

FINAL

AMENDMENT #3

FISHERY MANAGEMENT PLAN

FOR

AMERICAN LOBSTER

INCORPORATING AN

ENVIRONMENTAL ASSESSMENT

AND

**SUPPLEMENTAL REGULATORY IMPACT REVIEW/
INITIAL REGULATORY FLEXIBILITY ANALYSIS**

Prepared by the
New England Fishery Management Council

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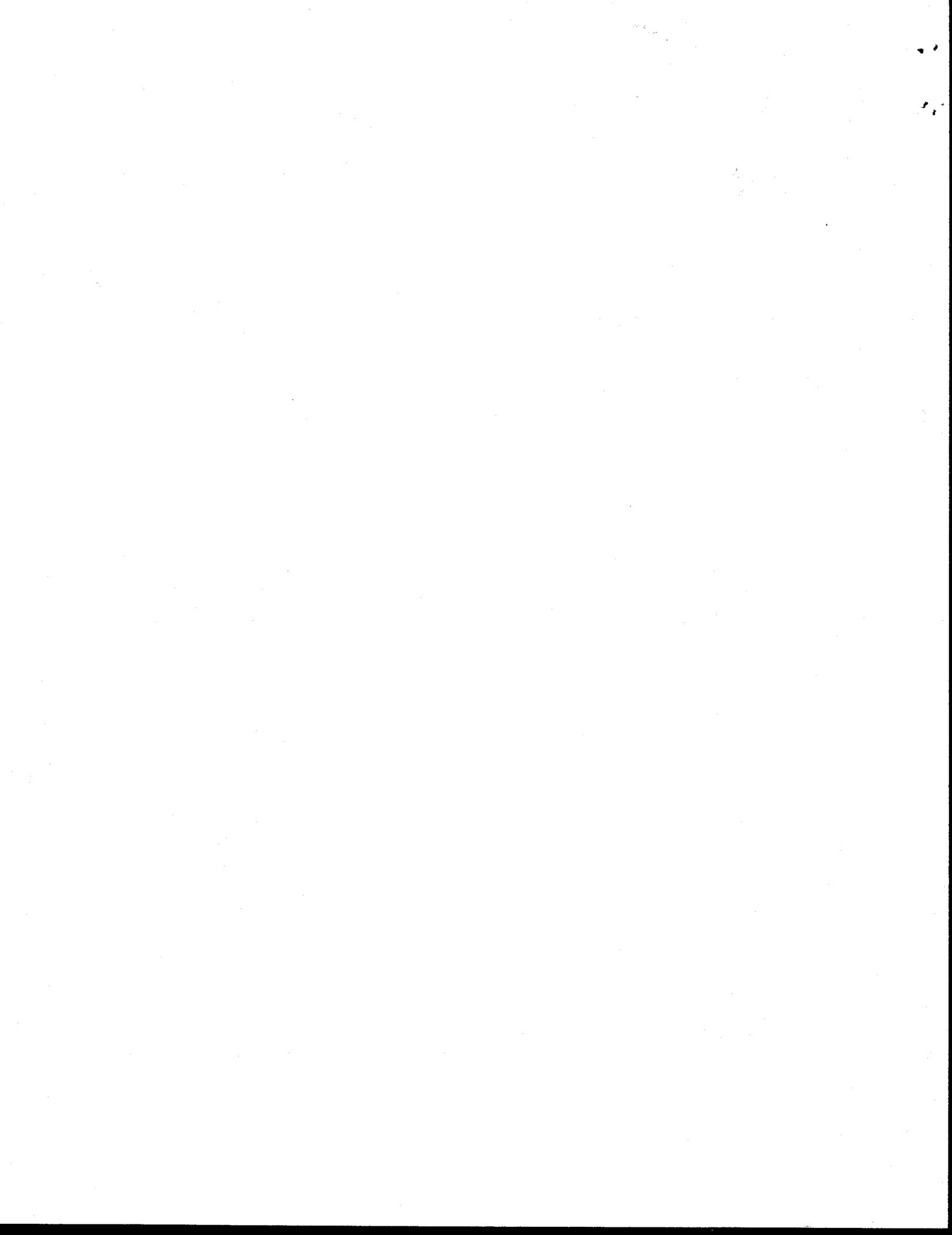


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I. INTRODUCTION

The New England Fishery Management Council, established by the Magnuson Act, has the responsibility for determining the management program for American lobster in Federal waters off the Northeast coast of the United States. In 1983, the Council adopted the American Lobster Fishery Management Plan (FMP), which is the basis for regulating the lobster fishery seaward of 3 miles. The objective of the FMP is:

"To support and promote the development and implementation, on a continuing basis, of a unified, regional management program for American lobster (*Homarus americanus*), which is designed to promote conservation, to reduce the possibility of recruitment failure, and to allow full utilization of the resource by the United States industry."

Lobster fisheries occur within the areas of authority of the New England and Mid-Atlantic Fishery Management Councils, including the EEZ and the territorial waters of the northern Atlantic coastal states. Important quantities of lobsters are landed at ports in each of the 10 coastal states from Maine to Virginia. Available statistics indicate that approximately 75-80 percent of the total U.S. harvest currently comes from waters under state jurisdiction, principally Maine, with the remaining 20-25 percent taken from the EEZ.

Particularly during the last decade, strong demand for lobsters has resulted in a substantial increase in levels of fishing effort throughout the lobster fishery in the United States. Total supply to the U.S market reached a record high of 78 million pounds in 1987 as the average ex-vessel price has increased (adjusted for inflation) in both 1986 and 1987. Using the number of traps fished as a rough index of applied effort, the coastal trap fishery has almost tripled over the last 20 years to a current level of about 2.75 million traps. Data on lobster effort levels are not available, however, an estimated 550,000 traps are fished in the EEZ. The offshore trap fishery, which reached a high level of intensity by the early 1970's, extends over much of the continental shelf and in the offshore canyons, from the Virginia capes to the Northeast Peak of Georges Bank and parts of the Gulf of Maine.

The current level of fishing is thought to be substantially greater than that which would allow the greatest productivity from the lobster resource. Increased exploitation in both the inshore and the offshore fisheries has caused concern about the long-term viability of the overall fishery in relation to stock and recruitment. In order to address this concern the New England Fishery Management Council adopted Amendment #2 to the Lobster FMP in June 1987. This amendment increases the carapace size of lobster by 1/32 inch increments in 4 steps over a 5-year period, reaching 3-5/16 inches according to the following schedule:

January 1, 1988	Increased to 3-7/32 inches
January 1, 1989	Increased to 3-1/4 inches
January 1, 1990	No change in Carapace Length, escape vents compatible with 3-5/16 inches
January 1, 1991	Increase to 3-9/32 inches
January 1, 1992	Increase to 3-5/16 inches

The purpose of the increase in carapace length was to reduce fishing mortality on small lobsters thereby increasing spawning potential. The reasons for the escape vent requirement were: 1) to promote compatibility with state regulations; 2) to decrease mortality of small lobsters which can be eaten by other lobsters in lobster traps; and 3) to reduce injuries on small lobsters caused by culling. An escape vent is an opening in a lobster trap designed to allow lobsters smaller than the legal minimum size to escape from the trap (Figure 1). This device reduces the mortality of small lobsters caused by crowding with other lobsters and finfish in the confined area of a lobster trap, particularly during molting, and mortality caused by lobstermen in culling their catch (Fogarty & Borden, 1984). Amendment 2 requires escape vents which release "a significant portion of undersized lobsters which would otherwise be retained".

II. PURPOSE AND NEED FOR ACTION

This action is proposed in response to a concern for the long term viability of the lobster resource. The lobster fishery will continue to depend heavily on newly recruited lobsters for 80-90% of its catch. Future increases in effort in the offshore fishery could impair the stocks ability to sustain itself in the long-term. Amendment #2, implemented on December 31, 1987, directly responded to this concern. The actions proposed in this Amendment 3, which is based on newly available scientific guidance from the Northeast Fisheries Center, fine tunes the escape vent measure that is already in place. Additionally, the Amendment will eliminate a major source of unproductive fishing mortality.

Now that the schedule of size increases has been established, it is appropriate to address the problem of ghost fishing and the issue of the optimum size for and implementation of escape vent size increases. Every year lobstermen lose an estimated 20 to 25% of their traps (Sheldon & Dow, 1975) due to storms or damage to trap lines caused by trawlers or other fishermen. Many of these traps continue to catch lobsters and cause some level of lobster mortality. Because the number of lobster traps totals about 2.75 million, this unknown mortality caused by lost traps is believed to be significant.

In addition to addressing the ghost fishing problem, this amendment proposes to delay the increase in the escape vent size so that the vent sizes will be more consistent with the 3-5/16" carapace size which will be implemented in 1992.

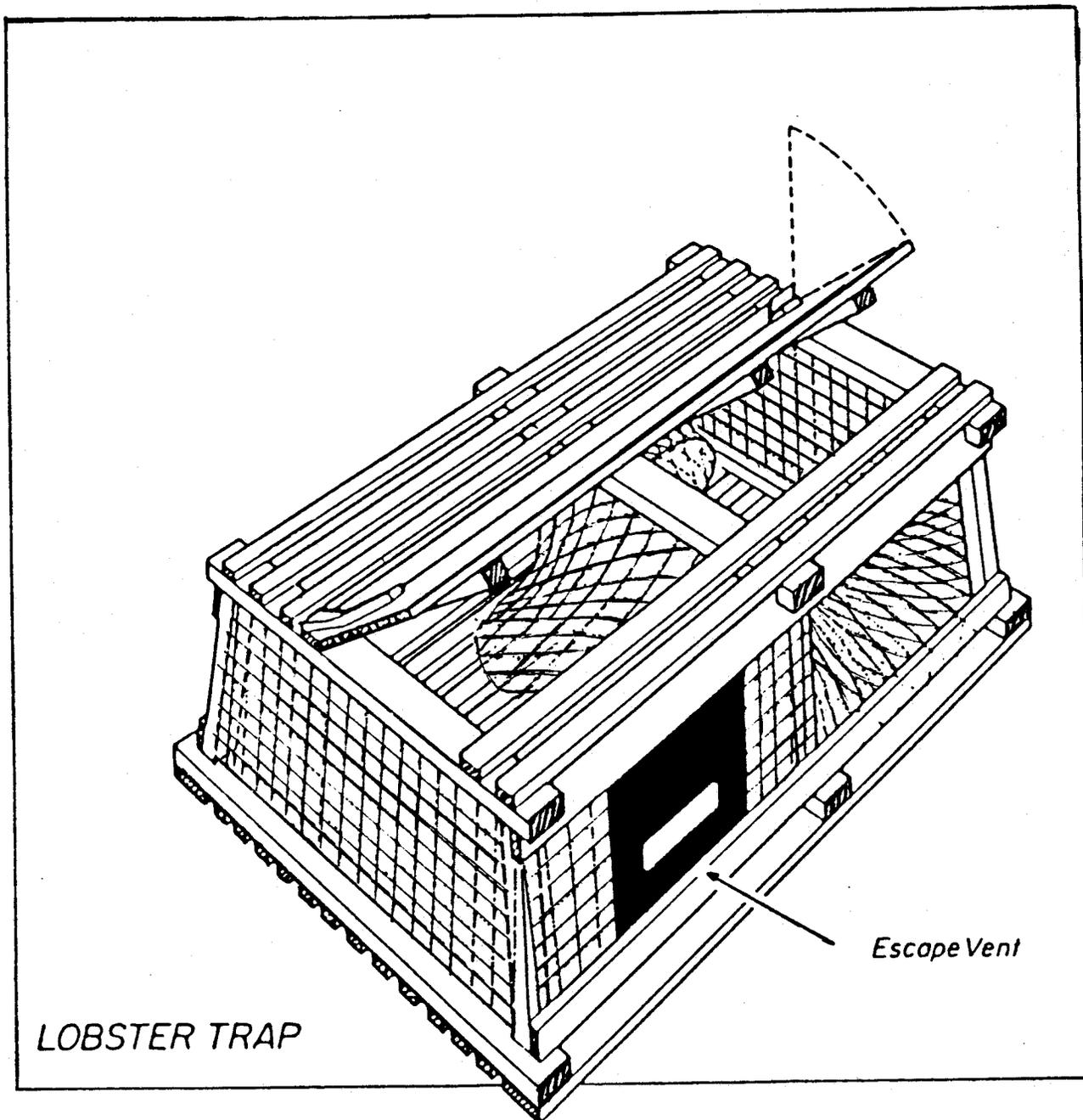
III. DESCRIPTION OF ALTERNATIVES AND THEIR IMPACTS

A. No Action Alternative

Rationale: Amendment #2 to the American Lobster FMP, specified that a new vent size, compatible with a minimum carapace length of 3-5/16", be implemented on January 1, 1990. Scientific guidance for the specification of this vent size was not available at the time the original schedule was set and was provided to the Council by NMFS in April 1988. The guidance included the following statements:

"... no single vent size can guarantee retention of all legal size lobsters, and escapement of all sublegals. At the extremes, a vent could (a) maximize retention of all legal size lobsters with the understanding that some sublegals will inevitably be retained, or a vent could (b) maximize escapement of sublegals with the understanding that some legals will inevitably escape."

Figure 1



The vent sizes which correspond to these two extremes are 1-7/8" which maximizes the retention of legal size lobsters and 1-15/16" which maximizes the escapement of sublegals (Peterson, personal communication, 1988). The problem is that these vent sizes are compatible with a minimum carapace length of 3-5/16" which will not be in effect until 1992. Instituting a minimum vent size of 1-7/8" in 1990 will enable lobster traps to retain 100% of legal size lobsters. After the two scheduled carapace length increases in 1991 and in 1992, however, escapement of sublegals would decrease. This result is contrary to the original intent of the escape vent requirement which was to release a significant portion of undersized lobsters in order to limit in-trap mortality and culling injuries.

On the other hand, requiring a vent size of 1-15/16" to be in place on January 1, 1990 constitutes a de facto instantaneous increase in the minimum carapace length from 3-1/4" to 3-5/16". The minimum size in effect during the calendar year 1990 will be 3-1/4". From Figure 1, it can be seen that a 1-15/16" vent would allow about 10-15% of 3-1/4" lobsters to escape. This level of escapement would also defeat the intent of Amendment 2 to increase the minimum size while avoiding significant losses in landings. Vented pots appear to be more efficient in trapping larger lobsters, but unfortunately, this effect is impossible to quantify in order to predict impacts on landings (Nulk, 1978).

The no action alternative would also mean not implementing a measure to reduce fishing mortality caused by ghost fishing and that this problem would have to be solved on a voluntary basis, probably by individual fishermen. Although time release mechanisms to prevent ghost fishing have been discussed for many years, lobstermen have not chosen to use them. It is unlikely that the industry will solve the ghost fishing problem without the Council's action. Experimentation by individual lobstermen or even academic and scientific institutions is unlikely to lead to a consistent or widely accepted uniform standard for a time-release escape panel mechanism that will be voluntarily adopted by lobster fishermen. Therefore, management action is necessary and appropriate to implement such a requirement for the benefit of the EEZ lobster fishery.

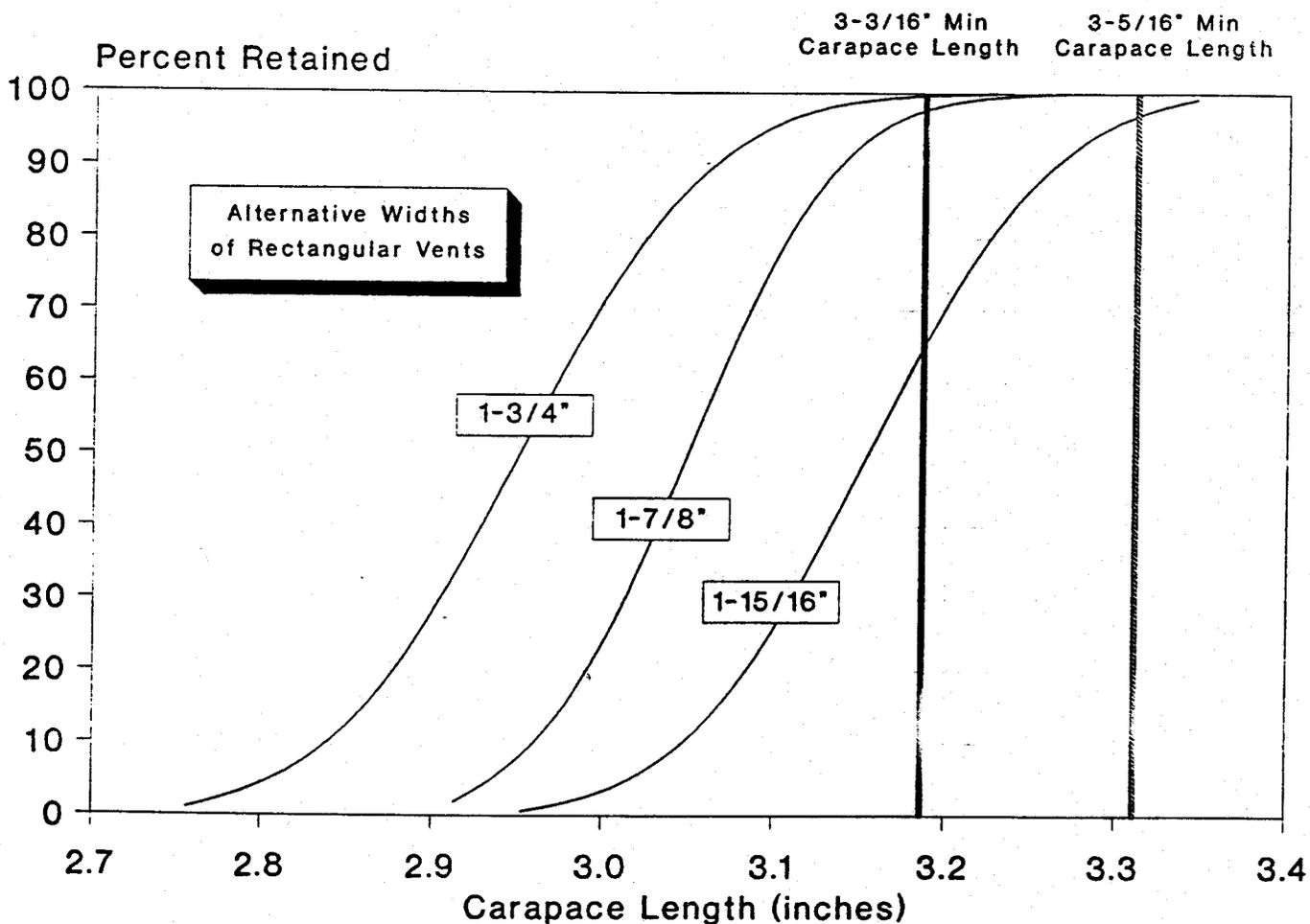
B. Proposed Measures (preferred alternative)

Proposal 1: Delay implementation of increase in escape vent size until 1992

Rationale: If the vent size increase was implemented in 1990, it must increase the height of the opening to 1-7/8" for rectangular vents in order to provide the same 100% retention level as does the present 1-3/4" rectangular vent under the 3-3/16" minimum carapace length standard. Unfortunately, the 1-7/8" vent would not provide the optimum level of escapement by 1992 under the 3-5/16" minimum carapace length standard. In contrast, by waiting until 1992 to increase the vent size, the Council can set a vent size of 1-15/16" which will allow the maximum number of small lobsters to escape while retaining virtually 100% of the legal size lobsters based on a 3-5/16" minimum carapace length. The 100% retention of legal size lobsters would be the same as current retention levels. When Amendment #2 was developed and taken to public hearings, neither the Council nor the lobster industry contemplated changing the existing 100% retention standard.

Figure 1A
(Referred to as Figure 1 in the Text)

AMERICAN LOBSTER Escape Vent Selection Curves



Curves based on data from Nulik (1978)



Biological considerations: The idea of incorporating vents in the construction of lobster traps to allow sublegal lobsters to escape is not new. Some of the earliest recorded experiments on lath spacing took place in Newfoundland in the 1890's. Further research in Canadian waters in the 1930's and 40's demonstrated a general relationship between the width of the vent opening or lath spacing and the proportion of the sublegal lobsters which escaped. These studies further suggested that when larger lobsters were abundant, vents tended to increase the catch of legal size lobsters relative to catch in unvented pots. Experiments on rock lobsters in the western Pacific also demonstrated that escape vents decrease the catch of undersized lobsters and increase the legal catch.

The Council has determined that the new vent size should maximize the escapement of sublegals. Accordingly, it has chosen the new vent size for rectangular vents to be 1-15/16" by 6". In those cases where fishermen prefer circular vents instead of rectangular vents to optimize retention of by-catch species (eg., Cancer crabs), a linear relationship between the two configurations (see Figure 2) indicates that the diameter consistent with the above range in size of rectangular vents ranges from 2-3/8" to 2-7/16". Therefore, the new size for circular vents will be 2-7/16" in diameter.

These curves (Figure 1) appear to accurately reflect the escapement of sublegal lobsters but do not necessarily depict expected catches of legal size lobsters. Vents in lobster pots appear to increase the trapping efficiency for larger lobsters, but this effect apparently depends heavily on the abundance of such lobsters in local populations. For this reason, there is considerable uncertainty with regard to the overall effect of alternative sized vents on catches of legal sized lobsters and on total landings.

Despite these uncertainties, the conservation value of vents in protecting sublegals is well documented. With traps allowing escapement of small lobsters, injuries and mortality caused by cannibalism or interspecific predation (eg., black sea bass) is greatly reduced. Resource conservation is best served if the vent size specification allows as many sublegals as possible to escape.

For the above reasons, the Council has proposed to delay implementation of the increase in vent sizes until the increases in carapace length have been completed on January 1, 1992. Through this proposed action, there will be some unknown but very small amount of additional injury and mortality on undersize lobsters during 1990 and 1991, relative to that which would occur under the current scheduled increase in vent size. This mortality currently occurs in the fishery and therefore proposed action will not have a negative impact on the resource relative to the current escape vent regulation.

Economic considerations: In order to retain the present level of efficiency of lobster gear, the 100% retention level of legal size lobsters must be kept. However, a vent size which retains 100% of legal lobsters in 1990 is different from that which would optimize escapement under a minimum carapace length of 3-5/16 in 1992. A 1-15/16" vent, which would be optimal under a minimum carapace length of 3-5/16, would allow some 10-15% of 3-1/4" lobsters to escape (Figure 1). Although it is not possible to measure the cost of this change in retention levels, any loss in retention of legal size lobsters would defeat the intent of Amendment #2 to lessen negative impacts on landings while implementing the minimum size increases.

The delay will have two negative impacts: 1) slightly increased mortality for small lobsters, and 2) lobstermen will have to spend more time culling their catch. However, the additional culling time caused by not increasing the vent size can be avoided if lobstermen choose to enlarge the vent openings and some lobstermen already use larger than minimum escape openings.

Implementation considerations: No additional enforcement or administrative costs are expected from the proposed delay in the implementation of increased vent sizes.

Proposal 2: Effective January 1, 1992, lobster traps must contain an escape panel or equivalent mechanism to keep a trap from ghost fishing after it has been abandoned or lost for 12 months or more. At least twelve months prior to implementation, the Regional Director will publish a list of acceptable methods specified by the Council for complying with this requirement, including the minimum dimensions of the escape vent.

Rationale: Every year lobstermen lose about 20-25% of their traps due to storms or damage to trap lines caused by trawlers (Sheldon and Dow, 1975). An unknown number of these traps continue to catch lobsters and cause some level of lobster mortality. Because the number of lobster traps totals about 2.75 million the mortality caused by lost traps is thought to be significant.

Several states already require degradable material in certain types of fish and shellfish traps. Florida has had a measure requiring that spiny lobster traps be constructed with wood since 1965. Other states have a number of fishery regulations similar in purpose and which require a range of readily degradable materials such as cotton twine, soft steel trap hooks and magnesium pins to be used in fish traps.

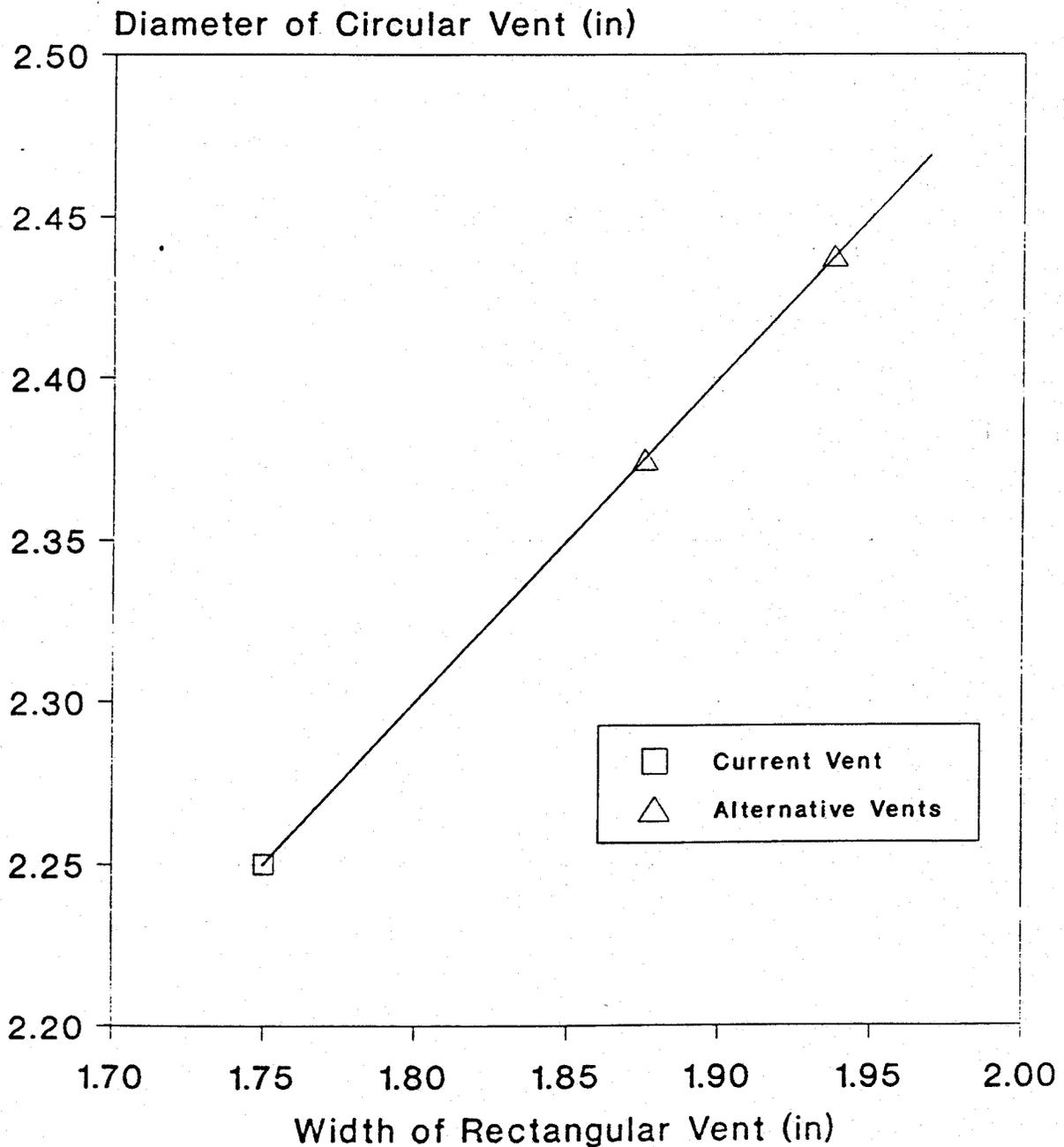
Although the potential of time release mechanisms to prevent ghost fishing has been demonstrated in a number of other fisheries, their use is not widespread. Experimentation by individual lobstermen or even academic and scientific institutions is unlikely to lead to a consistent or widely accepted standard for a time release mechanism. In this environment, it is also unlikely that gear manufacturers will develop and distribute the appropriate products to help solve this problem.

Biological Considerations: "Ghost fishing" is a term used to describe the action of fishing gear which continues to operate after all control of that gear is lost by the fisherman. Ghost fishing in the lobster pot fishery has become more of a concern as pot design has evolved, making the gear more durable. Although adequate information to determine whether dead lobster may act as bait does not exist, modern pots may continue to fish longer with dead fish and lobsters serving as bait, attracting new lobsters which eventually die or are cannibalized following a molt, with the remains attracting more fish and possibly lobsters until the pot deteriorates to the point where its condition allows lobsters of all sizes to escape.

Over extended periods of time, ghost traps fish at about 10% of the efficiency of a regularly tended, baited trap (Smolowitz, 1978). Annual catch per trap, based on 1987 Massachusetts catch and effort data, in the inshore fishery (traps which are hauled about every 2 days on average and generally fished in less than 30 fathoms of water) is estimated to be about 30 pounds and about 160 pounds in the offshore fishery (traps which are hauled about once per week and generally fished in water deeper than 30 fathoms). Corresponding estimates of catch rates for ghost traps are 16 pounds per year for offshore traps and 3 pounds per year for inshore traps.

Figure 2

LOBSTER TRAP ESCAPE VENTS Rectangular vs. Circular Equal Lobster Retention Characteristics





Based on interviews with fishermen and surveys of lost gear in the intertidal zone following storms, it has been estimated that an average of 20-25% of the gear set in the Maine fishery is lost, annually (Sheldon and Dow, 1975). Lobstermen fish an estimated 105,000 offshore traps and 445,000 inshore traps in the EEZ. Assuming a trap loss rate of 20-25%, that 80% of these are capable of ghost fishing, and that ghost traps stay in the fishery for two years on average, there are about 34-42,000 offshore and 142-178,000 inshore ghost traps in the EEZ. Estimated annual losses from ghost fishing mortality in the EEZ therefore range from 965-1,206,000 pounds in the EEZ. However, if all lobster traps were required to have an escape panel which would make the pot incapable of retaining lobsters for no more than one year after the pot was lost, then the population of ghost traps would be equivalent to the annual pot loss rate and lobster mortality in ghost traps would be about one half the current level or 482-603,000 pounds (Table 1).

The proposed action will significantly reduce losses from ghost fishing by reducing the number of effective ghost pots, almost without regard to the materials used in constructing the pot. The only exception would be if all traps used in the fishery were made of untreated wood, because such traps usually deteriorate within only a few months in most areas. The potential value of the proposed action is readily apparent in consideration of the increasing use of metal and plastic materials in pot construction.

Losses from ghost fishing will be significantly reduced despite the fact that most of the induced mortality occurs very early in the life of a ghost pot. From a strictly conservationist point of view, it might be desirable to further reduce the effective life of a ghost pot to less than one year. The Council has been advised by industry representatives, however, that the most practical period is one year which will best coincide with the trap maintenance schedule of most lobstermen.

Economic considerations: The costs associated with this measure are the costs of replacing the degradable vent fasteners more often than non-degradable fasteners and the additional cost of slightly larger plastic escape panels to cover the escape path openings in lobster traps. The escape path opening is the square space in either the wood lathing or wire mesh over which the plastic escape vent panel is placed. The initial cost of degradable materials, such as hemp, jute, cotton twine or steel wire, will probably be no greater than the cost of non-degradable materials currently used to secure vents. This measure would not increase costs for those lobstermen already using hog rings to secure the escape vents. For those using snap-in vents, the additional cost would be about \$ 0.015 per trap. The additional cost of the larger escape panels compared to the snap in vents is about \$.035 per panel. Many of these panels are already in use. One of the two main manufacturers of plastic vent panels makes only the larger size panels which meet the degradable escape vent requirements in Connecticut. The other, which also is a large manufacturer of lobster traps, installs, almost exclusively, the larger panels in new traps. Assuming that there are about 330 - 369,000 wire traps (60-67% of the estimated 550,000 traps) in use in the EEZ and that all lobstermen are using smaller panels today, the total additional cost of the larger panels would be about \$11-13,000. The industry wide cost of purchasing new hog rings for gear fished in the EEZ would be about \$5-6,000 annually. Total material costs would therefore range from \$16-18,000 (Table 2). It is likely that wood traps would be modified to meet the requirements of this measure without additional costs for materials.

TABLE 1

BENEFITS FROM REDUCING "GHOST FISHING"

	Offshore Traps	Inshore Traps	Total Traps
Number of traps in the EEZ	105,000	445,000	550,000
Estimated traps lost annually			
20% trap loss rate	21,000	89,000	110,000
25% trap loss rate	26,250	111,250	137,500
Traps able to ghost fish (80%)			
20% trap loss rate	16,800	71,200	88,000
25% trap loss rate	21,000	89,000	110,000
Number of ghost traps x 2 yr average life			
20% trap loss rate	33,600	142,400	176,000
25% trap loss rate	42,000	178,000	220,000
Catch rate (lbs/trap/year)*10%	16.0	3.0	
Mortality from annual trap losses			
20% trap loss rate	537,600	427,200	964,800
25% trap loss rate	672,000	534,000	1,206,000
	20% Trap Loss Rate	25% Trap Loss Rate	
Annual ghost fishing mortality (pounds) from above	964,800	1,206,000	
50% Reduction in annual mortality due to proposed measure	482,400	603,000	
Amount of lobster available to fishermen			
Assumed fishing mortality = 80%	385,920	482,400	
Assumed fishing mortality = 90%	434,160	542,700	
Estimate of Revenue Loss @ \$2.93/lb			
Assumed fishing mortality = 80%	\$1,130,746	\$1,413,432	
Assumed fishing mortality = 90%	\$1,272,089	\$1,590,111	

The length of time for the escape panel fasteners to degrade depends on the choice and thickness of the material, the dissolved oxygen content of the water, tidal currents and hauling stresses (Blott 1978). However, a period of one year for an escape release mechanism to work is sufficient to allow a variety of materials and thicknesses to be used without forcing lobstermen to replace escape vent fasteners too frequently. Most inshore lobstermen fish nine months or less. If the material used to secure the escape panels lasts at least this amount of time, then they will be able to resecure the escape panels once a year before putting the gear in the water at the beginning of a new season. Assuming that hog rings must be replaced annually and that the time required is 1/2 minutes per trap and that the opportunity cost for labor in the fishery is \$20 per hour, then the annual labor cost of replacing hog rings on 330-369,000 EEZ traps would range from \$55-61,000. Total costs for the EEZ, including the additional cost of new panels and the annual cost of buying new hog rings are therefore estimated to range from \$72-80,000 (Table 2).

The gross economic benefit of this measure is the increased amount of lobster available to fishermen after the reduction in ghost fishing mortality. This amount has been estimated to be about 482-603,000 pounds in the EEZ. Given the annual fishing mortality (80-90%) for lobster, almost all of these lobsters would be caught if available to lobstermen. Based on a 1987 average ex-vessel price of \$2.93 per pound, the estimated increase in landings provide an annual benefit of \$1.13-1.59 million (Table 1) in annual revenues to lobstermen. Net annual benefits for the EEZ would range from \$1.05-1.52 million (Table 3).

Implementation considerations: The implementation of this measure would entail only minimal administrative costs. The enforcement costs would depend largely on the specification of the degradable escape mechanism. For example, if the degradable escape panel fasteners are to be made of corrosible steel wire, they would be very difficult to distinguish from stainless steel hog rings which are currently used. Other types of fasteners might make the measure easier to enforce. Because there is already a need for enforcement officials to inspect traps to ensure that minimum escape vent size regulations complied with, this measure should add minimally to existing enforcement costs.

Because of these uncertainties, it is not possible to estimate the additional administrative and enforcement costs of this measure, however, they are not expected to be significant because this is a measure which has the support of industry associations and many lobstermen.

TABLE 2

COST OF DEGRADABLE ESCAPE MECHANISMS

	Percentage of Wire Traps	
	60%	67%
Number of wire traps in EEZ assuming 550,000 traps in EEZ	330,000	368,500
Additional cost of larger plastic escape panel @ 0.035 per panel	11,550	12,898
Cost of hog rings @ \$0.015	4,950	5,528
Labor costs 1/2 minute/trap * \$20/hr	55,000	61,417
	=====	=====
Total Costs	71,500	79,842

TABLE 3

RANGE OF NET BENEFITS

		Benefits	
		Minimum	Maximum
Costs	Minimum	\$1,059,246	\$1,518,611
	----- Maximum	\$1,050,904	\$1,510,269

C. Regulatory Impact Analysis**Proposal 1: Delay implementation of increase in escape vent size until 1992**

Benefits: This measure will produce the benefits associated with an improvement in the efficiency of traps in catching legal size lobsters and an unquantifiable long-term increase in catch attributable to lower juvenile lobster mortality after 1992, without any decrease in the current retention rates for legal size lobsters. It will also prevent a reduction of about 8% of the lobsters between 3-1/4" and 3-5/16" in carapace length in 1990 and a 5% reduction in the catch of the lobsters in 1991. This reduction cannot be quantified because size distribution data from the the lobster fishery in the EEZ is insufficient to determine what proportion of the EEZ landings are between 3-1/4" and 3-5/16" in carapace length.

Costs: Under this proposal, more small lobsters will be retained in traps in these years than without the delay. This is expected to have two negative impacts, slightly increased mortality for small lobsters and lobstermen will have to spend more time culling their catch than they would have under the current vent size implementation schedule. The level of increased mortality is unknown but thought to be insignificant. Some lobstermen already use a larger vent size in order to reduce retention of smaller lobsters and therefore would not be affected by these costs.

Benefit-Cost Conclusion: Because this proposal delays rather than implements an escape vent increase, forgone rather than actual benefits and costs must be evaluated. Although the net benefits from this proposal cannot be quantified, the benefits of retaining 100% of legal sized lobsters until 1992 are thought to outweigh the costs of increased mortality on small lobsters and extra culling time until the 1992 implementation date. Additionally, this proposal does not prevent lobstermen from using a large escape opening if they choose to do so.

Proposal 2: Effective January 1, 1992, lobster traps will contain an escape panel or equivalent mechanism to keep a trap from ghost fishing after it has been abandoned or lost for 12 months or more.

Benefits: Based on 1987 ex-vessel prices, this measure would provide an annual gross benefit of \$1.13-1.59 million to the lobster fishery in the EEZ because it is expected to increase landings by 139-196,000 pounds annually.

Costs: The annual cost of degradable materials, such as hemp, jute, cotton twine or steel wire, is estimated to be \$5-6,000 for traps in the EEZ. The annual opportunity cost of labor to install degradable fasteners is estimated to be \$55-61,000. The additional cost of slightly larger plastic escape panels needed to cover the escape path opening in the lobster trap and steel hog rings is estimated to range from about \$11-13,000 throughout the industry. The length of time for such escape panel fasteners to degrade depends on the choice and thickness of the material, the temperature, the dissolved oxygen content of the water, tidal currents and hauling stresses (Blott 1978). However, a period of one year for an escape release mechanism to work is sufficient to allow a variety of materials and thicknesses to be used without forcing lobstermen to replace escape panel fasteners too frequently. Most inshore lobstermen fish nine months or less. If the material used to secure the escape panels lasts at least this amount of time, then they will be able to resecure the escape panels once a year before putting the gear in the water at the beginning of a new season. Total costs are expected to be from \$72-80,000 annually.

Benefit-Cost Conclusion: This measure is expected to result in net benefits for the lobster fishery in the EEZ of \$1.05-1.52 million annually (Table 3).

Other E.O. 12291 Requirements:

E.O. 12291 requires that the following three issues be considered:

- a. Will the Amendment have an annual effect on the economy of \$100 million or more?
- b. Will the Amendment lead to an increase in the costs or prices for consumers, individual industries, Federal, State, or local government agencies or geographic regions?
- c. Will the Amendment have significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of US based enterprises to compete with foreign based enterprises in domestic or export markets?

The proposed action is expected to increase ex-vessel revenues by of \$1.13-1.59 million in annual revenues to EEZ lobstermen. Net benefits for the EEZ would range from \$1.05-1.52 million annually.

Administrative, enforcement, and paperwork and record-keeping requirements are expected to remain unchanged, thus, there are no impacts on Federal, State, or local government agencies. No data on operating costs are currently available for the harvesting sector; however, operating expenses are not expected to increase measurably. Employment impacts are expected to be neutral or very slightly positive because of the small size of the increase in revenues. Impacts on the competitive position of U.S. lobstermen are expected to be neutral or slightly positive.

For the above reasons, the proposed action does not constitute a "major rule" requiring a regulatory impact analysis under E.O. 12291.

D. Consistency with the Regulatory Flexibility Act and the Paperwork Reduction Act of 1980:

The proposed action is not expected to have a significant effect on small entities in relation to the Regulatory Flexibility Act. There are an estimated 10,000 commercial lobstermen, both full and part time, using lobster traps, however, it is known how many lobstermen fish in the EEZ. Although not all lobstermen will be affected in the same way, the combination of proposals is expected to provide benefits to lobstermen in all areas.

There will be no new paperwork or record-keeping requirements under the proposed management program.

E. Consistency With National Standards and Other Management Programs

National Standards:

National Standard 1: Conservation and management measures shall prevent overfishing while achieving, on a continuous basis, the optimum yield from each fishery.

Although fishing mortality rates in the US lobster fishery have remained at high levels, there is no evidence, to date, of recruitment overfishing. The amended management program can be expected to marginally reduce juvenile fishing mortality and enhance the attainment of the Lobster FMP objectives.

National Standard 2: Conservation and management measures shall be based upon the best scientific information available.

This amendment is based upon the best and most recent scientific information available to the Council. Further, expert industry advisory input has been carefully incorporated throughout development and analysis of the alternatives considered.

National Standard 3: To the extent practicable, an individual stock of fish shall be managed as a unit throughout its range, and interrelated stocks of fish shall be managed as a unit or in close coordination.

The proposed measures are intended to apply throughout the range of American lobster. However, since most US landings of American lobster are from the territorial sea, the Council's role in lobster management is to coordinate cooperative effort among individual states as well as to manage American lobster in the EEZ. These measures are expected to enhance the cooperative management of lobster by all the states involved.

National Standard 4: Conservation and management measures shall not discriminate between residents of different States. If it becomes necessary to allocate or assign fishing privileges among various United States fishermen, such allocation shall be (A) fair and equitable to all such fishermen; (B) reasonably calculated to promote conservation; and (C) carried out in such a manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges.

The proposed measures are intended to apply throughout the range of American lobster and do not discriminate between residents of different states. The proposal for degradable escape panels does not impose different costs on fishermen of different areas.

National Standard 5: Conservation and management measures shall, where practicable, promote efficiency in the utilization of the fishery resources; except that no such measure shall have economic allocation as its sole purpose.

The recommended management measures are expected to result in more efficient utilization of the American lobster resource by decreasing juvenile and ghost fishing mortality without imposing any net costs on the lobster fishing industry. None of the recommended measures have economic allocation as their sole purpose.

National Standard 6: Conservation and management measures shall take into account and allow for variations among, and contingencies in, fisheries, fishery resources, and catches.

Neither of the proposed measures imposes constraints on fishermen which reduces their flexibility in responding to variations among, and contingencies in, fisheries, fishery resources, and catches.

National Standard 7: Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication.

The proposed measures are expected to increase the efficiency of the existing fishing gear and do not duplicate other management efforts or measures.

State Laws and Other Regulations and Policies:

Although each of the lobster producing states has historically managed its lobster fishery independently of the others, the need for comparable management programs has long been recognized. Through the American Lobster FMP and the Council process, coordination of management activity has improved throughout the range of the lobster resource. A synopsis of the important state lobster regulations appears in Table 1. It is expected that all states will adopt regulations that are compatible with those implementing this amendment for their inshore lobster fisheries. Connecticut and New Hampshire have already adopted requirements for degradable escape panel fasteners and a similar regulation is under consideration in New York.

The management measures proposed in this Amendment do not change the relationship between the Federal management program for American lobster and other state and Federal laws and statutes that affect the American lobster resource. Nothing in this Amendment will change the relationship discussed in Section 226 of the American Lobster FMP concerning marine mammals and endangered species. Finally, the Council has determined that this Amendment will be implemented in a manner consistent with the approved Coastal Zone Management Programs of the affected states. This determination has been submitted for review by the responsible state agencies under section 307 of the Coastal Zone Management Act.

F. Finding of No Significant Environmental Impact

In view of the analysis presented in this document, The Council has determined that the proposed action in this amendment to the American Lobster Fishery Management Plan would not significantly affect the quality of the human environment with specific reference to the criteria contained in NDM 02-10 implementing the National Environmental Policy Act. Accordingly, the preparation of a supplemental Environmental Impact Statement for this proposed action is not necessary.

Assistant Administrator
for Fisheries, NOAA

Date

Table 4. Lobster Regulations by State

	<u>ME</u>	<u>NH</u>	<u>MA</u>	<u>RI</u>	<u>CT</u>	<u>NY</u>	<u>NJ</u>	<u>DE</u>	<u>MD</u>	<u>VA</u>	<u>NC</u>
Degradable Escape Panel (Time Release Mechanism)	*	X			X	*					
License Requirements											
none required									X		X
required to fish lobster	X	X	X	X	X	X	X	X		X	
required to land lobster	X	X	X	X	X					X	
required to deal lobster	X	X	X	X	X						
Legal Provisions for Aquaculture Enterprises X	X	X	X	X	X	X					
Fishermen Classification											
none									X	X	X
commercial X	X	X	X	X	X	X	X				
recreational	X	X	X	X	X		X				
Catch/Effort Reporting											
not required						X		X	X	X	
annual reporting	X	X	X	X	X	X		X			
daily reporting					X						
Gear Regulations											
by license class		X	X	X	X	X				X	
quantity		X	X			X		X		X	
type	X	X	X		X	X		X			
owner I.D. required	X	X	X	X	X	X		X			
escape vents required	X	X	X	X	X	*	X	X	X		X
Fishing Regulations											
by license class or method			X	X		X		X			
number of licenses			X								
catch quotas					X	X		X			
area	X	X	X			X					
season	X		X					X			
day or time of day	X	X	X	X	X	X		X			
prohibited activity											
landing berried females	X	X	X	X	X	X	X	X	X	X	X
landing V-notch lobster	X										
landing lobster parts	X	X	X	X	X	X		X	X	X	X
regulated activity											
landing lobster meat	X	X	X	X	X	X		X	X	X	X
landing lobster parts							X				
minimum size of 3-3/16"	X	X	X	X	X	X	X	X	X	X	X
maximum size of 5"	X										

X Implemented or approved

* Under consideration

IV. AMENDATORY LANGUAGE

A. Changes in Consequence of Proposed Action

The Council proposes to amend the language contained in Part 5 of the American Lobster FMP as follows:

§508 Escape Vents and Panels

Beginning January 1, 1992, all lobster traps must contain one of the following: (1) a rectangular escape vent with an unobstructed opening not less than 1-15/16 inches (49.2 mm) by 6 inches (152.5 mm); (2) two circular escape vents with unobstructed openings not less than 2-7/16 inches (61.9 mm) in diameter; or (3) any other type of escape vent which the Regional Director finds to be consistent with (1) or (2) above. All lobster traps and buoys must be marked with the vessel's Official Number, or, if the vessel is licensed under a State program that is approved by the Regional Director in lieu of a federal permit under §649.4(a), the State license number.

Effective January 1, 1992, lobster traps must contain an escape panel or equivalent mechanism to keep a trap from ghost fishing after it has been abandoned or lost for 12 months or more. At least twelve months prior to implementation, the Regional Director will publish a list of acceptable methods specified by the Council for complying with this requirement, including the minimum dimensions of the escape vent.

Comment: Every year lobstermen lose about 20-25% of their traps due to storms or damage to trap lines caused by trawlers (Smolowitz 1978). An unknown number of these traps continue to catch lobsters and cause some level of lobster mortality. Because the number of lobster traps totals about 2.75 million the mortality caused by lost traps is thought to be significant. Research has shown that a ghost trap fishes at about 10% of the efficiency of a regularly tended, baited trap. This action will significantly reduce losses from ghost fishing by reducing the number of effective ghost pots, almost without regard to the materials used in constructing the pot.

Although the potential of time release mechanisms to prevent ghost fishing has been demonstrated in a number of other fisheries, their use is not widespread. Experimentation by individual lobstermen or even academic and scientific institutions is unlikely to lead to a consistent or widely accepted standard for a time release mechanism. In this environment, it is also unlikely that gear manufacturers will develop and distribute the appropriate products to help solve this problem.

V. LIST OF AGENCIES AND PERSON CONSULTED IN FORMULATING THE PROPOSED ACTION

A. Federal Agencies:

U.S. Environmental Protection Agency (Regions I, II, III)
Department of State
U.S. Coast Guard
Department of Interior
 Fish and Wildlife Service
 Bureau of Indian Affairs
U.S. Army Corps of Engineers
Marine Mammal Commission
Mid-Atlantic Fishery Management Council
South Atlantic Fishery Management Council
Atlantic States Marine Fisheries Commission

B. State Agencies:

Maine Department of Marine Resources
Maine State Planning Office
New Hampshire Dept. of Fish and Game
Massachusetts Division of Marine Fisheries
Massachusetts Office of Coastal Zone Management
Rhode Island Dept. of Environmental Management
Rhode Island Statewide Planning Program
Connecticut Dept. of Environmental Protection
New York Division of Marine and Coastal Resources
New Jersey Division of Fish, Game and Shellfisheries
Pennsylvania Fish Commission
Maryland Department of Natural Resources
Virginia Marine Resources Commission
Delaware Division of Fish and Wildlife
North Carolina Division of Commercial and Sport Fisheries

C. Individuals:

William Adler
Edward Blackmore
David Dow
Robert Wheeler

VI. LIST OF PREPARERS FOR ENVIRONMENTAL ASSESSMENT AND PLAN AMENDMENT

This Amendment to the American Lobster Fishery Management Plan (FMP) was prepared by a team of fishery managers and scientists with special expertise in the American lobster resource.

Lobster Oversight Committee

William Brennan, Chairman
Richard Allen
Herbert Drake

Assisting the Committee

Louis Goodreau, NEFMC Staff
Christopher Kellogg, NEFMC Staff
Guy Marchesseault, NEFMC Staff
Howard Russell, NEFMC Staff

VII. RESPONSE TO PUBLIC COMMENTS

The Council held a hearing in Falmouth, MA on October 24, 1988 to solicit public comments on this amendment. Summary minutes of the hearing are included in the Appendix B to this document. The major concerns expressed at the hearings and in the written comments, as well as the Council's response, are listed below:

1. **Comment:** The vent size increase should not be delayed. The 1-3/4" inch vent was not sufficiently large before the gauge increase was implemented and it's certainly not sufficient now. If we delay the increase until 1992, we will catch lot of sublegal lobsters and will be doing a lot of harm to the resource.

Response: 1) Industry representatives have stated that lobstermen feel that there should be only one change in the escape vent size. The vent size which would allow the optimal of escapement for a lobster with a minimum carapace length of 3-5/16" (to be implemented in 1992) is 1-15/16". A vent this size would allow a level of escapement unacceptable to the industry if it were implemented in 1990. 2) If lobstermen want to use a 1-7/8", as many are now doing, these vents are permitted and are readily available.

2. **Comment:** Although degradable escape panel fasteners seem like a good idea, existing degradable materials are not sufficiently reliable and might prematurely release thereby causing lobstermen to lose some of their catch.

Response: The proposal has been modified in response to this concern by making its implementation contingent on a list of escape mechanisms to be specified by the Council and published by the Regional Director at least one year prior to implementation. If the Council feels that degradable escape mechanisms are not sufficiently reliable at that time, it will not specify them for use. By not deleting this proposal from this amendment, the issue of degradable escape mechanisms will continue to be a focus of attention. Otherwise experimentation by individual lobstermen or even academic and scientific institutions is unlikely to lead to a consistent or widely accepted standard for a time release mechanism.

The Council will also review the results of the state of Connecticut's degradable release mechanism regulation.

3. **Comment:** The width of the escape vent should accommodate the standard size wire mesh so that an additional mesh of wire doesn't need to be cut. If a vent were made by cutting standard 2" wire mesh, an opening exactly 6" wide would require lobstermen to remove an additional mesh, leaving almost an 8 inch opening.

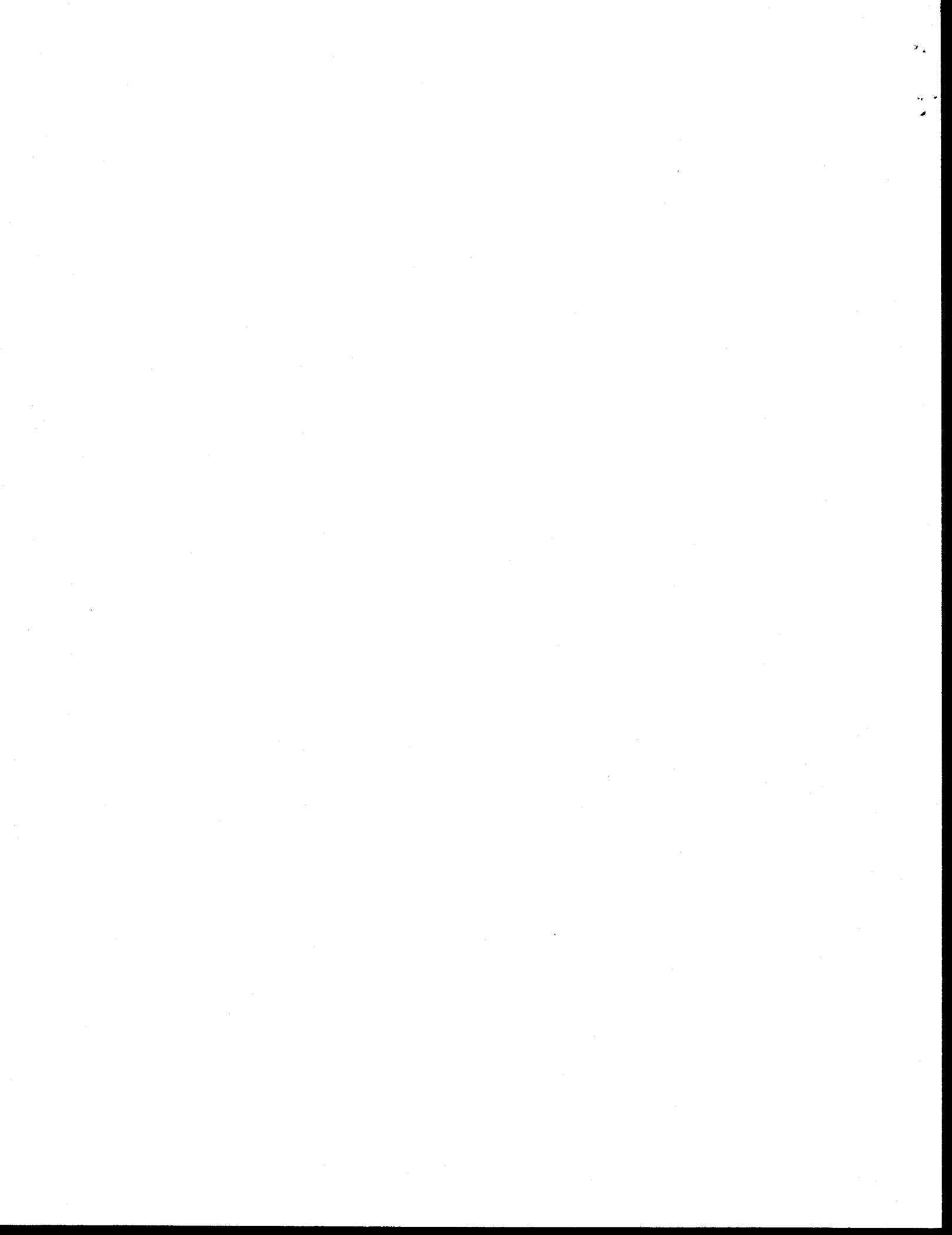
Response: The language in regulations accommodates this concern by specifying that the width of escape vents made by cutting away wire mesh will be measured from the center to center of the wire, instead of measuring the width of the inside opening.



APPENDIX A

References

- Blott, Alan J. (1978) A Preliminary study of timed release mechanisms for lobster traps. *Marine Fisheries Review*. 40(5-6).
- Botsford, Louis W., James E. Wilson, and Edward J. Richardson. 1986. Biological and Economic Analysis of Lobster Fishery Policy in Maine. Report submitted to Committee on Marine Resources, State of Maine. 98pp.
- Currier, T. 1987. An update on ottertrawl induced lobster damage in Massachusetts waters. Massachusetts Division of Marine Fisheries. Division News. Jan-Mar, 1987.
- Estrella, B.T. and D.J. McKiernan. 1986. Massachusetts coastal commercial lobster trap sampling program. May-Nov 1985. Massachusetts Division of Marine Fisheries. 74p.
- Fogarty, M. & Borden, D.V.D., Effects of Trap Vent on Gear Selectivity on the Inshore American Lobster (*Homarus americanus*) *Fishery Bulletin* 77(4) 1980.
- Ganz, A. 1980. Otter trawl induced lobster (*Homarus americanus*) damage evaluation. Final Report. 04-7-043-44041. Rhode Island Division of Fish & Wildlife. 23p.
- Krouse, J.S. 1986. Lobster stock assessment. Final Report. 3-370-R. Maine Department of Marine Resources. 81p.
- Pecci K. J., R.A. Cooper, C.D. Newell, R.A. Clifford, R.J. Smolowitz 1978. Ghost Fishing of Vented and Unvented Lobster Traps *Marine Fisheries Review* 40(5-6): 9-43.
- Sheldon, W.W. and R.L. Dow (1975) Trap contributions to losses in the American lobster fishery. *Fishery Bulletin* 73(2).
- Smith, E.M. and P.T. Howell. 1987. The effects of bottom trawling on lobsters (*Homarus americanus*) in Long Island Sound. *Fishery Bulletin*. 85(4).
- Smith, E.M. and L.L. Stewart. 1985. A study of lobster fisheries in the Connecticut waters of Long Island Sound with special reference to the effects of trawling on lobsters. Report to Connecticut Guard Assembly on Special Act 83-29. 56p.
- Smolowitz, R.J. (1978) Trap design and ghost fishing: discussion. *Marine Fisheries Review*. 40(5-6).



APPENDIX B

NEW ENGLAND FISHERY MANAGEMENT COUNCIL

Amendment #3 Public Hearing American Lobster Fishery Management Plan

Sheraton Inn, Falmouth, MA
October 24, 1988

Summary Minutes

Council member Brennan opened the meeting at 11:00 a.m. He explained the proposals contained in the Amendment and their purpose. Comments were requested on each proposal.

Proposal 1: Delay implementation of increase in escape vent size until 1992

Mr. Blackmore made the following comments: 1) The vent size increase should not be delayed because it is not using good judgment [to do so]. The 1-3/4" inch vent was not sufficiently large before the gauge increase was implemented and it's certainly not sufficient now. If we delay the increase until 1992, we will have lot of sublegal lobsters and will be doing a lot of harm to the resource. A small vent size slows down the way lobstermen conduct their operations because they must cull their catch longer to release the sublegals. A lot of lobstermen are already using escape vents with 1-7/8" openings. I don't know who we're serving by delaying until 1992. Lobstermen won't take notice of changes until immediately before the changes are implemented. The 1990 date for the vent size increase has already been accepted by the industry. Delaying the increase doesn't serve any purpose, however, the only thing that I hear is that there should be just one change in the vent size. Lobstermen don't want to have to change their vents in 1990 only to change them again a little later.

Mr. Adler commented that at the recent Massachusetts Lobstermen's Association Meeting, the Association's delegates strongly supported the delay in the escape vent size increase. The reason for their support of this proposal was that they felt lobstermen would lose too many legal size lobsters if the vent size were increased in 1990. They also strongly felt that there should be only one increase in the vent size and that it should be when the last increase in the carapace size is implemented. The delay also gives them a chance to start installing larger vents on some of their traps early. The Association has about 1,000 members.

Mr. Blackmore commented that perhaps the Council should consider banning the manufacture of 1-3/4" vents starting in 1990.

Mr. Allen commented that industry associations could possibly persuade equipment manufacturers not to make the 1-3/4" in vents. He also commented that the width of the escape vent should accommodate the standard size wire mesh so that an additional mesh of wire doesn't need to be cut. If a vent were made by cutting standard 2" wire mesh, an opening exactly 6" wide would require lobstermen to remove an additional mesh, leaving almost an 8 inch opening. This is a problem even if plastic escape panels are used because the wire must still be cut to accommodate the plastic escape panel.

Proposal 2: Effective January 1, 1992, lobster traps must contain an escape panel or equivalent mechanism to keep a trap from ghost fishing after it has been abandoned or lost for 12 months or more.

Mr. Blackmore commented that although this seems like a good idea and the Maine Lobstermen's Association supported the concept several years ago, it is not practical at this time. Mr. Blackmore commented that after speaking to lobstermen in Connecticut, it is apparent that the existing degradable materials work differently in Maine than in Connecticut because of differences in water temperature and in the way the materials react chemically with the water. He stated that the Council should not adopt such a measure until the technology had been perfected.

Mr. Allen agreed with Mr. Blackmore concerns, however, he stated that the issue should be kept alive in order to settle it once and for all. If this proposal is not adopted, then when it does come up again, the Council must start all over.

Mr. Adler commented that his organization agreed with Mr. Blackmore's comment that the proposal should not be implemented until more is known about degradable escape mechanisms.

Mr. Brennan closed the hearing at 11:45 a.m.