

# **2001 Catch Specifications for Surf Clams, Ocean Quahogs and Maine Mahogany Quahogs**

**Regulatory Impact Review  
Final Regulatory Flexibility Analysis**

**Prepared by  
National Marine Fisheries Service  
in Consultation With the  
Mid-Atlantic Fishery Management Council**

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## **2. INTRODUCTION**

The National Marine Fisheries Service (NMFS) prepares a Regulatory Impact Review (RIR) for all regulatory actions that either implement a new Fishery Management Plan (FMP) or significantly amend an existing plan or regulation. The RIR is part of the process of preparing and reviewing FMPs and provides a comprehensive review of the changes in net economic benefits to society associated with proposed regulatory actions. The analysis also provides a review of the problems and policy objectives prompting the regulatory proposals and an evaluation of the major alternatives that could be used to solve the problems. The purpose of the analysis is to ensure that the regulatory agency systematically and comprehensively considers all available alternatives so that the public welfare can be enhanced in the most efficient and cost-effective way.

The RIR addresses many items in the regulatory philosophy and principles of Executive Order (E.O.) 12866. The RIR also serves as the basis for determining whether any proposed regulation is a "significant regulatory action" under certain criteria provided in E.O. 12866.

## **3. MANAGEMENT OBJECTIVES**

The objectives of the surf clam and ocean quahog FMP are:

1. Conserve and rebuild Atlantic surf clam and ocean quahog resources by stabilizing annual harvest rates throughout the management unit in a way that minimizes short term economic dislocations.
2. Simplify to the maximum extent the regulatory requirement of surf clam and ocean quahog management to minimize the government and private cost of administering and complying with regulatory, reporting, enforcement, and research requirements of surf clam and ocean quahog management.
3. Provide the opportunity for industry to operate efficiently, consistent with the conservation of surf clam and ocean quahog resources, which will bring harvesting capacity in balance with processing and biological capacity and allow industry participants to achieve economic efficiency including efficient utilization of capital resources by the industry.
4. Provide a management regime and regulatory framework which is flexible and adaptive to unanticipated short term events or circumstances and consistent with overall plan objectives and long term industry planning and investment needs.

The management unit is all surf clams (*Spisula solidissima*) and all ocean quahogs (*Arctica islandica*) in the Atlantic EEZ.

Federal Surf Clam & Ocean Quahog Quotas and Landings: 1990 - 2001							
Surf Clams (Thou Bushels)				Ocean Quahogs (Thou. Bushels)			
* Georges Bank first closed for PSP in 1990				* Maine ocean quahog fishery excluded 1991 - 1999			
Year	Landings	Quota	Percent Harvested	Year	Landings	Quota	Percent Harvested
1990*	3,114	2,850	109%	1990	4,622	5,300	87%
1991	2,673	2,850	94%	1991*	4,840	5,300	91%
1992	2,812	2,850	99%	1992*	4,939	5,300	93%
1993	2,835	2,850	99%	1993*	4,812	5,400	89%
1994	2,847	2,850	100%	1994*	4,611	5,400	85%
1995	2,545	2,565	99%	1995*	4,628	4,900	94%
1996	2,569	2,565	100%	1996*	4,391	4,450	99%
1997	2,414	2,565	94%	1997*	4,279	4,317	99%
1998	2,365	2,565	92%	1998*	3,897	4,000	97%
1999	2,538	2,565	99%	1999*	3,770	4,500	84%
2000	N/A	2,565	N/A	2000	N/A	4,500	N/A
<b>2001**</b>	<b>N/A</b>	<b>2,850</b>	<b>N/A</b>	<b>2001**</b>	<b>N/A</b>	<b>4,500</b>	<b>N/A</b>
**2001 quotas are Council recommendations Source: NMFS Clam Logbook Reports, Woods Hole, MA							

### 3.1. Surf Clam Policy Objectives

The Mid-Atlantic Fishery Management Council (Council) policy is to set the surf clam quota within the OY range (1,850,000 to 3,400,000 bushels) at a level that will allow fishing to continue at that level for at least 10 years, and within the above constraints the quota may be set taking into account economic information to set the quota to consider net economic benefits over time to consumers and producers, within the framework of greatest national benefit.

At the March 2000 Council meeting, the Council (after reviewing the December 1999 surf clam SARC report) passed a motion that, "given the recent stock assessment, we consider an increase in quota to the 3.4 million bushel OY over the next 5 years with a 10% increase the first year."

### 3.2. Ocean Quahog Policy Objectives

Council policy is to set the ocean quahog quota within the OY range (4,000,000 to 6,000,000 bushels) at a level that will allow fishing to continue at that level for at least 30 years, and within the above constraints the quota may be set taking into account economic information to set the quota to consider net economic benefits over time to consumers and producers, within the framework of greatest national benefit.



## **4. DESCRIPTION OF THE SURF CLAM AND OCEAN QUAHOG FISHERIES**

### **4.1. Description of the Atlantic Surf Clam Fishery**

#### 4.1.1. Surf Clam Overview

Surf clams are bivalve mollusks which are distributed in the western North Atlantic from the southern Gulf of St. Lawrence to Cape Hatteras. Commercial fisheries have generally concentrated on the populations of surf clams which have flourished in the sandy ocean sediments off the coast of New Jersey and the Delmarva peninsula. Growth rates are relatively rapid, with clams reaching preferable/harvestable size (approximately 5 inches) in about six years. Maximum size is about 9 inches in length, though individuals larger than 8 inches are rare. They have a longevity of approximately 35 years, and while some individuals reach sexual maturity within three months, most spawn by the end of their second year.

In the Mid-Atlantic region, surf clams are found in the relatively shallow waters from the beach zone to a depth of about 180 feet. Substantial fisheries exist in the 3-mile jurisdictions of the States of New Jersey and New York.

Traditionally, surf clams' dominant use has been in the "strip market" to produce fried clams. In recent years, however, they have increasingly been used in chopped or ground form for other products, such as high-quality soups and chowders.

#### 4.1.2. Surf Clam Pricing

Exvessel prices for surf clams can vary considerably depending on the quality and meat yield of surf clams from a particular area. Surf clam beds in New York state waters and off the Delmarva peninsula tend to have lower meat weights and command lower prices. Prices will also depend on the nature and terms of contracts which fishermen and allocation holders enter into with processors. The markets for surf clams and ocean quahogs have varied over time, and individual fishermen may choose to accept a lower price for his allocation of one species in return for assurances that the processor will purchase his allocation of the other species. Some allocation holders and processors choose to enter into multi-year contracts with each other, while others do not.

The reported prices in fishermen's logbooks for 1999 ranged from a low of \$5.00 per bushel to a high of \$12.00 per bushel for surf clams. Unfortunately, pricing data as it is currently collected is ambiguous for both surf clams and ocean quahogs. Under an individual allocation system, there are two components to the value of any particular harvest: 1) the actual cost of vessel and crew services in harvesting the catch, or "harvest services," and 2) the limited access or lease value which is created when only a limited number of individuals are granted legal access to a public resource. An ITQ system allows individuals the flexibility to harvest their annual share of the quota themselves, or to "lease" a portion or all of their harvest rights to others. Current lease prices for surf clams (as of mid-2000) are in the neighborhood of \$5.00 per bushel.

Reported prices in fishermen's logbooks, however, do not specifically indicate whether a particular sale price includes the value of the lease, or not. If a vessel was fishing for a processor using allocation that was owned by the processor, then the vessel will receive a much lower price which reflects harvest services only (currently in the \$5.00 - \$6.00 range). If a vessel owns its own allocation, then the price for a good-quality bushel of federal surf clams will be in the \$8.00 - \$12.00 range. Prices for surf clams fell substantially from 1997 to 1998 under slack

demand, causing the median price to drop from \$12.00 to \$10.00 per bushel. In 1999 the price continued to edge downward until stabilizing in the latter part of the year. The outlook now appears brighter in 2000, as surf clam harvests have increased in order to substitute for ocean quahogs, whose thinning ranks have made them more costly to harvest.

While many vessels will harvest both surf clams and ocean quahogs in a given year, surf clams have always been the preferred catch due to the higher price which they command. While meat yields can vary substantially with geographic location and from year-to-year, the standard government conversion factor is for 1 bushel of surf clams to yield 17 pounds of meats, and has been in use since the 1970's. For the smaller, less-desirable ocean quahog, the accepted standard is for 1 bushel to produce 10 pounds of meats.

#### 4.1.3. Recent Fishery Performance - Surf Clams

Surf Clam Landings: Both State and Federal Waters					
Region	1998			1999	
	Bushels	Value		Bushels	Value
New England States	98,575	\$1,204,330		52,262	\$678,116
Mid-Atlantic States	3,058,134	\$27,781,605		3,410,232	\$29,765,459
Total	3,156,709	\$28,985,935		3,462,494	\$30,443,575

Source: NMFS Unpublished Landings Data, Woods Hole, MA

Coastwide landings of surf clams totaled 3.46 million bushels (bu) in 1999, an increase of 9.7% from the 3.16 million bushels landed in 1998. This reverses a trend which had seen landings decrease by 5% and 11.2% in the prior two years. Reported exvessel value increased 5.0% from \$29.0 million to \$30.4 million dollars. The improvement in the fortunes of surf clam fishermen is due largely to two factors: 1) the industry has been substituting surf clams for ocean quahogs as ocean quahog meats have become more expensive to produce, and 2) processors have had greater success in selling surf clam products relative to recent years. Industry has reported some success in marketing a thick, new "super-strip" product that is generated mainly from hand-shucked clams.

In recent years, surf clams have been harvested from four different jurisdictional areas: the federal EEZ, and the state waters of New Jersey, New York, and Massachusetts. All but Massachusetts have established management regimes which include annual quotas and harvest limits for individual vessels. In 1999, quotas were fully harvested from New Jersey and federal waters for the first time in years, while New York still retains a surplus.

#### 4.1.4. The New Jersey Inshore Fishery for Surf Clams

New Jersey manages the largest state fishery for surf clams. A constant annual quota of 600,000 bushels had been maintained for years until this past 1999/2000 season, when the quota was increased to 700,000. New Jersey is unique in defining a season which begins in October of one calendar year and closes at the end of May in the next.





New Jersey Surf Clam Fishery				
Season (Oct - May)	Quota (bu)	Landings (bu)	Bushels Unharvested	Percent Unharvested
FY 95/96	600,000	566,120	33,880	6%
FY 96/97	600,000	468,377	131,623	22%
FY 97/98	600,000	467,569	132,431	22%
FY 98/99	600,000	570,852	29,148	5%
FY 99/00	700,000	699,649	351	.05%
Source: New Jersey Division of Fish, Game, and Wildlife				

Many vessels in the New Jersey inshore fishery for surf clams also participate in the federal fishery. For the recently completed fishing year (May 2000), less than one-half of one percent of the quota was left unharvested. The past two fishing years represent a significant improvement relative to the prior two seasons, which saw fully 22% of the quota unharvested each year. Fortunately, vessels experienced virtually no problems in selling their catches in the recently completed fishing year. There are 57 licenses for inshore New Jersey. Up to three licenses can be combined onto one vessel.

#### 4.1.5. The New York Inshore Fishery for Surf Clams

New York inshore waters are divided into two segments: Long Island Sound and Atlantic Ocean waters out to three miles. While there are approximately 100 permits for the Long Island Sound area, the quantity of surf clams landed from that area is very small. With attractive shells of a golden-brown color, these surf clams are often harvested by hand, and sold fresh into sushi and premium bait markets.

The vast majority of New York state waters' harvest is from the Atlantic Ocean area, for which there are currently 23 moratorium vessel permits, held by 15 owners (Fox pers. comm.). When a moratorium and quota management were instituted in 1994, there were a total of 25 moratorium vessel permits issued. Two of these permits were canceled for failing to meet the minimum harvest requirement of 5,000 bushels per year. (This requirement has since been repealed.)

New York Inshore Quotas and Landings of Surf Clams			
Year	Quota (bu)	Harvest (bu)	Percent Over or Under Quota
1990	(none)	720,473	
1991	(none)	713,019	
1992	(none)	719,351	
1993	(none)	856,366	
1994	500,000	523,281	5 % over
1995	500,000	420,855	16 % under
1996	500,000	451,492	10 % under
1997	500,000	389,014	22 % under
1998	500,000	227,000	55% under
1999	500,000	255,194	49% under
2000	500,000	101,870 (first half year)	60% under for first half
Source: NY Dept. of Environmental Conservation			

The average catch from New York waters was approximately 173,000 bushels annually for the 20-year period spanning the 1970's and 1980's. Catches soared in 1990 with implementation of ITQ management in the federal fishery, as surplus vessels sought alternative areas to fish.

Harvests peaked in 1993 at just over 850,000 bushels, and have since trended significantly downward. As the market for surf clams began shrinking in the mid 1990s, the black, lower-yielding resource off New York's Atlantic coast has most strongly felt the effects. As of July 2000, more than half of the 23 vessel fleet had been idled for the past six months (Fox pers. comm.). Six vessels fishing for one owner and two for another owner were the only vessels that were consistently fishing. Many could be found either sunk, in a land fill, or tied to the dock for more than the past year.

The New York State Department of Environmental Conservation staffer who heads New York's surf clam program is Dick Fox. In a July 2000 contact he emphasized that the landings decline is not due to any problems associated with the resource. The New York surf clam survey was completed in the summer of 1999, and there are "clams everywhere," an outcome which is similar to what their 1996 survey found. Fox believes that the landings for New York are not higher because the market does not need their clams.

NY Atlantic Surf Clam Landings: Jan - June Comparison			
Year	First Quarter	Second Quarter	Half-Year Total
1994	119,623	119,251	238,874
1995	106,689	105,063	211,752
1996	117,738	119,053	236,791
1997	112,196	109,928	222,124
1998	76,003	59,339	135,342
1999	63,460	63,445	126,905
2000	73,170	28,700	101,870

Source: NY Dept. of Environmental Conservation

A comparison of the landings for the first half of each year since 1994 indicates that the significant unemployment currently being experienced by the New York fleet is not completely a seasonal phenomenon. Landings in 1998 and 1999 were down between 40 and 50 percent from the same period in prior years with 2000 showing a similar pattern to 1998 and 1999.

In recognition of the difficulty which fishermen were having finding a market for their surf clams, in 1998 the State of New York waived the 5,000 bushel minimum harvest requirement (in order to maintain a moratorium permit).

#### 4.1.6. The Federal Surf Clam Fishery

The federal fishery for surf clams was conducted by a total of 33 vessels in 1999, an increase of two vessels from the number participating in 1998 (Table 1). Relative to the 128 vessels reporting harvests of surf clams at the initiation of the ITQ program in 1990, this represents a 74% reduction in this sector of the fleet.

- Ž The harvest of surf clams from federal waters totaled 2.538 million bushels in 1999, and represents the first time the federal quota has neared full utilization since 1996.
- Ž Exvessel prices edged only slightly lower in 1999 after falling sharply in 1998. The median 1999 price of \$10.00 per bushel declined from \$12.00 in 1997.
- Ž Effort was spread across 2,155 individual trips, harvesting an average 1,178 bushels (36.8 cages) per trip.
- Ž A fleet-wide calculation of Landings Per Unit of Effort (LPUE) showed that the industry average increased approximately 12% to 127 bushels per hour in 1999 (Table 1).
- Ž Harvests continue to be concentrated off the coast of New Jersey, with 62% of the catch coming from the “New Jersey Nearshore” (3973) degree square (Table 4). Average LPUE for this square increased 15% for Class 3 vessels in 1999, though it is still down substantially from catch rates attained in the late 1980's.

#### 4.1.7. Biological Status of the Surf Clam Resource - Assessment Findings from the 30<sup>th</sup> SARC – December

1999

- Ž The EEZ surf clam resource is at a high level of biomass and is under-exploited.
- Ž The majority of the catch is derived from the Northern New Jersey (NNJ) area which contains about 39% of the coast-wide resource (Figure 4). Large fractions of the resource are exploited at low levels (Delmarva containing 25% of the resource) or not at all (Georges Bank containing 21% of the resource).
- Ž Estimated mean annual fishing mortality rates from 1997-1999 were 0.02 for the entire EEZ resource, 0.03 - 0.04 for the NNJ region, and 0.04 - 0.07 for the SNJ region.
- Ž Age composition data from the 1997 survey for NNJ and Delmarva indicate that the populations contain at least 18 cohorts, none of which are dominant. The length frequencies for these two regions between the 1997 and 1999 surveys did not significantly vary.
- Ž Fishing mortality can be increased for the surf clam resource taken as a whole. However, it may be advantageous to avoid localized depletion.

## **4.2. Description of the Ocean Quahog Fishery**

### 4.2.1. Ocean Quahog Overview

Ocean quahogs are found in the colder waters on both sides of the North Atlantic. Off the United States and Canada, they range from Newfoundland to Cape Hatteras at depths from 25 feet to 750 feet. Industry has been pressing the limits of current technology in harvesting ocean quahogs as deep as 300 feet in the waters off southern New England. As one progresses northward, ocean quahogs inhabit waters closer to shore, such that the State of Maine has a small commercial fishery which includes beds within the State's 3-mile zone.

Ocean quahogs are one of the longest-living, slowest growing marine bivalves in the world. Under normal circumstances, they live to more than 100 years old. Ocean quahogs have been aged in excess of 200 years. The exceedingly slow growth rate has given rise to such descriptions as "living rocks," or "miniature redwood trees." They require roughly twenty years to grow to the sizes currently harvested by the industry (approximately 3 inches), and reach sexual maturity between 5 and 10 years of age.

Traditionally, the dominant use of ocean quahogs has been in such products as soups, chowders, and white sauces. Their small meat has a sharper taste and darker color than surf clams, which has not permitted their use in strip products or the higher-quality chowders. With their lower exvessel price (typically between \$4.00 - \$4.75 per bushel in 1999 for the full "lease plus harvest" value), ocean quahogs continue to be a bulk, low-priced food item. As in other fisheries such as Atlantic mackerel, the industrial ocean quahog fishery appears viable only when large quantities can be harvested quickly and efficiently. When catch rates fall below a certain point, vessels tend to shift their effort to higher-yielding areas. Industry members have indicated that crews are more willing to work on ocean quahog trips if they are also allowed to fish on surf clam trips, which pay much more per hour for their labor.

As will be discussed in more detail in the following sections, there had been a shift toward greater utilization of the lower-priced ocean quahog meats in the years 1997 and 1998. Both years saw almost all of the ocean quahog quota harvested, while surf clam quota was left unharvested on the ocean floor. However this trend reverted back to the historical norm in 1999 as fuel prices spiked, and it became relatively more expensive to harvest ocean quahogs which are found farther offshore. Higher fuel prices combined with the increasing scarcity of dense ocean quahog beds has resulted in an overall decline in ocean quahog harvests. Industry focus returned to surf clams and they harvested virtually 99% of the federal surf clam quota, while leaving 16% of the ocean quahog quota unharvested.

#### 4.2.2. Recent Fishery Performance - Ocean Quahogs

Ocean Quahog Landings: Both State and Federal Waters (Excludes Maine fishery)					
Region	1998			1999	
	Bushels	Value		Bushels	Value
New England States	2,090,237	\$8,733,540		1,835,383	\$7,634,346
Mid-Atlantic States	1,821,005	\$7,778,674		1,936,735	\$8,273,702
Total	3,911,242	\$16,512,214		3,772,118	\$15,908,048

Source: NMFS Unpublished Landings Data, Woods Hole, MA

Landings of ocean quahogs from the high-volume fishery outside the State of Maine totaled 3.772 million bushels in 1999, a decrease of 3.6% from 1998. This fell on the heels of an 8.6% decline experienced the year before. Much of the larger, earlier reduction was due to the federal quota for ocean quahogs being reduced by 7% in 1998. Reported exvessel value declined 3.7% from \$16.5 million dollars to \$15.9 million in 1999.

#### 4.2.3. The Federal Ocean Quahog Fishery

A total of 23 vessels participated in the 1999 fishery for ocean quahogs in federal waters apart from Maine. Since 1996 there has been a dramatic exodus from the fishery; federal ocean quahog vessel numbers had been stable at 36 for the prior four years, back to 1993. Two of these vessels sank in weather-related accidents during January 1999, however the remainder left the fishery voluntarily.

- Ž Of greatest significance is the fact that fully 16% of the 1999 federal ocean quahog quota was left unharvested in the ocean. In 1996 and 1997 the quota had been binding on the industry, so the Mid-Atlantic Council recommended the quota be raised from 4.0 to 4.5 million bushels in 1999. None of this increase was tapped by the industry, and one can observe that landings have actually been on a declining trend from the 4.9 million bushel peak in 1992.
- Ž Exvessel prices have remained largely unchanged from 1997 through 1999, with more than three quarters of the trips reporting the sale of their catch at \$4.25 per bushel.
- Ž Effort in 1999 was comprised of 2,078 individual trips, which harvested an average 1,814 bushels (56.7 cages) per trip.



- Ž A fleet-wide calculation of Landings Per Unit of Effort showed that the average yield continued its recent steady decline by 3.3% in 1999, from 123 to 119 bushels per hour of fishing (Table 2).
- Ž Harvests of ocean quahogs continue to be distributed over a larger geographic area than surf clams, although over one-third of the 1999 catch came from the degree square off of eastern Long Island. LPUE for Class 3 vessels increased modestly in this square, while the total harvest fell by 240,000 bushels compared to 1998 (Table 4).
- Ž Larger catches were taken from areas south of Block Island (4071) and Martha's Vineyard (4070) in 1999, though LPUE values for these areas declined (Table 5).
- Ž Limits on the continued movement of the fleet eastward are still impeded by the closure of surf clam and ocean quahog beds east of the 69° line, due to the presence of PSP toxin. Vessels responded by pursuing ocean quahogs in the deeper waters further from shore.

#### 4.2.4. Biological Status of the Ocean Quahog Resource - Assessment Findings from the 31<sup>st</sup> SARC – June 2000

- Ž The ocean quahog resource in surveyed EEZ waters from Southern New England (SNE) to southern Virginia (SVA) is not overfished and overfishing is not occurring.
- Ž The current biomass is high with current catches near MSY.
- Ž Fully 36% of the current biomass is in the unfishable region of Georges Bank (Figure 5).
- Ž Annual recruitment is approximately 1 - 2% of stock biomass and lower than, or roughly equal to, the rate of natural mortality.
- Ž The percentage of virgin biomass in the assessed areas (not including Georges Bank because of PSP unavailability) is 82%.
- Ž The stock off the coast of Maine continues to be harvested, but the condition of the resource there is unknown.
- Ž Current fishing mortality is near  $F_{\text{target}}$  for the resource taken as a whole. However, it may be advantageous to avoid localized depletion.

#### 4.2.5. The Maine Ocean Quahog Fishery

In addition to the high-volume, ITQ fishery for surf clams and ocean quahogs, there is a small-scale fishery for ocean quahogs operating off the coast of Maine north of 43 degrees 50' N. latitude. The major ocean quahog fishery is an industrial enterprise, conducted by large vessels operating in deep, offshore waters. Ocean quahogs are dislodged from the seabed using large, hydraulic dredges which shoot jets of water from their leading edge. Once on board, ocean quahogs are stored in metal cages holding 32 bushels each. Back at the dock, cranes lift the cages into tractor trailers for shipment to processing plants, where they are steamed open, thoroughly

washed, and processed into a variety of product forms. These primarily take the form of diced meat, chowders and sauces. Reported prices, relatively constant during the past two decades, have ranged from about \$3.00 to \$4.75 per bushel.

By contrast, the small-scale Maine ocean quahog fishery utilizes small (36" maximum cutter bar length), dry dredges, on boats typically ranging between 30 and 40 feet in length. Participation is seasonal, with the heaviest landings centered around the summer holidays of Memorial Day, July 4, and Labor Day. Only a handful of vessels remain in the fishery year-round.

The ocean quahogs targeted by these vessels are smaller than in the industrial fishery, ranging between 1.5" and 2.5", and destined for the fresh, half-shell market. Average exvessel price in 1999 was \$27.55 per bushel, though prices have reached as high as \$45.00 per bushel in 1991. Larger ocean quahogs are discarded, and the retained individuals are stored on ice in ½ bushel onion bags below deck. Depending upon demand, the ocean quahogs are either landed directly and trucked out to retail markets the same day, held in a local dealer's cooler, or stored in floating pens for up to three days. The storage in pens also allows the ocean quahogs to depurate silt and body waste (McGowan pers. comm.).

Amendment 10 to the Atlantic Surf clam and Ocean quahog FMP specified management measures tailored to the Maine fishery, and took effect on May 21, 1998. The principal management measures included: 1) establishment of a Maine ocean quahog management zone north of 43 degrees 50' N. latitude, 2) establishment of a Maine ocean quahog permit, and 3) establishment of an initial annual quota of 100,000 Maine bushels for the management zone.

Vessels holding a Maine ocean quahog permit and fishing on the quota specified for the Maine management zone were exempted from the special requirements of the ITQ fishery. These include the obligation to "call-in" trip departure and landing times to NMFS, landing harvests in metal cages of a specific size, and accompanying shipments with the serialized tags issued to holders of ocean quahog allocation shares.



Maine Ocean Quahog Landings*	
Year	Maine Bushels
1984	43
1985	0
1986	124,530
1987	92,113
1988	88,054
1989	55,175
1990	51,233
1991	36,679
1992	24,839
1993	17,144
1994	26,890
1995	50,471
1996	69,067
1997	72,706
1998	72,466
1999	93,938
* From multiple sources: NMFS unpublished weighout files, NMFS shellfish logbook files, and NMFS Multispecies logbook files. Preliminary data.	

Available landings data for the Maine quahog fishery are subject to greater uncertainty than the ITQ fisheries. A single reporting channel did not exist until the State of Maine sent out a letter to fishermen in 1998 requesting that all ocean quahog harvests be reported in the NMFS shellfish logbooks. Prior to that time, ocean quahog landings data had been submitted in NMFS Multispecies logbooks, NMFS shellfish logbooks, and through dealers reports. Duplicate reporting did occur, and efforts to correct for double counting were difficult and time consuming. Additional uncertainty was created by the fact that dealers were required to pay a tax to the State on every bushel of quahogs landed, thus creating an incentive to under-report landings.

In spite of the uncertainty inherent in the early landings data, a clear U-shaped trend is apparent. The fishery started in earnest in 1986, with recorded landings exceeding 124,000 bushels. This initial boom year also corresponds to the peak landings made to date. Landings declined steadily through the late 1980's and early 1990's, reaching a low of just over 17,000 bushels in 1993. While the underlying reasons for the decline are not fully explained, it is thought that both difficulties in finding a market as well as depletion of local beds played a part.

Landings rebounded in the years following 1993, and climbed steadily to the 94,000 bushels landed in 1999.

Verbal reports from Maine suggest that vessels moved on to some new, virgin beds during this interval. As of November 25, 2000, 100% of the Maine ocean quahog quota for 2000 had been harvested and the fishery was closed for the remainder of the 2000 fishing year. It is possible that a 100,000 bushel quota could be reached in 2001 as well. If fishermen wish to continue harvesting after this quota is reached, they must purchase allocation from the ITQ portion of the ocean quahog fishery.

Informal communications with Maine quahog fishermen and State officials indicate that there are no concerns at present relative to resource depletion in the Maine management zone. However, the extent of the resources off Maine are largely unquantified, since a survey and assessment have not been conducted. The State of Maine is responsible for conducting a survey when funding becomes available. Near-term priorities have been focused elsewhere, given the small number of vessels involved in the Maine quahog fishery relative to others, such as lobsters. In 1999 there were a total of 38 vessels reporting landings of ocean quahogs in Maine

### **4.3. Operation of the ITQ System**

Prior to the adoption of an Individual Transferable Quota system in September 1990, the primary management tools employed to prevent overfishing were annual quotas for both species, and a vessel moratorium combined with severe effort restrictions that applied only to the high-value surf clam fishery. In the final year of the effort management system, those vessels holding a surf clam moratorium permit were only allowed to make six trips per quarter, and could have their dredge in the water no more than six hours per trip. The replacement of aging vessels was complicated by the need to restrain harvesting capacity. The government was put in the uncomfortable position of questioning the transfer of moratorium permits from old, unsafe vessels to larger, more efficient vessels if it was likely to increase the fishing power of the fleet. Finally, enforcing the effort-based system was very expensive, since it required the use of Coast Guard cutters and aircraft to monitor the operation of vessels at sea.

All of these concerns were addressed with the implementation of ITQ management on September 30, 1990 (MAFMC 1990). Vessels owners were issued an allocation percentage for each species based primarily on their past participation in each fishery. Prior to the start of each fishing year, each allocation owner is issued a series of numbered "cage tags" that correspond to their percentage share of the upcoming year's quota. Cage tags represent the "currency" of the Individual Transferable Quota system, and can be freely traded among industry participants so they can tailor their harvests to a level which meets their particular needs and business plans. Each tag must be fastened to a cage (shipping container) containing up to 32 bushels of either species, and allows for the legal transport of that species to a processing facility.

The requirements for vessel moratorium permits, as well as all effort restrictions were rescinded at the time of ITQ program implementation. Fleet efficiency and profitability were immediately enhanced with the ability to consolidate harvests on to fewer vessels. Enforcement costs declined substantially as attention was shifted from at-sea monitoring to shore-based efforts that simply seek to ensure that all landings make proper use of cage tags. Reports from both industry and enforcement personnel have supported the fact that violations of the plan regulations have dropped markedly under the ITQ system.

#### 4.4. Description of User Groups

##### 4.4.1. Harvesting Sector

The total number of vessels participating in the surf clam and ocean quahog fishery outside the State of Maine declined by 2 vessels in 1999. As opposed to past reductions which were the result of fishing operations being consolidated on to fewer vessels, this decline was due to the loss of four vessels in weather-related accidents in January of 1999.

Federal Fleet Profile				
Non-Maine Vessels	1996	1997	1998	1999
Harvests BOTH surf clams & ocean quahogs	14	14	8	11
Harvests only surf clams	20	19	23	22
Harvests only ocean quahogs	22	17	16	12
<b>Total Non-Maine Vessels</b>	<b>56</b>	<b>50</b>	<b>47</b>	<b>45</b>
Maine Ocean Quahog Vessels	25	34	39	38
Source: NMFS Clam Vessel Logbooks				

The major fleet shift which is apparent over time is the reduction in numbers of vessels participating in the fishery for ocean quahogs. While the total number of vessels in the federal surf clam and ocean quahog fleet declined 16% from 1996 to 1998 (from 56 to 47 vessels), that portion which participates in the harvest of ocean quahogs dropped by fully one-third over the same interval (from 36 to 24 vessels).

##### 4.4.2. Processing Sector

In 1999 there were a total of 10 companies which were reported as having made purchases of surf clams or ocean quahogs outside the State of Maine. Dealer reports are required of all entities receiving federal harvests of these two species managed under the ITQ system.

The largest processor is Sea Watch International, based in Milford, Delaware. Listed from north to south, the processors are arrayed as follows:

###### Massachusetts

Fair Tide Shellfish LTD.

###### Rhode Island

Blount Seafood Corp.

Galilean Seafood Inc.

###### New Jersey

Atlantic Capes Fisheries, Inc.

Cape May Cannery Inc.

Cape May Fisheries CO-OP Inc.  
Surfside Products Inc.  
Delaware  
Sea Watch International  
Virginia  
Eastern Shore Seafood Products  
J H Miles & Company Inc.

Ownership of multiple plants results in there effectively being five major processing entities in the industry. There is an increasing trend toward vertical integration, where companies own both vessels and processing facilities. The most recent example is the merger of Sea Watch International and the Truex fleet of vessels in the summer of 1999.

There were a total of 10 entities in the State of Maine to whom vessels reported selling ocean quahogs in 1999:

1. Al's Seafood
2. Atlantic Shellfish
3. Beals Lobster Co., Inc.
4. CNW Seafood
5. Kip's Seafood Co.
6. Machias Bay Seafood
7. Maine's Best Seafood, Inc.
8. Moosabec Mussels, Inc.
9. North Atlantic Seafood
10. Old Salt Seafood

#### 4.4.3. Differing Perspectives of the Harvesting and Processing Sectors

##### *4.4.3.1. Harvesting Sector*

For those entities in the harvesting sector that are not vertically integrated, key motivating factors include:

- Ž Harvesting fisheries products efficiently and at the lowest possible cost.
- Ž Obtaining the highest possible price for the products they sell.
- Ž Retaining a skilled crew to operate fishing vessels and minimize the costs associated with high crew turnover.

Those vessel owners that also own a substantial portion of the allocation which they harvest are additionally motivated to ensure that the value of the allocation itself is maintained. Factors which might influence the resale value of an allocation include the depletion of the biological resource which it represents, thus lowering its market value, or a change in demand for the resource, which could increase or decrease its value.

##### *4.4.3.2. Processing Sector*

The processors of fishery products tend to have a substantially different set of motivating forces in the

environment in which they must do business. High among their concerns are:

- Ž Maintaining steady, and reliable sources of raw materials for their production processes, which helps ensure their ability to satisfy customer orders in a timely manner.
- Ž Obtaining raw materials at the lowest possible price.
- Ž Maintain a production schedule which provides stable employment for their workforce, and reduces the costs of idled plant equipment.

For those participants in the surf clam and ocean quahog industry which do not have a “vertically-integrated” operation (owning both fishing vessels and processing plants), a particular dynamic takes shape. First, as in all fisheries, there are inherent, conflicting interests relative to the market selling price. Fishermen are motivated to obtain as high a price as possible for their catch, and processors are motivated to obtain the raw materials for their processing lines at the lowest possible price. In this way each maximizes the profitability of their operations.

#### *4.4.3.3. The Effects of Quotas*

Quotas tend to be viewed quite differently by the harvesting and processing sectors as well. For fishermen in an ITQ-managed fishery, quotas can be seen as having both positive and negative aspects. In one sense, they represent an unwelcome cap on potential income. Whatever price they receive for their catch multiplied by their bushel share of the quota represents their maximum gross income for the year.

A more welcome aspect of quotas to fishermen is the price support which may result from limits on the supply of a particular product. Tighter supplies of a fisheries product would give the fishermen who possess that product additional leverage when negotiating prices with processors.

Processors, on the other hand, have reason to view quotas as an additional, unwelcome constraint on the raw materials their business requires. In producing any particular product, there will be a range of “ingredients” which may be utilized in the manufacturing process. Their availability and cost may well vary with the season of the year. The profitability of operations can be enhanced when a manufacturer has the greatest flexibility in the choice of ingredients, and their supply is abundant and cheap.

When governmental bodies impose limits on when and how much of a particular fishery resource can be harvested, they also limit the flexibility which manufacturers have in choosing the least expensive ingredient (that is of acceptable quality) to use in their products. In the coast wide surf clam and ocean quahog fisheries, annual quotas exist for both species in federal waters, as well as in the state jurisdictions of Maine (for ocean quahogs), New York (surf clams) and New Jersey (surf clams). A seasonal limit also exists in New Jersey state waters for surf clams, where harvests are allowed from October through May.

In negotiating purchase prices with vessel and allocation owners, processors will have the strongest bargaining position when quotas are sufficiently high so as to not be a constraint on their businesses.

## 5. PROBLEM STATEMENT

### 5.1. Proposed Action

Regulations implementing the Fishery Management Plan for the Atlantic Surf Clam and Ocean Quahog Fisheries require the Council to make recommendations on the allowable harvest from Federal waters each year. The regulations may be found at 50 CFR section 648.71, and state as follows:

Sec. 648.71 Catch quotas.

(a) *Surf clams.* The amount of surf clams that may be caught annually by fishing vessels subject to these regulations will be specified by the Assistant Administrator, on or about December 1 of each year, within the range of 1.85 to 3.4 million bu (98.5 to 181 million liters).

(1) *Establishing quotas.* (i) Prior to the beginning of each year, the MAFMC, following an opportunity for public comment, will recommend to the Assistant Administrator quotas and estimates of DAH and DAP within the ranges specified. In selecting the quota, the MAFMC shall consider current stock assessments, catch reports, and other relevant information concerning:

(A) Exploitable and spawning biomass relative to the OY.

(B) Fishing mortality rates relative to the OY.

(C) Magnitude of incoming recruitment.

(D) Projected effort and corresponding catches.

(E) Geographical distribution of the catch relative to the geographical distribution of the resource.

(F) Status of areas previously closed to surf clam fishing that are to be opened during the year and areas likely to be closed to fishing during the year.

(ii) The quota shall be set at that amount that is most consistent with the objectives of the Atlantic Surf clam and Ocean Quahog FMP. The Assistant Administrator may set quotas at quantities different from the MAFMC's recommendations only if he/she can demonstrate that the MAFMC's recommendations violate the national standards of the Magnuson Act and the objectives of the Atlantic Surf clam and Ocean Quahog FMP.

And continue in Sec. 648.71(b):

(b) *Ocean quahogs.* The amount of ocean quahogs that may be caught by fishing vessels subject to these regulations shall be specified annually by the Assistant Administrator, on or about December 1, within the range of 4 to 6 million bu (213 to 319.4 million liters), following the same procedures set forth in paragraph (a) of this section for surf clams.

## 6. MANAGEMENT ALTERNATIVES

### 6.1. Quotas for the ITQ Fisheries

<b>Proposed 2001 Quota Alternatives</b>			
<b>Surf Clams</b>			
	<u>Description</u>	<u>Quota (bushels)</u>	<u>% Change from 1999</u>
Alt. S1	Min. Allowable	1.850 million	28% Decrease
Alt. S2	1998 Harvest Level	2.365 million	8% Decrease
Alt. S3	Status Quo	2.565 million	No Change
Alt. S4**	Slight Increase	2.850 million	11% Increase
Alt. S5	Max. Allowable	3.400 million	33% Increase
<b>Ocean Quahogs</b>			
Alt. Q1	Min. Allowable	4.000 million	12% Decrease
Alt. Q2	Partial Reduction	4.250 million	6% Decrease
Alt. Q3**	Status Quo	4.500 million	No Change
Alt. Q4	Slight Increase	4.75 million	6% Increase
Alt. Q5	Max. Allowable	6.000 million	33% Increase
** Council Recommendation			

Five alternative quota levels were identified for consideration in each of the two fisheries. The Council's choice was bounded by minimum and maximum quota levels that are specified as the Optimum Yield (OY) range in the Surf Clam and Ocean Quahog Fishery Management Plan, and may not be exceeded in either direction without an amendment to the Plan.

For each fishery, the quota alternatives numbered 1 and 5 correspond to the minimum and maximum allowable quotas specified in the current OY range:

Surf Clams 1.850 million to 3.400 million bushels

Ocean Quahogs 4.000 million to 6.000 million bushels

Alternative #3 for each species corresponds to the status quo and would maintain the 2000 quotas of 2.565 million bushels for surf clams, and 4.5 million bushels for ocean quahogs unchanged for another year.

Alternative #2 for each species represents a reduction of the annual quotas in the 6 - 8 percent range. As will be discussed in the sections below, it is put forth as an option to address economic concerns in each fishery. For surf clams, it corresponds to the actual federal harvest level attained in 1998. The actual 1998 harvest level for



ocean quahogs (3.897 million bu.) is not a valid quota option because it lies below the minimum OY range point of 4 million bushels. For this reason, the midpoint between the current 4.5 million bushel quota and the minimum OY of 4 million bushels was chosen as an alternative ocean quahog quota which moves closer to the harvest level which industry actually utilized in 1998, but moderates the adjustment to a 6% change rather than the full 12% decrease represented by the minimum OY level.

Alternative #4 represents a slight increase in the quota for each species (between 6 and 11 percent), and responds to a request for consideration put forth by several members of industry.

## 6.2. Quotas for the Maine Ocean Quahog Fishery

Alternative 2001 Quotas for the Maine Quahog Fishery			
Alt. M1	50% of Max. Quota	50,000 Maine Bu.	50% Decrease
Alt. M2	1998 Harvest Level	72,466 Maine Bu.	28% Decrease
Alt. M3**	Max Allowable - Status Quo	100,000 Maine Bu.	No Change
** Council Recommendation			

Three alternative quotas are presented for the Maine ocean quahog fishery. Alternative M1 corresponds to a 50% reduction from the maximum allowable quota under the current management plan. Alternative M2 corresponds to the harvest level actually attained in 1998, though it would reduce the allowable harvest by 28%. Finally, Alternative M3 would maintain the status quo quota at the maximum allowable level of 100,000 Maine bushels.

As of November 25, 2000, 100% of the Maine ocean quahog quota for 2000 had been harvested and the fishery was closed for the remainder of the 2000 fishing year. It is anticipated that the Regional Administrator will likely also have to close the fishery in 2001.

According to 50 CFR section 648.76 (2)(b)(iv): *The Regional Administrator will monitor the quota based on dealer reports and other available information and shall determine the date when the quota will be harvested. NMFS shall publish notification in the Federal Register advising the public that, effective upon a specific date, the Maine mahogany quahog quota has been harvested and notifying vessel and dealer permit holders that no Maine mahogany quahog quota is available for the remainder of the year.*

It must also be remembered that according to 50 CFR section 648.76 (2)(b)(iii): *All mahogany quahogs landed by vessels fishing in the Maine mahogany quahog zone for an individual allocation of quahogs under section 648,70 will be counted against the ocean quahog allocation for which the vessel is fishing.* In other words, even after the initial maximum quota of 100,000 Maine bushels is harvested from the Maine mahogany ocean quahog zone (north of 43°50'), vessels could obtain/use ITQ allocation and

continue to fish in this zone. It is anticipated that some Maine fishermen will rent ITQ allocation after the 100,000 bushel quota is reached.

Amendment 10 (MAFMC 1998) emphasized that there had been no comprehensive, systematic survey or assessment of the ocean quahog resource in eastern Maine. It also emphasized that a full stock assessment of the Maine resource should be a priority to ensure that this segment of the fishery would have a sustainable future. The initial maximum quota for the Maine zone was to remain in effect until a resource survey and assessment was completed. The agreement at the time of Amendment 10 was that the State of Maine was to initiate a survey once the initial maximum quota of 100,000 bushels became constraining. Such a survey has not yet been conducted.

### **6.3. Surf Clam Size Limit Suspension**

The Council recommended and NMFS suspended the surf clam minimum size limit for 2001. The minimum length for surf clams is 4.75 inches. According to 50 CFR section 648.72 (c): *Upon the recommendation of the MAFMC, the Regional Administrator may suspend annually, by publication in the Federal Register, the minimum shell-height standard, unless discard, catch, and survey data indicate that 30 percent of the surf clams are smaller than 4.75 inches (12.065 cm) and the overall reduced shell height is not attributable to beds where the growth of individual surf clams has been reduced because of density dependent factors.*

## **7. ANALYSIS OF ALTERNATIVES**

The objective of this analysis is to describe clearly and concisely the economic effects of the various alternatives. The types of effects that should be considered include the following:

- Changes in net benefits within a benefit-cost framework.
- Changes in the distribution of benefits and costs among groups.
- Changes in income and employment in fishing communities.
- Cumulative impacts of regulations.

A more detailed description of the economic concepts involved can be found in "Guidelines for Economic Analysis of Fishery Management Actions" (USDC 2000), as only a brief summary of key concepts will be presented here.

Benefit-cost analysis is conducted to evaluate the net social benefit arising from changes in consumer and producer surpluses that are expected to occur upon implementation of a regulatory action. Total Consumer Surplus (CS) is the difference between the amounts consumers are willing to pay for products or services and the amounts they actually pay. Thus CS represents net benefits to consumers. When the information necessary to plot the supply and demand curves for a particular commodity is available, consumer surplus is represented by the area that is below the demand curve and above the market clearing price where the two curves intersect. Due to lack of an empirical model for these fisheries and knowledge of elasticities of supply and demand, a

qualitative approach to the economic assessment was adopted. Nevertheless, quantitative measures are provided whenever possible.

An evaluation of consumer surplus for surf clams and ocean quahogs is further complicated by the fact that there are few retail markets for either species outside of Maine. All of the landings from the ITQ fisheries are sold to processors who then add value by processing them into a variety of product forms. Boxes of frozen, breaded surf clam strips, cans of "clamato" juice, or chopped "clam meats" are the more common items that may be found on retail grocer's shelves. The majority of production is sold at the wholesale level to restaurants or other processors in the food industry that use them as ingredients in chowders and sauces.

Net benefit to producers is producer surplus (PS). Total PS is the difference between the amounts producers actually receive for providing goods and services and the economic cost producers bear to do so. Graphically, it is the area above the supply curve and below the market clearing price where supply and demand intersect. Economic costs are measured by the opportunity cost of all resources including the raw materials, physical and human capital used in the process of supplying these goods and services to consumers.

One of the more visible costs to society of fisheries regulation is that of enforcement. From a budgetary perspective, the cost of enforcement is equivalent to the total public expenditure devoted to enforcement. However, the economic cost of enforcement is measured by the opportunity cost of devoting resources to enforcement vis à vis some other public or private use and/or by the opportunity cost of diverting enforcement resources from one fishery to another.

## 7.1. Analysis of Surf Clam Alternatives

<b>Surf Clam Quota Alternatives</b>			
	<u>Description</u>	<u>Quota (bushels)</u>	<u>% Change from 2000</u>
Alt. S1	Min. Allowable	1.850 million	28% Decrease
Alt. S2	1998 Harvest Level	2.365 million	8% Decrease
Alt. S3	Status Quo	2.565 million	No Change
Alt. S4**	Slight Increase	2.850 million	11% Increase
Alt. S5	Max. Allowable	3.400 million	33% Increase
** Council Recommendation			

### 7.1.1. Baseline Alternative S3 - Status Quo Surf Clam Quota - 2.565 million bushels

The baseline against which the surf clam quota alternatives was compared is the status quo of 2.565 million bushels. This quota level has remained constant in the federal surf clam fishery for the six-year interval from 1995 through 2000.

## 7.1.2. Areas of Impact that Do Not Change Regardless of the Alternative

### *7.1.2.1. Harvest Costs*

In specifying an annual quota for the federal surf clam fishery, the government is placing a cap on total removals from the resource located in federal waters. No companion regulations that would impact the type, quantity, or method of gear utilization in the fishery are in effect at this time. Adoption of ITQ management in the surf clam and ocean quahog fisheries has negated the need for most gear and effort regulations, which have the greatest impact on the efficiency and costs of harvest operations.

Allowing the industry to trade allocation among its members enables businesses to adjust capital, labor, and output to the levels that maximize profitability, and minimize costs.

The two remaining management tools in the FMP that have the potential to increase harvest costs directly are closed areas and the minimum size limit for surf clams. Closing nursery areas or creating "sanctuaries" to protect living resources and habitat in a specific area will typically oblige fishermen to limit their operations to areas which are less productive or more distant, thereby driving up costs.

Use of the surf clam minimum size restriction in the past has motivated vessels to install "sorters" which cull out smaller individuals and then route them back overboard. In addition to slowing the harvest process, sorters will add to the damage inflicted by dredging, resulting in substantial mortality to those small clams that are returned to the ocean.

Fortunately, recent assessment work has suggested that the overall health of the surf clam resource is substantially better than previously thought. This has allowed higher quota for 2001, and again foregoes the use of the two management tools which have the greatest negative side effects associated with them.

For these reasons, it is considered that none of the surf clam quota alternatives presented in this document will have the effect of significantly altering harvest costs.

### *7.1.2.2. Enforcement Costs*

Adoption of ITQ management in the surf clam and ocean quahog fisheries has allowed enforcement officials to focus attention on a limited number of shoreside processing plants, as opposed to large expanses of the ocean to monitor effort restrictions. Instead of ensuring that vessels were operating only on their allowed fishing days, which required the use of expensive Coast Guard cutters and aircraft, enforcement officials can restrict their efforts to the accounting task of ensuring that all clam shipping containers bear an official government "tag." Once a tag is attached to a "cage" full of surf clams or ocean quahogs, it cannot be removed without destroying it. This prevents tags from being reused, and the annual quota from being exceeded.

Compliance with the regulations under the ITQ system is widely thought to be high. Perhaps the most significant reason for this is that the harvest rights represented by an allocation are valuable, and could be forfeit if repeated violations of the law are uncovered. This fact alone creates a situation where violators have much more to lose than gain by failing to place tags on a shipment of surf clams.



A second factor relates to the question of who is thought to be harmed by a violation. In a fishery managed as an open pool, violators may well feel they are only cheating "the government." In an ITQ managed fishery, the fishermen themselves are more highly vested in a fishery, and are more likely to view cheaters as stealing from themselves, rather than the government. Hence they are more likely to report violations they witness.

None of the management alternatives considered for surf clams would have altered this enforcement dynamic, and therefore are not identified as leading to a change in enforcement costs.

### 7.1.3. Preferred Alternative S4 - Slight Increase in Surf Clam Quota - 2.850 million bushels

#### *7.1.3.1. Landings*

Increasing the federal surf clam quota to 2.850 million bushels corresponds to an 11% increase in landings. Recent developments in the industry suggest that the market can now absorb an increase of this magnitude, as contrasted with 1997 and 1998 when there was a glut of unsold product being held in storage. Development on a new "superstrip" fried clam product has helped increase sales of surf clams to the restaurant trade in New England, New York and New Jersey. The increasing costs of harvesting ocean quahogs has led to substitution of surf clams for ocean quahogs, further expanding their market.

#### *7.1.3.2. Exvessel Prices*

Current exvessel prices reported in the clam vessel logbooks as of mid-September 2000 range from \$5.00 per bushel to \$12.75. It is presumed that the low-end reports between \$5.00 and \$8.00 do not include the value of the allocation cage tags, while those between \$10.00 and \$12.75 do include the allocation value. The most commonly reported upper-end price continues to be \$10.00, though there does seem to be some evidence supporting industry comments that the \$11.00 price point is becoming more common.

The 11% increase in surf clam quota is likely to relieve any further upward pressure on exvessel prices. Hence, it is expected that exvessel prices will remain unchanged in 2001.

#### *7.1.3.3. Consumer Prices*

With exvessel prices expected to remain stable under this alternative, no changes in consumer prices are anticipated. However, it must be emphasized that many food products include surf clams or ocean quahogs as a relatively minor ingredient. Retail prices of these products may be more sensitive to changes in the price of other inputs to the production process, such as potatoes or cream (for chowders), energy, or labor.

#### *7.1.3.4. Consumer Surplus*

Assuming the retail prices of surf clam products will not be affected under the scenario described above, there will be no corresponding change in consumer surplus.

#### *7.1.3.5. Producer Surplus*

Without knowledge of the elasticities of demand and supply in the surf clam market, it is difficult to predict changes in producer surplus with accuracy. Normally an increase in available supply in a competitive market would lead to downward pressure on exvessel prices. If some of the price reduction were passed on to retail consumers, this would generate an increase in consumer surplus, since consumers would be able to purchase more surf clam product at a lower price. The impact on producer surplus is less clear. The revenue that is generated from selling additional product might be offset by the necessity to sell surf clams at the lower price.

Given current market conditions, it is assumed that vessels will be able to hold on to the recent small increase in the price of surf clams, and that there will not be a price decrease in the near term as a result of the 11% increase in quota. This would result in producers receiving most of the benefits from the quota increase, rather than consumers, and hence an expected increase in producer surplus if this alternative is adopted.

#### *7.1.3.6. Distributive Impacts*

Under the surf clam and ocean quahog ITQ system, members of the public have the ability to control their own share of the harvest. Quota for either species can be purchased or leased from other allocation holders. Distributive impacts from annual quota setting will not occur unless the quota is set above market needs. When surplus quota exists, it can be expected that allocation holders that are vertically integrated with a processor, or have a stronger relationship with a processor will be better positioned to sell their allocation. Those in a weaker position will be unable to sell some, or perhaps a majority of their allocation in a given year.

This does not appear to be the case in the federal surf clam fishery for the near term. Industry members have stated that they will be able to utilize the 11% increase in 2001.

#### *7.1.3.7. Cumulative Impacts Across Time*

Cumulative impacts may occur in the surf clam and ocean quahog fisheries if a quota surplus persists over a period of years. If an individual with lesser access to a market is unable to sell his/her annual allocation over an extended period of time, the financial pressure may ultimately force them to sell their allocation rights altogether and leave the industry.

This concern did exist in the federal surf clam fishery during 1997 and 1998, however it abated in 1999 and 2000 as demand for surf clams recovered. It is not anticipated that the 11% increase in surf clam quota will create a surplus in the near term.

#### *7.1.3.8. Risk of Biological Overexploitation*

The risk of biological overexploitation from the 11% increase in quota appears to be quite low. However, a qualitative comparison relative to the status quo baseline would have to find the risk slightly higher than if no increase were made at all.

A detailed evaluation is presented in the companion document: "Environmental Assessment and Essential Fish Habitat Assessment for the 2001 Surf clam and Ocean Quahog Fishing Quotas."

#### 7.1.4. Alternative S1 - Minimum Allowable Surf Clam Quota - 1.850 million bushels

##### *7.1.4.1. Landings*

Changing the surf clam quota to the minimum allowable under the existing management plan represents a 28% reduction in landings relative to the status quo.

##### *7.1.4.2. Exvessel Prices*

A 28% decrease in landings from federal waters would have a significant impact on the market, and would most certainly lead to an increase in exvessel prices.

##### *7.1.4.3. Consumer Prices*

It is likely that some of the increase in exvessel price will be passed along to consumers. Those products that contain a high proportion of surf clam meat, such as the new fried clam "superstrips," would probably increase the most. Chowders and soups would likely be less affected.

##### *7.1.4.4. Consumer Surplus*

The consumer price increases that would result from adoption of this alternative would lead to a decrease in consumer surplus.

##### *7.1.4.5. Producer Surplus*

The benefits to the harvesting sector of higher exvessel prices would be offset by the 28% decrease in federal surf clam harvests that could be sold. Whether a net increase or decrease in producer surplus would result depends on the magnitude of the exvessel price increase. In this analysis, it is assumed that the price increase would not fully compensate for the lost harvest opportunity, and result in a reduction in producer surplus.

##### *7.1.4.6. Distributive Impacts*

Given that a quota reduction would impact all allocation holders proportionally, it is not considered that this alternative would disproportionately advantage or disadvantage any particular sector.

##### *7.1.4.7. Cumulative Impacts over Time*

If the federal surf clam harvest were to be reduced by 28% and remain at that level for a number of years, it would likely represent a significant revenue loss for the industry as a whole. Likely impacts include increased harvests of alternative sources of meat, such as ocean quahogs and the lower-quality surf clams in New York inshore waters. Efforts to finalize the PSP testing protocol for Georges Bank would likely accelerate, in order to permit vessels to harvest surf clams and ocean quahogs from this area that is currently closed.



#### *7.1.4.8. Risk of Biological Overexploitation*

Given that the federal surf clam resource is thought to be healthy and underexploited at the current harvest level, the risk of biological overexploitation after a 28% reduction should be extremely low.

#### 7.1.5. Alternative S2 - 1998 Harvest Level Surf Clam Quota - 2.365 million bushels

##### *7.1.5.1. Landings*

Changing the surf clam quota to 2.365 million bushels in 2001 represents an 8% reduction in landings relative to the status quo.

##### *7.1.5.2. Exvessel Prices*

An 8% reduction in federal harvests of surf clams would likely lead to a modest increase in exvessel prices.

##### *7.1.5.3. Consumer Prices*

An 8% reduction in federal harvests of surf clams would likely lead to a slight increase in consumer prices. The most noticeable cases would be in those products which contain a high proportion of surf clam meat.

##### *7.1.5.4. Consumer Surplus*

The increase in consumer prices envisioned if this alternative is adopted would lead to a small decrease in consumer surplus.

##### *7.1.5.5. Producer Surplus*

The benefits to the harvesting sector of higher exvessel prices would be offset by the 8% decrease in federal surf clam harvests that could be sold. Whether a net increase or decrease in producer surplus would result depends on the magnitude of the exvessel price increase. In this analysis, it is assumed that the price increase would not fully compensate for the lost harvest opportunity, and result in a small reduction in producer surplus.

##### *7.1.5.6. Distributive Impacts*

Given that a quota reduction would impact all allocation holders proportionally, it is not considered that this alternative would disproportionately advantage or disadvantage any particular sector.

##### *7.1.5.7. Cumulative Impacts Over Time*

If the federal surf clam harvest were to be reduced by 8% and remain at that level for a number of years, it would likely have a moderate, negative impact on the industry. Exvessel prices would rise and greater use of alternative sources of clam meats would be made.

#### *7.1.5.8. Risk of Biological Overexploitation*

Reducing the federal surf clam quota by 8% should provide a slight reduction in the risk of biological overexploitation relative to the status quo.

### 7.1.6. Alternative S5 - Maximum Allowable Surf Clam Quota - 3,400 million bushels

#### *7.1.6.1. Landings*

Increasing the federal surf clam quota to 3,400 million bushels would correspond to a 33% increase in landings. Whether the market could absorb such a large increase in one year is questionable, given the recent glut of clam meats that was experienced in 1997 and 1998. This analysis assumes that some portion of the quota increase will remain unharvested.

#### *7.1.6.2. Exvessel Prices*

A 33% increase in quota would have a significant impact on the market, and would most certainly lead to an decrease in exvessel prices.

#### *7.1.6.3. Consumer Prices*

It is possible that some of the decrease in exvessel price would be passed along to consumers. Those products that contain a high proportion of surf clam meat, such as the new fried clam "superstrips," would probably decrease the most.

#### *7.1.6.4. Consumer Surplus*

The consumer price decreases that would result from adoption of this alternative would lead to an increase in consumer surplus.

#### *7.1.6.5. Producer Surplus*

The changes in producer surplus that might occur from a large quota increase will depend on a particular firm's position in the industry, and the magnitude of price changes. The harvesting sector may experience an increase or decrease in producer surplus dependent on the magnitude of the decline in exvessel prices. The smaller the drop in prices, the greater the likelihood that the sector will come out ahead. The processing sector will generally benefit from a decrease in the exvessel prices they must pay to harvesters. However, they too may be pressured to lower their finished good prices once their customers discover that raw material prices have fallen.

#### *7.1.6.6. Distributive Impacts*

It is assumed that a surf clam quota increase of 33% would not be fully utilized in the first year of implementation. Therefore, there would be distributive impacts in the near term as those allocation holders that have lesser access to a market would be unable to sell all of their allocation before it expired at the end of the year.



### 7.1.6.7. Cumulative Impacts Over Time

Cumulative impacts may occur under this alternative if surplus quota were to persist over a period of years, and those businesses holding the unnecessary quota shares fail. It is not possible to predict whether such an eventuality would come to pass at this point in time.

### 7.1.6.8. Risk of Biological Overexploitation

This alternative presents the highest risk of biological overexploitation relative to the status quo. The nature of the risk is simply that recent assessment work may have overestimated the current stock size, making this maximum level of harvest unsustainable. The uncertainty will be reduced as results are borne out over time.

### 7.1.7. Summary of Surf Clam Impacts

<b>Summary of Impacts for Proposed 2001 Surf Clam Quota Alternatives Relative to Status Quo Alt. S3: 2.565 million bushels</b>				
Feature	Alt. S1 Min. Allowable  1.850 million bushels	Alt. S2 1998 Harvest Level  2.365 million bushels	Alt. S4 (Preferred) Slight Increase  2.850 million bushels	Alt. S5 Max. Allowable  3.400 million bushels
Landings	- 28%	- 8%	+ 11%	+ 33% (?)
Exvessel Prices	+	+	0	-
Consumer Prices	+	Slight +	0	-
Consumer Surplus	-	Slight -	0	+
Harvest Costs	0	0	0	0
Producer Surplus	-	Slight -	+	(?)
Enforcement Costs	0	0	0	0
Distributive Impacts	0	0	0	+
Cumulative Impacts	+	Slight +	0	+ (?)
Risk of Biological Overexploitation	-	Slight -	Slight +	Slight +
+ indicates an increase relative to the status quo; - indicates a decrease relative to the status quo; 0 indicates no change; ? indicates unknown				

The final specifications implement a moderate increase in the federal surf clam quota of 11% for the year 2001.

The principal justification for relaxing the harvest limit rests in the fact that recent research and developments in the fishery have been largely positive. The most recent biological assessments (both in 1998 and 2000) have indicated that the resource is healthy, composed of many age classes, and can safely sustain increased harvests. Information reported by the industry in fishery logbooks have supported these findings by showing an increase in Landings Per Unit of Effort (LPUE), an important indicator of resource condition.

Utilization of the surf clam resource has also improved as demonstrated by the federal and New Jersey state quotas being fully harvested in 1999. The New York inshore quota remains underutilized, with roughly half of the 500,000 bushel quota left unharvested for the past two years. The surf clam beds in New York state waters suffer from the disadvantage of being smaller and of a lower quality than clams that are currently being fished elsewhere.

In sum, the principal reasons for not increasing the quota more than 11% are:

- 10% increase was put forth by industry as a compromise position.
- A large increase would likely further depress the quahog fishery.
- The New York inshore quota remains underutilized.
- The recent assessments represent new work that must still withstand the test of time.

## 7.2. Analysis of Ocean Quahog Alternatives

There are five alternative quota levels considered for the 2001 ocean quahog fishery:

Ocean Quahog Quota Alternatives			
Alt. Q1	Min. Allowable	4.000 million	12% Decrease
Alt. Q2	Partial Reduction	4.250 million	6% Decrease
Alt. Q3**	Status Quo	4.500 million	No Change
Alt. Q4	Slight Increase	4.75 million	6% Increase
Alt. Q5	Max. Allowable	6.000 million	33% Increase
** Council Recommendation			

Due to the fact that 2001 landings are not expected to reach even the minimum quota level of 4.0 million bushels, none of the alternatives are expected to have any impact on the following areas:

- Landings
- Exvessel prices
- Consumer prices
- Consumer surplus
- Harvest costs
- Producer surplus
- Enforcement costs
- Risk of biological overexploitation

### 7.2.1. Summary Evaluation of All Quahog Quota Alternatives

The picture of the ocean quahog fishery is quite different from that of the surf clam fishery. It has supported intense harvests for over two decades, and scientists believe that even when the closed portions of the resource are excluded, 82% of the virgin biomass remains untouched.

Yet the economic promise of the ocean quahog fishery does not look bright in the near term. Landings of ocean quahogs in 1999 totaled 3.77 million bushels, the lowest harvest in 15 years, and 16% below the 1999 quota of 4.5 million bushels. As described in prior sections, the ocean quahog resource is a low-value, bulk food commodity that must be harvested rapidly, and in large quantities in order to make a profit. Many of the densest beds, which are believed to have formed over a period of many decades, have been harvested, and the very slow-growing nature of these animals implies that they will not be replaced in our lifetime.

Fishermen have been finding it increasingly costly to harvest ocean quahogs, and have been dropping out of the fishery. When the ocean quahog fishery was initiated in 1976, it was largely in response to a shortage of available surf clam resource. Now that high-yielding surf clam beds are plentiful and can be found much closer to shore than ocean quahogs, surf clams have been increasingly used to fill ocean quahog orders. Harvest rates in the current year 2000 have been similar to 1999, with a projected quota surplus on the order of 17%. With an increase in the surf clam quota for 2001, there is no reason to expect that the ocean quahog harvest level will rise above the 3.8 million bushel mark in 2001.

The three factors that have the greatest potential of changing the economic outlook for ocean quahogs are:

- 1) Harvest technology could improve and reduce the costs of fishing on the remaining, leaner quahog beds;
- 2) The price and availability of substitutes (i.e. surf clams) could change such that ocean quahogs become more attractive again;
- 3) Processors develop (new) ocean quahog products that can command a higher price in the marketplace, and hence allow fishermen to be paid higher prices for their catches.

Until such time as one or more of these factors change in favor of ocean quahogs, it is not expected that any of the ocean quahog quota alternatives that are currently allowed under the FMP would be reached. The impacts of selecting any particular quota level for 2001 then devolve to the distributive and cumulative impacts which may arise from surplus quota.

#### *7.2.1.1. Distributive and Cumulative Impacts*

The selection of an ocean quahog quota for 2001 ultimately results in a tradeoff between two competing risks:

- 1) The risk of setting the quota too low and (unnecessarily) restraining harvests without offsetting benefits;
- 2) The risk of setting the quota so high that a large surplus is generated, and causes economic harm to those entities that are unable to sell their quota shares for that year.

Quota shares in the ITQ fisheries for surf clams and ocean quahogs are held by large corporations as well as small, independent fishermen. One concern is that in years when the market is unable to absorb all of the quota set by the government, the revenue losses from unsold quota will fall disproportionately on independent fishermen with lesser access to a market. If these losses fall repeatedly on the same individuals over a period of years, they may be forced to cease operations. Alternatively, if the

profitability of ocean quahog harvests should unexpectedly improve in the short run, and the quota is set below market needs, profits will be foregone needlessly.

The issue may also be characterized as a decision on how large a quota surplus or "buffer" should be allowed to grow over time in the ocean quahog fishery. The Council and staff recommended maintaining the 2000 quota of 4.500 million bushels for the ocean quahog fishery in federal waters apart from Maine for 2001. Assuming that current harvest rates do not change significantly, this would provide a buffer on the order of 15-17%. As market and resource conditions further reveal themselves in the future, it is recommended that quota adjustments be made to moderate the risks in either direction.

### 7.2.2. Summary of Ocean Quahog Impacts

<b>Summary of Impacts for Proposed 2001 Ocean Quahog Quota Alternatives Relative to Status Quo Alt Q3: 4.500 million bushels (Preferred)</b>				
Feature	Alt. Q1 Min. Allowable  4.000 million bushels	Alt. Q2 Slight Decrease  4.250 million bushels	Alt. Q4 Slight Increase  4.750 million bushels	Alt. Q5 Max. Allowable  6.000 million bushels
Landings	- 12% allowed (less than 4 mill. expected)	- 6% allowed (less than 4 mill. expected)	+ 6% allowed (less than 4 mill. expected)	+ 33% allowed (less than 4 mill. expected)
Exvessel Prices	0	0	0	0
Consumer Prices	0	0	0	0
Consumer Surplus	0	0	0	0
Harvest Costs	0	0	0	0
Producer Surplus	0	0	0	0
Enforcement Costs	0	0	0	0
Distributive Impacts	-	-	+	+
Cumulative Impacts	-	-	+	+
Risk of Biological Overexploitation	0	0	0	0
+ indicates an increase relative to the status quo; - indicates a decrease relative to the status quo; 0 indicates no change; ? indicates unknown				

### 7.2.3. Maine Ocean Quahog Fishery Quota

#### 7.2.3.1. Preferred Alternative M3 - Max Allowable - 100,000 Maine Bu. (Status Quo)

The Maine ocean quahog quota will remain unchanged for 2001 at the initial maximum quota level of 100,000 bushels. This quota pertains to the zone of both state and federal waters off the eastern coast of Maine north of 43 degrees 50 minutes north latitude. Amendment 10 established management measures for this small artisanal fishery in May of 1998, and specified an initial maximum quota of 100,000 bushels. This same level was continued again in 1999. Representatives of Maine all encouraged maintaining that quota for 2001 as well.

Issues of under-reporting of the catches have improved since the fall of 1998, when Maine sent letters to all their permit holders explaining the need to report their landing to NMFS. It is hoped that the efforts of ACCSP (Atlantic Coastal Cooperative Statistics Program) will also help improve any misreporting of data.

Landings statistics for the Maine ocean quahog fishery totaled 94,000 Maine bushels in 1999. As of November 25, 2000, 100% of the Maine ocean quahog quota for 2000 had been harvested and the fishery was closed for the remainder of the 2000 fishing year. It is possible that a 100,000 bushel quota could be reached in 2001 as well. If fishermen wish to continue harvesting after the quota is reached, they must purchase allocation from the ITQ portion of the ocean quahog fishery. Adoption of this "maximum allowable" quota alternative would minimize the amount of ITQ purchases that might be necessary from the other portion of the fishery.

Specification of a sustainable harvest limit for the Maine fishery remains problematic for two principal reasons. First and foremost, a survey and assessment of the resource off Maine has never been conducted. The shallow depths involved have inhibited the use of NMFS' standard survey vessel, and the small size of the fishery has made justification of additional funds difficult. Nevertheless, the Council has continued to recommend that a survey and assessment be conducted as soon as funding is available.

The second issue involves public safety closures for PSP toxin. Due to the health risks associated with toxins that may appear in a number of shellfish species on this portion of the coast, Maine officials only allow fishing to occur in those areas that are being actively monitored. Other areas may contain ocean quahogs, but remain unavailable to fishermen due to the lack of sampling coverage. This raises the question as to whether a sustainable harvest limit should pertain to only those areas that are typically open to fishing, or to the entire Maine ocean quahog fishery zone above 43° 50'.

In any regard, available information from fishermen and researchers in Maine suggest that the fishery is currently not in danger of depletion, and would not be adversely impacted through continuation of the maximum 100,000 bushel quota for 2001.

#### 7.2.3.2. Alternative M1 - 50% of Maximum Quota - 50,000 Maine Bu.

##### *7.2.3.2.1. Landings*

Reducing the Maine ocean quahog quota to 50% of the maximum allowable under the existing management plan represents a 50% reduction in potential landings versus the status quo. However, it is assumed that once the "free" quota assigned to the Maine fishery is harvested, fishermen would simply rent surplus ocean quahog quota from the ITQ fishery to replace it.

Current projections indicate that more than 900,000 bushels of quahogs from the ITQ fishery will be left unharvested in 2000. If the trend to substitute surf clams for ocean quahogs continues, the surplus may be even greater in 2001. For the purposes of this analysis, it is assumed that the rental price will be \$0.75 per bushel in mid-2001, as compared to \$1.00 per bushel in mid-2000.

It is further assumed that if the 2001 Maine quota were reduced by 50,000 bushels, that 100% of that reduction would be replaced by rented allocation from the ITQ fishery.



#### *7.2.3.2.2. Exvessel Prices*

A reduction in the "free" quota available to Maine quahog fishermen will oblige them to replace it with rented quota from the ITQ fishery. Rented quota, therefore, will simply become an additional variable cost of harvest operations.

Without knowledge of the elasticities of demand and supply in the fresh, half-shell market, it is difficult to predict changes in exvessel prices. However, a 50% reduction in the Maine quota would be a significant event for the Maine fishery, given that all of the 100,000 bushel quota is now being utilized. The Maine quota would likely be exhausted in mid-year, when most of the Maine vessels are still participating in the fishery. Most of the vessels, therefore, would be obliged to rent quota from the ITQ fishery. The additional \$0.75 per bushel cost would be minimal considering the much higher value which Maine quahogs command, when compared to landings from the ITQ fishery. The average exvessel price for Maine ocean quahogs was \$27.55 per Maine bushel in 1999, compared with \$4.25 per bushel in the ITQ fishery.

Note that a Maine bushel is smaller than a bushel in the ITQ fishery, so an adjusted price for Maine ocean quahogs would be an even higher \$41.62 per ITQ bushel. (1 Maine bushel = 1.2445 cubic feet; 1 ITQ bushel = 1.88 cubic feet.)

It is expected that Maine fishermen would be able to pass along a portion of their increased costs from renting quota, resulting in a slightly higher exvessel price for Maine ocean quahogs.

#### *7.2.3.2.3. Consumer Prices*

With exvessel prices expected to increase slightly under this alternative, prices to consumers may increase very slightly.

#### *7.2.3.2.4. Consumer Surplus*

Assuming that consumers would pay a slightly higher retail price for Maine ocean quahogs, consumer surplus would decrease slightly.

#### *7.2.3.2.5. Harvest Costs*

After the free Maine ocean quahog quota is exhausted, fishermen are expected to rent quota from the ITQ fishery. The cost per ITQ bushel is estimated at \$0.75. Assuming that the entire quota reduction of 50,000 bushels is replaced, the increased harvesting costs would equal \$37,500 across all vessels.

There are two factors which would serve to adjust this amount. First is the fact that Maine bushels are smaller than ITQ bushels, which would lower rental costs since fewer ITQ bushels would be needed to land each Maine ocean quahog bushel. One cage tag allows for the landing of 32 ITQ bushels (1.88 cu. ft. each), whereas one tag would equate to 48 Maine bushels (1.2445 cu. ft. each).

The second factor involves the fact that 1 cage tag is the smallest quota unit that a fishermen can utilize when landing either surf clams or ocean quahogs in the ITQ fishery. For most Maine ocean quahog trips, this unit is

relatively efficient, since in 1999 the average catch per trip was 47 Maine bushels. Each trip would then require 1 tag to cover 48 Maine bushels, at an estimated cost of \$24.00.

Inefficiencies would exist in those cases where either fewer or larger harvests were made on a single trip. Landings of any quantity between 1 and 48 Maine bushels would require one cage tag to be used. Similarly, landings of any quantity between 49 and 96 Maine bushels would require two tags be used.

For the purposes of this analysis, it is assumed that these two countervailing factors will balance one another out, and that the overall increase in harvest costs under this alternative is \$37,500.

#### *7.2.3.2.6. Producer Surplus*

It is expected that producers (vessels) will be obliged to absorb a portion of the increased costs of harvest that would result from renting ITQ quota. Producer surplus would correspondingly decrease slightly.

#### *7.2.3.2.7. Enforcement Costs*

With the widespread use of ITQ quota in Maine that this alternative envisions, the costs of tracking and enforcing it would increase. Since the implementation of Amendment 10 in May 1998, it has not been necessary to track ITQ in Maine because the 100,000 bushel quota in effect since that date was sufficient for the fishery's needs.

#### *7.2.3.2.8. Distributive Impacts*

No significant distributive impacts are foreseen from adoption of this alternative.

#### *7.2.3.2.9. Cumulative Impacts*

No significant cumulative impacts are foreseen from adoption of this alternative.

#### *7.2.3.2.10. Risk of Biological Overexploitation*

The risk of localized overexploitation exists in all of the management alternatives currently available for the Maine ocean quahog fishery. From a coast-wide perspective, there is little risk to the ocean quahog resource from the total allowable harvest of the combined ITQ and Maine ocean quahog quotas.

However, the lack of a survey and assessment of the Maine ocean quahog fishery zone leaves the question of a sustainable harvest level for this area unresolved. It is hoped that the State of Maine will be able to fund such an assessment in the near future, and that, in cooperation with the federal government, any necessary adjustments to the management regime be considered to ensure the continued health of the Maine fishery.

### 7.2.3.3. Alternative M2 - 1998 Harvest Level - 72,466 Maine Bu.

#### *7.2.3.3.1. Landings*

Reducing the Maine quahog quota to the 1998 harvest level of 72,466 Maine bushels represents a 28% reduction in potential landings versus the status quo. However, it is again assumed that once the "free" quota assigned to the Maine fishery is harvested, fishermen would simply rent surplus ocean quahog quota from the ITQ fishery to replace it. Total landings, then, would remain unchanged from the status quo alternative.

#### *7.2.3.3.2. Exvessel Prices*

Given the landings pattern exhibited in 1999, a quota of 72,466 Maine bushels should sustain the fishery through the Labor Day holiday in early September. This would limit the additional costs of renting ITQ to only those vessels active in the final few months of the year. As with the prior alternative, it is expected that vessels will be able to recoup a portion of the added costs through slightly higher exvessel prices.

#### *7.2.3.3.3. Consumer Prices*

The magnitude of the increase in exvessel prices under this alternative is considered to be so small that it is unlikely to have a discernable impact on consumer prices.

#### *7.2.3.3.4. Consumer Surplus*

With consumer prices expected to remain constant under this alternative, no changes in consumer surplus would result.

#### *7.2.3.3.5. Harvest Costs*

It is expected that vessels would respond to a 28% decrease in the Maine quota by renting the 27,534 bushels lost from the ITQ portion of the fishery. At an estimated cost of \$0.75 per bushel, this would result in an increase of \$20,650 in harvest costs across all vessels. (See the section on harvest costs in the prior alternative for a discussion of other compensating factors affecting the use of ITQ quota in the Maine fishery.)

#### *7.2.3.3.6. Producer Surplus*

It is expected that producers (vessels) will be obliged to absorb a portion of the increased costs of harvest that would result from renting ITQ quota. Producer surplus would correspondingly decrease slightly.

#### *7.2.3.3.7. Enforcement Costs*

With the need to administer and track the use of ITQ quota in the Maine fishery, enforcement costs would increase. However, with utilization limited to only those vessels remaining active in the final months of the year, the costs would be less than those resulting from the prior (50% of Maximum Quota) alternative.

#### *7.2.3.3.8. Distributive Impacts*

No significant distributive impacts are foreseen from adoption of this alternative.

#### *7.2.3.3.9. Cumulative Impacts*

No significant cumulative impacts are foreseen from adoption of this alternative.

#### *7.2.3.3.10. Risk of Biological Overexploitation*

As discussed in the prior alternative, the risk of biological overexploitation is expected to be similar across all quota alternatives currently available for the Maine ocean quahog fishery.

#### 7.2.3.4. Summary of Maine Ocean Quahog Quota Impacts

<b>Summary of Impacts for Proposed 2001 Maine Ocean Quahog Quota Alternatives Relative to Status Quo Alt M3: 100,000 Maine bushels (Preferred)</b>		
Feature	Alt. M1 50% of Maximum Quota  50,000 Maine bushels	Alt. M2 1998 Harvest Level  72,466 Maine bushels
Landings	0 (assumes 50,000 Maine bushels will be leased from ITQ portion of the fishery)	0 (assumes that 27,534 Maine bushels will be leased from ITQ portion of the fishery)
Exvessel Prices	Slight +	Very Slight +
Consumer Prices	Slight +	0
Consumer Surplus	Slight -	0
Harvest Costs	+ \$37,500	+ \$20,650
Producer Surplus	Slight -	Slight -
Enforcement Costs	+	+
Distributive Impacts	0	0
Cumulative Impacts	0	0
Risk of Biological Overexploitation	0	0
+ indicates an increase relative to the status quo; - indicates a decrease relative to the status quo; 0 indicates no change; ? indicates unknown		

### 7.3. Other Management Actions: Suspend Minimum Size Restriction on Surf Clams for 2001

The Surf Clam and Ocean Quahog FMP includes a provision for a minimum size limit of 4.75 inches on surf clams, which may be used to protect new year classes from harvest before they have reached an optimal size. The provision is written such that a minimum size will automatically be in effect unless the Council takes the active step of suspending it each year.

The current stock is comprised primarily of large, adult individuals, with few small individuals apparent from landings in most areas. Reinstating a minimum size under these conditions would result in greater harm than benefit, as it would require the industry to use "sorting" machines which will often damage undersized clams as it routes them back overboard.

Therefore, NMFS suspended the surf clam minimum size limit for 2001, as has been done since 1990. Continuing the suspension will have no impact on the current fishery.

### 7.3.1. The Alternative of Not Suspending the Surf Clam Minimum Size Limit in 2001

There is only one alternative to suspending the surf clam minimum size limit for 2001, and that is allowing the size limit to take effect. Each year the Council and NMFS must take the active step of suspension, or a minimum size of 4.75 inches will automatically go into effect as of January 1. The current regulations read as follows:

§ 648.72 Minimum surf clam size.

(a) Minimum length. The minimum length for surf clams is 4.75 inches (12.065 cm).

(b) Determination of compliance. No more than 50 surf clams in any cage may be less than 4.75 inches (12.065 cm) in length. If more than 50 surf clams in any inspected cage of surf clams are less than 4.75 inches (12.065 cm) in length, all cages landed by the same vessel from the same trip are deemed to be in violation of the minimum size restriction.

(c) Suspension. Upon the recommendation of the MAFMC, the Regional Administrator may suspend annually, by publication in the Federal Register, the minimum shell-height standard, unless discard, catch, and survey data indicate that 30 percent of the surf clams are smaller than 4.75 inches (12.065 cm) and the overall reduced shell height is not attributable to beds where the growth of individual surf clams has been reduced because of density dependent factors.

(d) Measurement. Length is measured at the longest dimension of the surf clam shell.

The minimum size provision for the surf clam fishery is a measure that is most appropriate when a large proportion of the resource is comprised of smaller, younger surf clams. Its application can help ensure the continued viability of a young, or recovering resource by delaying their harvest until they have had multiple opportunities to spawn. It is also intended to improve the overall meat yield from a fishery by postponing harvest until after the rapid growth phase which occurs in the adolescence of most species.

The condition of having a large portion of the resource in an immature state occurred in the surf clam fishery following the anoxia event in the summer of 1976. Low levels of dissolved oxygen in the water off the coast of New Jersey killed large portions of the surf clam resource available at the time. In the subsequent years the Mid-Atlantic Council implemented a series of management measures for surf clams. These included quarterly harvest quotas, a moratorium on new vessels entering the fishery, effort limitations, reporting requirements, closed areas, and an initial minimum size limit of 5.5 inches.

Unfortunately, in addition to the desired effect, each of these measures also produced some negative side effects. Quarterly quotas that were shared among all vessels still motivated a race to fish as vessels sought to harvest as much as possible before the quota was reached and the fishery closed. The vessel moratorium made the replacement of ageing vessels difficult and contentious. Effort limitations which limited the amount of time a vessel could operate were expensive to enforce and costly to vessel owners in the forced down-time of their vessels. Closed nursery areas were very expensive to enforce because they required the use of Coast Guard cutters or surveillance aircraft, and it is considered likely that the stunting of the surf clam resource off Chincoteague, Virginia was contributed to by the area closure.

Minimum size limits are also subject to their share of unintended consequences. The minimum size for surf clams was generally favored by processors because it obliged fishermen to bring them the most profitable, high-yielding clams. However, vessel owners were subject to fines if their catches were found to be in violation, and resource benefits are muted when captains are unable to avoid small individuals, and are forced to discard them.

The culling out of small clams is most often accomplished with sorting machines, which will direct clams across a series of parallel metal rollers, allowing the smaller individuals to fall between the rollers and be

shunted back overboard. Fracture of the clam shell during this process is common, and a significant portion of the animals returned to the ocean will not survive.

In the 1999 surf clam logbook data, the average reported discard rate was 2%, and the highest reported rate was 11%. In the last assessment, gear mortality was assumed to be 10% of landings (animals killed from the dredge passing over them), and discard mortality an additional 10% of landings. Numbers of this magnitude are not suggestive of a population dominated by small individuals. Moreover, assessment figures continue to indicate that the stock is comprised primarily of large, adult individuals. Reinstating a minimum size under these conditions would result in greater harm than benefit, because it would result in higher discard mortality through the expanded use of sorters, as vessel owners seek to minimize the risk of fines. Therefore, continuing the suspension will provide substantial benefits through maintaining a low discard mortality rate, while giving up little in the way of increased survival of juveniles.

## **8. DETERMINATION OF A SIGNIFICANT REGULATORY ACTION**

The 2001 final specifications do not constitute a significant regulatory action under Executive Order 12866 for the following reasons: (1) They will not have an annual effect on the economy of more than \$100 million. Based on federal logbook reports, the total value of the EEZ surf clam fishery was \$21.3 million in 1999, and the total value of the EEZ ocean quahog fishery was \$18.5 million. Hence, with a total value of \$39.8 million between the two fisheries, it is not possible for any regulation which the federal government might issue to exceed the \$100 million impact threshold. The final specifications are necessary to maintain the harvest of surf clams and ocean quahogs at sustainable levels. The final specifications benefit in a material way the economy, productivity, competition and jobs. These specifications will not adversely affect, in the long-term, competition, jobs, the environment, public health or safety, or state, local, or tribal government communities. (2) The final specifications will not create a serious inconsistency or otherwise interfere with an action taken or planned by another agency. No other agency has indicated that it plans an action that will affect the Atlantic surf clam or ocean quahog fisheries in the EEZ. (3) The final specifications will not materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of their participants. (4) The final specifications do not raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in this Executive Order.

### **8.1 Conclusion**

Due to the lack of meeting any of the four criteria described above, it is determined that the final 2001 quotas for the surf clam and ocean quahog fisheries do not constitute a "significant" regulatory action.



## 9. REVIEW OF IMPACTS RELATIVE TO THE REGULATORY FLEXIBILITY ACT (Small Entity Impacts)

### 9.1. Introduction

The purpose of the Final Regulatory Flexibility Act is to minimize the adverse impacts from burdensome regulations and record keeping requirements on small businesses, small organizations, and small government entities. The category of small entities likely to be affected by the proposed plan is that of commercial Atlantic surf clam and ocean quahog fishermen. The impacts of the final action on the fishing industry and the economy as a whole were discussed above. The following discussion of impacts centers specifically on the effects of the final actions on the mentioned small businesses entities.

### 9.2. Determination of Significant Economic Impact on a Substantial Number of Small Entities

The Small Business Administration (SBA) defines a small business in the commercial fishing sector as a firm with receipts (gross revenues) of up to \$3.0 million. The Northeast Regional Office of the National Marine Fisheries Service maintains current ownership records of surf clam and ocean quahog allocation holders. Tables 1 and 2 contain listings of ocean quahog and surf clam allocation holders respectively as of September 26, 2000. These are the entities that will be most directly impacted by the setting of annual quotas.

Table 1. Ocean Quahog Allocation Owners as of Sept. 26, 2000			
No. of Allocation Holders	State	Total Bushels Held	Bu/Holder
41	NJ	2,101,600	51,259
8	MD	29,1520	36,440
7	VA	913,824	130,546
5	VAR*	1,184,768	236,954
4	NY	7,616	1,904
<b>Total = 65</b>		<b>4,499,328</b>	<b>69,220</b>
*Var = CT, GA, FL, RI			

Table 2. Surf Clam Allocation Owners as of Sept. 26, 2000			
No. of Allocation Holders	State	Total Bushels Held	Bu/Holder
66	NJ	1,119,008	16,955
17	VA	922,592	54,270
13	MD	413,568	24,328
10	VAR*	110,112	11,011

<b>Total = 106</b>		<b>2,565,280</b>	<b>24,201</b>
* Var = FL, MA, NY, RI			

Table 3 lists the number of vessels active in harvesting surf clams and ocean quahogs in the non-Maine fisheries. Some of these vessels may not hold allocations. Depending on the regulations promulgated, the population affected by the regulation may change, i.e. if, for example, an area is closed, both holders and service providing vessels may be affected, while with a quota change, only holders may appropriately be affected and service providers impacted.

Table 3. Vessel Participation in Surf Clam and non-Maine Ocean Quahog Fisheries	
Species Harvested	Number of Vessels
Surf clams only	22
Ocean Quahogs only	12
BOTH Surf clams and Ocean Quahogs	11
<b>TOTAL</b>	<b>45</b>

Average 1999 gross income for surf clam vessels was \$ 646,701 per vessel, and for ocean quahogs was \$ 691,316 per vessel. In the small artisanal fishery for ocean quahogs in Maine, 38 vessels reported harvests in the clam logbooks, with an average value of \$68,097 per boat. All of these vessels readily fall within the definition of small businesses.

### 9.3. Analysis of Economic Impacts

#### 9.3.1. Does this action result in revenue loss of >5% for > 20% of the participants?

##### 9.3.1.1. *Atlantic Surf Clam Quota*

The final specifications increase by 11% the 2001 quota for surf clams in federal waters. Hence, if the quota is fully harvested and prices remain stable, an increase in revenue of 11% per vessel should result.

##### 9.3.1.2. *Ocean Quahog Quota*

The final specifications do not change the 2001 quota for ocean quahogs in federal waters from the 2000 quota level. Maintaining the quota at its current level will not directly reduce the exvessel revenues of any industry participant.

##### 9.3.1.3. *Maine Ocean Quahog Management Area*

The final specifications do not change the 2001 quota for the Maine ocean quahog management area from the 2000 quota level. Currently set at 100,000 bushels, maintaining the quota at its current level will not directly reduce the exvessel revenues of any industry participant.

#### *9.3.1.4. Suspension of Surf Clam Minimum Size Limit*

NMFS continued the suspension of the surf clam minimum size limit for 2001. This action should increase the profitability of participating in the surf clam fishery for all vessels, as it eliminates the need to purchase and maintain costly sorting machinery. As discussed in prior sections, the imposition of a size limit in the surf clam fishery is only advisable when the resource is comprised of predominantly small, juvenile individuals.

### 9.3.2. Does this action result in an increase in compliance costs (annualized capital, operating, reporting, etc.) of >5% for > 20% of the participants?

#### *9.3.2.1. Atlantic Surf Clam Quota*

The costs of compliance with these regulations remain unchanged from prior years. Therefore, there should be no increase in compliance costs resulting from the final 2001 surf clam quota.

#### *9.3.2.2. Ocean Quahog Quota*

The costs of compliance with these regulations remain unchanged from prior years. Therefore, there should be no increase in compliance costs resulting from the final 2001 ocean quahog quota.

#### *9.3.2.3. Maine Ocean Quahog Management Area*

The costs of compliance with these regulations remain unchanged from prior years. Therefore, there should be no increase in compliance costs resulting from the final 2001 Maine ocean quahog area quota.

#### *9.3.2.4. Suspension of Surf Clam Minimum Size Limit*

The costs of compliance with these regulations remain unchanged from prior years. Therefore, there should be no increase in compliance costs resulting from the 2001 suspension of the surf clam minimum size limit.

### 9.3.3. Does this action result in 2% of the entities ceasing operations?

#### *9.3.3.1. Atlantic Surf Clam Quota*

The final specifications increase by 11% the 2001 quota for surf clams in federal waters. The market for surf clams is currently strong, and there should be no impediment to all vessels increasing their sales by a corresponding 11%. Hence, no business failures are expected as a result of this quota specification.

#### *9.3.3.2. Ocean Quahogs Quota*

The final specifications do not change the 2001 quota for ocean quahogs in federal waters. There is currently

a 16% surplus of unharvested ocean quahog quota. This is a result of the increasing costs of harvesting ocean quahogs, and the decreasing costs of substitute products (surf clams). A risk of business failure exists if selected allocation owners with lesser access to a market were unable to sell their quota shares over a period of years. Currently, there are no known cases of this occurring in the ocean quahog fishery. However, the Council is monitoring developments in the fishery closely, and will recommend adjustments in the future should the risk of business failure appear to increase.

#### *9.3.3.3. Maine Ocean Quahog Management Area*

The final specifications do not change the 2001 quota for the Maine ocean quahog management area. It is not anticipated that this action will negatively impact the number of business entities.

#### *9.3.3.4. Suspension of the Surf Clam Minimum Size Limit*

It is not anticipated that the suspended surf clam minimum size limit will have anything other than a favorable impact on the number of business entities.

#### 9.3.4. 2001 Surf Clam Quota Deemed "Not Significant" Impact

The final specifications increase by 11% the 2001 quota for surf clams in federal waters. The market for surf clams is currently strong, and there should be no impediment to all vessels increasing their sales by a corresponding 11%. Therefore, with only positive impacts resulting from this action, it is concluded the 2001 surf clam quota will have no significant negative impact on small businesses.

#### 9.3.5. 2001 Ocean Quahog Quota Deemed "Not Significant" Impact

The final specifications do not change the ocean quahog quota for 2001. The industry is currently not utilizing all of the existing quota for ocean quahogs. Therefore, it is concluded that there will be no significant negative impact on small businesses.

#### 9.3.6. 2001 Maine Ocean Quahog Area Quota Deemed "Not Significant" Impact

The final specifications do not change the Maine ocean quahog area quota for 2001. Therefore, it is concluded that there will be no significant negative impact on small businesses.

#### 9.3.7. Indirect Impacts

A required component for preparation of this analysis under the Regulatory Flexibility Act is identification of the industries and economic sectors that will either be directly or indirectly affected by the final specifications. In addition to commercial fishing vessels, this information is specifically provided for the affected economic sectors for the commercial fishing industry in the following Table 4.

Table 4. List of indirectly affected industry sectors

Commercial Fishing (0910)			Processors (2092)		
Sector	SIC Code	Impact Percent	Sector	SIC Code	Impact Percent
LUBRICATING OILS AND GREASES	2992	22.88%	COMMERCIAL FISHING	910	36.03%
CORDAGE AND TWINE	2298	11.84%	BUILDING MATERIALS AND GARDENING SUPPLIES	5200	18.07%
SHIP BUILDING AND REPAIRING	3731	11.72%	PREPARED FRESH OR FROZEN FISH OR SEAFOOD	2092	15.12%
MISCELLANEOUS REPAIR SHOPS	7690	6.53%	MISCELLANEOUS LIVESTOCK	0191, 0219, 0259, 0271, 0272, 0273, 0279, 0291	9.30%
MANUFACTURED ICE	2097	5.55%	WATER TRANSPORTATION	4400	6.05%
PETROLEUM REFINING	2910	4.76%	PAPERBOARD CONTAINERS AND BOXES	2650	4.03%
BOAT BUILDING AND REPAIRING	3732	4.23%	COMMUNICATIONS, EXCEPT RADIO AND TELEVISION	4810, 4820, 4849, 4890	2.36%
INSURANCE CARRIERS	6300	3.53%	GAS PRODUCTION AND DISTRIBUTION	4920, 4930	1.36%
AUTOMOBILE RENTAL AND LEASING	7510	2.24%			92.32%
WATER TRANSPORTATION	4400	2.05%			
MAINTENANCE AND REPAIR OTHER FACILITIES	1500, 1600, 1700	1.96%			
CANVAS PRODUCTS	2394	1.61%			
MOTOR FREIGHT TRANSPORT AND WAREHOUSING	4200, 4789	1.41%			
BANKING	6000	1.33%			
HOTELS AND LODGING PLACES	7000	1.16%			
MANAGEMENT AND CONSULTING SERVICES	8740	1.11%			
COMMERCIAL FISHING	910	1.04%			
AUTOMOTIVE DEALERS & SERVICE STATIONS	5500	1.03%			
HARDWARE, N.E.C.	3429	0.95%			
AUTOMOBILE REPAIR AND SERVICES	7530	0.92%			
INTERNAL COMBUSTION ENGINES, N.E.C.	3519	0.86%			
MANIFOLD BUSINESS FORMS	2760	0.77%			
BUSINESS ASSOCIATIONS	8610	0.62%			
		90.10%			

For the commercial sector, the final regulations will have direct effects on both commercial fishing and processing. These sectors are identified by their 4-digit Standard Industrial Classification (SIC) code as 0910 and 2092 respectively. The economic sectors that will be indirectly affected were identified in the following manner: An Input/Output model of the United States economy was estimated using a PC-Based software program called IMPLAN. IMPLAN has been in use since its development by the U.S. Forest Service in 1979. IMPLAN is based on Bureau of Economic Analysis (BEA) data for 521 industries. The U.S. model provides information on linkages among industries as well as an estimate of the required amount of purchases from all sectors in order to produce one dollar's worth of output in a given sector. The indirectly affected economic sectors for commercial fishing and processing were listed in Table 1, along with the SIC codes that comprise those sectors. Note that the list of sectors is not exhaustive, but include sectors in descending order of impact and only reports those sectors whose cumulative impact was 90 percent or greater.

In each column of Table 1, headed by the title "Impact Percent" are estimated proportions of expenditures by directly affected sectors on purchased inputs (i.e. expenses per dollar of commercial fishing output net of value added) from each of the indirectly affected sectors. For example, of the inputs used by commercial vessels, 22.88 percent were from SIC sector 2992 (lubricating oils and greases). Value added includes payments that go to labor (captain and crew) and profits. This means that for every dollar spent to produce a dollar's worth of commercial fishing \$0.75 goes to value added and \$0.25 goes to purchased inputs other than labor. Thus, the effect on indirectly affected industries is the product of \$0.25 and the "Impact Percent." Sector 2992 has the highest impact percent (22.88) and revenues in that sector would change at a rate of \$0.057 per dollar of output change in the commercial fishing sector. Since no significant impact (>5%) was found for either the surf clam or ocean quahog fishery, it is very unlikely that the any indirectly affected firms would be significantly impacted by any of the three criterion.

#### **9.4. Explanation of Why The Action is Being Considered**

Regulations implementing the FMP for the Atlantic Surf Clam and Ocean Quahog Fisheries prepared by the Council appear in 50 CFR Sec. 648.7. These regulations stipulate that prior to the beginning of each year, the MAFMC, following an opportunity for public comment, will recommend to the Assistant Administrator quotas and estimates of DAH and DAP for surf clams and ocean quahogs within the ranges specified.

#### **9.5. Objectives and Legal Basis for the Rule**

Refer to the section on Management Objectives above (Section 1.2). The Magnuson-Stevens Fishery Conservation and Management Act (Public Law 94-265) as amended through October 11, 1996 provides the legal basis for the rule.

#### **9.6. Demographic Analysis**

Refer to the sections on Description of Fishing Activities (Section 7), and Economic Characteristics of the Fishery (Section 8) in Amendment 8 to the Atlantic Surf Clam and Ocean Quahog FMP (MAFMC 1990). See also the 2000 Surf Clam and Ocean Quahog quota recommendations paper (MAFMC 1999b).

## **9.7. Cost Analysis**

This regulatory action does not impose any additional reporting or compliance costs on the industry. Refer to the "Impacts of Proposed Alternatives" section above.

## **9.8. Competitive Effects Analysis**

Competition in the surf clam and ocean quahog fisheries will only be affected by the annual quotas if surplus quota were to persist for an extended period of time. If independent fishermen with lesser access to a market were unable to sell their quota shares for either species for an extended period, it could result in their exit from the industry and an increase in concentration. A surplus existed in the federal surf clam fishery in 1997 and 1998, but corrected in 1999. A surplus currently exists in the federal ocean quahog fishery, and is being monitored closely. Corrective action will be recommended in the future if the situation warrants. To date, no reduction in competition is apparent from actions related to the annual quotas.

## **9.9. Identification of Overlapping Regulations**

The final action does not create regulations that conflict with any state regulations or other federal laws.

## **9.10. Conclusions**

The preceding analysis of impacts relative to the Final Regulatory Flexibility Act indicates that these regulatory actions will not have a significant negative impact on small entities engaged in the surf clam or ocean quahog fisheries.

## **10. PAPER WORK REDUCTION ACT OF 1995**

The Paperwork Reduction Act concerns the collection of information. The intent of the Act is to minimize the Federal paperwork burden for individuals, small business, state and local governments, and other persons as well as to maximize the usefulness of information collected by the Federal government.

There are no measures under this regulatory action that will involve increased paper work and consideration under this Act.

## **11. IMPACTS OF THE PLAN RELATIVE TO FEDERALISM**

These specifications do not contain policies with federalism implications sufficient to warrant preparation of a federalism assessment under Executive Order 12612.





## 12. FINAL REGULATORY FLEXIBILITY ANALYSIS SUPPLEMENT

A description of the reasons why action by the agency is being taken and the objectives of this final rule are explained in the preamble to the proposed rule and are not repeated here. This action does not contain any collection-of-information, reporting, or recordkeeping requirements. It does not duplicate, overlap, or conflict with any other Federal rules. This action is taken under authority of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) and regulations at 50 CFR part 648. There are no compliance costs associated with this rule.

There were no public comments submitted in response to the initial regulatory flexibility analysis (IRFA). No changes were made from the proposed rule.

In 1999, a total of 45 vessels reported harvesting surf clams or ocean quahogs from Federal waters under an individual transferrable quota (ITQ) system. Average 1999 gross income from surf clam harvests was \$646,701 per vessel. Average 1999 gross income from ocean quahog harvests was \$691,316 per vessel. In the small artisanal fishery for ocean quahogs in Maine, 38 vessels reported harvests with an average value of \$68,097 per boat. All of these vessels are small entities. The Council recommended no change in the 2001 quotas for ocean quahogs or Maine mahogany ocean quahogs from their present 2000 quotas of 4.500 and 0.100 million bu (2.396 million hL and 35,240 hL), respectively. The Council recommended an 11-percent increase in the surf clam quota from 2.565 million bu to 2.85 million bu (1.366 million hL to 1.518 million hL).

Since the 1999 harvest level of 3.772 million bu (2.0 million hL) for ocean quahogs is below the 2001 proposed quota and the Council assumes that no changes in fishing effort or yield-to-effort will take place in 2000, the Council believes that the 2001 proposed quota will yield a surplus quota available to vessels participating in the ocean quahog fishery. In addition, the Maine mahogany quahog fishery 1999 harvest level of 0.094 million Maine bu (33,134 hL) is slightly below the 2001 proposed quota, and preliminary landings reports for 2000 suggest that the Maine fishery may reach the 0.100-million Maine bu (35,240-hL) quota level allocated to the fishery before the year ends. However, fishermen may continue harvesting after the mahogany quahog is reached, provided they purchase allocation from the ITQ portion of the ocean quahog fishery.

In the case of the surf clam fishery, nearly 99 percent, or 2.538 million bu (1.351 million hL), of the 1999 allocation of 2.565 million bu (1.366-million hL) was harvested. Preliminary trends for 2000 suggest that the quota will likely be harvested this year as well. Due to the scarcity of dense ocean quahog beds inshore, the surf clam industry has been increasingly shifting its focus away from the harvesting of ocean quahogs and has begun harvesting an increased number of surf clams. Therefore, the Council believes that the market can now absorb the 2001 quota increase of 11 percent.

The Council analyzed four ocean quahog quota alternatives, in addition to the preferred 4.500-million bu (2.396-million hL) option, including 4.000, 4.250, 4.750, and 6.000 million bu (2.129, 2.263, 2.529, and 3.195 million hL). The minimum allowable quota specified in the current OY range is 4.0 million bu (2.129 million hL) of ocean quahogs. Adoption of this quota would represent a 12-percent decrease from the current 4.5-million bu (2.396-million hL) quota and, assuming the entire quota is harvested, a 6.1-percent increase in harvest from the 1999 harvest level of 3.770 million bu (2.0 million hL). This alternative would take the most conservative approach to managing the fishery that is currently available to the Council. Adopting the maximum allowable quota of 6.000 million bu (3.195 million hL) for ocean quahogs would represent a 33-percent increase in

allowable harvest and a 59-percent increase in landings from 1999, assuming all the quota is taken. The industry does not have a market available to absorb such a massive increase in landings and may not have the vessel capacity necessary to harvest a quota this large. All of the alternatives, including the preferred alternative, would yield increased revenues relative to revenues from actual landings.

The Council identified four surf clam quota alternatives in addition to the preferred alternative of 2.850 million bu (1.518 million hL), including 1.850, 2.365, 2.565, and 3.400 million bu (0.985, 1.259, 1.366, and 1.810 million hL). The minimum allowable quota specified in the current OY range is 1.850 million bu (0.985 million hL) of surf clams. Adoption of this quota would represent a 28-percent decrease from the current 2.565-million bu (1.366-million hL) quota, and a 27-percent decrease from the 1999 harvest level of 2.538 million bu (1.351 million hL). Assuming that demand is price elastic, a reduction in quota of this magnitude would have a substantially negative impact on overall exvessel revenues. Adoption of the 2.365-million bu (1.259-million hL) quota would most likely have a limited impact on small entities, since it is identical to 1998 base year landings of 2.365 million bu (1.259 million hL). Adopting the maximum allowable quota of 3.40 million bu (1.810 million hL) for surf clams would allow for a 33-percent increase in harvest. The preferred alternative allows for the 11-percent increase of 2.565 to 2.85 million bu (1.366 million hL to 1.518 million hL). In summation, the Council determined that the only alternative that would significantly negatively impact revenues to vessels is the 1.850-million bu (0.985-million hL) alternative for surf clams. The status quo quota and the slight reduction alternative would be restrictive and have a slight impact on revenues. The resource can support the 11-percent increase in landings as in the preferred alternative, and the industry believes it can utilize this additional product and thus have a beneficial impact for the Nation.

The FMP specifies that the maximum quota for Maine mahogany ocean quahogs is 100,000 Maine bu (35,240 hL) and that an increase of the quota would require a scientific survey and stock assessment of the Maine mahogany ocean quahog resource. An assessment has not been completed and, therefore, the Council did not look at higher alternative quotas for this fishery. The Council staff analyzed two smaller Maine mahogany ocean quahog quota alternatives, in addition to the preferred 100,000-Maine bu (35,240-hL) option, including 50,000 Maine bu (17,624 hL) and 72,466 Maine bu (25,543 hL). Maine mahogany ocean quahog fishermen may supplement their quota by purchasing or renting ocean quahog quota from ITQ holders. Therefore, any quota below the 1999 landing level of 93,938 bu (33,112 hL) would most likely cause a decrease in revenues to individual vessels, while a quota greater than that level could cause an increase.

Nine to 12 processors participated in the surf clam and ocean quahog fisheries. However, five firms are responsible for the vast majority of purchases in the exvessel market and sale of processed clam products in appropriate wholesale markets. Impacts to surf clams and ocean quahog processors would most likely mirror the impacts of the various quotas to vessels as discussed above. Revenues earned by processors would be derived from the wholesale market for clam products and, since a large number of substitute products (i.e., other food products) are available, the demand for processed clam products is likely to be price elastic, resulting in revenue increases or decreases with changes in price.

In 2000, surf clam allocation holders totaled 106, while 65 firms or individuals held ocean quahog allocation. The recommended quotas (i.e., no change from 2000 quotas on ocean quahogs, Maine mahogany ocean quahogs, and a slight increase of 11 percent for surf clams), are likely to result in minimal impacts to allocation holders or buyers. Theoretically, increases in quota would most likely benefit those who must purchase quota through lower prices (values) and negatively impact sellers of quota, because the quota would be reduced in

value. Decreases in quota would most likely have an opposite effect.

The alternatives implemented by this final rule are expected to minimize economic impacts on small entities while achieving the conservation goals and objectives of the FMP.

NMFS considered four alternatives to the selected 2001 surf clam quota. The selected quota and all alternatives fall within the range of OY established by the FMP. The selected surf clam quota of 2.85 million bu (1.518 million hL) represents an 11-percent increase over the 2000 quota. The harvest of surf clams from Federal waters in 1999 represented the first time the Federal quota was near full utilization since 1996. The slight 11-percent increase in quota should provide no restraint of the fishery. However, it may have the effect of decreasing exvessel prices due to a larger supply of surf clams. There is a moderate risk that some allocation holders might not be able to market their share of the surf clam allocation. This risk is considered acceptable in order to provide a quota large enough to allow for some increase in demand for the product, while not setting it so high as to force some allocation holders out of business. There were two alternatives with quotas smaller than the one selected. The alternative with the least quota allocation represents the minimum OY provided under the FMP (1.85 million bu (0.985 million hL)), a 28-percent decrease from the 1999 quota. This quota was not selected because, at this quota level, although the price per bushel would likely increase, the overall revenues may decrease because it is not likely that the increased price would compensate for the reduction in amount of sales. The 2.365-million bu (1.259-million hL) quota alternative, the quota alternative adopted in 1998, and the 1999 status quo alternative (2.565 million bu (1.366 million hL)), were not selected because they provided no opportunity for an increase in demand of surf clams. The 3.4-million bu (1.810-million hL) alternative quota represents a 33-percent increase from the 1999 quota and is the maximum quota allowed by the FMP. This alternative would very likely depress exvessel prices and increase the risk of business failure for allocation holders not associated with a processor, as vertically integrated companies are expected to buy product from vessels using allocations they control before buying product outside the company.

NMFS considered four alternatives to the selected 2001 ocean quahog quota. The selected quota and all alternatives fall within the range of OY established by the FMP. The selected quota (4.5 million bu (2.396 million hL)), is the same quota as was adopted for 1999 and 2000, and is 16 percent greater than the actual harvest in 1999 and so provides no restraint on the fishery. There is no expected change in exvessel prices in the fishery as a result of the quota. There were two alternatives with quotas smaller than the one selected. The alternative with the least quota allocation (4.0 million bu (2.130 million hL)), represents the minimum OY provided under the FMP, and is a 12-percent decrease from the 1999 quota. The second to least quota alternative (4.250 million bu (2.263 million hL)) represents a 6-percent decrease from the 1999 quota. Given that both of these alternatives could potentially be constraining to the fishery, these alternatives were not selected. Two alternatives above the selected quota were also considered, 6.0 million bu (3.194 million hL), the maximum OY allowed by the FMP, and 4.75 million bu (2.529 million hL), a 6-percent increase from the 1999 quota. Neither of these alternatives were selected because of a concern that upcoming stock assessments may recommend reduced quotas and that the fishery would most likely not be able to utilize such an increase in the quota.

NMFS considered two alternatives to the selected 2001 Maine mahogany quahog quota of 100,000 Maine bu (35,240 hL). The selected quota and all alternatives fall within the range of OY established by the FMP. In order to increase the quota beyond 100,000 Maine bu (35,240 hL), a scientific survey of the resource would be required. Because an assessment has not been completed, NMFS did not look at higher alternative quotas for this fishery. Maine mahogany quahog landings in 1999 were only slightly less than the 1999 quota and

preliminary landings data for 2000 indicate that this quota has been harvested. Consequently, the 2001 quota may slightly constrain the fishery. Two alternatives smaller than the selected quota were considered, including quotas of 50,000 Maine bu (17,624 hL) and 72,466 Maine bu (25,543 hL). However, these alternatives were not selected because decreasing the quota would constrain the fishery to no purpose.

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