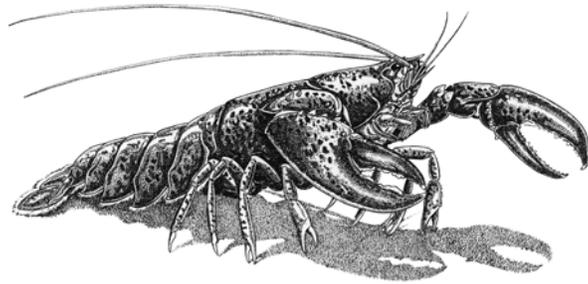


REVIEW OF THE  
INTERSTATE FISHERY MANAGEMENT PLAN  
FOR  
**AMERICAN LOBSTER**  
*(Homarus americanus)*  
**2000 FISHING YEAR**



Plan Review Team

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## **REVIEW OF THE INTERSTATE FISHERY MANAGEMENT PLAN FOR AMERICAN LOBSTER (*Homarus americanus*)**

### **I. Status of the Fishery Management Plan**

<u>Year of Plan's Adoption:</u>	1997
<u>Framework Adjustments:</u>	Addendum I (1999) Addendum II (2001) Amendment 4 (In Development)
<u>Management Unit:</u>	Maine through North Carolina
<u>States with a Declared Interest:</u>	Maine through North Carolina
<u>Active Committees:</u>	American Lobster Management Board, Technical Committee, Stock Assessment Sub-Committee, Socio-Economic Sub- Committee, Database Sub-Committee, Effort Control Sub-Committee, Model Development Sub-Committee, Advisory Panel, Plan Development Team

### **II. Status of the Stocks**

#### **ASMFC External Stock Assessment – July 2000**

The last stock assessment for lobster was completed via an external peer review during summer 2000. The Stock Assessment Report provides an analysis of the lobster stocks through 1998 and this subsection is summarized from that report. Overall, fishing effort is intense throughout the range of the species and the stock is defined as overfished.

For assessment purposes, the lobster population is split into three regions: Gulf of Maine (GOM), George's Bank and South (GBS), and South of Cape Cod to Long Island Sound (SCCLIS). The quality and quantity of data do not currently permit the lobster population to be assessed at a greater level of detail.

#### **Gulf of Maine (GOM)**

Despite recent increases in landings and fishing effort, fishing mortality rates declined and abundance increased during the last ten years in the stock area as a whole, however a sub-area (Massachusetts Bay) showed very different conditions from the rest of the stock area. Total landings increased by 75% from 1982-1997, reaching a record high of 26,230 metric tons in 1997.

The average annual 1995-97 fishing mortality rates were 0.74 (49% annual exploitation rate) for

females and 0.59 (42%) for males, with 80% confidence intervals of 0.54-0.88 and 0.30-0.70 respectively. Even though females are protected from fishing to a greater degree, female fishing mortality rates in the GOM were noticeably higher than male fishing mortality rates every year since 1987. Fishing mortality rates have remained relatively stable since 1993 for both males and females, but were higher in the late 1980s. There were no trends in exploitation indices calculated from NMFS fall survey data or in NMFS survey mass balance fishing mortality rates for either sex.

Egg production per recruit, based on 1995-1997 female fishing mortality, was 3.2% of maximum EPR. There was at least a 90% probability that female fishing mortality rates have exceeded the F10% EPR reference point (0.34) for this stock every year since 1982. According to the ASMFC overfishing definition this stock is overfished. However, recruitment into the fishery, total potential egg production, and stock abundance have increased in recent years, thus the majority of the Lobster Stock Assessment Sub-committee (LSASC) concluded that the stock is not currently recruitment overfished. Based on yield per recruit analysis for females, this stock is growth overfished.

### **Georges Bank and South (GBS)**

Unlike the other two stocks, landings, recruit abundance and full recruit population size remained relatively stable in the GBS stock area over the past 16 years. Total landings increased steadily from 2,444 mt in 1982 to a peak of 4,279 mt in 1990, and remained stable around 3,600 mt from 1992-1998. This stock is composed of a higher proportion of larger lobsters than the other two stocks. The fishery is less dependent on first molt group lobsters with 60-70% of the landings comprised of first molt group lobsters since the early 1990s compared to 90% in SCCLIS.

The average annual 1995-97 fishing mortality rates were 0.41 (31% annual exploitation rate) for females and 0.63 (44%) for males, with 80% confidence intervals of 0.32-0.46 and 0.59-0.69, respectively. Fishing mortality rates were higher for males, which only made up 30% of the average fully-recruited population but 53% of the landings during 1995-97.

Egg production per recruit, based on 1995-1997 female fishing mortality, is 6.2% of maximum EPR. There is at least a 90% probability that female fishing mortality rates have exceeded the F10% EPR reference point (0.29) for this stock in 8 out of the last 16 years. According to the ASMFC overfishing definition this stock is overfished. However, recruitment into the fishery, total potential egg production, and stock abundance have remained stable, thus the majority of the LSASC concluded that the stock is not currently recruitment overfished. Based on yield per recruit analysis for females, this stock is growth overfished.

### **South of Cape Cod and Long Island Sound (SCCLIS)**

Despite a steady increase in landings, and fishing mortality in recent years, the number of recruits in the SCCLIS stock area increased almost three-fold since the mid 1980s. Landings increased steadily from 2,352 metric tons in 1982 to a record high of 6,894 metric tons in 1997, nearly tripling over the time series.

Average 1995-97 fishing mortality rates were estimated from fall landings and survey data were 1.41 for males (71%) and 1.25 for females (67%) with 80% confidence intervals of 1.2-1.5 and 1.07-1.37, respectively. These fishing mortality rates were much higher than the average 1995-97 fishing mortality rates in the other two assessment areas. Fishing mortality rates for the SCCLIS stock as a whole fluctuated, but generally increased after the mid-1980s and remained above 1.0 (60% annual removal rate) during the past ten years. Recent fishing mortality estimates derived from CT fall survey data in LIS were even higher (80% removal rates) and increased steadily since the early 1980s. However, spring survey fishing mortality rates did not change over the time series and were not as high (60% removal rate). Area 539 fishing mortality rates have not changed to any notable degree since 1982, but were below average during the last four years.

Egg production per recruit, based on 1995-1997 female fishing mortality, is 8.3% of maximum EPR. There is at least a 90% probability that female fishing mortality rates exceeded the F10% EPR reference point (0.84) for this stock in 11 out of the last 16 years and every year since 1991. According to the ASMFC overfishing definition this stock is overfished. However, recruitment into the fishery, total potential egg production, and stock abundance have increased in recent years, thus the majority of the LSASC concluded that the stock is not currently recruitment overfished. Based on yield per recruit analysis for females, this stock is growth overfished.

### III. Status of the Fishery

Harvests of American lobster peaked in 1999 at 39,654 metric tons. The significance of this increase in harvest is most easily illustrated by comparing 1999 landings to that of the period between 1978-1987 (15-20,000 mt). Landings have continued to increase over time, with the exception of a short decline in 1992 and 1993. Maine and Massachusetts account for 79% of the 1999 commercial landings, 61% and 18% respectively. The magnitude of recreational landings is unknown.

**Table 1.** Total commercial landings in metric tons. (Based on NMFS landings data)

Year	metric tons	Pounds
1990	28,297	62,383,125
1991	29,073	64,093,998
1992	25,978	57,270,826
1993	26,290	57,958,940
1994	31,720	69,930,711
1995	31,742	69,978,238
1996	32,346	71,310,316
1997	37,455	82,572,804
1998	36,330	80,092,672
1999	39,654	87,420,414

**Table 2.** Landings of American Lobster by the states of Maine through New Jersey from 1990-1999 (pounds).  
(Source, NMFS Commercial Fisheries Statistics Web Page)

Year	Maine	Massachusetts	Rhode Island	New York	Connecticut	New Hampshire	New Jersey
1990	28,068,238	17,054,434	7,258,175	3,431,111	2,645,800	1,658,200	2,198,867
1991	30,788,646	16,528,168	7,445,172	3,128,246	2,674,000	1,802,035	1,673,031
1992	26,830,448	15,823,077	6,763,087	2,651,067	2,439,600	1,529,292	1,213,255
1993	29,926,464	14,336,032	6,228,470	2,667,107	2,177,022	1,693,347	906,498
1994	38,948,867	16,100,264	6,474,399	3,954,634	2,212,000	1,650,751	581,396
1995	37,208,324	15,771,981	5,363,810	6,653,781	2,536,177	1,834,794	606,016
1996	36,083,443	15,330,377	5,296,110	9,408,689	2,888,683	1,632,829	640,207
1997	47,023,271	15,092,014	5,801,183	8,878,395	3,468,051	1,414,368	858,426
1998	47,036,836	13,278,726	5,618,440	8,525,590	3,715,316	1,194,653	721,811
1999	53,494,418	15,533,953	6,410,125	7,062,687	2,595,764	1,380,714	935,837

#### IV. Status of Research and Monitoring

Ongoing research and monitoring efforts in states from Maine to New York are focused on recruitment parameters. NMFS and all states from Maine to North Carolina, except Virginia and New Jersey monitor fishery statistics. Hands on involvement by lobstermen in the collection of data was expanded in 2000 by lobstermen from Maine that volunteered to evaluate automated data recording to reduce the data entry demands required to record fishing location information and automate other data entry tasks for at sea sampling programs. A juvenile lobster trap survey in the Gulf of Maine was expanded beyond Maine state waters in 2000 to include Federal waters and the state waters of Massachusetts and New Hampshire. The survey is a collaborative research and monitoring program with active participation by lobstermen, inshore and offshore lobster associations, the New England Aquarium, state fishery agencies and NMFS. Indices of juvenile lobster recruitment could be used to predict recruitment into the fishery years in advance.

Fishery independent surveys were used to estimate the relative abundance of lobsters in each of the assessment areas. The Northeast Fisheries Science Center's (NEFSC) bottom trawl survey was the primary source of abundance indices for all lobster stock areas. The states of Massachusetts and Maine inshore bottom trawl survey was also used for the GOM assessment area. The inshore trawl surveys from Massachusetts, Connecticut and Rhode Island were used for the SCCLIS assessment area. NJ and the NEFSC bottom trawl survey was used for the Georges Bank and South assessment area. All of the surveys are ineffective at sampling lobsters on hard-bottom lobster habitat. In addition, the high density of fishing gear in some areas can affect the sampling effectiveness for some of the surveys.

During the fall and winter of 1999-2000, the lobster resource in western Long Island Sound suffered mass mortalities, possibly associated with a parasite infestation. Following requests from the Governors of NY and CT, the U.S. Secretary of Commerce, on January 26, 2000, declared the Long Island Sound die-off to be a commercial fishery failure. Following the declaration, the U.S. Congress appropriated \$13.9 million to address the biological and economic consequences of the fishery failure. Plans are to utilize \$7.3 million to provide economic relief

funds for impacted NY and CT lobstermen, and utilize \$6.6 million in research funds for a comprehensive, collaborative research and monitoring program into the possible cause(s) of poor lobster health in LIS.

A subcommittee of the Lobster Technical Committee was established to monitor lobster health issues, including the impact of insecticide spraying on lobsters and reports of increased occurrences of shell disease in southern New England. Insecticide spraying to control various harmful insects, including aerially sprayed insecticides, has been identified as a potential problem to lobster health, especially following the lobster mortality event in LIS in 1999 and 2000. Several states have begun to closely monitor the occurrence and note the severity of shell damage/disease observed on commercial sea sampling trips.

## V. Status of Management Measures

Amendment 3 established management measures that require coastwide and measures applicable to commercial fishing in lobster management areas. The coastwide requirements are summarized in Table 3.

**Table 3.** Coastwide requirements and prohibited actions

- |   |
|---|
| <ul style="list-style-type: none"><li>▪ Prohibition on possession of berried or scrubbed lobsters</li><li>▪ Prohibition on possession of lobster meats, detached tails, claws, or other parts of lobsters</li><li>▪ Prohibition on spearing lobsters</li><li>▪ Prohibition on possession of v-notched female lobsters</li><li>▪ Requirement for biodegradable “ghost” panel for traps</li><li>▪ Minimum gauge size of 3-1/4”</li><li>▪ Limits on landings by fishermen using gear or methods other than traps to 100 lobsters per day or 500 lobsters per trip for trips 5 days or longer</li><li>▪ Requirements for permits and licensing</li><li>▪ All lobster traps must contain at least one escape vent with a minimum size of 1-15/16” by 5-3/4”</li><li>▪ Maximum trap size of 22,950 cubic inches in all areas except area 3, where traps may not exceed a volume of 30,100 cubic inches.</li></ul> |
|---|

Amendment 3’s measures applicable to commercial fishing in lobster management areas are summarized in Table 4. Amendment 3 also established seven Lobster Conservation Management Teams (LCMTs), each of which coincides with a management area.

Table 4. Measure applicable to commercial fishing in management areas.

<i>Measure</i>	<i>Area 1</i>	<i>Area 2</i>	<i>Area 3</i>	<i>Area 4</i>	<i>Area 5</i>	<i>Area 6</i>	<i>Outer Cape</i>
Number of traps per vessel	1998: 1200 1999: 1000 2000: 800	1998: 1200 1999: 1000 2000: 800	1999: 2000	Investigate the need for trap reductions	Investigate the need for trap reductions	Investigate the need for trap reductions	1998: 1200 1999: 1000 2000: 800
Other	5" max. gauge size; proposal for area closure with Area 3		proposal for area closure with Area 1	Investigate the need for other measures to achieve egg production rebuilding schedule	Investigate the need for other measures to achieve egg production rebuilding schedule	Investigate the need for other measures to achieve egg production rebuilding schedule	

The Commission has approved two addenda for the purposes of incorporating LCMT recommendations for full implementation of Amendment 3. Addendum I incorporated measures from the LCMT proposals which were intended to control effort. Addendum II, following the release of an updated, peer-reviewed stock assessment, was created to address management measures affecting egg production. The measures included in both Addenda I and II supercede measures addressing similar issues under Amendment 3. The measures required under Addenda I and II are summarized in Tables 5 and 6 below.

Table 5. Required Provisions of Addendum I to Amendment 3

<i>Plan Section</i>	<i>Management Measure</i>
2.2	Black sea bass pot fishery limits in Area 5
2.3.4	All commercial traps aboard a vessel must be tagged
2.3.4	All recreational traps must be tagged
2.3.5	Routine loss rate
2.3.5	Tag issuance and effective dates
2.3.5	Mechanism to issue replacement tags
2.3.6	Catastrophic tag loss
2.4	Circular escape vent
2.5.3.1	Area 2 trap limit
2.5.3.2	Area 2 control date
2.5.5.1	Area 4 trap limit and evaluation
2.5.6.1	Area 5 trap limit and evaluation
2.5.7.1	Area 6 trap limit and evaluation
2.5.8.1	Outer Cape trap limit

Table 6. Required Provisions of Addendum II to Amendment 3

<i>Plan Section</i>	<i>Management Measure</i>
2.1	Egg Production Rebuilding Schedule
2.2.1	Minimum Gauge Size Increase (Areas 2, 3, 4, 5, and Outer Cape)
2.2.2	Minimum Escape Vent Size (Areas 2, 3, 4, 5, and Outer Cape)
2.2.3	Trap Reduction Schedule (Area 3)
2.2.4	Reporting Requirement (Area 3)
2.2.5	Review of Area Management Program

## **VI. Current State-by-State Implementation per Compliance Requirements**

All states are currently in compliance with all required measures under Amendment #3, Addendum I, and Addendum II.

## **VII. Status of Assessment Advice**

The fact that lobster stock abundance has either remained stable or increased despite high and, in some cases, increasing fishing mortality rates, has led to a great deal of speculation concerning the resiliency of the lobster resource to high exploitation rates.

High priority recommendations for improvements in assessment methodology include:

- Develop a database to calculate lobster landings by area caught, time period, sex, and length in a timely and efficient manner (See Section 11.3);
- Evaluation of additional stock assessment models and analyses that could provide the basis for alternative biological reference points for lobsters that would complement the current F10% maximum egg production per recruit reference point, and account for prevailing spawning stock size, total egg production, or recruitment;
- Development of a yield per recruit analysis for male lobsters;
- Analysis of biological risk and economic costs and benefits associated with different management policies that rely on stock assessment models and reference points;
- Expanded use of annual trawl survey data for juvenile lobsters and development of surveys to monitor annual changes in abundance of pre-recruits and predict the effects of variable recruitment on stock abundance; and
- Expanded data collection efforts throughout the range of the resource to determine the spatial distribution of fishing effort and changes to the distribution of effort over time.

## **VIII. Recommendations**

The following are recommendations from the Plan Review Team:

1. The PRT recommends continued research on egg extrusion cycle and egg per recruit analyses along the entire coast. The recommendation was offered back in 1998 and the PRT is unsure of the progress made toward addressing this recommendation.
2. The PRT encourages the full implementation of data collection programs enhancing the ACCSP data collection.
3. The PRT continues to express concern over the implementation of multiple gauge sizes along the coast. The PRT recommends that the Lobster Management Board task the Law Enforcement Committee and the Socio-Economic Sub-committee to establish a subgroup to review and evaluate the issue and make recommendations back to the lobster Board.
4. The PRT reserves the right to comment further on recommendations pertaining to improvement of enforcement and implementation of the current FMP as well as all FMP objectives.