. None of these vessels reported any landings prior to 1995. Of these, two vessels reported landings only in 2001. Seven vessels reported landings greater than 1,000,000 pounds. Of the seven, two vessels have not reported any landings since 1993. The remaining five vessels reported landings greater than 1,000,000 pounds, and have a current reporting history.

These data can be used to get an indication of how many vessels would be likely to qualify for the controlled access program depending on the criteria selected by the Council. The Council developed a wide range of potential criteria to be used to establish the red crab controlled access program.

Landings Prior to the Control Date

The first question we attempted to answer was based on the range of criteria developed by the Council to determine access to the fishery based on some minimum amount of landings during some time period prior to the control date. The specific language of this option reads as follows:

Control date cut-off -- This option would limit the vessels qualified to participate in the directed red crab fishery to only those vessels with a history of verifiable

landings prior to the March 1, 2000 control date. There could be a couple options for qualification criteria under the control date cut-off. The following options are intended to represent a range of qualification criteria, some of which may be considered too restrictive and others which may be considered not restrictive enough.

- a. At least 10,000 pounds of verifiable annual landings in one or more years of up to the three years prior to the control date. The intention of this option would be to differentiate vessels targeting red crabs from those landing small amounts of red crab as incidental catch in their primary fisheries.*
- b. At least 300,000 pounds of verifiable annual landings in one or more years of up to the three years prior to the control date. The intention of this option would be to differentiate full-time directed red crab vessels from those vessels occasionally targeting red crabs.*

In this option the amounts of 10,000 and 300,000 pounds are intended to reflect a *range* of potential criteria rather than a single binary choice. The language requiring landings “in one or more of up to three years” was also intended to reflect a range such that the Council would have the flexibility to choose one year prior, two years prior, or three years prior to the control date as the timeframe. The Council would also have the flexibility to determine how landings would be compared against the timeframe, such that the Council could choose to use:

- a. *an average of the landings for the time period*, if the time period selected is two or three years;
- b. *the total landings for the entire time period*, be it one, two or three years;
- c. *the minimum landings required in each year* of the time period, be it one, two or three years; or
- d. *the minimum landings required in at least one year* of the time period, if the time period selected is two or three years.

For example, suppose that a hypothetical fishing vessel reported landings of red crabs in the amounts of 25,000 pounds, 15,000 pounds, and 65,000 pounds in each of the one, two and three years prior to the control date, respectively. If the minimum required landings weight selected was 50,000 pounds and the time period selected was the three years prior, this vessel would:

- a. NOT QUALIFY using the *average* landings for the time period (which would be 35,000 pounds);
- b. QUALIFY using the *total* landings for the time period (which would be 105,000 pounds);

- c. NOT QUALIFY using the minimum landings in each year of the time period (they had a year with only 15,000 pounds and one with 35,000 pounds -- both less than the 50,000 pound requirement); and
- d. QUALIFY using the minimum landings in at least one year of the time period (one year with 65,000 pounds -- more than the 50,000 pound requirement).

The first step in answering this question was to pare down the number of vessels to only those with one or more pounds of landings of red crab during the three year period prior to the control date. There were 29 vessels with landings during this time frame. Of those, 18 vessels had less than 1,000 pounds total and 21 had less than 10,000 pounds. Of the remaining eight vessels, different numbers of vessels could potentially qualify for the controlled access program depending on the exact nature of the criteria. Refer to Table 17 to see the minimum number of vessels that would be able to qualify under each possible set of controlled access criteria.

For example, if the minimum landings criterion was 250,000 pounds and the time period was the two years prior to the control date, starting from the upper left and working clockwise, the following numbers of vessels would be expected to qualify:

- a. three vessels would qualify with 250,000 pounds of landings in each of the two years prior to the control date;
- b. four vessels would qualify with an average of 250,000 pounds of landings in each of the two years prior to the control date;
- c. five vessels would qualify with a total of 250,000 pounds of landings for the two years prior to the control date combined; and
- d. five vessels would also qualify with 250,000 pounds of landings in at least one of the two years prior to the control date.

One thing to notice in reviewing this table is that many of the results are the same and do not change as the criteria change. For example, it makes no apparent difference whether the minimum landings criterion is anywhere between 50,000 pounds and 300,000 pounds for the year prior to the control date: four vessels would be expected to qualify. Under these circumstances, the Council considered selecting the most conservative approach (300,000 pounds) to minimize the potential for unknown vessels meeting the qualification criteria and gaining access to the fishery.

The Council's preferred alternative is to establish criteria requiring that a vessel demonstrate at least 250,000 pounds of red crab landings, on average, per year during the three years prior to the control date. Under this criterion, five fishing vessels would be expected to qualify for the red crab controlled access program.

Minimum Criteria	1 Year Prior		2 Years Prior		3 Years Prior	
	10,000 pounds	5	5	4	6	4
	5	5	6	6	8	8
20,000 pounds	5	5	4	6	4	7
	5	5	6	6	8	8
30,000 pounds	5	5	4	5	4	7
	5	5	6	6	8	8
40,000 pounds	5	5	4	5	4	5
	5	5	6	6	8	8
50,000 pounds	4	4	4	5	4	5
	4	4	5	5	7	8
100,000 pounds	4	4	4	5	4	5
	4	4	5	5	6	6
150,000 pounds	4	4	4	5	4	5
	4	4	5	5	5	5
200,000 pounds	4	4	3	4	3	5
	4	4	5	5	5	5
250,000 pounds	4	4	3	4	3	5
	4	4	5	5	5	5
300,000 pounds	4	4	3	4	3	4
	4	4	5	5	5	5

Each cell represents the minimum number of vessels that would be expected to qualify for the controlled access program under the specific set of criteria defined by the minimum reported landings over some number of years prior to the Control Date. The four cells for each combination of time and landings represent:

# of vessels with at least the minimum weight <u>in each</u> of the years prior to the control date	# of vessels with at least the minimum weight <u>on average</u> in the years prior to the control date
# of vessels with at least the minimum weight <u>in at least one</u> of the years prior to the control date	# of vessels with at least the minimum weight <u>total</u> for the years prior to the control date

Table 17: Numbers of qualifying vessels (option 1). This table reports the minimum number of fishing vessels that would be expected to qualify for a red crab controlled access program based on the range of options developed by the Council for the period prior to the control date. The numbers reported are based on an analysis of both VTR and dealer weighout data from 1997-2000.

Landings After the Control Date

The second question we attempted to answer was based on the range of criteria developed by the Red Crab Committee to determine access to the fishery based on some minimum amount of landings during the one year immediately following the control date. The specific language of this option reads as follows:

This option would limit the vessels qualified to participate in the directed red crab fishery to only those vessels with a verifiable history of some minimum amount of landings in the one year subsequent to the control date (March 1, 2000 - February 28, 2001). The qualification criteria for this option could be the same range as the control date cut-off option.

- a. *At least 10,000 pounds of verifiable landings.*
- b. *At least 300,000 pounds of verifiable landings.*

Minimum Criteria	1 Year After
10,000 pounds	7
20,000 pounds	7
30,000 pounds	7
40,000 pounds	7
50,000 pounds	7
100,000 pounds	6
150,000 pounds	6
200,000 pounds	5
250,000 pounds	5
300,000 pounds	4

Table 18: Numbers of qualifying vessels (option 2). This table reports the minimum number of fishing vessels that would be expected to qualify for a red crab controlled access program based on the range of options developed by the Council for the year subsequent to the control date. The numbers reported are based on an analysis of both VTR and dealer weighout data from 2000-2001.

As before the amounts of 10,000 and 300,000 pounds are intended to reflect a range of potential criteria rather than a single binary choice. The nature of this option does, however, limit the consideration of landings to only the one year period. The first step in answering this question was to determine the number of vessels with at least one pound of red crab landings during the qualification period. There were fourteen vessels