

**2002 Summer Flounder, Scup, and Black Sea Bass Recreational Specifications**

**Environmental Assessment  
Preliminary Regulatory Economic Evaluation**

Prepared by the Mid-Atlantic Fisheries Management Council  
and the National Marine Fisheries Service

May 15, 2002

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## **Environmental Assessment (EA)**

### **Purpose and Need**

The purpose of this action is to analyze and establish recreational measures for summer flounder, scup and black sea bass to insure that the recreational harvest limits established for summer flounder, scup, and black sea bass for 2002 are not exceeded. This document examines the impacts to the environment that could result from implementation of the proposed range of the 2002 recreational management measures recommended for these fisheries. These measures include recreational size limits, recreational possession limits, and seasonal closures.

The summer flounder measures are based upon a management plan drafted by the State/Federal Summer Flounder Management Program pursuant to a contract between the New Jersey Division of Fish, Game, and Wildlife, and the National Marine Fisheries Service (NMFS). The State/Federal draft was adopted by the Atlantic States Marine Fisheries Commission (Commission or ASMFC) in 1982. The Mid-Atlantic Fishery Management Council (Council or MAFMC) adopted the Fishery Management Plan (FMP) in April 1988 and NMFS approved it in September 1988. The FMP has been amended several times since its initial implementation, with Environmental Impact Statements prepared to consider the impacts of the three major amendments relevant to this action. Amendment 2 enacted management measures for the summer flounder fishery through final regulations implemented on December 4, 1992 (57 FR 57358). Amendment 8 enacted management measures for the scup fishery through final regulations implemented on September 23, 1996 (61 FR 43420). Amendment 9 enacted management measures for the black sea bass fishery through final regulations implemented on December 16, 1996 (61 FR 58461). Each of these amendments enacted comprehensive management measures to attain annual fishing targets and address overfishing. These amendments were adopted jointly by the Council and the Commission, so state regulatory actions complement federal management actions.

The management measures contained in the Summer Flounder, Scup and Black Sea Bass Fishery Management Plan (FMP) are intended to address the overfished condition of these stocks. The management objectives of this FMP are as follows: (1) reduce fishing mortality in the summer flounder, scup and black sea bass fisheries to assure that overfishing does not occur; (2) reduce fishing mortality on immature summer flounder, scup, and black sea bass to increase spawning stock biomass; (3) improve the yield from the fishery; (4) promote compatible management regulations between state and federal jurisdictions; (5) promote uniform and effective enforcement of regulations; (6) minimize regulations to achieve the management objectives stated above. To attain these management objectives, the FMP specifies that the following measures may be specified annually: commercial quotas; recreational harvest limits; minimum sizes; gear restrictions;

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recreational possession limits; and recreational seasons.

## **1.0 Annual Specification Process**

Comprehensive measures enacted by Amendment 2 and modified in Amendments 3 through 7 were designed to rebuild the severely depleted summer flounder stock. Amendments 8 and 9 to the Summer Flounder, Scup and Black Sea Bass FMP implemented recovery strategies to rebuild the scup and black sea bass stocks, respectively. These amendments established Monitoring Committees which meet annually to review the best available scientific data and make recommendations regarding the total allowable landings and other management measures in the plan. The Committee's recommendations are made to achieve the target mortality rates established in the amendments to reduce overfishing. The Committee bases its recommendations on the following information: (1) commercial and recreational catch data; (2) current estimates of fishing mortality; (3) stock status; (4) recent estimates of recruitment; (5) virtual population analysis (VPA); (6) target mortality levels; (7) levels of regulatory noncompliance by fishers or individual states; (8) impact of fish size and net mesh regulations; (9) sea sampling data; (10) impact of gear other than otter trawls on the mortality of each species; and (11) other relevant information.

The Council met jointly with the Commission's Summer Flounder, Scup, and Black Sea Bass Board (Board) in August 2001, to consider the 2002 overall commercial quota and recreational harvest limits for these species. The Monitoring Committee made a recommendation to the Council which, in turn, made a recommendation to the Regional Administrator. The Regional Administrator reviewed the recommendations to ensure achievement of the FMP objectives. The "2002 Summer Flounder, Scup, and Black Sea Bass Specifications" (December, 2001) described the environmental, economic and social impacts of the overall 2002 commercial quotas and recreational harvest limits for these fisheries (summer flounder, scup, and black sea bass). The specifications also analyzed the impacts of commercial measures aimed at achieving the commercial quotas. The 2002 commercial quota and recreational harvest limits, and the specific measures to attain the commercial quota, were implemented by NMFS in December 2001 (66 FR 66348).

The Council and Board met again in December 2001 to recommend specific measures to attain the recreational harvest limits that had been specified in August 2001. The Council and Board considered the recommendations of the Summer Flounder, Scup, and Black Sea Bass Monitoring Committee, and information provided by Council staff, advisors, and public in the development of their recommendations for the recreational fisheries. This document analyzes the impact of the recreational measures designed to achieve the recreational harvest limits.

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## 2.0 Methods of Analysis

This analysis is an assessment of various management measures based on their impacts upon the environment. The analysis discusses the preferred recommendations as well as the alternatives that were evaluated. A full description of these alternatives is given in Section 3.0 of the Environmental Assessment (EA).

The Summer Flounder Monitoring Committee met in August 2001 to review the most recent catch and assessment information on summer flounder and make recommendations to the Council and Commission on the total allowable landings (TAL) for 2002. Based on the recommendation of the Monitoring Committee, the Council and Commission adopted a TAL of 24.3 million lb or 11.02 million kg for 2002. Based on this TAL, the recreational harvest limit for 2002 would be 9.719 million lb (4.41 million kg; 40% of the TAL). The Summer Flounder Monitoring Committee met again in December 2001 to review the 2002 recreational harvest limit and most recent landings data and make recommendations to the Council and Commission on recreational management measures to achieve this limit in 2002. In this document, management measures that will most likely achieve the Council's limit in 2002 are discussed.

The Scup Monitoring Committee met in August 2001 to review the most recent stock assessment information on scup and make suggestions to the Council and Commission on the recreational harvest limit for 2002. Based on a committee suggestion, the Council and Commission recommended that the recreational harvest limit be 2.77 million lb (1.26 million kg) for 2002. The Scup Monitoring Committee met again in December 2001 to review the 2002 recreational harvest limit and most recent landings data and make recommendations to the Council and Commission on recreational management measures to achieve this limit in 2002. Several research set aside projects will be conducted in 2002. The total research set aside for the scup fishery in 2002 is estimated at 222,775 lb (101,049 kg). The recreational TAL adjusted to account for this research set aside is 2.713 million lb (1.23 million kg) for 2002 (See EA, Sec. 6.4). In this document, the possession, size, and/or seasonal limits that will most likely achieve this limit in 2002 are discussed.

The Black Sea Bass Monitoring Committee met in August 2001 to review the most recent stock assessment information on black sea bass and make recommendations to the Council and Commission on the recreational harvest limit for 2002. Based on a committee suggestion, the Council and Commission recommended that the recreational harvest limit be 3.468 million lb (1.57 million kg) for 2002. The Black Sea Bass monitoring committee met again in December 2001 to review the 2002 recreational harvest limit and most recent landings data and make recommendations to the Council and Commission on recreational management measures to achieve this limit in 2002. Several research set aside projects will be conducted in 2002. The total research set aside for the black sea

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bass fishery in 2002 is estimated at 76,055 lb (34,498 kg). The recreational TAL adjusted to account for this research set aside is 3.429 million lb (1.56 million kg) for 2002 (See EA, Sec. 6.5). In this document, the possession, size, and/or seasonal limits that will most likely achieve this limit in 2002 are discussed.

### **3.0 Description of Management Alternatives**

This section provides a brief description of all considered management alternatives. Further discussion and evaluation of these alternatives is found in Section 6.0 of the EA.

#### **3.1 No Action Alternative**

For each species, a “No Action Alternative” was considered but rejected due to regulatory requirements. In order to achieve the recreational harvest limits specified by the FMP for 2002, a reduction in recreational landings was required.

#### **3.2 Summer Flounder**

The 2002 final specifications established Total Allowable Landings (TAL) for summer flounder of 24.3 million lb (11.02 million kg), consistent with the FMP’s target fishing mortality rate (F) of 0.26. The specifications divided the summer flounder TAL into a commercial quota of 14.58 million lb (6.61 million kg) and a recreational harvest limit of 9.72 million lb (4.40 million kg).

In 2000, recreational landings were 15.82 million lb (7.17 million kg), the highest landings since 1987. In 2001, the Council and the Board implemented a recreational harvest limit of 7.16 million lb (3.25 million kg), the lowest recreational limit since the FMP went into effect in 1992. To achieve the 2001 recreational harvest limit, most coastal states from Maine through North Carolina established measures in state waters that were significantly more restrictive than the 2000 recreational summer flounder measures. NMFS similarly implemented restrictive measures for the Exclusive Economic Zone (EEZ) (66 FR 39288, July 30, 2001). Despite these measures, 2001 Marine Recreational Statistics Survey (MRFSS) data project recreational summer flounder landings to be 11.54 million lb (5.23 million kg). Thus, assuming recreational fishing effort in 2002 will be similar to that in 2001, it is necessary to implement recreational measures for summer flounder that reduce recreational landings by approximately 16 percent in order to achieve the recreational harvest limit of 9.72 million lb (4.40 million kg) established for 2002.

#### **Preferred Alternative 1 for Summer Flounder: Conservation Equivalency**

On July 11, 2001, NMFS published a final rule in the Federal Register to implement Framework Adjustment 2 to the FMP (66 FR 36208). This framework implemented a

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process that makes conservation equivalency a management option for the summer flounder recreational fishery. Conservation equivalency allows each state to establish its own recreational management measures (possession limit, minimum fish size, and season time and duration) as long as the combined effect of all of the states' management measures achieve the same level of conservation as Federal coastwide measures developed to achieve the recreational harvest limit would, if implemented by all of the states (i.e., both would have equivalent Fs). If NMFS approves and implements conservation equivalency, then NMFS would waive Federal recreational measures that would otherwise apply in the EEZ. Federally permitted vessels as well as vessels fishing in the EEZ, would be subject to the recreational fishing measures implemented by the state in which the fish are landed.

The Council and Board are required to recommend annually either conservation equivalency (whereby states develop state-specific measures) or coastwide management measures (whereby all states adopt the same measures as the Federal measures) for the summer flounder recreational fishery. If the Council and the Board recommend conservation equivalency, they must also recommend a coastwide management alternative that would be implemented if, following NMFS review and public comment, conservation equivalency is not implemented in the final rule. In addition, the Council and the Board must recommend a precautionary default alternative that would apply in states that either do not submit conservation equivalency proposals to the Board, or whose management proposals are not approved by the Board. The precautionary default measures are defined as the set of measures that would achieve the greatest reduction in landings required for any state.

For 2002, the Council and Board voted to recommend conservation equivalency to achieve the required 16-percent reduction in total landings for the recreational summer flounder fishery. NMFS is considering in the proposed rule to either approve and defer to the state conservation equivalency measures approved and recommended by the Commission or to implement the coastwide alternative.

In order to constrain recreational landings to the overall recreational harvest limit, the Commission has established conservation equivalency guidelines that require each state, using state-specific tables, to determine and implement an appropriate possession limit, size limit, and closed season to achieve the landings reduction necessary for each state. The state-specific tables are adjusted to account for the past effectiveness of the regulations in each state. As specified in the Commission's guidelines (Atlantic States Fishery Management Council Addendum III to the Summer Flounder, Scup, and Black Sea Bass FMP), based upon the number of fish landed in 1998 and projected to have been landed in 2001, the percent reduction in landings required by the states for 2002 (relative to 2001) under conservation equivalency are: Rhode Island: 5 percent; New Jersey: 16.7 percent; Delaware: 3.5 percent; Maryland: 5.3 percent; Virginia: 43.8 percent; and North



Carolina: 28.4 percent. Massachusetts, Connecticut and New York do not require any reductions in recreational summer flounder landings if their current regulations are maintained.

The Board required each state to submit its conservation equivalency proposal to the Commission by January 15, 2002. The Commission's Summer Flounder Technical Committee has since evaluated the proposals and advised the Board of each proposal's consistency with respect to achieving the coastwide recreational harvest limit. After the Technical Committee evaluation, the Board met on February 21, 2002 to approve or disapprove each state's proposal. During the comment period for the proposed rule, the Commission will notify NMFS as to which state proposals have been approved or disapproved. If, at the final rule stage, the Commission recommends and NMFS accepts conservation equivalency, then NMFS would waive the Federal recreational measures that would otherwise apply in the EEZ. Federally permitted vessels as well as vessels fishing in the EEZ, would be subject to the recreational fishing measures implemented by the state in which it lands. States that do not submit proposals or whose proposals were disapproved by the Commission would be required by the Commission to adopt the precautionary default measures. The Commission would allow states that had been assigned the precautionary default measures to resubmit revised management measures and ASMFC would notify NMFS of any resubmitted proposals that were approved after publication of the final rule implementing the recreational specifications. Afterwards, NMFS would publish a notice in the Federal Register to notify the public of any changes in the state's management measures.

### **Non - Preferred Alternative 2 for Summer Flounder: Coastwide Measures**

The coastwide alternative recommended by the Council and Board to be implemented in the EEZ if conservation equivalency is not implemented, includes a possession limit of eight fish/person, a minimum fish size of 17 inches (43.18 cm) total length (TL), and no closed season. The recommended coastwide alternative would reduce recreational landings by 30 percent, assuming the coastwide regulations are implemented by all states. For comparative purposes, the existing coastwide summer flounder measures include a 15.5-inch (39.37 cm) minimum fish size, a 3-fish possession limit and an open season from May 25 through September 4.

### **Non - Preferred Alternative 3 for Summer Flounder: Precautionary Default**

As required when conservation equivalency is recommended, the Council and Board also must specify precautionary default measures. These would be the measures required to be implemented by a state that either does not submit a summer flounder management proposal or for states whose measures do not achieve the required reduction. For 2002,

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the precautionary default measures include a possession limit of one fish/person, a minimum fish size of 18 inches (45.72 cm) total length (TL), and no closed season.

The precautionary default alternative preferred by NMFS would achieve a 43.8-percent reduction in landings from 2001 in Virginia, the state requiring the largest reductions. Therefore, the impact of the precautionary default on the states would range from a 43.8-percent to an 88-percent reduction in landings for 2002.

### **3.3 Scup**

The 2002 specifications for scup implemented a recreational harvest limit of 2.71 mlb (1.23 million kg), consistent with the FMP target exploitation rate for scup, of 21 percent for the 2002 fishing year. The 2001 MRFSS data projected 2001 recreational scup landings to be 4.97 million lb (2.25 million kg). Assuming the same level of fishing effort will exist in 2002, the MRFSS data indicate that a reduction in landings will be necessary. However, the landings data alone were not used to determine the necessary reductions for 2002. The potential need for reductions was estimated using a method devised in 2000 by the Commission's Technical Committee to adjust for the effectiveness of the various measures. Also, as recommended by the Council and Commission's Technical Committee, the effects of a closed season are adjusted to account for the season that was in place the previous year. As such, the projected 2001 recreational landings increased to 6.37 million lb (2.89 million kg) and the estimated reduction in landings necessary for 2002 increased to 57.4 percent.

#### **Council Preferred Scup Alternative**

The Council voted to recommend the following measures: A 10-inch (25.40-cm) TL minimum fish size, a 50-fish per person possession limit, and open seasons from January 1 through February 28 and from July 1 through October 31. For comparative purposes, the current scup recreational measures in the EEZ are a 9-inch (22.86 cm) minimum fish size, a 50-fish possession limit and an open season from August 15 through October 31. It was estimated that the Council's recommended scup measures would reduce recreational landings by only 30 percent, although a 57.4-percent reduction is necessary. The Council believes that their recommended measures would have more impact than the analysis of the MRFSS data indicates, based on industry comment at the December 2001 Council meeting.

The Commission postponed action on scup at its December meeting and advised its staff to prepare an addendum to its Interstate FMP for Scup that would include state-by-state conservation equivalency and other measures. On February 21, 2002, the Commission approved Addendum VII to the Commission's Interstate Scup FMP, which allows states from Massachusetts through New York to develop state-specific management measures.

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For New Jersey, which has limited recreational scup landings data, the Commission approved a 10-inch (25.40-cm) TL minimum size, a 50-fish possession limit, and an open season from July 1 through October 31. Due to low scup landings in more southern states, the Commission approved the retention of existing recreational scup measures in Delaware, Maryland, Virginia, and North Carolina. Because the Federal FMP does not contain provisions for conservation equivalency and states will be adopting their own unique measures under Addendum VII to the Commission's Interstate FMP, it is likely that state and Federal recreational scup measures will differ for the 2002 season.

### **Disapproval of Council's Preferred Scup Alternative and Request for Public Comment**

After careful review, NMFS has decided to disapprove the Council's scup recommendation because analysis of the measures indicates that accepting this recommendation would result in landings of approximately 4.46 million lb (2.02 million kg), which is well above the scup recreational harvest limit of 2.71 million lb (1.23 million kg) established for 2002. Thus, the Council's recommended measures are not consistent with the requirements of the FMP.

The Council submission analyzed the following three alternatives that could reduce recreational landings by the required 57.4 percent:

#### **NMFS Scup Alternative 1**

A 10-inch (25.4-cm) TL minimum fish size, a 20-fish per person possession limit, and open seasons from January 1 through February 28 and from July 1 through October 2;

#### **NMFS Scup Alternative 2**

A 9-inch (22.86-cm) TL minimum fish size, a 20- fish per person possession limit, and open seasons from January 1 through February 28 and from September 2 through October 31.

#### **Scup Alternative 3**

A 9-inch (22.86-cm) TL minimum fish size, a 50-fish possession limit, and open seasons from January 1 through February 28 and from October 8 through October 31.

### **Discussion of the Three Scup Alternatives**

NMFS has requested public comment on the first two of these alternatives--Alternatives 1 and 2--for possible implementation in the final rule. These two alternatives have been

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determined by the Council to achieve the landings reductions needed to achieve the FMP's target exploitation rate. The third alternative, which would allow only a 24-day open season during the prime fishing period, is not being further considered for implementation by NMFS. The impacts associated with Scup Alternatives 1 and 2 are described in the Council's submission and are summarized below.

NMFS is proposing Scup Alternative 2 for publication in the proposed regulatory text. However, depending on public comments, NMFS may decide to implement Scup Alternative 1, instead. Should Alternative 1 ultimately be chosen, NMFS will publish the corresponding regulations in the final rule.

### **3.4 Black Sea Bass**

#### **Black Sea Bass - Preferred Alternative**

The Council recommended the following black sea bass measures for the 2002 fishery: An 11.5-inch (29.21-cm) TL minimum fish size, a 25-fish per person possession limit, and no closed season. For comparative purposes, the current black sea bass regulations include an 11-inch (27.94 cm) minimum fish size, a 25-fish possession limit, and a March 1 through May 9 closed season. The Commission's Black Sea Bass Board adopted the same measures for 2002 as the Council at its December 2001 meeting. These measures should reduce recreational landings by 16 percent, assuming they are complied with 85 percent of the time. NMFS has reviewed the Council's analyses of these measures and is publishing its recommendation in the proposed rule with no modifications.

#### **Black Sea Bass - Non Preferred Alternative 1**

An 11-inch (22.86-cm) TL minimum fish size, a 25- fish per person possession limit, and an open season from May 19 through November 30.

#### **Black Sea Bass - Non Preferred Alternative 2**

An 11-inch (22.86-cm) TL minimum fish size, a 15- fish per person possession limit, and open seasons from January 1 through February 28 and from May 1 to December 26.

### **4.0 General Fishery Description**

#### **4.1 Port and Community Description**

The recreational summer flounder, scup, and black sea bass fisheries are important to

many communities along the East Coast. However, data are not available to identify to what extent communities are dependent upon these recreational fisheries. The Marine Recreational Fishery Statistical Survey (MRFSS) program does not identify port and community level data, and Vessel Trip Report (VTR or “logbook”) data for party/charter fishermen only represent 4%, 10%, and 31%, of the total number (A+B1) of summer flounder, scup, and black sea bass recreational landings, respectively, from Maine through North Carolina.

A brief description of the relative importance of summer flounder, scup, and black sea bass recreational landings at the state level follows. A description by port of importance to these fisheries is presented in Appendix 1 of the “2002 Summer Flounder, Scup, and Black Sea Bass Specifications.”

According to 2000 MRFSS estimates the top five states from Maine through North Carolina that had summer flounder landings (number of fish) were New Jersey, New York, Rhode Island, Virginia, and Massachusetts (Table 3). Massachusetts landings were only slightly higher than North Carolina, Connecticut, and Delaware’s summer flounder recreational landings which each accounted for 4% to 5% of the total summer flounder landings. Maryland landed approximately 3% of the total summer flounder recreational landings. VTR data indicate that summer flounder accounted for 31%, 12%, 6%, and 5% of the total catch by party charter vessels in the states of New York, New Jersey, Delaware, and Rhode Island, respectively, from 1996 to 2000 (Table 4).

The top five states that had scup landings in 2000 were New York, Massachusetts, Connecticut, Rhode Island, and New Jersey (Table 3). These states accounted for nearly 100% of the total recreational scup landings in 2000. New Hampshire, Delaware, Maryland, Virginia, and North Carolina combined caught less than 1% of the total scup recreational landings. VTR data indicate that scup accounted for 19%, 18%, 6%, and 6% of the total catch by party charter vessels in the states of Massachusetts, New York, Rhode Island, and New Jersey, respectively, from 1996 to 2000 (Table 5).

The top five states that had black sea bass landings were New Jersey, Virginia, Maryland, New York, and Rhode Island (Table 3). New Jersey, Virginia, and Maryland accounted for 76% of the landings. The states of New Hampshire, Massachusetts, Connecticut, Delaware, and North Carolina each accounted for less than 5% of the total black sea bass recreational landings. VTR data indicate that black sea bass accounted for 51%, 36%, 33%, and 31% of the total catch by party charter vessels in the states of Maryland, Virginia, North Carolina, and New Jersey, respectively, from 1996 to 2000 (Table 6). Black sea bass also accounted for at least 8% of the total catch of party/charter vessels in New York, Delaware, and Rhode Island from 1996-2000 (Table 6).

## **4.2 Analysis of Permit Data**

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A full description and analysis of the vessels permitted to participate in the commercial and recreational fisheries for summer flounder, scup, and black sea bass is presented in Section 4.2 of the “2002 Summer Flounder, Scup, and Black Sea Bass Specifications.” The analysis estimated that, as of September 5, 2000, there were 1,969 vessels with one or more of the following three commercial or recreational Federal Northeast permits: summer flounder (FLK), black sea bass (BSB), and scup (SCP). A total of 1033, 977, and 831 Federal commercial permits for FLK, SCP, and BSB, respectively, had been issued to Northeast region fishing vessels. For party/charter operators a total of 613, 498, and 528 Federal permits were issued for FLK, SCP, and BSB, respectively.

These three fisheries (FLK, SCP, and BSB) have vessels permitted as commercial, recreational, or both. Of the 1,969 vessels with at least one Federal permit there were 1,303 that held only commercial permits for FLK, SCP, or BSB while there were 546 vessels that held only a recreational permit. The remaining vessels (120) held some combination of recreational and commercial permits.

For party/charter vessels, the largest number of permit holders are found in New Jersey, followed by New York and Massachusetts.

## **5.0 Description of Fisheries**

### **5.1 Summer Flounder**

The commercial and recreational fisheries for summer flounder are outlined by port in Appendix 1 of the “2002 Summer Flounder, Scup, and Black Sea Bass Specifications,” and additional information is found in Amendment 2 and subsequent amendments.

MRFSS data indicate that recreational landings have fluctuated since Amendment 2 regulations were implemented in 1993. Landings increased to 8.83 million lb (4.00 million kg) in 1993 from the 1992 level of 7.15 million lb (3.24 million kg). In 1994, recreational landings increased again to 9.33 million lb (4.23 million kg) and then declined to 5.42 million lb (2.46 million kg) in 1995. In 1996, 1997, and 1998 landings increased to 9.82 million lb (4.45 million kg), 11.87 million lb (5.38 million kg), and 12.48 million lb (5.66 million kg), respectively. Landings decreased from 1998 to 1999 by 4.11 million lb (1.86 million kg) to 8.37 million lb (3.80 million kg). In 2000, landings increased to 15.82 million lb (7.17 million kg) the highest landings value since 1987. Based on 2001 MRFSS data for waves 1-5 (January through October), summer flounder recreational landings for 2001 are projected to be 11.54 million lb (5.23 million kg).

#### **5.1.1 Status of the Stock**

The status of the summer flounder stock is re-evaluated annually. The most recent

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assessment, updated by the Northeast Fisheries Science Center (NEFSC) Southern Demersal Working Group in June, 2001 indicates that the summer flounder stock is overfished and overfishing is occurring with respect to the Amendment 12 overfishing definition.

However, the fishing mortality rate estimated for 2000 is 0.30, a significant decline from the 1.31 estimated for 1994. In addition, total stock biomass has increased substantially since 1991 to 102.3 million lb (46.40 million kg) in 2000. Spawning stock biomass has increased each year since 1993 and was estimated at 81.6 million lb (37.01 million kg) in 2000, the highest value in the time series. Projections indicate that if the TAL in 2001 is not exceeded, total stock biomass will exceed the biomass threshold in 2001. At this level, the stock will no longer be overfished.

Year-class estimates indicate that the 1996, 1997 and 1998 year classes were about average size at 35 to 42 million fish. The assessment estimated the 1999 and 2000 year classes to be below average at 28 and 26 million fish, respectively. However “retrospective analysis shows that the VPA tends to underestimate recent year-classes.”

### **5.1.2 Stock Characteristics and Ecological Relationships**

The stock characteristics and ecological relationships of summer flounder are fully described in Section 5.3 of Amendment 2. Additional information can be found in the Stock Assessment Workshop 31 (SAW-31) documents. The following is taken from the “SAW Southern Demersal Working Group 2001 Advisory Report: Summer Flounder.”

An analytical assessment (VPA) of commercial and recreational total catch at age (landings plus discard) was conducted. The natural mortality rate (M) was assumed to be 0.2. Indices of recruitment and stock abundance from Northeast Fisheries Science Center (NEFSC) winter, spring, and autumn, Massachusetts spring and autumn, Rhode Island, Connecticut spring and autumn trawl, Delaware, and New Jersey trawl surveys were used in VPA tuning. In addition, recruitment indices from surveys conducted by the states of North Carolina, Virginia, and Maryland were used in VPA tuning in an ADAPT framework. The uncertainty associated with the estimates of fishing mortality and spawning stock biomass in 2000 was evaluated with respect to research survey variability.

Fishing mortality calculated from the average of the currently fully recruited ages (3-5) summer flounder has been high, varying between 0.9 and 2.2 during 1982-1997 (55%-83% exploitation), far in excess of the revised FMP Amendment 12 overfishing definition,  $F_{\text{threshold}} = F_{\text{target}} = F_{\text{max}} = 0.26$  (21% exploitation). The fishing mortality rate has declined substantially since 1997 and was estimated to be 0.30 in 2000 but is still 15% higher than the overfishing definition. The annual partial recruitment of age-1 fish decreased from near 0.50 during the first half of the VPA series to 0.25 since 1994; the partial recruitment of

age-2 fish has decreased from 1.00 in 1993 to 0.77 in 1998-2000. These decreases in partial recruitment at age are in line with expectations given recent changes in commercial and recreational fishery regulations.

The NEFSC spring survey stock biomass index (1968-2001) peaked during 1976-1977, and reached a record high in 2001. Total stock biomass on January 1, estimated by VPA (1982-1999) reached 48,300 mt in 1983, before falling to 16,100 mt in 1989. Total stock biomass has increased since 1991, has been stable since 1994 at about 41,000 mt, and in 2000 was estimated to be 46,400 mt, which is 44% of the biomass target of  $B_{MSY} = 106,400$  mt, and 87% of the biomass threshold of one-half  $B_{MSY} = 53,200$  mt.

The arithmetic average recruitment from 1982 to 2000 was 40 million fish at age 0, with a median of 36 million fish. The 1982 and 1983 year-classes are the largest in the VPA time series, at 74 and 80 million fish, respectively, at age 0. Recruitment declined from 1983 to 1988, with the 1988 year-class the weakest at only 13 million fish. Recruitment since 1988 has generally improved, and the 1995 year-class, at 45 million fish, was above average. The 1996-1998 year-classes, ranging between 35 to 42 million fish, are estimated to be about average. The 1999 and 2000 year-classes, at 28 and 26 million fish, respectively, are estimated to be below average. It should be noted that retrospective analysis shows that the assessment tends to underestimate the abundance of recent year classes. Recent recruitment per unit of spawning stock biomass (SSB) has been lower than that estimated at a comparable abundance of SSB during the early 1980s.

Spawning stock biomass declined 72% from 1983 to 1989 (18,800 mt to 5,200 mt), but has since increased seven-fold, with improved recruitment and decreased fishing mortality to 37,000 mt in 2000. The age structure of the spawning stock has expanded, with 78% at ages 2 and older, and 16% at ages 5 and older. Under equilibrium conditions at  $F_{max}$ , however, about 85% of the spawning stock biomass would be expected to be ages 2 and older, with 50% at ages 5 and older.

### **5.1.3 Economic Environment**

Summer flounder continues to be an important component of the recreational fishery. An evaluation of the primary or secondary species sought as reported by anglers in recent intercept surveys indicates that summer flounder has increased in importance in the U.S. North Atlantic and Mid-Atlantic subregions, while decreasing in North Carolina. The estimated number of recreational fishing trips where the primary or secondary targeted species was summer flounder in the North Atlantic and Mid-Atlantic subregions have increased by 266% and 50%, respectively, from 1990 to 2000. The estimated number of recreational fishing trips where the primary or secondary targeted species was summer flounder in North Carolina decreased by 97% from 1990 to 2000. From Maine through North Carolina, the estimated number of recreational fishing trips where the primary or



secondary targeted species was summer flounder increased by 56% from 1990 to 2000. The recent increase in preference of summer flounder may result in an increase in the overall importance associated with this species in the North Atlantic and Mid-Atlantic subregions.

The socioeconomic characteristics of various ports and communities along the Atlantic Coast that depend on the summer flounder, scup, and black sea bass fisheries were described and assessed by McCay *et al.* (1993) and McCay and Cieri (2000). A description by port of importance to these fisheries is presented in Appendix 1 of the “2002 Summer Flounder, Scup, and Black Sea Bass Specifications.”

A detailed description of the economic aspects of the recreational fishery was presented in Section 8.2 of Amendment 2 to the Summer Flounder FMP, and was also discussed in Section 5.1.3 of the “2002 Summer Flounder, Scup, and Black Sea Bass Specifications.”

## **5.2 Scup**

The commercial and recreational fisheries for scup are outlined by port in Appendix 1 of the “2002 Summer Flounder, Scup, and Black Sea Bass Specifications,” and additional information is found in Amendment 8.

MRFSS data indicate that recreational landings declined steadily from a 1986 value of 11.61 million lb (5.27 million kg) to 1.34 million lb (0.61 million kg) in 1995, and then increased to 2.16 million lb (0.98 million kg) in 1996. In 1997, recreational landings were 1.20 million lb (0.54 million kg). Then in 1998, recreational landings decreased to 0.88 million lb (0.40 million kg) and increased in 1999 to 1.89 million lb (0.86 million kg). In 2000, landings increased to 5.18 million lb (2.34 million kg) the highest landings value since 1992. Based on 1996-2000 wave data, scup recreational landings for 2001 are projected to be 4.97 million lb (2.25 million kg).

### **5.2.1 Status of the Stock**

The most recent assessment on scup, in June 2000, indicates that scup are overfished and overfishing is occurring (Stock Assessment Review Committee (SARC) 31 ). The SARC concluded that “the current index of spawning stock biomass is low (1998-2000 average =0.10 SSB kg/tow) and less than 5% of the biomass threshold (2.77 SSB kg/tow).” The SARC also stated that “fishing mortality should be reduced substantially and immediately. Reduction in fishing mortality from discards will have the most impact on the stock, particularly considering the importance of the 1999 and all future good recruitment to rebuilding the stock.”

Since then, the ASMFC Technical Committee has updated the state and federal survey

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indices for scup as well as discard estimates from sea sample and VTR data. In general, the surveys indicate an increase in stock abundance in recent years. The NEFSC spring survey results indicate that spawning stock biomass has increased each year since 1998; the estimate for 2000 (3 yr average) is 0.25 or about 9% of the biomass threshold. In addition, the NEFSC autumn survey results (kg/tow) for 2000 are the highest in the time series since 1976. These survey results reflect the effects of a strong 1997 year class and moderate to strong 1999 and 2000 year classes on the stock.

Commercial and recreational landings also indicate that the 1997 year class was strong and has persisted over time to support landings in both 1999 and 2000. Recreational catch per trip increased substantially in 1999 and recreational landings in 2000 were highest since 1991. Increased abundance of larger fish has also been noted by commercial fishermen who have suggested that more than the 1997 year class accounts for the availability of larger fish. However, ageing studies conducted by CT Department of Environmental Protection (DEP) personnel suggest that scup from the 1997 year class have grown at a faster rate than previous year classes. As such, the 1997 year class probably accounts for most of the larger fish in the commercial and recreational catches in 2000.

Estimates of fishing mortality rates for scup are uncertain. The SARC conducted several analyses that indicated that  $F$  was at least 1.0 for ages 0-3 scup for the 1984 to 2000 time series. The SARC could not estimate  $F$ 's on older fish because they are not well represented in the surveys. However, the SARC did note that it was likely that the current  $F$  was "significantly higher than the reference point." The SARC noted that the truncation in lengths and ages in the surveys and landings suggest that the stock has experienced high fishing mortality rates.

Although the magnitude of the mortality rates is unknown, relative exploitation rates have changed over the period. Relative exploitation rates based on total landings and the spring survey suggest a general increase in exploitation from 1981 to 1995. Since then, relative exploitation rates have declined; the 2000 value is about one-third of the 1997 value.

### **5.2.2 Stock Characteristics and Ecological Relationships**

The stock characteristics and ecological relationships of scup are fully described in Section 5.3 of Amendment 8. Scup was last fully assessed at SAW-31 in 2000. Reliable estimates of commercial fishery discards were not available due to the limited sample size and the uncertainty related to the representative nature of the sea sampling data for scup. VPA and production models were not undertaken and stock status was estimated from survey abundance indices. Standardized indices of abundance from the NEFSC autumn survey and the MRFSS (recreational) catch per tow show similar patterns over time (1981-

1999). Total mortality rates were estimated from survey based calculations using both annual and cohort catch curves. Fishing mortality rates were then estimated by subtracting the assumed natural mortality rate of 0.2.

The SARC estimated that mortality of age 0-3 scup was close to 2.0 based on survey data suggesting that discard mortality had been high. However, the estimates were uncertain and did not account for availability of scup to the trawl gear or the fact that natural mortality is higher on smaller scup. The SARC concluded that the F on age 0-3 scup was at least 1.0.

The relative exploitation index may offer some clue as to current levels of mortality for older fish. Because the index is based on mostly landings of scup larger than 9" TL (the commercial minimum fish size and the recreational minimum fish size in states from Massachusetts through New Jersey) and SSB, the index may indicate fishing mortality rates on the larger fish has declined in recent years.

Based on current information, scup abundance is likely to increase in 2002. Survey information indicates that regulations may have protected the 1997 year class and also indicate a large 1999 and 2000 year class. If the 1999 and 2000 year classes are large and mortality of undersized fish is reduced, substantial biomass could be added to the stock by 2002.

In fact, deterministic projections of the NEFSC spring survey based on the 3-year average value for 2000 (average of the 1999, 2000, and 2001 indices at age) indicate that the SSB 3-year average index could increase from 0.25 in 2000 to 0.457 in 2001 assuming a fully recruited F of 1.0, the F estimated by the SARC in the last assessment, and the partial recruitment and maturity vectors from the yield per recruit analysis conducted for SAW 27. Assuming an average biomass that is at least identical to the 2001 average value of 0.457 in 2002, then exploitation rates could drop to 21% if the landings do not exceed 10.77 million lb (4.89 million kg) in 2002.

This calculation does not include an estimate of discards, i.e., mortality estimates are based on landings (not catch) of fully recruited fish and assumes that legal sized fish would not be discarded. As such, discards in both the directed scup fishery and indirect small mesh fisheries should be minimized to achieve the target exploitation rate for 2002. If in fact discards in 2002 are as high as suggested by sea sample data for 2000, the TAL would have to be reduced significantly to achieve the target exploitation rate of 21%.

### **5.2.3 Economic Environment**

The socio-economic characteristics of various ports and communities along the Atlantic Coast that depend on the summer flounder, scup and black sea bass fisheries were

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described and assessed by McCay *et al.* (1993) and McCay *et al.* (2000). A description by port of importance to these fisheries is presented in Appendix 1 of the “2002 Summer Flounder, Scup, and Black Sea Bass Specifications.”

A detailed description of the economic aspects of the recreational fishery was presented in Section 8.2 of Amendment 8 to the Summer Flounder FMP, and was also discussed in Section 5.2.3 of the “2002 Summer Flounder, Scup, and Black Sea Bass Specifications.”

### **5.3 Black Sea Bass**

The commercial and recreational fisheries for black sea bass are outlined by port in Appendix 1 of the “2001 Summer Flounder, Scup, and Black Sea Bass Specifications,” and additional information is found in Amendment 9.

MRFSS data indicate that recreational landings have varied without trend since 1981 ranging from a low of 1.45 million lb (0.66 million kg) in 1984 to a high of 12.39 million lb (5.62 million kg) in 1986. Recreational landings in 1997, 1998, and 1999 were 4.27 million lb (1.94 million kg), 1.15 million lb (0.52 million kg), and 1.66 million lb (0.75 million kg), respectively. From 1999 to 2000, landings increased by 2.20 million lb (1.00 million kg) to 3.87 million lb (1.76 million kg). Based on 1996-2000 wave data, black sea bass recreational landings for 2001 are projected to be 3.64 million lb (1.65 million kg).

#### **5.3.1 Status of the Stock**

The most recent assessment on black sea bass, completed in June 1998, indicates that black sea bass are over-exploited and at a low biomass level (SAW 27). Fishing mortality for 1997, based on length based methods, was 0.73. The complete assessment is detailed in the “Report of the 27<sup>th</sup> Northeast Regional Stock Assessment Workshop.”

The NEFSC has provided spring survey results for 2001. Amendment 12 to the Summer Flounder, Scup and Black Sea Bass FMP, which was partially approved by NMFS in 1999, established a biomass threshold based on this survey. Specifically, the biomass threshold is defined as the maximum value of a three-year moving average of the NEFSC spring survey catch-per-tow (1977-1979 average of 0.9 kg/tow).

Because of the potential influence of extremely small or large number for a single tow, Gary Shepherd, NEFSC (pers. comm.) has suggested that the survey indices be log transformed to give a better indication of stock status. The transformed series indicates a general increase in the exploitable biomass since 1993. The preliminary index for 2001 of 0.245 is the highest value in the series since 1976 and would substantiate fishermen’s observations that black sea bass have become more abundant in recent years. The three-year moving average for 1999-2001 of 0.204 is a 45% increase relative to the 1998-2000

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average.

Fishery dependent data can also be used as an indicator of stock status. Increased abundance is evident in the recreational data; landing-per-hour fished increased 25% from 1999 to 2000.

Relative exploitation based on the total commercial and recreational landings and the moving average of the transformed spring survey index indicates a significant reduction in mortality from 1998 to 2000 relative to 1996 and 1997 levels. Based on length frequencies from the spring survey, and assuming length of full recruitment at 25 cm, the average F based on two length based methods was 0.75 (48% exploitation rate) in 1998 (G. Shepherd pers. comm.). Length based estimates are very sensitive to changes in the length used for full recruitment; average F's were 0.51 (37% exploitation) or 1.25 (66% exploitation) if a length of 23 or 27 cm was used in the calculations. Based on the relative index, exploitation rates in 2000 increased relative to the 1998 values; assuming a 48% rate for 1998, the exploitation rate in 2000 was 59%.

The spring survey can also be used as an index of recruitment. The survey indicates good year classes were produced in 1988, and 1990 through 1992, with a moderate year class in 1995, and poor year classes in 1993, 1994, and 1996 through 1998. The 1999 index was about three times the average for the period 1968-1998 and the fourth largest value since 1968. Results for 2000 indicate a strong year class; the index is 2.782, the highest in the time series. However, preliminary results indicate that the year class was poor in 2001.

### **5.3.2 Stock Characteristics and Ecological Relationships**

The stock characteristics and ecological relationships are fully described in Section 5.3 of Amendment 9. In addition, the advisory report on black sea bass from SAW-27 states that "recent catches are well below the historical average, age and size structure is truncated, and survey biomass indices since the late 1980s have been one-tenth of those observed in the late 1970s. Average annual fishing mortality, estimated from length-based analyses, ranged from 0.56 to 0.79 during 1984-1997 and was 0.73 (48% exploitation) in 1997. Recruitment in 1997, as indicated by survey indices, was well below the 1972-1996 average." Additional, detailed information is available in the SAW-27 documents.

### **5.3.3 Economic Environment**

The socioeconomic characteristics of various ports and communities along the Atlantic Coast that depend on the summer flounder, scup and black sea bass fisheries were described and assessed by McCay *et al.* (1993) and McCay and Cieri (2000). A description by port of importance to these fisheries is presented in Appendix 1 of the

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“2002 Summer Flounder, Scup, and Black Sea Bass Specifications.”

A detailed description of the economic aspects of the recreational fishery was presented in Section 8.2 of Amendment 9 to the Summer Flounder FMP, and was discussed in Section 5.3.3 of the “2002 Summer Flounder, Scup, and Black Sea Bass Specifications.”

#### **5.4 1990 Survey of Charter and Party Boats**

The charter and party boat industry is an important component of the fishery in several states from Maine to North Carolina. The contribution by mode of recreational landings of summer flounder, scup, and black sea bass is detailed in Tables 7-9. To provide additional information on charter and party boats, the Council conducted a survey of charter and party boat owners in the summer of 1990 with the purpose of acquiring information in support of management efforts for the summer flounder, scup, and black sea bass fisheries. Although the survey did not directly influence the selection of recreational management alternatives for the 2002 fishing year, the results did provide important background information regarding the charter/party fishing sector for consideration by the Council. A mailing list was compiled from the NMFS vessel permit files that included all vessels which indicated they were involved in party and charter activities (permit Category 2). The list included 402 vessels.

Some of the results obtained from this survey may not accurately describe current fishing trends (e.g., interest and demand, desirability, etc.). For example, since this survey was conducted, scup landings have generally declined, reflecting a drop in availability, abundance, and/or angler interest. In addition, party/charter boats may be targeting other species that are relatively more abundant than scup (e.g., summer flounder).

Consultation with Council members yielded concerns that a number of vessels did not hold federal permits, and would not be included in the survey. Representatives from New Jersey, New York, and Virginia supplied the Council with lists supplementing the NMFS permit files, and an additional 190 questionnaires were mailed.

A total of 592 surveys were sent out to 13 east coast states (Table 10). Massachusetts, New Jersey, New York, and Virginia were most heavily represented, accounting for 80% of survey mailings.

A total of 172 of the 202 surveys returned to the Council were usable. The 30 returns which could not be used were inappropriate mailings that fell into the following general categories: did not charter/fish in 1989; private boat, not for hire; dive boat, primarily after lobsters; returned as undeliverable by Post Office; or sold boat. Usable returns equaled 29% of total mailings, with the percentage ranging from approximately 20% - 50% for individual states.

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Some of the analyses conducted on the survey divided the responses into "Party boat" versus "Charter boat" categories. Typically, charter vessels are thought of as hiring out for a day's fishing to a small number of individuals at a cost of over \$100 per person. They provide a high level of personal attention to the passengers and will make special efforts to find the particular species of interest to their clients.

"Party boats" are generally larger vessels which run on a fixed schedule and carry from 10 to 100 passengers, averaging around 20. They offer fewer options and less attention to passengers, yet charge much lower fares than charter boats (in the \$20 - \$40 range).

In order to have the ability to differentiate between these two groups, the data were partitioned based on the reported number of passengers each vessel could carry. Examination of the data showed a logical division between those vessels which reported carrying 8 or fewer passengers and those able to carry more than 8. The average fee charged per person dropped significantly for those vessels carrying more than 8 passengers. For purposes of this analysis then, "charter boats" are defined as those boats carrying 8 or fewer passengers, and "party boats" are those which may carry 9 and above. It is recognized that charter boats are generally licensed for six passengers and, in fact, responses to another question indicated that the average charter boat carried 6 passengers (SD = 0.4), while the average party boat carried 53 (SD = 32), so it is quite likely that the respondents which indicated they owned a charter boat that carried eight people were including the captain and mate whereas in the subsequent question they were referring to the six paying passengers.

Calculating mean values of responses allows comparison of the different species using a single number for each. The first question on the survey attempted to gauge the interest or demand which party and charter boat customers exhibited for common species (or species groups). Given a five point scale, owners were asked to rank each species as being: 1 = Low, 2 = Somewhat Low, 3 = Moderate, 4 = Somewhat High, or 5 = High in interest to their customers.

Spot ranked as the most desirable fish for party boats (mean interest = 4.7), illustrating its importance to the well-represented boats of Virginia (Table 11). It was followed by bluefish (4.6), then summer flounder (3.6), Atlantic Mackerel (3.5), and striped bass (3.5). The top four fish which party boats reported catching were: bluefish (4.0), Atlantic mackerel (3.5), spot (3.4), and black sea bass (2.9).

Charter boat owners reported a preference ordering similar to that of party boats for their customers, with the exception that large pelagics took the second ranked spot along with bluefish (Table 11). The top five desired species were: spot (4.6), large pelagics (3.9), bluefish (3.9), striped bass (3.7), and summer flounder (3.2).

In 1989, the average party boat customer traveled 67 miles, with a standard deviation (SD) of 43 miles. The farthest party boat customer traveled 695 miles (SD = 1,125 mi.). In 1989, the average charter boat customer traveled 123 miles (SD = 194 mi.). The farthest charter boat customer traveled 727 miles (SD = 914 mi.).

Charter boat respondents indicated that 38% of their customers were more interested in a particular species, 15% were more interested in fishing enjoyment, and 46% were about equally interested in each. For party boats, the responses were 43% for a particular species, 12% for the fishing experience, and 45% equally for each.

For charter boats, 89% of the respondents were both owner and operator (7% just owner, 5% just captain). The party boat responses were 94% owner and captain, 2% just owner, and 4% just captain. Only 14% of the charter boats were used year round (86% seasonally), while 18% of the party boats were used year round (82% seasonally).

Thirty six percent of the charter boat respondents indicated that they fished commercially in 1989, with 91% of those fishing commercially from the charter boat and 9% from another boat. For party boats, 26% of the respondents indicated they had fished commercially in 1989, with 69% of those fishing commercially from the party boat and 31% from another boat.

On a scale of 1 (almost none) to 5 (almost all), respondents were asked what part of their personal earnings in 1989 came from party and charter boat fishing, commercial fishing, or other sources. For charter boat respondents, the mean answers were: charter or party boat fishing, 2.2; commercial fishing, 1.5; and other sources, 4.0. For party boat respondents, the mean answers were: charter or party boat fishing, 3.2; commercial fishing 1.3; and other sources, 2.4.

Respondents were also asked what their perception of fishing success was for 1989 and what they thought their customers' perceptions of 1989 fishing success was. Ranking was on a scale of 1 (good) through 3 (bad). For charter boats, the operators reported a mean of 2.1 (SD = 0.7) for their own view and 1.9 (SD = 0.7) for their customers. For party boat operators, their own perception was 2.2 (SD = 0.6), while they thought their customers would rate the season at 2.0 (SD = 0.6).

The survey included a series of questions to determine how the respondents felt business was in 1989 compared to 1985. Both charter and party boats made slightly fewer trips in 1989 compared to 1985 (Table 12). The days per trip and/or trips per day were essentially unchanged. They operated fewer days per week, on average, and carried slightly fewer customers. The average price per trip increased from \$121.80 to \$149.50 for charter boats and \$26.20 to \$29.20 for party boats. The average number of fish taken per customer fell from 10.9 to 8.3 for charter boats and from 15.2 to 9.9 for party boats



between 1985 and 1989. The number of crew members stayed relatively constant. The average cost per trip rose from \$96.10 to \$131.10 for charter boats and from \$113.30 to \$146.60 for party boats during the period.

## **5.5 Marine Recreational Descriptive Statistics**

In 1994, sportfishing surveys were conducted by NMFS in the Northeast Region (Maine to Virginia) to obtain demographic and economic information on marine recreational fishing participants from Maine to Virginia. Data from the surveys were then used to access socioeconomic characteristics of these participants, as well as to identify their marine recreational fishing preferences and their perceptions of current and prospective fishery management regulations. This information will be used in future stages of the research to estimate statistical models of the demand for marine recreational fishing for eight important recreational species. The information that follows is excerpted and paraphrased from a preliminary report by Steinback *et al.* (1999).

"Marine recreational fishing is one of the most popular outdoor recreational activities in America. In 1992, the lowest level of participation during the last ten years, approximately 2.57 million residents of coastal states in the Northeast Region participated in marine recreational fishing in their own state. Participation increased approximately 5% in 1993 (2.7 million) and increased another 14% in 1994 (3.1 million), exceeding the ten-year average of 2.9 million. Although the total number of finfish caught in the Northeast Region has declined over the past ten years effort (trips) has remained relatively stable. An estimated 22.4 million fishing trips were taken in 1994, up from 19.3 million in 1993."

The following discussion contains demographic and socioeconomic characteristics of anglers, as well as their preferences, attitudes, and opinions, toward recreational fishing activities and regulations. There was little or no difference in mean age across subregions. "The largest proportion of anglers in both subregions were 36-45 years old (NE=28%, MA=25%). However, New England (NE) anglers were younger than Mid-Atlantic (MA) anglers. Results show that participation in marine recreational fishing increased with age, peaked between ages of 36 to 45, and subsequently declined thereafter. The resultant age distribution is similar to the findings of other marine recreational studies. However, the distribution is not reflective of the general population in these subregions. Bureau of the Census estimates indicate population peaks between the ages of 25 to 34 in both subregions, declines until the age of 64 and then increases substantially." The complete distribution of recreational anglers by age for both subregions is as follows: less than 18, 25.2% in NE and 25.6% in MA; between the ages of 18-24, 9.8% in NE and 9.7% in MA; between 25-34, 16.4% in NE and 17.0% in MA; between 35-44, 16.3% in NE and 16.2% in MA; between 45-54, 11.5% in NE and 11.8% in MA; between 55-64, 8.2% in NE and 8.4% in MA; and 65 and over, 12.6% in NE and 11.3% in MA. In this survey, anglers under the age of 16 were not interviewed and are not included

in the analysis.

In both subregions, at least 88% of the anglers (age 25 and over) had obtained at least a high school degree (NE=91%, MA=88%). "While the educational background is similar across subregions, a greater portion of the anglers in New England earned college or post graduate/professional degrees (NE=29%, MA=23%). The shape of the educational distribution essentially mirrored the general population in both subregions. However, the average number of anglers without a high school degree was considerably lower than Bureau of the Census estimates (age 25 and over) for the general population. On the other hand, it appears that anglers in New England and the Mid-Atlantic earned less post graduate/professional degrees than Bureau of Census estimates."

When anglers were asked to describe their racial or ethnic origin, almost all of the anglers interviewed in both subregions considered themselves to be white (NE=95%, MA=90%). "In the Mid-Atlantic, most of the remaining individuals were black (7%), leaving 3% to be of other ethnic origins. In New England, the remaining anglers were evenly distributed across other ethnic origins. The high occurrence of white fishermen is representative of the general population of the coastal states in New England. Approximately 94% of the population in 1993 was estimated to be white. However, in the Mid-Atlantic, the percentage of white anglers was considerable higher than Bureau of Census populations estimates, and the percentage of black fishermen was 12% lower."

When anglers were asked to indicate from a range of categories what their total annual household income was, only minor differences between subregions were found. "The largest percentage of household incomes fell between \$30,001 and \$45,000 for both subregions (NE=27%, MA=26%). In comparison to the general population, anglers' annual household incomes are relatively higher in both subregions...Results are consistent with previous studies which showed that angler household incomes are generally higher than the population estimates."

If it is assumed that "years fished" is a proxy for "experience," the survey data shows that anglers in New England are relatively less experienced than anglers in the Mid-Atlantic. The distribution of recreational anglers years of experience is as follows: 0-5 years of experience, 22% in NE and 16% in MA; 6-10 years of experience, 10% in NE and 10% in MA; 11-15 years of experience, 13% in NE and 14% in MA; 16-20 years of experience, 9% in NE and 9% in MA; 21-25 years of experience, 12% in NE and 12% in MA; 26-30 years of experience, 13% in NE and 12% in MA; and 30 or more years of experience, 21% NE and 26% in MA.

Survey results show that over 50% of the anglers in both subregions indicated boat ownership (NE=51%, MA=53%). These results were obtained when anglers were asked if anyone living in their household owns a boat that is used for recreational saltwater fishing.

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Regarding the duration of the interviewed trip, "at least 80% of the anglers in both subregions indicated they were on a one-day fishing trip (NE=80%, MA=84%). One-day fishing trips were defined to be trips in which an angler departs and returns on the same day. Less than one fourth of the respondents indicated the day fishing was part of a longer trip which they spent at least one night away from their residence (NE=20%, MA=16%)."

"Respondents were asked why they chose to fish at the site they were interviewed... 'Convenience' and 'better catch rates' were the main reasons why anglers chose fishing sites in both subregions. Forty-nine percent of the anglers in New England and 57% of the anglers in the Mid-Atlantic indicated 'convenience' as either first or second reason for site choice. 'Better catch rates' was the first or second stated reason for site choice by 51% of the anglers in New England and 50% of the anglers in the Mid-Atlantic. Other notable responses were 'always go there,' 'boat ramp,' 'access to pier,' and 'scenic beauty.'...Results indicate that although anglers chose fishing sites for many different reasons, sites that offered good catch rates and were convenient attracted the most anglers."

Recreational anglers were asked to rate recreational fishing against their other outdoor activities during the last two months. Specifically, they were asked if fishing was their most important outdoor activity, their second most important outdoor activity, or only one of many outdoor activities? "Over 60% of the respondents in both subregions (NE=61%, MA=68%) reported marine recreational fishing was their most important outdoor activity during the past two months. Less than 30% in both subregions (NE=27%, MA=20%) said recreational fishing was only one of many outdoor activities." This is consistent with national outdoor recreation surveys carried over the past three decades indicating that fishing is consistently one of the top outdoor recreational activities in terms of number of people who participate.

Recreational anglers ratings of reasons (7 preestablished reasons) for marine fishing are presented in Table 13. More than 65% of the anglers in both subregions said that it was very important to go marine fishing because it allowed them to: spend quality time with friends and family (NE=81%, MA=85%); enjoy nature and the outdoors (NE=89%, MA=87%); experience or challenge of sport fishing (NE=69%, MA=66%); and relax and escape from my daily routine (NE=83%, MA=86%). "The reasons that were rated as not important by the largest proportion of anglers consisted of: catch fish to eat (NE=42%), to be alone (NE=55%, MA=58%), and to fish in a tournament or when awards were available (NE=79%, MA=73%). In the Mid-Atlantic, although to catch fish to eat was rated as being somewhat important by the largest proportion of anglers (40%), approximately 31% felt that catching fish to eat was very important. However, in New England, only 20% concurred. It is clear from these responses that marine recreational fishing offers much more than just catching fish to anglers. Over 80% of the respondents in both subregions perceived recreational fishing as a time to spend with friends and family, a time to escape

from their daily routine, and time to enjoy nature and outdoors. While catching fish to eat is somewhat important to anglers, findings of this survey generally concur with previous studies that found non-catch reasons are rated highly by almost all respondents while catch is very important for about a third and catching to eat fish is moderately important for about another third."

"The economic survey sought to solicit anglers opinions regarding four widely applied regulatory methods used to restrict total recreational catch of the species of fish for which they typically fish: (1) limits on the minimum size of the fish they can keep; (2) limits on the number of fish they can keep; (3) limits on the times of the year when they can keep the fish they catch; and (4) limits on the areas they fish. Anglers were asked whether or not they support or opposed the regulations." As indicated in Table 14, strong support existed for all regulatory methods in both subregions. Limits on the minimum size of fish anglers could keep generated the highest support in both regions (NE=93%, MA=93%), while limits on the area anglers can fish, although still high, generated relatively lower support (NE=68%, MA=66%).

Regulations which limit the number of fish anglers can keep ranked second (NE=91%, MA=88%). The results from this solicitation indicate that recreational anglers in the Northeast Region appear to be conservation oriented and generally support regulations employed to restrict total catch. Not surprisingly, when analyzing anglers' opinions regarding the four widely applied regulatory methods, it was found that anglers in all modes indicated strong support for the regulatory measures. With minimum size limits generating the strongest support, followed by catch limits, seasonal closures, and lastly, area closures (Table 15). "Although party/charter, private/rental, and shore respondents did offer varying degrees of support for each of a selection of regulatory measures, similar support existed across all modes. Support was highest for common regulatory methods currently being implemented in New England and the Mid-Atlantic (e.g., size and bag limits), than for area and seasonal closures."

## **5.6 Vessel Trip Report (VTR) Data**

Vessel Trip Report data (logbook data) has been collected by NMFS since 1994 for the recreational and commercial fisheries. In the recreational fishery, this data is collected from party/charter vessels that have permits to operate in federal waters as required by the FMPs or amendments for Summer Flounder, Scup, Black Sea Bass, Northeast Multispecies, and Atlantic Mackerel, Butterfish, and Squids. VTR data was used to describe summer flounder, scup, and black sea bass catch disposition as well as contribution of these species to the total catch made by party/charter vessels for 1996 through 2000. VTR data for 1994 and 1995 was not used because reporting compliance was medium to low. Furthermore, neither year has been completely audited. As such, the VTR data for 1996 through 2000 is the most recent and complete data submitted by

fishermen.

General trends in VTR data for party/charter boats indicate that for all species combined, the number of fish kept has shown an overall upward trend since 1996 (Table 11). The total number of fish kept for all species combined increased by 3% from 3,772,959 in 1999 to 3,893,901 in 2000, the highest value in the time series. The number of summer flounder kept decreased 46% from 369,334 in 1997, the highest value in the time series, to 200,632 in 1999. From 1999 to 2000, the number of summer flounder kept increased 25% from 200,632 to 250,380. For the 1996 to 1999 period, the number of scup kept have fluctuated between 252,359 fish in 1997 to 418,735 in 1999. A substantial increase in the number of scup kept by party/charter boats occurred in 2000 relative to 1999. In 2000, party/charter boats kept 669,089 scup, which represented a 60% increase from the previous year. For the 1998 to 1999 period, the number of black sea bass kept has fluctuated between 471,049 fish in 1998 to 1,197,819 fish in 1996. In 1999, 672,475 black sea bass were kept by party/charter boats. A substantial increase in the number of black sea bass kept by party/charter boats occurred in 2000 relative to 1999. In 2000, party/charter boats kept 564,404 more black sea bass (84%) relative to 1999 (Table 16).

General trends in VTR data indicate that the number of fish discarded by party/charter boats has shown an overall upward trend since 1996, for summer flounder, scup, and black sea bass separately, and for all species combined as well. The total number of fish discarded for all species combined decreased 3% (55,657 fish) from 1999 to 2000, decreased 28% (148,370 fish) for summer flounder, increased 87% (60,497 fish) for scup, and increased 82% (331,635 fish) for black sea bass (Table 16).

Tables 4-6 detail the portion of the total summer flounder, scup, and black sea bass, respectively, of the total catch (number) made by anglers on party/charter vessels for the combined years of 1996-2000. Summer flounder were 13% of the total catch (by number) made by party/charter vessels for the 1996-2000 period (Table 4). The contribution of summer flounder to the total catch of party/charter vessels fluctuated throughout the year, ranging from 1% or less in January through April and November through December to 23% in July, with the largest proportion (at least 10%) of summer flounder caught from May through September (Table 4). Analysis of the recreational landings by state indicates that the proportion of summer flounder in the total catch ranged from less than 1 to 31% for party/charter vessels.

Vessel trip reporting data indicate that scup were 9% of the total catch (by number) made by party/charter vessels for the 1996-2000 period (Table 5). The contribution of scup to the total catch of party/charter vessels fluctuated throughout the year, ranging from less than 1% in January through April to 26% in October, with the largest proportion of scup caught from September to November (Table 5). Analysis of the recreational landings by state indicates that the proportion of scup in the total catch ranged from less than 1 to 19%

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for party/charter vessels.

Vessel trip reporting data indicate that black sea bass were 22% of the total catch (by number) made by party/charter vessels for the 1996-2000 period (Table 6). The contribution of black sea bass to the total catch of party/charter vessels fluctuated throughout the year, ranging from less than 10% in January through April to 50% in November, with the largest proportion of black sea bass caught from May through December (Table 6). Analysis of the recreational landings by state indicates that the proportion of black sea bass to the total catch ranged from less than 1 to 51% for party/charter vessels.

## **6.0 Analysis of Impacts on the Environment**

### **6.1 Impacts of Alternatives upon the Affected Environment**

The environment in which these fisheries are prosecuted was described in detail by the Council in the FMP amendments that implemented fishery management plans for these fisheries (Amendments 2 and 10, summer flounder; Amendment 8, scup; Amendment 9, black sea bass). The fishery management plans for black sea bass and scup regulate the fisheries from Maine to Cape Hatteras, North Carolina, while the summer flounder fishery is regulated from Maine to the southern border of North Carolina. The analyses in the amendments included considerations of the impacts of the overall management measures on stock health and abundance, spawning stock biomass, and protected species, as well as on the economy and affected fishermen.

The measures in each of the recreational alternatives do not contain major changes to existing management measures. As proscribed by the FMP, the recreational specifications may alter the fishing season, minimum fish size and the possession limit to achieve the recreational harvest limit. For each of the species, the required recreational harvest limit has been reduced. These reductions, relative to 2001, are as follows: Summer flounder - 16 percent reduction; scup - 57 percent reduction; and black sea bass - 12 percent reduction.

The principal gear used in the recreational fishery for summer flounder, scup and black sea bass fishery is rod and reel and handline. Although quantification of specific gear types on various bottom habitats is poorly understood, rod and reel and handlines are generally not associated with adverse impacts. Furthermore, given that the recreational harvest limits are being reduced, it is likely that recreational fishing effort will not significantly increase under any of the alternatives. Finally, because each of the alternatives does not contain major changes to existing management measures, it is concluded that the alternatives will not result in significant impacts to the environment.

### **6.2 Impacts of Alternatives upon Endangered or Threatened Species or Marine**

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## Mammal Populations

Numerous species of marine mammals and threatened or endangered species occur in the Northwest Atlantic Ocean. NMFS determined in a Biological Opinion dated December 6, 2001, that actions implemented through the 2002 specifications for the Summer Flounder, Scup and Black Sea Bass FMP (including the 2002 commercial and recreational specifications) may adversely affect right whales, humpback whales, fin whales, loggerhead sea turtles, leatherback sea turtles, Kemp's ridley sea turtles and green sea turtles. The Biological Opinion also determined that the actions being considered for the 2002 specifications were not likely to adversely affect shortnose sturgeon, the Gulf of Maine distinct population segment of Atlantic salmon, sperm whales, sei whales, blue whales, or the hawksbill sea turtle, all of which are listed as endangered species under the Endangered Species Act of 1973. The Biological Opinion also determined that the actions implemented through the 2002 specifications for the FMP were not expected to destroy or adversely modify right whale critical habitat that occurs within the action area (Cape Cod Bay and Great South Channel).

The impacts of the summer flounder, scup and black sea bass recreational fisheries upon endangered and threatened species and marine mammal populations are also described in detail in the FMP amendments that instituted fishery management measures for these fisheries (Amendments 2 and 10, summer flounder; Amendment 8, scup; Amendment 9, black sea bass).

Recreational fisheries, in general, have very limited interactions with marine mammals and endangered or threatened species. Recreational fishermen do contribute to difficulties for these species of endangered and threatened marine life in that it is estimated that recreational fishermen discard over 227 million lb (103 million kg) of litter each year (O'Hara *et al.* 1988). More than nine million recreational vessels are registered in the United States. The greatest concentrations of recreational vessels in the United States are found in the waters off New York, New Jersey, the Chesapeake Bay, and Florida (O'Hara *et al.* 1988). Recreational fishermen are also a major source of debris in the form of monofilament fishing line. The amount of fishing line lost or discarded by the 17 million U.S. fishermen during an estimated 72 million fishing trips in 1986 is not known, but if the average angler snares or cuts loose only one yard of line per trip, the potential amount of deadly monofilament line is enough to stretch around the world (O'Hara *et al.* 1988). Although the recreational fishery may impact these marine species, nothing considered in these alternatives, relative to the status quo, will have a significant impact on marine mammals and threatened or endangered species.

The measures in the alternatives do not contain major changes to existing management measures. Changes in overall fishing effort as a result of lower recreational harvest limits are unknown. Fishing effort could decrease as vessels take fewer trips or carry fewer

passengers. Conversely, fishing effort could remain constant as recreational anglers target other species, or practice catch and release. Because the alternatives are not expected to cause large changes in fishing effort, it is concluded that the alternatives will not affect endangered and threatened species or critical habitat in any manner not considered in prior consultations. Furthermore, the Biological Opinion, dated December 12, 2001, indicated that there have been no known takes of cetaceans or sea turtles on handlines used in the summer flounder, scup or black sea bass fisheries. Therefore, any potential negative impacts on protected species associated with the alternatives considered in the 2002 recreational summer flounder, scup and black sea bass specifications are expected to be negligible.

### **6.3 Impact of Summer Flounder Measures Upon the Environment**

In this section the impacts of the evaluated summer flounder measures on the environment are examined. These measures were described in Section 3.1 of the EA.

The most recent stock assessment for summer flounder was completed in June 2001 and indicates that the summer flounder stock is overfished and overfishing is occurring with respect to the overfishing definition. Fishing mortality calculated from the average of the currently fully recruited ages (3-5) summer flounder has been high, varying between 0.9 and 2.2 during 1982-1997. The fishing mortality rate declined substantially since 1997 to 0.30 in 2000 but is still in excess of the target and threshold F of 0.26. The coastwide harvest limit is 24.30 million lb (11.02 million kg) for 2002 which has a 50% probability of achieving the target F of 0.26 in 2002, assuming the TAL and discard level in 2001 are not exceeded. The recreational harvest limit for 2002 would be 9.719 million lb (40% of 24.30 million lb) or 4.41 million kg (40% of 11.02 million kg).

A recreational harvest limit of 9.719 million lb (4.41 million kg) in 2002 would be 31 and 36% greater than the recreational harvest limit established in 2000 and 2001, respectively, and about 39% (6.10 million lb or 2.77 million kg) below the recreational landings for 2000. The proposed recreational harvest limit is approximately 16% below the projected 2001 landings of 11.54 million lb (5.23 million kg). As such, more restrictive limits (i.e., lower possession limits, greater minimum size limits, and/or shorter seasons) would be required to prevent anglers from exceeding the recreational harvest limit in 2002.

#### **6.3.1 Harvest Limits and Management Measures - A Review**

As a review, recreational harvest limits have been established since 1993. In both 1993 and 1994, recreational landings were close to the harvest limits. The harvest limit established for 1993 was 8.38 million lb or 3.80 million kg (Table 17) In 1993, recreational fishermen landed 8.83 million lb (4.01 million kg), exceeding the target by approximately 0.45 million lb (0.2 million kg).

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Most states implemented the coastwide recreational management measures of a 14" TL minimum fish size, a 6 fish possession limit, and a May 15 to September 30 season (or equivalent) in 1993. However, several states were out of compliance with the plan including Connecticut (no possession limit or season), Maryland (10 fish possession limit), Virginia (10 fish possession limit and no season), and North Carolina (13" TL minimum size, no possession limit or season). However, even with the implementation of some management measures in the states, recreational landings increased in 1993 relative to the 1992 landings of 7.15 million lb (3.24 million kg).

The harvest limit established for 1994 was 10.67 million lb (4.84 million kg). Estimated landings in 1994 were 9.33 million lb (4.23 million kg) or 1.34 million lb (0.61 million kg) less than the harvest limit. Most states implemented the coastwide recreational management measures of a 14" TL minimum fish size, an 8 fish possession limit, and an April 15 to October 15 season (or equivalent) in 1994. However, two states did not fully implement the season in 1994; Virginia had no opening date but closed October 31 and North Carolina had no closed season at all. In addition, several states maintained the 1993 possession limit and season for their 1994 season (New Hampshire, Connecticut, and New York).

The Council and Commission approved a recreational harvest limit of 7.76 million lb (3.52 million kg) for 1995. The landings estimate of 5.42 million lb (2.46 million kg) for 1995 was approximately 2.34 million lb (1.06 million kg) lower than the harvest limit. The limits implemented in 1995 were a 6 fish possession limit in the EEZ and an 8 fish possession limit in state waters, a 14" TL minimum fish size and no closed season. All states had a 14" TL minimum fish size in 1995 and most states implemented the 8 fish possession limit although several states (New Hampshire, Connecticut, and New York) had a 6 fish possession limit.

The landings estimate for 1996 was about 2.41 million lb (1.09 million kg) greater than the limit approved by the Council and Commission for that year (7.41 million lb or 3.36 million kg). The management measures implemented in 1996 were a 10 fish possession limit, a 14" TL minimum fish size, and no closed season.

A harvest limit of 7.41 million lb (3.36 million kg) was adopted for 1997. Recreational landings exceeded this limit by about 4.46 million lb (2.02 million kg). The management measures implemented in 1997 were an 8 fish possession limit and a 14.5" minimum size limit.

The recreational harvest limit was unchanged for 1998 at 7.41 million lb (3.36 million kg). The management measures that were proposed by the Council and Commission to control landings in 1998 were an 8 fish possession limit and a 15" TL minimum fish size. However, some states did not implement these management measures until late in the

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season. Recreational landings exceeded the harvest limit by 5.07 million lb (2.30 million kg) in 1998.

The recreational harvest limit implemented in 1999 was 7.41 million lb (3.36 million kg). Although the harvest limit was the same as previous years, the Council and Commission opted to modify the management system to allow states the flexibility to implement state-specific management measures. Specifically, the Council and Commission adopted coastwide management measures of 8 fish, 15" TL, and an open season from May 29 to September 11. In addition, they gave the states the option of choosing the coastwide management measures or other combinations of management measures that would reduce their 1998 state-specific landings by 40%. As a result, states in New England opted for the coastwide measures and the other states chose other alternatives including higher size limits and longer seasons.

The states used a form of conservation equivalency again in 2000 to achieve the coastwide harvest limit of 7.41 million lb (3.36 million kg). Specifically, the states were given the option of adopting state specific management measures or the coastwide measures of an 8 fish possession limit, a 15.5 minimum fish size and an open season from May 10 to October 2 (Table 17). Coastwide management measures were based on number of fish landed and equated to a 41% reduction in landings relative to 1998 estimates. State specific measures also had to reduce landings by 41%. However, as in 1999, states from Massachusetts to New York opted for the coastwide management measures with other states choosing longer seasons and/or smaller size limits (Table 18).

### **6.3.2 Impact of Preferred Alternative 1 for Summer Flounder - Conservation Equivalency**

The 2001 season was complicated by the different TALs that were initially adopted by the Council and Commission. Based on an emergency rule to comply with a court order, the Council recommended that the recreational harvest limit for 2001 be set at 7.16 million lb (3.25 million kg). However, the Commission initially set the overall TAL higher and adopted a recreational harvest limit of 8.2 million lb (3.72 million kg) for 2001. The Commission later revised their TAL to the identical level adopted by the Council. The Commission also adopted an addendum that required the states to develop recreational management measures to reduce landings by state-specific percentages based on average landings for 1998-2000, a 43% coastwide reduction, a base year of 1998, and a harvest limit of 7.16 million lb or 3.25 million kg (Table 19).

A comparison of projected landings with state-specific targets indicates that most states, with the exception of Massachusetts and New York, exceeded their targets in 2001 (Table 20). New Jersey and Virginia had the highest overages with landings 33% and 97% in excess of the target for those states, respectively.

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Analysis of coastwide intercept data indicates that 90% of the trips landed 3 fish or less in 2001 based on data through wave 4 (Table 21). This compares to 90% of the trips landing 4 fish or less in 1992, the year before the fishery was regulated with possession limits (Table 22).

Landings were constrained by the various minimum size limits that were in effect in 2001 based on an analysis of length frequencies (Table 23). However, there was significant numbers of fish measured less than the size limit in some states and coastwide about 14% of the measured fish were less than 15.5" TL in the first four waves of 2001.

Analysis of wave data suggests that some landings may have been affected by seasonal restrictions in 2001 (Table 24). Obviously, greater effects would be associated with seasonal closures in waves where a higher proportion of landings occurred.

The size, possession and seasonal limits did not constrain landings to the harvest limit in 2001. Projected landings for 2001 are 11.54 million lb (5.23 million kg) or 4.38 million lb (1.99 million kg) more than the limit of 7.16 million lb (3.25 million kg). In fact, projected landings would have to be reduced by 19% to achieve the harvest limit of 9.719 million lb (4.41 million kg) in 2002 assuming no change in stock status or angler effort.

The Council and Commission preferred alternative (Alternative 1- Conservation Equivalency) is to allow states to implement conservation equivalent management measures. State-specific reductions associated with a coastwide recreational harvest limit of 9.719 million lb (4.41 million kg) were derived. Employing the mean weight of summer flounder landed in 2001 (2.2 lb/fish), the 2002 harvest limit in number of fish is 4.417 million. Base on 1998 landings (6.979 million fish) and the harvest limit for 2002, 1998 state specific landings were reduced 37% to derive state specific targets for 2002. The percent reduction required in the states for 2002 would range from 0 to 44% (Table 2). Last year, the Board and the ASMFC Technical Committee developed a methodology for the states to use to develop management measures for the 2001 fishery. That methodology, as detailed in the ASMFC Addendum III to the Summer Flounder, Scup and Black Sea Bass FMP, will be used to develop state specific regulations in 2002 to meet the state-specific targets. The percent reduction in landings required by the states for 2002 (relative to 2001) under conservation equivalency are: Rhode Island: 5 percent; New Jersey: 16.7 percent; Delaware: 3.5 percent; Maryland: 5.3 percent; Virginia: 43.8 percent; and North Carolina: 28.4 percent. Massachusetts, Connecticut and New York do not require any reductions in recreational summer flounder landings if their current regulations are maintained.

Conservation equivalent recreational management measures would allow each state to develop specific recreational measures to allow the fishery to operate in each state during critical fishing periods while still achieving conservation goals. This would enable the

summer flounder fishery to operate in a way that dissipates potential adverse economic effects in specific states. Table 25 details the proportion of summer flounder harvested in state and federal waters. On average (1995-2000), approximately 92% of the harvested summer flounder (both number and weight) came from state waters.

There is very little information available to empirically estimate how sensitive the affected party/charter boat anglers might be to regulations implemented through conservation equivalency. It is possible that proposed management measures by states could restrict the recreational fishery for 2002 and cause some decrease in recreational satisfaction (i.e. low bag limit, larger fish size or closed season). However, due to lack of data, these effects cannot be quantified (See Preliminary Regulatory Economic Evaluation (PREE), Sec. 4.0). The economic impacts of the proposed management measures are fully described in Section 5.0 of the PREE. The proposed recreational management measures are necessary to prevent anglers from exceeding the recreational harvest limit in 2002.

### **6.3.3 Impact of Non-Preferred Alternative 2 for Summer Flounder - Coastwide Measures**

The non-preferred coastwide alternative (Alternative 2) adopted by the Council and Board was a 17" TL minimum fish size, an 8 fish possession limit, and no closed season for 2002. The summer flounder recreational management measures (minimum size, possession limit, and season) implemented by state in 2001 are presented in Table 19.

The recreational harvest limit for 2002 would be 9.719 million lb (40% of 24.30 million lb) or 4.41 million kg (40% of 11.02 million kg). Based on 2001 MRFSS data for waves 1-5 (January through October), summer flounder recreational landings for 2001 are projected to be 11.54 million lb (5.23 million kg).

In 2001, some states implemented higher minimum size limits and possession limits than the proposed limits in 2002. In addition, most states implemented an open season in 2001. Taking into consideration state-specific measures implemented in 2001, adjusted projected landings, that is, the landings that would had occurred without individual state size limits greater than 17.5" TL, possession limits of less than 8 fish, and seasons would be 13.22 million lb (6.00 million kg). As such, the overall percent reduction required to achieve the 2002 harvest limit of 9.719 million lb (4.41 million kg) would be 27% for 2002.

The non-preferred alternative could reduce recreational landings by 30% (Table 26). Projected reductions are based on the assumption that regulations would be implemented by all the states.

There is very little information available to empirically estimate how sensitive the affected party/charter boat anglers might be to the proposed fishing regulations. It is possible that

the proposed management measures could restrict the recreational fishery for 2002 and cause some decrease in recreational satisfaction (i.e. low bag limit, larger fish size or closed season). It may be possible that, given the popularity of summer flounder among anglers, the more limiting time frame of closures may affect angler satisfaction and/or demand for party/charter trips. Due to lack of data, these effects cannot be quantified (See PREE, Sec. 4.0). The economic impacts of the proposed management measures are fully described in Section 5.0 of the PREE.

#### **6.3.4 Impact of Non-Preferred Alternative 3 for Summer Flounder - Precautionary Default**

Specific states that fail to implement conservation equivalent measures as specified in Framework 2 to the Summer Flounder, Scup and Black Sea Bass FMP would be required to implement precautionary default measures. Precautionary default measures are defined as measures that would achieve at least the overall required reduction in landings for each state. The precautionary alternative adopted by the Council and Board was an 18" TL minimum fish size, a 1 fish possession limit, and no closed season. The precautionary default measures would reduce state specific landings from 41% to 88% (Table 27). The state specific reduction in landings associated with the precautionary default measures are substantially higher than the state reductions to be implemented via conservation equivalency (Tables 2 and 27). As such, it is expected that states will avoid the impacts of precautionary approach measures by establishing conservation equivalent management measures.

There is very little information available to empirically estimate how sensitive the affected party/charter boat anglers might be to the proposed fishing regulations. It is possible that the proposed management measures could restrict the recreational fishery for 2001 and cause some decrease in recreational satisfaction (i.e. low bag limit, larger fish size or closed season). It may be possible that, given the popularity of summer flounder among anglers, the more limiting time frame of closures may affect angler satisfaction and/or demand for party/charter trips. Due to lack of data, these effects cannot be quantified (See PREE, Sec. 4.0). However, it is likely that the impacts to party/charter boat anglers under the precautionary default measures would be higher than those under the preferred alternative. The economic impacts of the proposed management measures are fully described in Section 5.0 of the PREE.

#### **6.4 Impact of Scup Measures Upon the Environment**

In this section the impacts of the evaluated scup measures on the environment are examined. These measures were described in Section 3.2 of the EA.

Amendment 8, which was approved by NMFS on July 29, 1996, established a recovery

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schedule to reduce overfishing on scup over a 7 year time frame. The target exploitation rate was 47% for scup from 1997 to 1999. In 2000 and 2001, the target exploitation rate is 33% and in 2002 and subsequent years, the target exploitation rate is based on  $F_{max}$ . Currently, the exploitation rate associated with  $F_{max}$  is 21%.

Based on current information, scup abundance is likely to increase in 2002. Survey information indicates that regulations may have protected the 1997 year class and also indicate a large 1999 and 2000 year class. If the 1999 and 2000 year classes are large and mortality of undersized fish is reduced, substantial biomass could be added to the stock by 2002.

In fact, deterministic projections of the NEFSC spring survey based on the 3-year average value for 2000 (average of the 1999, 2000, and 2001 indices at age) indicate that the SSB 3-year average index could increase from 0.25 in 2000 to 0.457 in 2001 assuming a fully recruited  $F$  of 1.0, the  $F$  estimated by the SARC in the last assessment, and the partial recruitment and maturity vectors from the yield per recruit analysis conducted for SAW 27. Assuming an average biomass that is at least identical to the 2001 average value of 0.457 in 2002, then exploitation rates could drop to 21% if the landings do not exceed 10.77 million lb (4.89 million kg) in 2002. Assuming the same level of discard to landings in 2002 as used in 2001, the TAL would be 10.77 million lb (4.89 million kg). Research set aside in this fishery for 2002 is 225,775 lb (102,410 kg). Therefore, the adjusted harvest limit (original TAL minus research set aside) is 2.713 million lb (1.23 million kg) for 2002.

The recreational harvest limit for 2002 is higher than any previous harvest limit implemented in the fishery; the 2002 harvest limit is 54% higher than the harvest limit implemented in 2001. However, the limit is 45% lower than the projected landings for 2001. Recreational landings of scup have declined in recent years; from 1991 to 1997 recreational landings dropped by approximately 85%. This decrease occurred before the implementation of any recreational management measures (e.g., harvest limits, minimum size limits) and is probably due largely to a reduction in stock biomass. However, given the potential increased availability of scup in 2002, as well as the overage in 2001, more restrictive limits (i.e., lower possession limits, greater minimum size limits, and/or shorter seasons) would be required to prevent anglers from exceeding the recreational harvest limit in 2002.

#### **6.4.1 Harvest Limits and Management Measures - A Review**

The Council and Commission approved a recovery strategy that reduces overfishing on scup over a 7 year time frame. That recovery strategy called for minimum fish sizes and commercial gear regulations in 1996, year 1 of the plan. In 1996, the minimum size for the recreational fishery was 7" TL (Table 28). The minimum fish size was also 7" TL for each year from 1997 to 2000. Several states had larger minimum sizes (Massachusetts - 9",

Rhode Island - 9", Connecticut - 8") and maintained them for 1996-2000 (Table 29).

Beginning in 1997, recreational harvest limits were established to achieve the target exploitation rates. The harvest limit in 1997 was 1.947 million lb (0.88 million kg). Estimated landings in 1997 were 1.2 million lb (0.54 million kg) or about 0.74 million lb (0.34 million kg) less than the limit. Similarly, landings in 1998 were 0.875 million lb (0.40 million kg) or about 0.68 million lb (0.31 million kg) less than the limit of 1.553 million lb (0.70 million kg). In 1999, landings exceeded the harvest limit of 1.238 million lb (0.56 million kg) by 52% or about 650 thousand pounds (295 thousand kg).

In 2000, the harvest limit was 1.238 million lb (0.56 million kg), the same limit adopted by the Council and Commission for 1999. The Council and Board were presented with projected landings for 1999 that indicated landings would exceed this limit by 32%. In response, they recommended a 50 fish possession limit with a coastwide minimum size of 7" TL and no closed season for 2000. Those management measures were rejected by NMFS as ineffective. In fact, MRFSS data indicated that such a limit would reduce landings by approximately 1% on a coastwide basis based on 1999 recreational data. Although a coastwide possession limit was never implemented in the EEZ, some states did have a 50 fish possession limit in effect in 2000 (Table 29).

The harvest limit for 2001 was 1.76 million lb (0.80 million kg). At their meeting in December, 2000, the Council adopted coastwide management measures of a 50 fish possession limit, a 9" TL minimum size limit, and an open season from August 15 to October 31. The Board postponed their decision until early 2001 and decided to implement a system of conservation equivalency to reduce landings by 33% and allow for different regulations in each of the states (Table 30).

The various size, possession and seasonal limits did not constrain landings to the harvest limit in 2001. Projected landings for 2001 are 4.58 million lb (2.08 million kg) or almost 3 million lb (1.36 million kg) more than the limit of 1.76 million lb (0.80 million kg). In fact, projected landings would have to be reduced by 39% to achieve the harvest limit in 2002 assuming no change in stock status or angler effort.

#### **6.4.2 Impact of Council Preferred Scup Alternative**

Current scup recreational measures require a 9" TL minimum size, a 50 fish possession limit, and an open season from August 15 to October 31 (closed season from November 1 to August 14). The fact that these management measures can result in landings in excess of the 1.76 million lb (0.80 million kg) harvest limit indicates that further constraints on the recreational fishery are required for 2002. A combination of possession and size and seasonal limits can be used to control landings in 2002.

Recreational limits act to constrain landings as the availability of fish increases. If availability is low, few anglers will be affected by the regulations and landings will be lower than the harvest limit. As availability of scup to anglers increases, the constraints imposed by the limits increase, i.e., anglers are more constrained by a size limit when there is a good year class of scup produced and more constrained by a possession limit when the availability of larger fish is high. The correct limits will allow anglers to land up to the harvest limit but not exceed the limit.

Landing frequencies for the first four waves of 2001 indicate about 90% of the trips had 11 or less fish per trip with about 50% of the trips landing 3 or less scup (Table 31). Anglers were more successful in 2000 than they were in 2001. In 2000, about 50% of the successful trips landed 5 or less scup per trip (Table 32).

Analysis of length frequencies indicate that landings were constrained by the 9" TL size limit in the first four waves of 2001. Approximately 6.5% of the measured fish were less than 9" TL in 2001 samples (Table 33). In 2000, almost 21% of the measured fish were less than 9" TL.

In developing a recommendation for 2002 it is important to consider that the most recent assessment indicates that the scup biomass increased in 2001 and is likely to increase in 2002. In fact, the increase in angler catches in 2000 and 2001 indicate an increase in availability of scup. Survey information indicates that regulations may have protected the 1997 year class and also indicate a large 1999 and 2000 year class. If the 1999 and 2000 year classes are large and mortality of undersized fish is reduced, substantial biomass could be added to the stock by 2002.

Possession and size limits, based on 2001 data were developed to constrain landings in 2002 (Table 34). In considering the appropriate limits it is important to remember that possession limits act to reduce mortality on the fully recruited, older fish and the minimum size limit reduces mortality on small fish.

Potential reductions should also be adjusted to account for levels of effectiveness. It is improbable that a regulation will be a 100% effective. In fact, analysis of catch and length frequencies indicate that anglers do exceed the possession limit and land scup smaller than the size limit. Last year, the Board, with the assistance of the ASMFC Technical Committee, determined that an effective way to deal with this inefficiency was to remove fish less than the size limit or in excess of the possession limit from the data before the table was constructed to determine the reductions associated with the size/possession limit combinations. The adjusted table was used to guide recommendations on the appropriate limits for 2002.

A season could also be used to control recreational landings. However, in determining the



effect of closed seasons the Board and Technical Committee determined that any seasonal effects would have to be adjusted to account for a season that was in place the previous year. Based on MRFSS data for 1996-2000, the combined effect of the 2001 closed seasons implemented by the states would have reduced landings by 22%.

In developing state-specific programs last year, the Board recognized that cumulative reductions associated with size/possession limits and seasonal closures were not additive, i.e., the total recreational reduction does not equate to the sum of the size/possession limit reduction and the seasonal closure reduction. To derive the cumulative effect, they used an approach similar to that used in other Commission FMPs. Specifically, they used the following equation:

$$\text{Total Reduction} = X + [(1-X)*Y]$$

where X=percent reduction associated with seasonal closures and Y=the percent reduction associated with the size/possession limit.

Projected 2001 landings are 4.97 million lb or 2.25 million kg (MRFSS data for waves 1-5; January through October). Determining the appropriate coastwide reduction is complicated by the state-specific seasons implemented in 2001. Based on MRFSS data for 1996-2000, the combined effect of the 2001 closed season implemented by the states would have reduced landings by 22%. Taking into consideration state-specific seasons implemented in 2001, adjusted projected landings, that is, the landings that would have occurred without individual state seasons, would have been 6.37 million lb (2.89 million kg). Based on adjusted projected landings, the reduction required for 2002 would be 57% to achieve the recreational harvest limit of 2.713 million lb or 1.23 million kg (recreational TAL adjusted to account for research set aside).

The Council's preferred scup alternative is a 10" TL minimum fish size, a 50 fish possession limit and an open season from January 1 through February 28 and from July 1 through October 31 (a closed season from March 1 to June 30 and from November 1 to December 31). Employing the formula presented above and using the reductions associated with the size/bag limits shown in Table 34 and seasonal closures shown in Tables 35 and 36, the preferred alternative could reduce recreational landings by 30%. Projected reductions are based on the assumption that regulations would be implemented by all the states. This is less than the 57.4 percent reduction required to meet the recreational harvest limit established for 2002.

However, the Council believes that these regulations will have considerably more impact than that indicated by analysis of MRFSS data. At the December 2001 Council meeting, the Council heard substantial public input that suggested that a possession limit of less than 50 fish would reduce landings by much more than suggested by the data and could

have adverse economic impact to the party/charter industry. As such, the Council believes that this combination of management measures will allow anglers to achieve the recreational harvest limit in 2002.

The Commission postponed action on scup at the December meeting and probably will adopt regulations that differ from the Council's proposed coastwide management measures. As such, it is unlikely that any state will adopt the proposed coastwide management measures.

There is very little information available to empirically estimate how sensitive the affected party/charter boat anglers might be to the proposed fishing regulations. It is possible that the proposed management measures could restrict the recreational fishery for 2002 and cause some decrease in recreational satisfaction (i.e. low bag limit, larger fish size or closed season). However, due to lack of data, these effects cannot be quantified (See Regulatory Impact Review/Regulatory Flexibility Analysis (PREE, Sec. 4.0)). The economic impacts of the proposed management measures are fully described in Section 5.0 of the PREE.

In summary, the economic impacts of the Council's preferred scup alternative are as follows: Impacted trips were defined as trips taken aboard party/charter vessels in 2001 that landed at least one scup smaller than 10 inches (25.4 cm) TL, that landed more than 50 scup, or that landed at least one scup during the proposed closed seasons of March 1 to June 30 and November 1 to December 31. The analysis concluded that the measures would affect 2.1 percent or less of the party/charter trips in any of the states, with impacts identified in Massachusetts (\$110,197), Delaware (\$15,976), New Jersey (\$6,574), Rhode Island (\$2,590), Connecticut (\$1,195) and New York (\$478). The statewide revenue losses associated with these impacts are shown in parentheses.

The average maximum gross revenue loss per party/charter vessel associated with the Council's preferred alternative was estimated to be \$7,988 in Delaware, \$1,900 in Massachusetts, \$219 in New Jersey, \$185 in Rhode Island, \$149 in Connecticut, and \$17 in New York. It should be noted that this analysis likely overestimates the potential revenue impacts of these measures because some anglers would continue to take party/charter vessel trips even if the restrictions limit their landings. In addition, although the Federal coastwide measures would apply to federally permitted vessels wherever they fish, state-only permitted vessels will likely be fishing under different recreational measures for scup because the Commission has adopted a conservation equivalency addendum.

#### **6.4.3 Impacts of NMFS Scup Alternative 1, NMFS Scup Alternative 2, and Scup Alternative 3**

The technical information regarding the role of recreational limits, recreational landings,

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and the effects of possession limits and size limits discussed in Section 6.4.2 of the EA is also relevant to this section.

Three other alternatives were examined : NMFS Scup Alternative 1) 10" TL minimum fish size, a 20 fish possession limit, and an open season from January 1 through February 28 and from July 1 through October 2 (or a closed season from March 1 to June 30 and from October 3 to December 31); NMFS Scup Alternative 2 ) 9" TL minimum fish size, a 20 fish possession limit, and an open season from January 1 through February 28 and from September 2 through October 31 (or a closed season March 1 to September 1 and from November 1 to December 31); and Scup Alternative 3) 9" TL minimum fish size, a 50 fish possession limit, and an open season from January 1 through February 28 and from October 8 through October 31 (or a closed season from March 1 to October 7 and from November 1 to December 31).

NMFS is considering implementing either of the first two other scup alternatives (i.e. NMFS Scup Alternative 1 and NMFS Scup Alternative 2), because the Council's preferred alternative does not achieve the required landings reduction. The third alternative is considered to be a non-preferred alternative, because of the very short open season during prime fishing season (24 days) . All three of the other alternatives could reduce recreational landings by 57%. Projected reductions are based on the assumption that regulations would be implemented by all the states. All three other recreational management measures could prevent anglers from exceeding the recreational harvest limit in 2002.

There is very little information available to empirically estimate how sensitive the affected party/charter boat anglers might be to the proposed fishing regulations. It is possible that the proposed management measures could restrict the recreational fishery for 2002 and cause some decrease in recreational satisfaction (i.e. low bag limit, larger fish size or closed season). However, due to lack of data, these effects cannot be quantified (See Regulatory Impact Review/Regulatory Flexibility Analysis (PREE, Sec. 4.0). The economic impacts of the proposed management measures are fully described in Section 5.0 of the PREE.

In summary, the impacts associated with NMFS Scup Alternative 1 are as follows: Impacted trips were defined as trips taken aboard party/charter vessels in 2001 that landed at least one scup smaller than 10 inches (25.4 cm) TL, that landed more than 20 scup, or that landed at least one scup during the proposed closed seasons of March 1 to June 30 and October 3 to December 31. The analysis concluded that the measures in NMFS Scup Alternative 1 would affect 4 percent or less of the party/charter trips in any of the states, with impacts identified in New York(\$375,890), Massachusetts(\$180,635), Rhode Island (\$29,163), New Jersey (\$26,972), Connecticut (\$20,199), and Delaware (\$16,534). The statewide revenue losses associated with these impacts are shown in

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parentheses.

The average maximum gross revenue loss per party/charter vessel associated with NMFS Scup Alternative 1 was estimated to be \$13,425 in New York, \$8,267 in Delaware, \$3,114 in Massachusetts, \$2,525 in Connecticut, \$2,083 in Rhode Island, and \$899 in New Jersey. This method of analysis likely overestimates the potential revenue impacts of these measures because some anglers would continue to take party/charter vessel trips even if the restrictions limit their landings. Although the Federal coastwide measures would apply to federally permitted vessels wherever they fish, state-only permitted vessels will likely be fishing under different recreational measures for scup because the Commission has adopted a scup conservation equivalency addendum.

For NMFS Scup Alternative 2, impacted trips were defined as trips taken aboard party/charter vessels in 2001 that landed at least one scup smaller than 9 inches (22.86 cm) TL, that landed more than 20 scup, or that landed at least one scup during the proposed closed seasons of March 1 to September 1 and November 1 to December 31. The analysis concluded that the measures in Alternative 2 would affect 7.3 percent or less of the party/charter trips in any of the states, with impacts identified in New York (\$434,256), Massachusetts (\$388,838), New Jersey (\$314,856), Rhode Island (\$50,278), Delaware (\$23,466), and Connecticut (\$22,032). The statewide revenue losses associated with these impacts are shown here in parentheses.

The average maximum gross revenue loss per party/charter vessel associated with scup Alternative 2 was estimated to be \$15,509 in New York, \$11,733 in Delaware, \$10,495 in New Jersey, \$6,704 in Massachusetts, \$3,591 in Rhode Island, and \$2,754 in Connecticut. These estimates are likely to be high because some anglers would likely continue to take party/charter vessel trips even if the restrictions limit their landings. Also, state-only permitted vessel will potentially be fishing under different recreational measures for scup due to the adoption of conservation equivalency by Commission.

For non-preferred Scup Alternative 3, impacted trips were defined as trips taken aboard party/charter vessels in 2001 that landed at least one scup smaller than 9 inches (22.86 cm) TL, that landed more than 50 scup, or that landed at least one scup during the proposed closed seasons of March 1 to October 7 and November 1 to December 31. The analysis concluded that the measures in Alternative 3 would affect 9.6 percent or less of the party/charter trips in any of the states, with impacts identified in New York (\$538,318), Massachusetts (\$481,506), New Jersey (\$325,453), Rhode Island (\$69,043), Connecticut (48,804), and Delaware (\$41,195).

The average maximum gross revenue loss per party/charter vessel associated with Scup Alternative 3 was estimated to be \$20,597 in Delaware, \$19,226 in New York, \$10,848 in

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New Jersey, \$8,302 in Massachusetts, \$6,101 in Connecticut, and \$4,932 in Rhode Island. These estimates are likely to be high because some anglers would likely continue to take party/charter vessel trips even if the restrictions limit their landings. Also, state-only permitted vessels will potentially be fishing under different recreational measures for scup due to the adoption of conservation equivalency by the Commission.

## **6.5 Impact of Black Sea Bass Measures upon the Environment**

In this section, the impacts of the evaluated black sea bass measures on the environment are examined. These measures were described in Section 3.3 of the EA.

The most recent assessment and status of the black sea bass stock is discussed in Section 5.3.1 of the EA.

Amendment 9, which was approved by NMFS on November 15, 1996, established a recovery schedule to reduce overfishing on black sea bass over an 8 year time frame (the first year was 1996). That same schedule was used in Amendment 12 to meet SFA requirements. The target exploitation rate established by this schedule for 2000 was 48%. In 2001 and 2002, the target exploitation rate is 37%. In 2003, the target exploitation rate will drop to the exploitation rate associated with  $F_{max}$  (0.32) or 25%.

Given the lack of stock assessment information, it is hard to predict what the actual biomass will be in 2002. The best available information on stock status indicates that stock size has increased in recent years. In fact, the 3-year average for 1999-2001 is 45% larger than the value for 1998-2000. In addition, the recruitment index for 2000 is the highest in the time series, 1968-2000. If protected, this year class should allow for additional stock rebuilding in 2002 and beyond.

Amendment 9 specifies that the 2002 TAL will be allocated to the commercial and recreational fisheries based on 1983 to 1992 landings data. Based on this data, 49% was allocated to the commercial fishery as a commercial quota and 51% to the recreational fishery as a harvest limit. Based on a TAL of 6.80 million lb (3.08 million kg), the commercial quota would be 3.33 million lb or 1.51 million kg (49%) for 2002 and the recreational harvest limit would be 3.47 million lb or 1.57 million kg (51%). The commercial quota and recreational harvest limit would be higher than the 1998, 1999, 2000, and 2001 levels. Research set aside in this fishery for 2002 is 76,055 lb (34,498 kg). Therefore, the adjusted recreational harvest limit (original TAL minus research set aside) is 3.429 million lb (1.56 million kg) for 2002.

### **6.5.1 Harvest Limits and Management Measures - A Review**

The Council and the Commission approved a recovery strategy that reduces overfishing on black sea bass over an 8 year time frame. That recovery strategy called for minimum

fish sizes and commercial gear regulations in 1996 and 1997, years 1 and 2 of the plan. In 1996, the minimum size for the recreational fishery was 9" TL (Table 37). However, the minimum fish size was only in place for the last couple of weeks of 1996. The minimum fish size remained at 9" TL in 1997.

The Council and Commission approved a harvest limit of 3.148 million lb (1.43 million kg) for 1998. The management measures that were proposed to control landings were a 10" TL minimum size limit and a closure from August 1 to August 15. Some states implemented these regulations late or not at all in 1998. In addition, although the plan requires a coastwide possession, size, and/or seasonal limit, some states implemented alternative regulations in 1998. Landings in 1998 were 1.15 million lb (0.52 million kg).

The 1999 harvest limit was also 3.148 million lb (1.43 million kg). For 1999, the Council and Commission adopted a 10" TL minimum size limit. The landings for 1999 were 1.67 million lb (0.76 million kg) or about 1.5 million lb (0.68 million kg) less than the limit.

The harvest limit remained at 3.148 million (1.43 million kg) for 2000 and the minimum size limit was 10" TL. Management measures differed by state with some states implementing a 20 fish possession limit (Massachusetts, Connecticut, and North Carolina) or a 50 fish possession limit (Virginia; Table 38). The landings for 2000 exceeded the limit by approximately 700,000 lb (317,515 kg).

The harvest limit remained at 3.148 million lb (1.43 million kg) in 2001. The Council and Commission adopted a 11" TL minimum size, a 25 fish possession limit and a closed season from March 1 to May 9 to control landings in 2001. In addition, Virginia adopted an alternative closed season, North Carolina had a lower size limit, and Massachusetts had 12" TL size limit and 20 fish possession limit (Table 39). However, the combination of size, possession and seasonal limits failed to constrain landings to the harvest limit in 2001. Projected landings exceed the limit by about 0.5 million lb (0.23 million kg).

### **6.5.2 Impact of Preferred Black Sea Bass Measures**

The technical information regarding the role of recreational limits, recreational landings, and the effects of possession limits and size limits discussed in Section 6.4.2 of the EA is also relevant to this section.

In developing a recommendation for 2002 it is important to consider the most recent assessment information on black sea bass. Based on the NEFSC spring survey, stock size has increased in recent years and is likely to increase in 2002. Survey results indicate that the three-year moving average for 1999-2001 is 45% larger than the value for 1998-2000. In addition, survey results for 2000 indicate a strong year class; the index is 2.782, the highest value in the time series.

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Good recruitment in 1999 and 2000 and increased abundance of larger fish would explain fishermen's observations that black sea bass have become more abundant in recent years. Higher catches in 2000 and 2001 indicate that black sea bass were much more available to anglers in these years.

Possession and size limits, based on 2001 data, could be used to constrain landings in 2002 (Table 40). In considering the appropriate limits, it is important to remember that possession limits act to reduce mortality on the fully recruited, older fish and the minimum size limit reduces mortality on small fish. If availability is low, few anglers will be affected by the regulations and landings will be lower than the harvest limit. If availability of black sea bass increases, the possession limit will act to control landings and will have more of an effect.

A season could also be used to control recreational landings. However, in determining the effect of closed seasons, the Board and Technical Committee determined that any seasonal effects would have to be adjusted to account for a season that was in place the previous year. The 2001 closed season reduced coastwide landings by 6%.

In developing state-specific programs last year, the Board also recognized that cumulative reductions associated with size/possession limits and seasonal closures were not additive, i.e., the total recreational reduction does not equate to the sum of the size/possession limit reduction and the seasonal closure reduction. To derive the cumulative effect, they used an approach similar to that used in other Commission FMPs. Specifically, they used the following equation:

$$\text{Total Reduction} = X + [(1-X)*Y]$$

where X=percent reduction associated with seasonal closures and Y=the percent reduction associated with the size/possession limit.

Projected 2001 landings are 3.64 million lb or 1.65 million kg (MRFSS data for waves 1-5; January through October). Determining the appropriate coastwide reduction is complicated by the season implemented in 2001. Based on 1996-2000 MRFSS data, the 2001 closed season reduced coastwide landings by 6%. Adjusted projected landings, that is, the landings that would had occurred without the season would be 3.88 million lb (1.76 million kg). Based on adjusted projected landings, the reduction required for 2002 would be 12% to achieve the recreational harvest limit of 3.429 million lb or 1.56 million kg (recreational TAL adjusted to account for research set aside).

The preferred management measure is 11.5" TL minimum fish size, a 25 fish possession limit and an and no closed season. Employing the formula presented above and reductions based on size/bag limits shown in Table 40 and seasonal closures shown in

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Tables 41 and 42, the preferred alternative could reduce recreational landings by 16%. Therefore, the implementation of this alternative could provide the required reduction to meet the recreational harvest limit established for 2002.

There is very little information available to empirically estimate how sensitive the affected party/charter boat anglers might be to the proposed fishing regulations. It is possible that the proposed management measures could restrict the recreational fishery for 2002 and cause some decrease in recreational satisfaction (i.e. low bag limit, larger fish size). However, due to lack of data, these effects cannot be quantified (See PREE, Sec. 4.0). The economic impacts of the proposed management measures are fully described in Section 5.0 of the PREE. The proposed recreational management measures are necessary to prevent anglers from exceeding the recreational harvest limit in 2002.

The proposed black sea bass action is designed to achieve the 3.43 million lb (1.55 million kg) harvest limit and to reduce landings by at least 16 percent, compared to 2001. Although only a 12- percent reduction in landings (relative to 2001) is required, it was not possible to develop precise measures using only a minimum fish size and a possession limit. In summary, impacted trips were defined as trips taken aboard party/charter vessels in 2001 that landed at least one black sea bass smaller than 11.5 inches (29.21 cm) TL or that landed more than 25 black sea bass. NMFS concluded through the analysis that the proposed alternative would affect 1.8 percent or less of the party/charter trips in any of the states, with impacts identified in New Jersey (\$178,324), Maryland (\$78,365), Delaware (\$55,457), Virginia (\$39,999), North Carolina (\$13,785), and Rhode Island (\$1,355). The statewide revenue losses associated with these impacts are shown in parentheses.

The average maximum gross revenue loss per party/charter vessel associated with the proposed alternative was estimated to be \$26,122 in Maryland, \$11,091 in Delaware, \$3,075 in New Jersey, \$1,818 in Virginia, \$1,378 in North Carolina, and \$54 in Rhode Island. As stated above, these estimates represent maximum potential losses because it is likely that anglers will continue to take party/charter trips rather than quit altogether, due to the new restrictions.

For all of the alternatives and for all of the species, it is important to re-emphasize that the revenue losses discussed above represent the maximum potential gross revenue losses per vessel. These losses were calculated by assuming that all of the angler trips constrained by the proposed measures would no longer occur. Because anglers would continue to have the ability to engage in catch-and-release fishing for summer flounder, scup, and black sea bass and because of the numerous alternative target species available to anglers, the reduction in effort and associated expenditures should be substantially lower than indicated in this summary. The lack of demand models limits the ability to empirically estimate how sensitive the affected anglers might be to the proposed regulations. Because the proposed measures affect the number and size of the fish that



may be kept and do not prohibit anglers from engaging in catch and release fishing or fishing up to the possession limit, demand and revenues for party/charter vessels are expected to remain relatively stable.

### **6.5.3 Impact of Non-Preferred Black Sea Bass Alternatives**

The technical information regarding the role of recreational limits, recreational landings, and the effects of possession limits and size limits discussed in Section 6.4.2 of the EA is also relevant to this section.

Two non-preferred alternatives were also examined: a) 11" TL minimum fish size, a 25 fish possession limit, and an open season from May 19 to November 30 (or a closed season from December 1 to May 18); and b) 11" TL minimum fish size, a 15 fish possession limit, and an open season from January 1 to February 28 and from May 1 to December 26 (or a closed season from March 1 to April 30 and from December 27 to December 31).

There is very little information available to empirically estimate how sensitive the affected party/charter boat anglers might be to the proposed fishing regulations. It is possible that the proposed management measures could restrict the recreational fishery for 2002 and cause some decrease in recreational satisfaction (i.e. low bag limit, larger fish size or closed season). The economic impacts of the proposed management measures are fully described in Section 5.0 of the PREE. The proposed recreational management measures are necessary to prevent anglers from exceeding the recreational harvest limit in 2001.

In summary, for Black Sea Bass Non-Preferred Alternative 1, impacted trips were defined as trips taken aboard party/charter vessels in 2001 that landed at least one black sea bass smaller than 11 inches (27.94 cm) TL, that landed more than 25 black sea bass, or that landed at least one black sea bass during the closed season (December 1 - May 18). The analysis concluded that the proposed alternative would affect 5.5 percent or less of the party/charter trips in any of the states, with impacts identified in New Jersey (\$238,920), Maryland (\$81,792), Delaware (\$64,342), Virginia (\$44,501), Rhode Island (39,442), North Carolina (\$15,418), and Massachusetts (\$3,426). The statewide revenue losses associated with these impacts are shown in parentheses.

The average maximum gross revenue loss per party/charter vessel associated with Black Sea Bass Non-Preferred Alternative 1, was estimated to be \$27,264 in Maryland, \$12,868 in Delaware, \$4,119 in New Jersey, \$2,023 in Virginia, \$1,578 in Rhode Island, \$1,542 in North Carolina, and \$36 in Massachusetts.

In summary, for Black Sea Bass Non-Preferred Alternative 2, impacted trips were defined as trips taken aboard party/charter vessels in 2001 that landed at least one black sea bass smaller than 11 inches (27.94 cm) TL, that landed more than 15 black sea bass, or that

landed at least one black sea bass during the closed seasons (March 1 - April 31 and December 27 - December 31). NMFS concluded through the analysis that the proposed alternative would affect 5.5 percent or less of the party/charter trips in any of the states, with impacts identified in New Jersey (\$1,360,775), Maryland (\$110,317), Delaware (\$52,908), Virginia (\$41,115), North Carolina (\$13,785), Rhode Island (\$4,582), New York (\$3,307), and Massachusetts (\$518). The statewide revenue losses associated with these impacts are shown in parentheses.

The average maximum gross revenue loss per party/charter vessel associated with Black Sea Bass Non-Preferred Alternative 2 was estimated to be \$36,772 in Maryland, \$23,462 in New Jersey, \$10,582 in Delaware, \$1,869 in Virginia, \$1,378 in North Carolina, \$183 in Rhode Island, \$59 in New York, and \$5 in Massachusetts.

## **6.6 Social Impacts**

There is no data available at the port or community level that shows the dependence of the party/charter boat fishery, the private/rental boat fishery, or the shore fishery on summer flounder, scup, and black sea bass. However, for party/charter vessels, the largest number of permit holders for these species are located in New Jersey, New York and Massachusetts. A description by port of importance to the commercial summer flounder, scup, and black sea bass fisheries is presented in Appendix 1 of the "2002 Summer Flounder, Scup, and Black Sea Bass Specifications." Based upon 1999 commercial landings, ports with the largest revenue dependence on summer flounder, scup and/or black sea bass, ranked according to dependence, were: Falmouth, MA; Mattituck, NY; New Shoreham, RI; Clinton, CT; Little Compton, RI; Belford, NJ; and East Lyme, CT. Additional information obtained from a party/charter boat industry survey conducted by the MAFMC detailing the importance of summer flounder, scup, and black sea bass to this industry is presented in Section 5.4 of the EA. In addition to this, demographic and economic information on marine recreational fishing participants by region is presented in Section 5.5 of the EA. Even though, the proposed management measures could affect the demand for trips for a specific species, it is not expected that it would affect in a negative way the overall number of recreational fishing trips in the North and Mid-Atlantic regions (See PREE, Sec. 5.0). This is because recreational anglers may choose not to stop recreational fishing altogether, and may choose to fish for alternative species (spot, bluefish, weakfish, striped bass, tautog, pelagics, etc.), or fish within the new limits established by the 2002 regulations. As such, there should not be significant adverse impacts to ports and communities as a result of the 2002 measures.

There is a distinction to be made between negative impacts to individuals and negative impacts to the larger communities. If the number of affected individuals in a community is large (i.e. large numbers of recreational anglers in a community), the degree of impacts on individuals and communities would be expected to be the same. However, where the

number of recreational anglers in a community is proportionally small, the degree of impacts on individuals and communities would differ. In this situation, some individual fishermen and their families could find the final recreational management measures for 2002 to have significant impacts, whereas the larger communities and towns in which they live would not. The economic diversity of a community may enable a community to be sustained, although the recreational fishing sector might be adversely impacted. On the other hand, small, remote and less economically diverse communities that are more dependent upon recreational fishing are less likely to be sustained through restrictive regulations.

## **7.0 Essential Fish Habitat Assessment**

An Essential Fish Habitat (EFH) Assessment was conducted and is included in Section 7.0 of the "2002 Summer Flounder, Scup, and Black Sea Bass Specifications." This assessment evaluated the affects of the proposed landings limits on EFH. An EFH consultation was conducted on October 23, 2001. This consultation found the adverse impacts to habitat resulting from the proposed 2002 quotas to be minimal. Since this action establishes measures to achieve the recreational harvest limits evaluated as part of the proposed quotas, no further EFH consultation is required.

## **8.0 List of Agencies and Persons Consulted in Formulating the Proposed Action**

The proposed summer flounder, scup and black sea bass specifications were submitted to the National Marine Fisheries Service (NMFS) by the Mid-Atlantic Fishery Management Council.

## **9.0 List of Preparers of the Environmental Assessment**

This environmental assessment was prepared by the Mid-Atlantic Council and the Northeast Regional Office of NMFS, and is based, in part, on information provided by the Northeast Fisheries Science Center.

## **10.0 Finding of No Significant Environmental Impact**

National Oceanic and Atmospheric Administration Order (NAO) 216-6 (revised May 20, 1999) provides nine criteria for determining the significance of the impacts of a proposed action. These criteria are discussed below:

### **1. *Can the proposed action be reasonably expected to jeopardize the sustainability of any target species that may be affected by the action?***

The proposed action is not expected to jeopardize the sustainability of any target species

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that may be affected by the action. As specified in the FMP, this proposed action is intended reduce recreational landings to achieve the  $F = 0.26$  target for summer flounder, a 21-percent target exploitation rate for scup, and a 37-percent target exploitation rate for black sea bass.

**2. *Can the proposed action be reasonably expected to allow substantial damage to the ocean and coastal habitats and/or EFH as defined under the Magnuson-Stevens Act and identified in FMPs?***

The proposed action is not expected to allow substantial damage to the ocean and coastal habitats and/or EFH as defined under the Magnuson-Stevens Act and identified in the FMP. The area affected by the proposed action in the summer flounder, scup and black sea bass fisheries has been identified as EFH for species managed by the Northeast Multispecies; Atlantic Sea Scallop; Spiny Dogfish; Atlantic Mackerel, Squid, and Butterfish; Atlantic Surf Clam and Ocean Quahog; Bluefish; Atlantic Billfish; Spiny Dogfish; Monkfish; Atlantic Tunas, Swordfish and Sharks; Calico Scallop; Wreckfish; King and Spanish Mackerel; Atlantic Coast Red Drum; Shrimp; Stone Crab; Snapper-Grouper of the South Atlantic; Coral and Coral Reefs of the Gulf of Mexico and the South Atlantic; and Coastal Migratory Pelagic Resources of the Gulf of Mexico and the South Atlantic Fishery Management Plans. The primary gear utilized in the recreational harvest of summer flounder, scup and black sea bass is rod and reel or handline. Although quantification of specific gear types on various bottom habitats is poorly understood, rod and reel and handlines are generally not associated with adverse impacts. Furthermore, given that the recreational harvest limits are being reduced, it is likely that recreational fishing effort will not significantly increase under any of the alternatives. Finally, because each of the alternatives does not contain major changes to existing management measures, it is concluded that the alternatives will not result in significant impacts to the environment.

**3. *Can the proposed action be reasonably expected to have a substantial adverse impact on public health or safety?***

The proposed action is not expected to have a substantial adverse impact on public health or safety. Each of the alternatives contains only changes to existing management measures (i.e. recreational minimum fish size, recreational possession limit and recreational seasons). Management alternatives will be selected to achieve the recreational harvest limits and to provide a reasonable balance between size limits, seasons and possession limits, so as not to compromise public health or safety.

**4. *Can the proposed action be reasonably expected to have an adverse impact on endangered or threatened species, marine mammals, or critical habitat of these species?***

The proposed action is not reasonably expected to have an adverse impact on endangered or threatened species, marine mammals, or critical habitat for these species. As stated in Section 6.2 of the EA, the activities to be conducted under the proposed annual recreational specifications are within the scope of the FMP, and do not change the basis for the determinations made in previous consultations.

**5. *Can the proposed action be reasonably expected to result in cumulative adverse effects that could have a substantial effect on the target species or non-target species?***

The proposed action is not expected to result in cumulative adverse effects that could have a substantial effect on target or non-target species. All of the alternatives that are being considered are designed to reduce recreational landings in order to achieve the recreational harvest limit specified through the FMP for the 2002 fishing year. The alternatives contain only changes to existing recreational management measures for summer flounder, scup and black sea bass, including the minimum recreational fish size, recreational possession limit and recreational season for each of the species. Furthermore, bycatch of target and non-target species in the recreational fishery using rod and reel or handline is not expected to be substantial. Therefore, the proposed action is not expected to result in any cumulative adverse effects to target or non-target species.

**6. *Can the proposed action be reasonably expected to jeopardize the sustainability of any non-target species?***

The proposed action is not expected to jeopardize the sustainability of any non-target species. All of the alternatives that are being considered are designed to reduce recreational landings in order to achieve the recreational harvest limit specified through the FMP for the 2002 fishing year. The alternatives contain only changes to existing recreational management measures for summer flounder, scup and black sea bass, including the minimum recreational fish size, recreational possession limit and recreational season for each of the species. Furthermore, bycatch of non-target species in the recreational fishery using rod and reel or handline is not expected to be substantial.

**7. *Can the proposed action be expected to have a substantial impact on biodiversity and ecosystem function within the affected area (e.g., benthic productivity, predator-prey relationships, etc.)?***

The proposed action is not expected to have a substantial impact on biodiversity and ecosystem function within the affected area. As specified in the FMP, this proposed action is intended reduce recreational landings to achieve the  $F = 0.26$  target for summer flounder, a 21-percent target exploitation rate for scup, and a 37-percent target exploitation rate for black sea bass. The alternatives being considered contain only changes to

existing recreational management measures for summer flounder, scup and black sea bass, including the minimum recreational fish size, recreational possession limit and recreational season for each of the species. Furthermore, rod and reel and handlines are generally not associated with adverse benthic impacts. The proposed action will likely ensure biodiversity and ecosystem stability over the long term as the species continue to rebuild.

**8. Are significant social or economic impacts interrelated with significant natural or physical environmental effects?**

As discussed in Section 6.0 of the EA, the proposed action is not expected to result in significant social or economic impacts, or significant natural or physical environmental effects. Therefore, there are no significant social or economic impacts interrelated with significant natural or physical environmental impacts.

**9. To what degree are the effects on the quality of the human environment expected to be highly controversial?**

The scup measures contained in this action could be somewhat controversial, but are not expected to be highly controversial. The Council was not able, or not willing, to recommend measures to achieve the recreational harvest limit established for scup for 2002, because they were concerned the measures would be too restrictive. Therefore, NMFS is requesting public comment on two alternatives that do achieve the recreational harvest limit, and will implement one of the alternatives in the final rule. Measures for the other species are not expected to be controversial. The proposed action would implement measures for the upcoming fishing year to achieve the recreational harvest limit for 2002, as specified through the FMP..

**FONSI Statement**

For the reasons discussed above, it is hereby determined that the proposed action would not affect significantly the quality of the human environment, and that the preparation of an environmental impact statement for these specifications is not required by section 101(2)(c) of the National Environmental Policy Act nor its implementing regulations.

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Assistant Administrator for Fisheries, NOAA

Date

May 15, 2002

## **PRELIMINARY REGULATORY ECONOMIC EVALUATION (PREE)**

### **1.0 Introduction**

The National Marine Fisheries Service (NMFS) requires the preparation of a Regulatory Impact Review (RIR) for all regulatory actions that either implement a new Fishery Management Plan (FMP) or significantly amend an existing plan. This 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. This 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 this 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. This RIR addresses many items in the regulatory philosophy and principles of Executive Order (E.O.) 12866.

Also included is a Regulatory Flexibility Analysis (RFA). A complete description of the need for, and objectives of, the proposed rule can be found in the Introduction of the Environmental Assessment (EA). A description by port of commercial and recreational

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importance is presented in Appendix 1 of the A2002 Summer Flounder, Scup, and Black Sea Bass Specifications. @ In addition, an analysis of permit data and a description of the fisheries are presented in Sections 4.2 and 5.0 of the EA, respectively. The legal basis of this rule can be found in Section 1.0 of the EA.

## **2.0 Evaluation Of E.O. 12866 Significance**

The proposed action does not constitute a significant regulatory action under E.O. 12866 for the following reasons. First, it will not have an annual effect on the economy of more than \$100 million. The measures considered in this regulatory paper will not affect gross revenues or indirect and induced effects generated by the party/charter, private/rental, or other sectors offering goods and services to anglers engaged in the summer flounder, scup, and black sea bass fisheries to the extent that \$100 million annually economic impact will occur in any of these fisheries individually or combined.

Projected data from Marine Recreational Fisheries Statistics Survey (MRFSS) indicate that 36,853,539 trips were taken in the Northeast Region (Maine-North Carolina) in 2001. It is estimated that the number of trips by fishing mode was 1,833,431 party/charter boat trips, 19,103,616 private/rental boat trips, and 15,916,492 shore trips (See PREE, Sec. 5.0).

The management alternatives for summer flounder (Non-Preferred Alternative 2 - Coastwide Measures), scup (Council Preferred Scup Alternative), and black sea bass (Preferred Alternative) were estimated to decrease party/charter boat trips, in total, by up to 0.01%, 0.17%, and 0.10%, respectively, if adopted by all the states. In addition, 0.07%, 0.12%, and 0.001% of the private/rental boat trips, in total, could decrease as a consequence of the summer flounder (Non-Preferred Alternative 2 - Coastwide), scup (Council Preferred Alternative), and black sea bass (Preferred) measures, respectively. It was also estimated that shore fishing trips could decrease by up to .03%, in total, after implementation of the Council's Preferred Scup Alternative in all of the Northeast states. The measures to manage summer flounder (Non-Preferred Alternative 2 - Coastwide Measures) and black sea bass (Preferred) were not estimated to have an effect on recreational fishermen fishing from the shore. As such, the total number of party/charter boat, private/rental boat, and shore trips, across all of the Northeast states, may decrease by approximately 239, 13,756, and 0 in the summer flounder fishery; by 3,118, 22,743, and 4,775 in the scup fishery; and by 1,872, 191, and 0 in the black sea bass fishery, respectively, if these coastwide management alternatives for each species are adopted by all the states.

The management measures could potentially decrease gross revenues of businesses providing goods and services to anglers participating in the party/charter boat, private/rental boat, and shore fisheries for those species. This decrease in revenues can



be estimated by multiplying the changes in the total number of party/charter boat, private/rental boat, and shore fishing trips across all states, estimated above, by the projected average expenditure by fishing mode for 2002 paid by anglers. Adjusted mean trip expenditures (2002 equivalent) for party/charter boat trips is \$76.87, \$55.71 for private/rental boat trips, and \$39.24 for shore trips (see PREE, Section 5.0). As such, it is estimated that revenues for business providing goods and services to anglers engaged in these fisheries could decrease by approximately \$2,633,324 in 2002 compared to 2001, across all states, if these coastwide alternatives (summer flounder (Non-Preferred Alternative 2 - Coastwide); scup (Council Preferred Alternative); and black sea bass (Preferred)) are adopted in 2002. The contribution of individual species to this total revenue decrease is as follows: \$784,719 for summer flounder, \$1,694,065 for scup, and \$154,542 for black sea bass.

The potential losses presented in the above paragraph include only the direct effects of angler expenditures; the sales generated from initial purchases by anglers (e.g., party/charter access fees paid to owners of for-hire vessels). Indirect and induced effects also occur because businesses providing goods and services to anglers must purchase goods and services, which in turn, generate more sales. These ripple effects (i.e., multiplier effects) continue until the amount remaining in a local economy is negligible. Although indirect and induced effects could be estimated by constructing a combined input-output model of the Northeast region coastal states, a model of this kind is not available. Nevertheless, a reasonable approximation of indirect and induced effects across all the Northeast states can be made by assuming a multiplier effect of 1.5 - 2.0. As such, an angler paying \$50.00 to fish on a party vessel would generate between \$75.00 to \$100.00 worth of revenue for the local economy. It is likely that the multiplier for this sector of the fishery falls within 1.5 - 2.0 considering that anglers might spend money on food, beverages, transportation, lodging, gear, etc. As such, the overall economic revenue losses associated with Non-Preferred Alternative 2 - Coastwide Measures for the summer flounder fishery in the Northeast could range from \$1,177,079 ( $\$784,719 \times 1.5$ ) to \$1,569,438 ( $\$784,719 \times 2.0$ ), from \$2,541,098 ( $\$1,694,065 \times 1.5$ ) to \$3,388,130 ( $\$1,694,065 \times 2.0$ ) for the scup fishery (Council Preferred Alternative), and from \$231,813 ( $\$154,542 \times 1.5$ ) to \$309,084 ( $\$154,542 \times 2.0$ ) for the black sea bass fishery (Preferred) if these coastwide alternatives are adopted by all the states. These values combined would result in overall economic revenue losses ranging from \$3,949,990 to \$5,266,652.

Importantly, the potential economic losses described above assume the worse potential impact case scenario. Losses of this magnitude are not likely to occur given that anglers will continue to have the ability to engage in catch and release fishing for summer flounder, scup, and black sea bass and because of the numerous alternative target species available to anglers. Unfortunately, very little information is available to empirically estimate how sensitive the affected party/charter boat anglers might be to the proposed regulations. Because the alternatives described above affect the number and size of the fish that can be

kept or landed, but do not prohibit anglers from engaging in catch and release fishing, the overall losses are likely to be somewhat lower.

The Council and Commission's preferred summer flounder alternative is to allow states to implement conservation equivalent measures (Preferred alternative 1 for Summer Flounder - Conservation Equivalency). Since those management measures have not yet been established they are not incorporated into this analysis. The non-preferred coastwide alternative (Non-Preferred Alternative 2 for Summer Flounder - Coastwide Measures) for summer flounder included in the above analysis was done for comparative purposes (in the absence of specific state management measures under conservation equivalency).

Conservation equivalent recreational management measures would allow each state to develop specific recreational measures to allow the fishery to operate in each state during critical fishing periods while still achieving conservation goals. This would enable the summer flounder fishery to operate in a way that dissipates potential adverse economic effects in specific states. Table 25 details the proportion of summer flounder harvested in state and federal waters. On average (1995-2000), approximately 92% of the harvested summer flounder (both number and weight) came from state waters.

This action will not adversely affect, in the long-term, competition, jobs, the environment, public health or safety, or state, local, or tribal government communities. Second, this action 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 summer flounder, scup or black sea bass fisheries in the EEZ. Third, this action will not materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of their participants. And, fourth, the proposed action does not raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in E.O. 12866.

### **3.0 Paperwork Reduction Act of 1995**

The Paperwork Reduction Act (PRA) concerns the collection of information. The intent of the PRA 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.

The Council is not proposing measures under this regulatory action that require review under PRA. There are no changes to existing reporting requirements previously approved under OMB Control Nos. 0648-0202 (Vessel permits), 0648-0229 (Dealer reporting) and 0648-0212 (Vessel logbooks).

### **4.0 Regulatory Flexibility Analysis**

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## 4.1 Introduction and Methods

The Regulatory Flexibility Act (RFA) requires the federal rulemaker to examine the impacts of proposed and existing rules on small businesses, small organizations, and small governmental jurisdictions. In reviewing the potential impacts of proposed regulations, the agency must either certify that the rule: A) will not, if promulgated, have a significant economic impact on a substantial number of small entities; or B) prepare an Initial Regulatory Flexibility Analysis. The Small Business Administration (SBA) defines a small business in the commercial fishing and recreational fishing activity, as a firm with receipts (gross revenues) of up to \$3.0 million. The category of small entities likely to be affected by the proposed rule are party/charter boats harvesting summer flounder, scup, and/or black sea bass. This proposed rule could affect any party/charter vessel holding an active federal permit for summer flounder, scup, and/or black sea bass as well as vessels that fish for any of these species in state waters. Data from the Northeast permit application database indicates that in 2000 there were 738 vessels permitted to take part in the summer flounder, scup, and/or black sea bass fisheries in the EEZ. The Northeast landings database indicates that a total of 393 party/charter vessels participated in the summer flounder, scup, and/or black sea bass fisheries in the Northeast in 2000.

This rule would apply to the following small entities: summer flounder, scup and/or black sea bass charter/party permit holders, as well as those actively participating in the recreational fisheries. While permit holders represent the universe of entities whose normal activities might be directly affected by these regulations, not all permit holders choose to fish in a given year. Those who actively participate, i.e., land fish, would be the group of permit holders that are directly impacted by the regulations. Latent fishing power (in the form of unfished permits) represents a real and considerable force to alter the impacts on a fishery, but vessels actively participating in the fishery are dependent upon a particular species. It is impossible to predict how many - or who - will or will not participate in these fisheries in 2002.

This analysis will present information relative to the impacts of this proposed action on small entities. The basic approach is an assessment of various management measures from the standpoint of determining the resulting changes in gross revenue on party/charter vessels in each state in the Northeast. Estimates of the impacts upon profitability are not provided because data on costs and revenues for party/charter vessels are not available in the NMFS files containing vessel data. As such, revenues for party/charter vessels participating in these fisheries were estimated by employing various assumptions which are described below. The effects of actions were analyzed by employing quantitative approaches to the extent possible. Where quantitative data were not available, qualitative analyses were conducted. The MAFMC invites public comment on this IRFA, and the qualitative and quantitative aspects of it in particular.

Impacts were examined by estimating the number of recreational fishing trips in 2001 that would have been affected by the proposed 2002 management measures. To date, the first five waves of MRFSS effort data are available for 2001. Preliminary MRFSS data (waves 1-5) for 2001 were used to estimate the total number of trips taken in 2001 in each state in the Northeast Region. Wave six effort estimates for 2001 were calculated from the proportion of wave 6 effort in 2000 to the total effort in 2000, by state. The total number of trips affected by the proposed regulations were determined by estimating the number of trips that could be constrained by the evaluated proposed measures in each state. Finally, potential losses in gross revenues were estimated by multiplying the number of potentially affected trips in each state by the average trip expenditure incurred by anglers in a particular state.

## **4.2 Recordkeeping and Reporting**

As stated in Section 3.0 of the PREE, this proposed action does not propose new reporting or recordkeeping measures. There are no changes to existing reporting requirements. Currently, all summer flounder, scup or black sea bass federally-permitted dealers must submit weekly reports of fish purchases. The owner or operator of any vessel issued a moratorium vessel permit for summer flounder, scup or black sea bass, must maintain on board the vessel, and submit, an accurate daily fishing log report for all fishing trips, regardless of species fished for or taken. The owner of any party or charter boat issued a summer flounder, scup or black sea bass permit other than a moratorium permit and carrying passengers for hire must submit an accurate daily fishing log report for each charter or party fishing trip that lands summer flounder, scup, or black sea bass, unless such a vessel is also issued another permit that requires regular reporting, in which case a fishing log report is required for each trip regardless of species retained.

## **4.3 Relevant Federal Rules**

This proposed action will not duplicate, overlap or conflict with any other federal rules.

## **5.0 Analysis of Impacts of Proposed Measures**

### **5.1 Summer Flounder Fishery Impacts**

#### **5.1.1 Preferred Alternative 1 for Summer Flounder: Conservation Equivalency**

NMFS approved Framework 2 to the Summer Flounder, Scup and Black Sea Bass FMP in 2001. This framework implemented conservation equivalency as a management tool for the summer flounder recreational fishery. Under this alternative, the Council and Commission may choose to implement either coastwide measures or conservation equivalency. For 2002, the Council and Commission adopted conservation equivalency

as a preferred alternative. As a result, each state will be required to implement recreational measures that it chooses to achieve its required reductions, if any are needed. The Commission Board will either approve or disapprove each state's measures in February 2002. No analysis is provided here since the measures have yet to be adopted by the states. The percent reduction required in the states for 2002 relative to 2001 are: Rhode Island 5%; New Jersey 16.7%; Delaware 3.5%; Maryland 5.3%; Virginia 43.8%; and North Carolina 28.4% (Table 2).

### **5.1.2 Non-Preferred Alternative 2 for Summer Flounder: Coastwide Measures**

Non-Preferred Alternative 2 for Summer Flounder (Coastwide measures) would implement a coastwide 17" TL minimum fish size and an 8 fish possession limit. These management measures could reduce landings by approximately 30% if implemented by all the states (See EA, Sec. 6.3.3). Based on projected 2001 landings and the proposed recreational harvest limit for 2002, landings would have to be reduced 27% to achieve the harvest limit in 2002 assuming no change in angler effort or stock abundance. As such, the reduction in landings associated with the proposed management measures (30%) under this alternative is higher than the necessary reduction in landings. Current summer flounder recreational measures in the EEZ are a 15.5" TL minimum size, a 3 fish possession limit, and an open season from May 25 to Sept. 4. As such, the difference between Non-Preferred Alternative 2 for Summer Flounder for 2002 and the status quo is a substantial increase in the minimum fish size, but an increase in the possession limit and removal of the closed fishing season.

Summer flounder recreational data indicate that in only two of the last eight years (1994 and 1995) recreational landings have been less than the recreational harvest limits (Table 17). In 1998 and 1999, recreational landings of summer flounder were 12.48 million lb (5.66 million kg) and 8.37 million lb (3.80 million kg), respectively. The summer flounder recreational landings in 1998 and 1999 were 5.07 million lb (2.30 million kg) and 0.96 million lb (0.44 million kg) over the recreational harvest limit for those years, respectively. In 2000, recreational landings were 8.41 million lb (3.81 million kg) higher than the harvest limit for that year. For 2001, recreational landings are projected to be 4.13 million lb (1.87 million kg) above the allowable recreational harvest limit of 7.16 million lb (3.25 million kg).

The proposed recreational harvest limit for 2002 is 9.719 million lb (4.41 million kg). This recreational harvest limit is over 36% higher than the recreational harvest limit implemented in 2001 (7.16 million lbs), but about 16% below the projected recreational landings for that year (Table 43). Since there is no mechanism to deduct overages directly from the recreational harvest limit, any overages to the recreational harvest limit must be addressed by the way of adjustments to the management measures (fish size, bag limit and/or season). The proposed recreational management measures are necessary to prevent anglers from exceeding the recreational harvest limit in 2002.

## Recreational Fishing Effort in 2001

Projected data from the Marine Recreational Fisheries Statistics Survey (MRFSS) indicate that anglers fished 36,987,200 days in 2001 in the Northeast Region (ME through NC). Anglers fishing from a private or rental boat were estimated to have fished more days than shore and party/charter anglers combined (18,798,678; Table 44). Shore anglers were projected to have fished 16,410,405 days and party/charter boat anglers about 1,778,117 days. Anglers fishing in New Jersey, North Carolina, Massachusetts, New York, and Virginia comprised 75% of the total projected effort in the Northeast Region. To date, the first five waves of MRFSS effort data are available for 2001. Wave six effort estimates were calculated from the proportion of wave 6 effort in 2000 to the total effort in 2000, by state.

## Expenditures for Recreational Fishing

During 1998, social and economic data from marine recreational fishermen in the Northeast Region were gathered through an economic add-on to NMFS= Marine Recreational Statistics Survey (MRFSS; Steinback and Gentner, 2001). As part of this survey, anglers were asked to delineate trip expenditures and purchases of durable equipment used primarily for saltwater recreational fishing. Results of the survey were used to project the potential losses associated with the proposed 2002 regulations.

Survey results indicate that the average trip expenditure in the Northeast Region in 1998 was \$49.78 for anglers fishing from a private/rental boat, \$35.06 for shore anglers, and \$68.60 for anglers that fished from a party/charter boat (Table 46). Trip expenditures included the following consumable items: (1) travel; (2) food, drink, and refreshments; (3) lodging at motels, cabins, lodges, or campgrounds; (4) public transportation or car rental; (5) boat fuel; (6) guide or package fees; (7) access and/or boat launching fees; (8) equipment rental such as boat, fishing or camping equipment; (9) bait; and (10) ice. Expenditures on durable items such as rods, reels, tackle, special fishing clothing, etc., were also estimated in the Steinback and Gentner report but are not included in the subsequent analysis. Although expenditures on durable items may also be affected by the proposed regulations, the extent of the impact would be difficult to quantify since these items could be used for many trips.

## Changes in Fishing Effort Associated with Non-Preferred Coastwide Alternative

Staff at the Northeast Fisheries Science Center estimated the proportion of effort that fished from party/charter boats in 2001 that would have been affected by the implementation of the summer flounder measures proposed under the non-preferred alternative for the 2002 fishing year (Table 45). In Delaware, for example, it was estimated that 0.25% of the trips aboard party/charter boats in 2001 would have been affected by the 2002 measures. In other words, 189 (0.25%) angler trips taken aboard party/charter boats

in 2001 landed at least one summer flounder that was less than 17 inches or landed more than 8 summer flounder. Angler effort in Rhode Island, New Jersey, Maryland, and Virginia were would also have been affected by the proposed 2002 measures. Party/charter boat anglers in the remaining states in the Northeast Region would not have been affected by the proposed measures. Assuming angler effort in 2002 is similar to 2001 and catch rates remain about the same, Table 45 shows the projected number of party/charter trips by state that will likely be affected by the proposed regulations under this non-preferred alternative in the Northeast region.

### Changes in Expenditures Associated with Non-Preferred Coastwide Alternative

Maximum potential losses associated with the proposed 2002 regulations can be estimated by adjusting the 1998 average trip expenditures to their 2002 equivalent and multiplying by the projected number of affected trips in 2002<sup>1</sup>. Adjusted average trip expenditures in 2002 dollars are \$76.87 for party/charter boat trips, \$55.71 for private/rental boat trips, and \$39.24 for shore trips. Thus, the multiplication of party/charter mean trip expenditures adjusted to its 2002 equivalent (\$76.87) and the projected number of affected trips in Delaware (189), for example, results in total expenditures of \$14,528 (Table 45). As such, if the regulations proposed under this non-preferred alternative result in a decrease in the number of party/charter boat fishing trips, Delaware businesses that supply trip-related goods and services to this mode could lose up to \$14,528 in 2002 compared to 2001. Using the same type of analysis, it was estimated that the largest potential decrease in total expenditures due to the proposed regulations would be felt by businesses operating out of the state of New Jersey (\$124,222). Potential reductions in expenditures were also estimated for the states of Rhode Island, Maryland, and Virginia. No losses were estimated the remaining the states.

### Overall Economic Impact of Non-Preferred Coastwide Alternative

The potential losses generated in the expenditure analysis presented above describe only the direct effects of party/charter boat angler expenditures; the sales generated from initial purchases by anglers (e.g., party/charter access fees paid to owners of for-hire vessels). Indirect and induced effects also occur because businesses providing goods and services to anglers must purchase goods and services, which in turn, generate more sales. These ripple effects (i.e., multiplier effects) continue until the amount remaining in a local economy is negligible. Although indirect and induced effects could be estimated for by constructing an input-output model of the Northeast region coastal states, a model of this kind was not available.

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<sup>1</sup>1998 average trip-related expenses were adjusted to their 2001 equivalent by using the Bureau of Labor Statistics Consumer Price Index. Since the price index has yet to be calculated for 2002, a 10-year average annual increase from 1992-2001 (2.82%) was used to adjust the expenditure estimates from 2001 to 2002.

Nevertheless, an approximation to indirect and induced effects can be made by assuming a multiplier effect of 1.5 - 2.0. It is likely that the multiplier for this sector of the fishery falls within those values. As such, the overall economic impact of the proposed management measures on party/charter boat anglers in Delaware, for example, could be from \$21,792 (\$14,528 x 1.5) to \$29,056 (\$14,528 x 2.0). Losses in the remaining states estimated to be effected by the proposed regulations could be from \$5,420 to \$7,226 in Rhode Island, from \$186,333 to \$248,444 in New Jersey, from \$1,614 to \$2,152 in Maryland, and from \$58,460 to \$77,946 in Virginia.

The potential economic losses described above (expenditures and overall economic impact sections), however, assume the worse potential impact case scenario. Losses of this magnitude are not likely to occur given that anglers in these states will continue to have the ability to engage in catch and release fishing for summer flounder and because of the various alternative target species available to these anglers. Unfortunately, very little information is available to empirically estimate how sensitive the affected anglers might be to the proposed regulations. The fact that the proposed regulations affect the number and size of the fish that can be kept or landed and do not prohibit anglers from engaging in catch and release fishing, the overall losses are likely to be somewhat lower. If the total number of recreational fishing trips is unaffected by the regulations (i.e., total expenditures remain constant) then no losses will occur to businesses that supply trip-related goods and services.

#### Gross Revenue Impacts on Party/Charter Vessels Associated with Non-Preferred Coastwide Alternative

Party and charter vessels that target summer flounder could be directly impacted by the proposed regulations. Assuming catch rates and angler effort in 2002 are similar to 2001, these measures are projected to affect anglers fishing from party/charter boats in Rhode Island, New Jersey, Delaware, Maryland, and Virginia. Total party/charter boat earnings associated with these trips can be determined by multiplying the number of potentially affected trips in each state in 2002 by the average fee paid by party/charter anglers in the Northeast region (\$39.84 - 2002 equivalent; Table 45). These earnings were apportioned to the number of federally permitted party/charter vessels that participated in the summer flounder fishery in 2000 according to homeport state in the Northeast logbook database. Thus, the potential impact per boat could be up to \$67 (\$1,872/28) in Rhode Island, \$961 in New Jersey, \$1,506 in Delaware, \$186 in Maryland, and \$808 in Virginia (Table 45). As such, if the regulations proposed under this non-preferred alternative result in a decrease in the number of recreational fishing trips, on average, each party/charter vessel in these states could see a decrease in gross revenue in 2002.

Actual losses will likely be even lower considering the states, through the Atlantic States Marine Fisheries Commission, will implement alternative measures for summer flounder through conservation equivalency. Since those management measures have not yet been



established they are not incorporated into this analysis. In addition, the universe of party/charter vessels that participated in the summer flounder fishery is likely to be even larger than presented in this analysis. Party/charter vessels that do not possess a federal summer flounder permit because they only fish in state waters are not represented in this assessment. Considering that 88% of the landings in 2000 came from state waters it's probable that some party/charter vessels fish only in state waters and, thus, do not hold a federal summer flounder permit. Therefore, the party/charter losses shown in this assessment would be spread over a greater number of vessels resulting in lower estimated losses per vessel.

In addition to this, anglers will continue to have the ability to engage in catch and release fishing for summer flounder and because of the numerous alternative target species available to anglers, overall recreational demand should not be adversely affected. Unfortunately, very little information is available to empirically estimate how sensitive the affected party/charter boat anglers might be to the proposed regulations. The fact that the proposed regulations affect the number and size of the fish that can be kept or landed and do not prohibit anglers from engaging in catch and release fishing, demand in the effected states should remain relatively unaffected.

While keeping fish is moderately important to anglers in the Mid-Atlantic, over 42% of anglers in New England in 1994, indicated catching fish to eat was not an important reason for marine fishing (Steinback and O=Neil 1998). Although these anglers are not likely to be the ones constrained by the regulations, findings of this study generally concur with previous studies that found non-catch reasons for participating in marine recreational fishing were rated much higher than keeping fish for food. In combination with alternative target species available to anglers, the findings of the Steinback and O=Neil (1998) study suggest that at least some of the potentially affected anglers would not reduce their effort when faced with the landings restrictions proposed under this non-preferred alternative.

### **5.1.3 Non-Preferred Alternative 3 for Summer Flounder: Precautionary Default**

As required under conservation equivalency guidelines, the Council and Board also must adopt a Precautionary Default Alternative for federal permit holders landing summer flounder in states that do not submit approved conservation equivalency measures. The Precautionary Default Alternative consists of one fish at 18 inches,

Specific states that fail to implement conservation equivalent measures as specified in Framework 2 to the Summer Flounder, Scup and Black Sea Bass FMP would be required to implement precautionary default measures. The precautionary default measures result in reductions in the states for 2002 ranging from 41 to 88% (Table 27). The state-specific reduction in landings associated with the Precautionary Default Alternative are substantially higher than the state-specific reductions that are contained in the Conservation Equivalency Alternative (see Tables 2 and 27). As such, it is expected that

states will avoid the impacts of the Precautionary Default Alternative by establishing conservation equivalent measures. In other words, because states have a choice, it is more rational for the states to adopt measures with less adverse economic impacts under conservation equivalency than to acquiesce to the much more restrictive measures contained in Non-Preferred Alternative 3 for Summer Flounder - Precautionary Default.

## **5.2 Scup Fishery Impacts**

Scup recreational landings have declined over 89% for the period 1991 to 1998 (Table 46). The number of fishing trips has also declined over 74% for this same time period. This decrease in the recreational fishery has occurred both with and without any recreational measures being in place, and it is perhaps a result from the stocks being over-exploited and at a low biomass level. In addition, party/charter boats may be targeting other species that are relatively more abundant than scup (e.g., striped bass), thus accounting for the decrease in the number of fishing trips in this fishery.

Recreational harvest limits in the scup fishery were first implemented in 1997 (Table 46). Recreational landings in 1997 and 1998 were below the recreational harvest limit for those years. However, in 1999 and 2000 recreational landings were above the recreational harvest limit for those years. Recreational landings are projected to be 4.97 million lb (2.25 million kg) in 2001 or about 182% over the allowable recreational harvest limit of 1.76 million lb (0.78 million kg).

The recreational harvest limit for 2002 is 2.713 million lbs (1.23 million kg). This recreational harvest limit is approximately 54% above the recreational harvest limit implemented in 2001 (1.76 million lbs), but about 45% below the projected recreational landings in 2001 (Table 46). Since there is no mechanism to deduct overages directly from the recreational harvest limit, any overages to the recreational harvest limit must be addressed by the way of adjustments to the management measures (fish size, bag limit and/or season). The scup recreational management measures are necessary to prevent anglers from exceeding the recreational harvest limit in 2002.

### Recreational Fishing Effort in 2001

Projected data from the Marine Recreational Fisheries Statistics Survey (MRFSS) indicate that anglers fished 36,987,200 days in 2001 in the Northeast Region (ME through NC). Anglers fishing from a private or rental boat were estimated to have fished more days than shore and party/charter anglers combined (18,798,678; Table 44). Shore anglers were projected to have fished 16,410,405 days and party/charter boat anglers about 1,778,117 days. Anglers fishing in New Jersey, North Carolina, Massachusetts, New York, and Virginia comprised 75% of the total projected effort in the Northeast Region. To date, the first five waves of MRFSS effort data are available for 2001. Wave

six effort estimates were calculated from the proportion of wave 6 effort in 2000 to the total effort in 2000, by state.

The contribution of scup to the total catch (by number) made by party/charter vessels varied by month for the period 1996-2000 (Table 5). The contribution of scup to the total catch of party/charter vessels fluctuated throughout the year, ranging from less than 6% from January through August and December to 27% in October, with the largest proportion (about 16%) of scup caught from September through November.

### Expenditures for Recreational Fishing

During 1998, social and economic data from marine recreational fishermen in the Northeast Region were gathered through an economic add-on to NMFS= Marine Recreational Statistics Survey (MRFSS; Steinback and Gentner, 2001). As part of this survey, anglers were asked to delineate trip expenditures and purchases of durable equipment used primarily for saltwater recreational fishing. Results of the survey were used to project the potential losses associated with the proposed 2002 regulations.

Survey results indicate that the average trip expenditure in 1998 was \$49.78 for anglers fishing from a private/rental boat, \$35.06 for shore anglers, and \$68.60 for anglers that fished from a party/charter boat (Table 46). Trip expenditures included the following consumable items: (1) travel; (2) food, drink, and refreshments; (3) lodging at motels, cabins, lodges, or campgrounds; (4) public transportation or car rental; (5) boat fuel; (6) guide or package fees; (7) access and/or boat launching fees; (8) equipment rental such as boat, fishing or camping equipment; (9) bait; and (10) ice. Expenditures on durable items such as rods, reels, tackle, special fishing clothing, etc., were also estimated in the Steinback and Gentner report but are not included in the subsequent analysis. Although expenditures on durable items may also be affected by the proposed regulations, the extent of the impact would be difficult to quantify since these items could be used for many trips.

### **5.2.1 Impacts of Council Preferred Scup Alternative**

The Council Preferred Scup Alternative has been determined to not achieve the required reduction in landings necessary to attain the recreational harvest limit specified for 2002. As such, NMFS has disapproved the alternative and will not be implementing it. This alternative would implement a 10" TL minimum fish size, a 50 fish possession limit, and an open season from January 1 to February 28 and from July 1 to October 31 for 2002 (or a closed season from March 1 to June 30 and from November 1 to December 31). These management measures could reduce landings by approximately 30%, if implemented by all the states (See EA, Sec. 6.4.2). Based on projected 2001 landings adjusted for 2001 seasonal effects, and the proposed recreational harvest limit for 2002, it was estimated that landings would have to be reduced 57% to achieve the harvest limit in 2002 assuming

no change in angler effort or stock abundance. As such, the reduction in landings associated with this alternative (30%) is not sufficient to achieve the harvest limit. Current scup recreational measures in the EEZ are a 9" TL minimum size, a 50 fish possession limit, and an open season from August 15 to October 31 (or a closed season from November 1 to August 14). The difference between the measures in this alternative and the status quo is an increase in the size limit and a longer fishing season.

The Council Scup Alternative would allow for an open season from January 1 to February 28 and from July 1 to October 31. VTR data indicates that the monthly contribution of scup to the total catch of party/charter vessels averaged about 5.5% during the proposed closed period of time in the Northeast Region (Table 5). However, scup comprised over 20% of total catches in Massachusetts, New York, and Rhode Island during the closed season contained in this alternative. It is possible that a scup seasonal closure during those months could affect recreational satisfaction to such an extent that the demand for recreational party/charter trips could decrease for that time period. However, taking into consideration that approximately 88% of the harvested scup (number) came from state waters and that states through the Atlantic States Marine Fisheries Commission may implement alternative reduction strategies through the Commission's conservation equivalency procedures, the demand for recreational party/charter trips may not be significantly affected.

#### Changes in Fishing Effort Associated with Council Preferred Scup Alternative

Staff at the Northeast Fisheries Science Center estimated the proportion of effort in 2001 that would have been affected by the implementation of the scup measures proposed under the Council Preferred Scup Alternative for the 2002 fishing year (Table 47). In Massachusetts, for example, it was estimated that 2.08% of the trips aboard party/charter vessels in 2001 would have been affected by the 2002 measures. In other words, 2,766 (2.08%) angler trips taken aboard party/charter boats in 2001 landed at least one scup that was less than 10 inches, or landed more than 50 scup, or landed at least one scup during the proposed closed season. Angler effort in Rhode Island, Connecticut, New York, New Jersey, and Delaware would also have been affected by the proposed 2002 measures. Party/charter boat anglers in the remaining states in the Northeast region would not have been affected by the proposed measures. Assuming angler effort in 2002 is similar to 2001 and catch rates remain about the same, Table 47 shows the projected number of party/charter trips by state that will likely be affected by the proposed regulations under the Council preferred scup alternative in the Northeast region.

#### Changes in Expenditures Associated with Council Preferred Scup Alternative

Maximum potential losses associated with the 2002 regulations can be estimated by adjusting the 1998 average trip expenditures to their 2002 equivalent and multiplying by the

projected number of affected trips in 2002<sup>2</sup>. Adjusted average trip expenditures in 2002 dollars are \$76.87 for party/charter boat trips, \$55.71 for private/rental boat trips, and \$39.24 for shore trips. Thus, the multiplication of party/charter mean trip expenditures adjusted to its 2002 equivalent (\$76.87) and the projected number of affected trips in Massachusetts (2,766), for example, results in total expenditures of \$212,622 (Table 47). As such, if the regulations proposed under the Council Preferred Scup Alternative result in a decrease in the number of party/charter boat fishing trips, Massachusetts businesses that supply trip-related goods and services to this mode could lose up to \$212,622 in 2002 compared to 2001. Potential reductions in expenditures were also estimated for the states of Rhode Island, Connecticut, New York, New Jersey, and Delaware, although the losses were considerably lower than projected in Massachusetts. No losses are expected in Maine, New Hampshire, Maryland, Virginia, and North Carolina.

### Overall Economic Impact of Council Preferred Scup Alternative

The potential losses generated in the expenditure analysis presented above describe only the direct effects of party/charter angler expenditures; the sales generated from initial purchases by anglers (e.g., party/charter access fees paid to owners of for-hire vessels). Indirect and induced effects also occur because businesses providing goods and services to anglers must purchase goods and services, which in turn, generate more sales. These ripple effects (i.e., multiplier effects) continue until the amount remaining in a local economy is negligible. Although indirect and induced effects could be estimated by constructing an input-output model of the Northeast region coastal states, a model of this kind was not available.

Nevertheless, an approximation to indirect and induced effects can be made by assuming a multiplier effect of 1.5 - 2.0. It is likely that the multiplier for this sector of the fishery falls within those values. As such, the overall economic impact of the proposed management measures on businesses that supply goods and services to the party/charter boat sector in Massachusetts, for example, could be from \$318,933 ( $\$212,622 \times 1.5$ ) to \$425,244 ( $\$212,622 \times 2.0$ ). Losses in the remaining states projected to be effected by the proposed regulations could be from \$7,496 to \$9,994 in Rhode Island, from \$3,459 to \$4,612 in Connecticut, from \$1,383 to \$1,844 in New York, from \$19,026 to \$25,368 in New Jersey, and from \$46,238 to \$61,650 in Delaware.

The potential economic losses described above (expenditures and overall economic impact sections), however, assume the worse potential impact case scenario. Losses of this magnitude are not likely to occur given that anglers will continue to have the ability to

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<sup>2</sup>1998 average trip-related expenses were adjusted to their 2002 equivalent by using the Bureau of Labor Statistics Consumer Price Index. Since the price index has yet to be calculated for 2002, a 10-year average annual increase from 1992-2001 (2.82%) was used to adjust the expenditure estimates from 2001 to 2002.

engage in catch and release fishing for scup and because of the numerous alternative target species available to anglers. Unfortunately, very little information is available to empirically estimate how sensitive the affected party/charter boat anglers might be to the proposed regulations. The fact that the proposed regulations affect the number and size of the fish that can be kept or landed and do not prohibit anglers from engaging in catch and release fishing, the overall losses are likely to be somewhat lower. If the total number of recreational fishing trips is unaffected by the regulations (i.e., total expenditures remain constant) then no losses will occur to businesses that supply trip-related goods and services.

#### Gross Revenue Impacts on Party/Charter Vessels Associated with Council Preferred Scup Alternative

Party and charter vessels that target scup could be directly impacted by the proposed regulations. Assuming catch rates and angler effort in 2002 are similar to 2001, these measures are projected to affect anglers fishing from party/charter boats in Massachusetts, Rhode Island, Connecticut, New York, New Jersey and Delaware. Total party/charter boat earnings associated with these trips can be determined by multiplying the number of potentially affected trips in each state in 2002 by the average fee paid by party/charter anglers in the Northeast region (\$39.84 - 2002 equivalent; Table 47). These earnings were apportioned to the number of federally permitted party/charter vessels that participated in the scup fishery in 2000 according to homeport state in the Northeast logbook database. Thus, the potential impact per boat could be up to \$1,890 (\$110,197/58) in Massachusetts, \$185 in Rhode Island, \$149 in Connecticut, \$17 in New York, \$219 in New Jersey, and \$7,988 in Delaware (Table 47). As such, if the regulations proposed under this preferred alternative result in a decrease in the number of recreational fishing trips, on average, each party/charter vessel in these states could see a decrease in gross revenue in 2002.

Actual losses will likely be even lower because the universe of party/charter vessels that participated in the scup fishery is likely to be even larger than presented in this analysis. Party/charter vessels that do not possess a federal scup permit because they only fish in state waters are not represented in this assessment. Considering that 92% of the landings in 2000 came from state waters it's probable that some party/charter vessels fish only in state waters and, thus, do not hold a federal scup permit. Therefore, the party/charter losses shown in this assessment would be spread over a greater number of vessels resulting in lower estimated losses per vessel.

In addition to this, anglers will continue to have the ability to engage in catch and release fishing for scup and because of the numerous alternative target species available to anglers, overall recreational demand should not be adversely affected. Unfortunately, very little information is available to empirically estimate how sensitive the affected party/charter boat anglers might be to the proposed regulations. The fact that the proposed regulations

affect the number and size of the fish that can be kept or landed and do not prohibit anglers from engaging in catch and release fishing, demand in the effected states should remain relatively unaffected.

While keeping fish is moderately important to anglers in the Mid-Atlantic, over 42% of anglers in New England in 1994, indicated catching fish to eat was not an important reason for marine fishing (Steinback and O=Neil 1998). Although these anglers are not likely to be the ones constrained by the regulations, findings of this study generally concur with previous studies that found non-catch reasons for participating in marine recreational fishing were rated much higher than keeping fish for food. In combination with alternative target species available to anglers, the findings of the Steinback and O=Neil (1998) study suggest that at least some of the potentially affected anglers would not reduce their effort when faced with the landings restrictions proposed under this preferred alternative.

### **5.2.2 Impacts of NMFS Scup Alternative 1**

NMFS Scup Alternative 1 has been determined to achieve the required reduction needed to attain the scup recreational harvest limit specified for 2002 (57%). NMFS intends to consider this alternative for implementation in the final rule and seek public comment. This alternative would allow for an open season from January 1 to February 28 and from July 1 to October 2; a 10-inch (25.4 cm) TL minimum fish size; and a 20-fish per person possession limit. Current scup recreational measures in the EEZ are a 9" TL minimum size, a 50 fish possession limit, and an open season from August 15 to October 31 (or a closed season from November 1 to August 14). As such, the difference between this alternative and the status quo is an increase in the size limit, a decrease in the possession limit, and a shift in the fishing season.

VTR data indicates that the monthly contribution of scup to the total catch of party/charter vessels averaged about 8.4% during the closed period of time in the Northeast Region for NMFS Scup Alternative 1 (Table 5). However, scup comprised over 20% of total catches in Massachusetts, New York, and Rhode Island during the closed season contained in this alternative. It is possible that a scup seasonal closure during those months could affect recreational satisfaction to such an extent that the demand for recreational party/charter trips could decrease for that time period. However, taking into consideration that approximately 88% of the harvested scup (number) came from state waters and that states through the Atlantic States Marine Fisheries Commission may implement alternative reduction strategies through the Commission's conservation equivalency procedures, the demand for recreational party/charter trips may not be significantly affected.

#### Changes in Fishing Effort Associated with NMFS Scup Alternative 1

Staff at the Northeast Fisheries Science Center estimated the proportion of effort in 2001 that would have been affected by the implementation of the scup measures proposed

under NMFS Scup Alternative 1 for the 2002 fishing year (Table 48). In Rhode Island, for example, it was estimated that 4.05% of the trips aboard party/charter vessels in 2001 would have been affected by the 2002 measures in this alternative. In other words, 732 (4.05%) angler trips taken aboard party/charter boats in 2001 landed at least one scup that was less than 10 inches, or landed more than 20 scup, or landed at least one scup during the proposed closed season. Angler effort in Massachusetts, Connecticut, New York, New Jersey, and Delaware would also have been affected by the 2002 measures in this alternative. Party/charter boat anglers in the remaining states in the Northeast region would not have been affected by the measures in this alternative. Assuming angler effort in 2002 is similar to 2001 and catch rates remain about the same, Table 48 shows the projected number of party/charter trips by state that will likely be affected by the measures under this NMFS alternative in the Northeast region.

### Changes in Expenditures Associated with NMFS Scup Alternative 1

Maximum potential losses associated with the 2002 regulations can be estimated by adjusting the 1998 average trip expenditures to their 2002 equivalent and multiplying by the projected number of affected trips in 2002<sup>3</sup>. Adjusted average trip expenditures in 2002 dollars are \$76.87 for party/charter boat trips, \$55.71 for private/rental boat trips, and \$39.24 for shore trips. Thus, the multiplication of party/charter mean trip expenditures adjusted to its 2002 equivalent (\$76.87) and the projected number of affected trips in Rhode Island (732), for example, results in total expenditures of \$56,269 (Table 48). As such, if the regulations proposed under this alternative result in a decrease in the number of party/charter boat fishing trips, Rhode Island businesses that supply trip-related goods and services to this mode could lose up to \$56,269 in 2002 compared to 2001. Potential reductions in expenditures were also estimated for the states of Massachusetts, Connecticut, New York, New Jersey, and Delaware. No losses are expected in Maine, New Hampshire, Maryland, Virginia, and North Carolina.

### Overall Economic Impact of NMFS Scup Alternative 1

Using a multiplier of 1.5 - 2.0, as described in Section 5.2.1, it was estimated that the overall economic impact of the proposed management measures on businesses that supply goods and services to the party/charter boat sector in Rhode Island, for example, could be from \$84,404 (\$56,269 x 1.5) to \$112,538 (\$56,269 x 2.0). Losses in the remaining states projected to be effected by the proposed regulations could be from \$522,794 to \$697,058 in Massachusetts, from \$58,460 to \$77,946 in Connecticut, from \$1,087,902 to \$1,450,536 in New York, from \$78,062 to \$104,082 in New Jersey, and

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<sup>3</sup>1998 average trip-related expenses were adjusted to their 2002 equivalent by using the Bureau of Labor Statistics Consumer Price Index. Since the price index has yet to be calculated for 2002, a 10-year average annual increase from 1992-2001 (2.82%) was used to adjust the expenditure estimates from 2001 to 2002.



from \$47,852 to \$63,802 in Delaware.

As described in Section 5.2.1, the potential economic losses described above (expenditures and overall economic impact sections) assume the worse potential impact case scenario. Losses of this magnitude are not likely to occur given that anglers will continue to have the ability to engage in catch and release fishing for scup and because of the numerous alternative target species available to anglers.

#### Gross Revenue Impacts on Party/Charter Vessels Associated with NMFS Scup Alternative 1

Party and charter vessels that target scup could be directly impacted by the proposed regulations. Assuming catch rates and angler effort in 2002 are similar to 2001, these measures are projected to affect anglers fishing from party/charter boats in Massachusetts, Rhode Island, Connecticut, New York, New Jersey and Delaware. Total party/charter boat earnings associated with these trips can be determined by multiplying the number of potentially affected trips in each state in 2002 by the average fee paid by party/charter anglers in the Northeast region (\$39.84 - 2002 equivalent; Table 48). These earnings were apportioned to the number of federally permitted party/charter vessels that participated in the scup fishery in 2000 according to homeport state in the Northeast logbook database. Thus, the potential impact per boat could be up to \$3,114 (\$180,635/58) in Massachusetts, \$2,083 in Rhode Island, \$2,525 in Connecticut, \$13,425 in New York, \$899 in New Jersey, and \$8,267 in Delaware (Table 48). As such, if the regulations proposed under this preferred alternative result in a decrease in the number of recreational fishing trips, on average, each party/charter vessel in these states could see a decrease in gross revenue in 2002.

Actual losses will likely be even lower because the universe of party/charter vessels that participated in the scup fishery is likely to be even larger than presented in this analysis. Party/charter vessels that do not possess a federal scup permit because they only fish in state waters are not represented in this assessment. Considering that 92% of the landings in 2000 came from state waters it's probable that some party/charter vessels fish only in state waters and, thus, do not hold a federal scup permit. Therefore, the party/charter losses shown in this assessment would be spread over a greater number of vessels resulting in lower estimated losses per vessel.

Anglers will continue to have the ability to engage in catch and release fishing for scup and because of the numerous alternative target species available to anglers, overall recreational demand should not be adversely affected. Unfortunately, very little information is available to empirically estimate how sensitive the affected party/charter boat anglers might be to the proposed regulations. The fact that the proposed regulations affect the number and size of the fish that can be kept or landed and do not prohibit anglers from engaging in catch and release fishing, demand in the effected states should remain

relatively unaffected.

### **5.2.3 Impacts of NMFS Scup Alternative 2**

NMFS Scup Alternative 2 has been determined to achieve the required reduction needed to attain the scup recreational harvest limit specified for 2002 (57%). NMFS intends to consider this alternative for implementation in the final rule and seek public comment. This alternative would allow a 9" TL minimum fish size, a 20 fish possession limit, and an open season from January 1 to February 28 and from September 2 to October 31 for 2002 (or a closed season from March 1 to September 1 and from November 1 to December 31). These management measures could reduce landings by approximately 57% if implemented by all the states (See EA, Sec. 6.4.3). Based on projected 2001 landings and the proposed recreational harvest limit for 2002, it was estimated that landings would have to be reduced 57% to achieve the harvest limit in 2002 assuming no change in angler effort or stock abundance. As such, the reduction in landings associated with the proposed management measures under this alternative would meet the percent reduction required to achieve the harvest limit. Current scup recreational measures in the EEZ are a 9" TL minimum size, a 50 fish possession limit, and an open season from August 15 to October 31 (or a closed season from November 1 to August 14). As such, the difference between this alternative for 2002 and the status quo is a substantial decrease in the possession limit, and a longer fishing season.

VTR data indicates that the monthly contribution of scup to the total catch of party/charter vessels averaged about 4.6% during the closed period of time in the Northeast Region for NMFS Scup Alternative 2 (Table 5). However, scup comprised over 20% of total catches in Massachusetts, New York, and Rhode Island during the closed season contained in this alternative. It is possible that a scup seasonal closure during those months could affect recreational satisfaction to such an extent that the demand for recreational party/charter trips could decrease for that time period. However, taking into consideration that approximately 88% of the harvested scup (number) came from state waters and that states through the Atlantic States Marine Fisheries Commission may implement alternative reduction strategies through the Commission's conservation equivalency procedures, the demand for recreational party/charter trips may not be significantly affected.

#### Changes in Fishing Effort Associated with NMFS Scup Alternative 2

Staff at the Northeast Fisheries Science Center estimated the proportion of effort in 2001 that would have been affected by the implementation of the scup measures proposed under this alternative for the 2002 fishing year (Table 49). In Connecticut, for example, it was estimated that 1.2% of the trips aboard party/charter vessels in 2001 would have been affected by the 2002 measures. In other words, 553 (1.2%) angler trips taken aboard private and rental boats in 2001 landed at least one scup that was less than 9 inches, or landed more than 20 scup, or landed at least one scup during the proposed closed

season. Angler effort in Massachusetts, Rhode Island, New York, New Jersey, and Delaware would also have been affected by the proposed 2002 measures. Party/charter boat anglers in the remaining states in the Northeast region would not have been affected by the proposed measures. Assuming angler effort in 2002 is similar to 2001 and catch rates remain about the same, Table 49 shows the projected number of party/charter trips by state that will likely be affected by the proposed regulations under NMFS Scup Alternative 2 in the Northeast region.

### Changes in Expenditures Associated with NMFS Scup Alternative 2

Maximum potential losses associated with the proposed 2002 regulations can be estimated by adjusting the 1998 average trip expenditures to their 2002 equivalent and multiplying by the projected number of affected trips in 2002<sup>2</sup>. Adjusted average trip expenditures in 2002 dollars are \$76.87 for party/charter boat trips, \$55.71 for private/rental boat trips, and \$39.24 for shore trips. Thus, the multiplication of party/charter mean trip expenditures adjusted to its 2002 equivalent (\$76.87) and the projected number of affected trips in Connecticut (553), for example, results in total expenditures of \$42,509 (Table 49). As such, if the regulations proposed under Alternative 2 result in a decrease in the number of party/charter boat fishing trips, Connecticut businesses that supply trip-related goods and services to this mode could lose up to \$42,509 in 2002 compared to 2001. Potential reductions in expenditures were also estimated for the states of Massachusetts, Rhode Island, New York, New Jersey, and Delaware. No losses are expected in Maine, New Hampshire, Maryland, Virginia, and North Carolina.

### Overall Economic Impact of NMFS Scup Alternative 2

Using a multiplier of 1.5 - 2.0, as described in Section 5.2.1, it was estimated that the overall economic impact of the proposed management measures on businesses that supply goods and services to the party/charter boat sector in Connecticut, for example, could be from \$63,764 ( $\$42,509 \times 1.5$ ) to \$85,018 ( $\$42,509 \times 2.0$ ). Losses in the remaining states projected to be effected by the proposed regulations could be from \$1,125,377 to \$1,500,502 in Massachusetts, from \$145,515 to \$194,020 in Rhode Island, from \$1,256,825 to \$1,675,766 in New York, from \$911,256 to \$1,215,008 in New Jersey, and from \$67,914 to \$90,552 in Delaware.

As described in Section 5.2.1, the potential economic losses described above (expenditures and overall economic impact sections) assume the worse potential impact case scenario. Losses of this magnitude are not likely to occur given that anglers will

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<sup>2</sup>1998 average trip-related expenses were adjusted to their 2002 equivalent by using the Bureau of Labor Statistics Consumer Price Index. Since the price index has yet to be calculated for 2002, a 10-year average annual increase from 1992-2001 (2.82%) was used to adjust the expenditure estimates from 2001 to 2002.

continue to have the ability to engage in catch and release fishing for scup and because of the numerous alternative target species available to anglers.

## Gross Revenue Impacts on Party/Charter Vessels Associated with NMFS Scup Alternative 2

Party and charter vessels that target scup could be directly impacted by the proposed regulations. Assuming catch rates and angler effort in 2002 are similar to 2001, these measures are projected to affect anglers fishing from party/charter boats in Massachusetts, Rhode Island, Connecticut, New York, New Jersey and Delaware. Total party/charter boat earnings associated with these trips can be determined by multiplying the number of potentially affected trips in each state in 2002 by the average fee paid by party/charter anglers in the Northeast region (\$39.84 - 2002 equivalent; Table 49). These earnings were apportioned to the number of federally permitted party/charter vessels that participated in the scup fishery in 2000 according to homeport state in the Northeast logbook database. Thus, the potential impact per boat could be up to \$6,704 (\$388,838/58) in Massachusetts, \$3,591 in Rhode Island, \$2,754 in Connecticut, \$15,509 in New York, \$10,495 in New Jersey, and \$11,733 in Delaware (Table 49). As such, if the regulations proposed under this preferred alternative result in a decrease in the number of recreational fishing trips, on average, each party/charter vessel in these states could see a decrease in gross revenue in 2002.

Because the regulations would affect the number and size of the fish that can be kept or landed and do not prohibit anglers from engaging in catch and release fishing, demand in the affected states should remain relatively unaffected.

### **5.2.4 Impacts of Non-Preferred Scup Alternative 3**

Non-Preferred Scup Alternative 3 has been determined to achieve the required reduction needed to attain the scup recreational harvest limit specified for 2002 (57%). However, NMFS does not intend to further consider this alternative for implementation in the final rule due to the very short season contained in the alternative. This non-preferred alternative would implement a 9" TL minimum fish size, a 50 fish possession limit, and an open season from January 1 to February 28 and from October 8 to October 31 for 2002 (or a closed season from March 1 to October 7 and November 1 to December 31). Current scup recreational measures in the EEZ are a 9" TL minimum size, a 50 fish possession limit, and an open season from August 15 to October 31 (or a closed season from November 1 to August 14). As such, the difference between this alternative for 2002 and the status quo is a significant decrease in the fishing season.

VTR data indicates that the monthly contribution of scup to the total catch of party/charter vessels averaged about 6.5% during the proposed closed period of time in the Northeast Region (Table 5). However, scup comprised over 35% of total catches in New York and

Rhode Island during the proposed closed season, and over 19% in Massachusetts and New Jersey. It is likely that a scup seasonal closure during those months could affect recreational satisfaction to such an extent that the demand for recreational party/charter trips could decrease for that time period. However, taking into consideration that approximately 88% of the harvested scup (number) came from state waters and that states through the Atlantic States Marine Fisheries Commission may implement alternative reduction strategies through conservation equivalency, the demand for recreational party/charter trips might not be significantly affected.

#### Changes in Fishing Effort Associated with Non-Preferred Scup Alternative

Staff at the Northeast Fisheries Science Center estimated the proportion of effort in 2001 that would have been affected by the implementation of the scup measures proposed under this non-preferred alternative for the 2002 fishing year (Table 50). In New Jersey, for example, it was estimated that 1.31% of the trips aboard party/charter vessels in 2001 would have been affected by the 2002 measures. In other words, 8,169 (1.31%) angler trips taken aboard party/charter boats in 2001 landed at least one scup that was less than 9 inches, or landed more than 50 scup, or landed at least one scup during the proposed closed season. Angler effort in Massachusetts, Rhode Island, Connecticut, New York, and Delaware would also have been affected by the proposed 2002 measures. Party/charter boat anglers in the remaining states in the Northeast region would not have been affected by the proposed measures. Assuming angler effort in 2002 is similar to 2001 and catch rates remain about the same, Table 50 shows the projected number of party/charter trips by state that will likely be affected by the proposed regulations under this non-preferred alternative in the Northeast region.

#### Changes in Expenditures Associated with Non-Preferred Scup Alternative 3

Maximum potential losses associated with the proposed 2002 regulations can be estimated by adjusting the 1998 average trip expenditures to their 2002 equivalent and multiplying by the projected number of affected trips in 2002<sup>3</sup>. Adjusted average trip expenditures in 2002 dollars are \$76.87 for party/charter boat trips, \$55.71 for private/rental boat trips, and \$39.24 for shore trips. Thus, the multiplication of party/charter mean trip expenditures adjusted to its 2002 equivalent (\$76.87) and the projected number of affected trips in New Jersey (8,169), for example, results in total expenditures of \$627,951 (Table 50). As such, if the regulations proposed under this non-preferred alternative result in a decrease in the number of party/charter boat fishing trips, New Jersey businesses that supply trip-related goods and services to this mode could lose up to

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<sup>3</sup>1998 average trip-related expenses were adjusted to their 2002 equivalent by using the Bureau of Labor Statistics Consumer Price Index. Since the price index has yet to be calculated for 2002, a 10-year average annual increase from 1992-2001 (2.82%) was used to adjust the expenditure estimates from 2001 to 2002.

\$627,951 in 2002 compared to 2001. Potential reductions in expenditures were also estimated for the states of Massachusetts, Rhode Island, Connecticut, New York, and Delaware. No losses are expected in Maine, New Hampshire, Maryland, Virginia, and North Carolina.

#### Overall Economic Impact of Non-Preferred Scup Alternative

Using a multiplier of 1.5 - 2.0, as described in Section 5.2.1, it was estimated that the overall economic impact of the management measures on businesses that supply goods and services to the party/charter boat sector in New Jersey, for example, could be from \$941,927 ( $\$627,951 \times 1.5$ ) to \$1,255,902 ( $\$627,951 \times 2.0$ ). Losses in the remaining states projected to be effected by the proposed regulations could be from \$1,393,577 to \$1,858,102 in Massachusetts, from \$199,824 to \$266,432 in Rhode Island, from \$141,249 to \$188,332 in Connecticut, from \$1,558,001 to \$2,077,334 in New York, and from \$119,226 to \$158,968 in Delaware.

As described in Section 5.2.1, the potential economic losses described above (expenditures and overall economic impact sections) assume the worse potential impact case scenario. Losses of this magnitude are not likely to occur given that anglers will continue to have the ability to engage in catch and release fishing for scup and because of the numerous alternative target species available to anglers.

#### Gross Revenue Impacts on Party/Charter Vessels Associated with Non-Preferred Scup Alternative 3

Party and charter vessels that target scup could be directly impacted by the measures in this alternative. Assuming catch rates and angler effort in 2002 are similar to 2001, these measures are projected to affect anglers fishing from party/charter boats in Massachusetts, Rhode Island, Connecticut, New York, New Jersey and Delaware. Total party/charter boat earnings associated with these trips can be determined by multiplying the number of potentially affected trips in each state in 2002 by the average fee paid by party/charter anglers in the Northeast region (\$39.84 - 2002 equivalent; Table 50). These earnings were apportioned to the number of federally permitted party/charter vessels that participated in the scup fishery in 2000 according to homeport state in the Northeast logbook database. Thus, the potential impact per boat could be up to \$8,302 ( $\$481,506/58$ ) in Massachusetts, \$4,932 in Rhode Island, \$6,101 in Connecticut, \$19,226 in New York, \$10,848 in New Jersey, and \$20,597 in Delaware (Table 50). As such, if the regulations proposed under this preferred alternative result in a decrease in the number of recreational fishing trips, on average, each party/charter vessel in these states could see a decrease in gross revenue in 2002.

As with all of the scup alternatives, actual losses will likely be even lower because the universe of party/charter vessels that participated in the scup fishery is likely to be even

larger than presented in this analysis. Party/charter vessels that do not possess a federal scup permit because they only fish in state waters are not represented in this assessment. Considering that 92% of the landings in 2000 came from state waters it's probable that some party/charter vessels fish only in state waters and, thus, do not hold a federal scup permit. Therefore, the party/charter losses shown in this assessment would be spread over a greater number of vessels resulting in lower estimated losses per vessel.

In addition to this, anglers will continue to have the ability to engage in catch and release fishing for scup and because of the numerous alternative target species available to anglers, overall recreational demand should not be adversely affected. Unfortunately, very little information is available to empirically estimate how sensitive the affected party/charter boat anglers might be to the proposed regulations. The fact that the proposed regulations affect the number and size of the fish that can be kept or landed and do not prohibit anglers from engaging in catch and release fishing, demand in the effected states should remain relatively unaffected.

While keeping fish is moderately important to anglers in the Mid-Atlantic, over 42% of anglers in New England in 1994, indicated catching fish to eat was not an important reason for marine fishing (Steinback and O=Neil 1998). Although these anglers are not likely to be the ones constrained by the regulations, findings of this study generally concur with previous studies that found non-catch reasons for participating in marine recreational fishing were rated much higher than keeping fish for food. In combination with alternative target species available to anglers, the findings of the Steinback and O=Neil (1998) study suggest that at least some of the potentially affected anglers would not reduce their effort when faced with the landings restrictions proposed under this non-preferred alternative.

### **5.3 Black Sea Bass Fishery Impacts**

Black sea bass recreational data indicate that in two of the last four years (2000 and 2001) recreational landings have been more than the recreational harvest limits (Table 48). In 1998 recreational landings of black sea bass were 1.15 million lb (0.52 million kg) or 2 million lb (0.91 million kg) below the allowable harvest limit. In 1999 recreational landings of black sea bass were 1.70 million lb (0.77 million kg) or 1.45 million lb (0.66 million kg) below the allowable harvest limit. For the year 2000, recreational landings of black sea bass were 3.62 million lb (1.64 million kg) or 0.47 million lb (0.21 million kg) above the allowable harvest limit. In 2001 recreational landings are projected to be 0.49 million lb (0.22 million kg) above the allowable recreational harvest limit of 3.15 million lb (1.43 million kg). The proposed recreational harvest limit for 2002 is 3.429 million lbs (1.56 million kg). Based on projected 2001 landings and the proposed recreational harvest limit for 2002, landings would have to be reduced 12% to achieve the harvest limit in 2002 assuming no change in angler effort or stock abundance. Since there is no mechanism to deduct overages directly from the recreational harvest limit, any overages to the recreational harvest limit must be addressed by the way of adjustments to the

management measures (fish size, bag limit and/or season). The proposed recreational management measures are necessary to prevent anglers from exceeding the recreational harvest limit in 2002.

### Recreational Fishing Effort in 2001

Projected data from the Marine Recreational Fisheries Statistics Survey (MRFSS) indicate that anglers fished 36,987,200 days in 2001 in the Northeast Region (ME through NC). Anglers fishing from a private or rental boat were estimated to have fished more days than shore and party/charter anglers combined (18,798,678; Table 44). Shore anglers were projected to have fished 16,410,405 days and party/charter boat anglers about 1,778,117 days. Anglers fishing in New Jersey, North Carolina, Massachusetts, New York, and Virginia comprised 75% of the total projected effort in the Northeast Region. To date, the first five waves of MRFSS effort data are available for 2001. Wave six effort estimates were calculated from the proportion of wave 6 effort in 2000 to the total effort in 2000, by state.

The contribution of black sea bass to the total catch (by number) made by party/charter vessels varied by month for the period 1996-2000 (Table 6). The contribution of black sea bass to the total catch of party/charter vessels fluctuated throughout the year, ranging from less than 10% from January through April to 50% in November, with the largest proportion (> 30%) of black sea bass caught from September through November.

### Expenditures for Recreational Fishing

During 1998, social and economic data from marine recreational fishermen in the Northeast Region were gathered through an economic add-on to NMFS= Marine Recreational Statistics Survey (MRFSS; Steinback and Gentner, 2001). As part of this survey, anglers were asked to delineate trip expenditures and purchases of durable equipment used primarily for saltwater recreational fishing. Results of the survey were used to project the potential losses associated with the proposed 2002 regulations.

Survey results indicate that the average trip expenditure in 1998 was \$49.78 for anglers fishing from a private/rental boat, \$35.06 for shore anglers, and \$68.60 for anglers that fished from a party/charter boat (Table 46). Trip expenditures included the following consumable items: (1) travel; (2) food, drink, and refreshments; (3) lodging at motels, cabins, lodges, or campgrounds; (4) public transportation or car rental; (5) boat fuel; (6) guide or package fees; (7) access and/or boat launching fees; (8) equipment rental such as boat, fishing or camping equipment; (9) bait; and (10) ice. Expenditures on durable items such as rods, reels, tackle, special fishing clothing, etc., were also estimated in the Steinback and Gentner report but are not included in the subsequent analysis. Although expenditures on durable items may also be affected by the proposed regulations, the



extent of the impact would be difficult to quantify since these items could be used for many trips.

### **5.3.1 Impacts of Black Sea Bass Preferred Alternative**

The preferred alternative would implement a coastwide 11.5" TL minimum fish size, a 25 fish possession limit, and no season. These management measures could reduce landings by approximately 16% if implemented by all the states (See EA, Sec. 6.5.2). Based on projected 2001 landings and the proposed recreational harvest limit for 2002, landings would have to be reduced 12% to achieve the harvest limit in 2002 assuming no change in angler effort or stock abundance. As such, the reduction in landings associated with the proposed management measures (16%) under this alternative are estimated to achieve the necessary reduction in landings. Current black sea bass recreational measures in the EEZ include 11" TL minimum size, a 25 fish possession limit, and an open season from January 1 to February 28 and from May 10 to December 31 (or a closed season from March 1 to May 9). As such, the difference between the preferred coastwide black sea bass recreational measures for 2002 and the status quo is an increase in the minimum fish size and the elimination of closed season.

#### Changes in Fishing Effort Associated with Black Sea Bass Preferred Alternative

Staff at the Northeast Fisheries Science Center estimated the proportion of effort that fished from party/charter boats in 2001 that would have been affected by the implementation of the black sea bass measures proposed under the preferred alternative for the 2002 fishing year (Table 51). In Maryland, for example, it was estimated that 1.15% of the trips aboard party/charter boats in 2001 would have been affected by the 2002 measures. In other words, 1,967 (1.15%) angler trips taken aboard party/charter boats in 2001 landed at least one black sea bass that was less than 11.5 inches or landed more than 25 black sea bass. Angler effort in Rhode Island, New Jersey, Delaware, Virginia, and North Carolina would also have been affected by the proposed 2002 measures. Party/charter boat anglers in the remaining states in the Northeast Region would not have been affected by the proposed measures. Assuming angler effort in 2002 is similar to 2001 and catch rates remain about the same, Table 51 shows the projected number of party/charter trips by state that will likely be affected by the proposed regulations under this preferred alternative in the Northeast region.

#### Changes in Expenditures Associated with Black Sea Bass Preferred Alternative

Maximum potential losses associated with the proposed 2002 regulations can be estimated by adjusting the 1998 average trip expenditures to their 2002 equivalent and

multiplying by the projected number of affected trips in 2002<sup>4</sup>. Adjusted average trip expenditures in 2002 dollars are \$76.87 for party/charter boat trips, \$55.71 for private/rental boat trips, and \$39.24 for shore trips. Thus, the multiplication of party/charter mean trip expenditures adjusted to its 2002 equivalent (\$76.87) and the projected number of affected trips in Maryland (1,967), for example, results in total expenditures of \$151,251 (Table 51). As such, if the regulations proposed under this preferred alternative result in a decrease in the number of party/charter boat fishing trips, Maryland businesses that supply trip-related goods and services to this mode could lose up to \$151,251 in 2002 compared to 2001. Using the same type of analysis, it was estimated that the largest potential decrease in total expenditures due to the proposed regulations would be felt by businesses operating out of the state of New Jersey (\$344,070). Potential reductions in expenditures were also estimated for the states of Rhode Island, Delaware, Virginia, and North Carolina. No losses were estimated the remaining the states.

### Overall Economic Impact of Black Sea Bass Preferred Alternative

Using a multiplier of 1.5 - 2.0, as described in Section 5.2.1, it was estimated that the overall economic impact of the proposed management measures on party/charter boat anglers in Maryland, for example, could be from \$226,877 (\$151,251 x 1.5) to \$302,502 (\$151,251 x 2.0). Losses in the remaining states estimated to be effected by the proposed regulations could be from \$3,921 to \$5,228 in Rhode Island, from \$516,105 to \$67,149 in New Jersey, from \$160,505 to \$214,006 in Delaware, from \$115,803 to \$154,404 in Virginia, and from \$39,908 to 53,210 in North Carolina.

The potential economic losses described above (expenditures and overall economic impact sections), however, assume the worse potential impact case scenario. Losses of this magnitude are not likely to occur given that anglers in these states will continue to have the ability to engage in catch and release fishing for black sea bass and because of the various alternative target species available to these anglers. Unfortunately, very little information is available to empirically estimate how sensitive the affected anglers might be to the proposed regulations. The fact that the proposed regulations affect the number and size of the fish that can be kept or landed and do not prohibit anglers from engaging in catch and release fishing, the overall losses are likely to be somewhat lower. If the total number of recreational fishing trips is unaffected by the regulations (i.e., total expenditures remain constant) then no losses will occur to businesses that supply trip-related goods and services.

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<sup>4</sup>1998 average trip-related expenses were adjusted to their 2001 equivalent by using the Bureau of Labor Statistics Consumer Price Index. Since the price index has yet to be calculated for 2002, a 10-year average annual increase from 1992-2001 (2.82%) was used to adjust the expenditure estimates from 2001 to 2002.

## Gross Revenue Impacts on Party/Charter Vessels Associated with Black Sea Bass Preferred Alternative

Party and charter vessels that target black sea bass could be directly impacted by the proposed regulations. Assuming catch rates and angler effort in 2002 are similar to 2001, these measures are projected to affect anglers fishing from party/charter boats in Rhode Island, New Jersey, Delaware, Maryland, Virginia, and North Carolina. Total party/charter boat earnings associated with these trips can be determined by multiplying the number of potentially affected trips in each state in 2002 by the average fee paid by party/charter anglers in the Northeast region (\$39.84 - 2002 equivalent; Table 51). These earnings were apportioned to the number of federally permitted party/charter vessels that participated in the black sea bass fishery in 2000 according to homeport state in the Northeast logbook database. Thus, the potential impact per boat could be up to \$54 (\$1,355/25) in Rhode Island, \$3,075 in New Jersey, \$11,091 in Delaware, \$26,122 in Maryland, \$1,818 in Virginia, and \$1,378 in North Carolina (Table 51). As such, if the regulations proposed under this preferred alternative result in a decrease in the number of recreational fishing trips, on average, each party/charter vessel in these states could see a decrease in gross revenue in 2002.

Party/charter vessels that do not possess a federal black sea bass permit because they only fish in state waters are not represented in this assessment. Considering that 34% of the landings in 2000 came from state waters it's possible that some party/charter vessels fish only in state waters and, thus, do not hold a federal black sea bass permit. Therefore, the party/charter losses shown in this assessment would be spread over a greater number of vessels resulting in lower estimated losses per vessel.

In addition to this, anglers will continue to have the ability to engage in catch and release fishing for black sea bass and because of the numerous alternative target species available to anglers, overall recreational demand should not be adversely affected. Unfortunately, very little information is available to empirically estimate how sensitive the affected party/charter boat anglers might be to the proposed regulations. The fact that the proposed regulations affect the number and size of the fish that can be kept or landed and do not prohibit anglers from engaging in catch and release fishing, demand in the effected states should remain relatively unaffected.

While keeping fish is moderately important to anglers in the Mid-Atlantic, over 42% of anglers in New England in 1994, indicated catching fish to eat was not an important reason for marine fishing (Steinback and O=Neil 1998). Although these anglers are not likely to be the ones constrained by the regulations, findings of this study generally concur with previous studies that found non-catch reasons for participating in marine recreational fishing were rated much higher than keeping fish for food. In combination with alternative target species available to anglers, the findings of the Steinback and O=Neil (1998) study

suggest that at least some of the potentially affected anglers would not reduce their effort when faced with the landings restrictions proposed under this preferred alternative.

### **5.3.2 Impacts of Black Sea Bass Non-Preferred Alternative 1**

This non-preferred alternative would implement a 11" TL minimum fish size, a 25 fish possession limit, and an open season from May 19 to November 30 for 2002 (or a closed season from December 1 to May 18). These management measures could reduce landings by approximately 12% if implemented by all the states (See EA, Sec. 6.5.3). Based on projected 2001 landings and the proposed recreational harvest limit for 2002, it was estimated that landings would have to be reduced 12% to achieve the harvest limit in 2002 assuming no change in angler effort or stock abundance. As such, the reduction in landings associated with the proposed management measures under this alternative would meet the percent reduction required to achieve the harvest limit. Current black sea bass recreational measures in the EEZ include 11" TL minimum size, a 25 fish possession limit, and an open season from January 1 to February 28 and from May 10 to December 31 (or a closed season from March 1 to May 9). As such, the difference between this non-preferred coastwide black sea bass alternative and the status quo is a decrease in the fishing season.

VTR data indicates that the monthly contribution of black sea bass to the total catch of party/charter vessels averaged about 7.8% during the proposed closed period of time in the Northeast Region (Table 6). However, black sea bass comprised a significant portion the total catch in certain states during the closed season: greater than 87% in Virginia and Maryland in December; 80% in Virginia in January; 66% in Virginia in February; and greater than 20% in Virginia, Maryland and North Carolina in April. It is possible that a black sea bass seasonal closure during those months could affect recreational satisfaction to such an extent that the demand for recreational party/charter trips could decrease for that time period.

#### Changes in Fishing Effort Associated with Black Sea Bass Non-Preferred Alternative 1

Staff at the Northeast Fisheries Science Center estimated the proportion of effort that fished from party/charter boats in 2001 that would have been affected by the implementation of the black sea bass measures proposed under this non-preferred alternative for the 2002 fishing year (Table 52). In Virginia, for example, it was estimated that 1.19% of the trips aboard party/charter boats in 2001 would have been affected by the 2002 measures. In other words, 1,117 (1.19%) angler trips taken aboard party/charter boats in 2001 landed at least one black sea bass that was less than 11 inches, or landed more than 25 black sea bass, or landed at least one black sea bass during the proposed closed season. Angler effort in Massachusetts, Rhode Island, New Jersey, Delaware, Maryland, and North Carolina would also have been affected by the proposed 2002 measures. Party/charter boat anglers in the remaining states in the Northeast Region

would not have been affected by the proposed measures. Assuming angler effort in 2002 is similar to 2001 and catch rates remain about the same, Table 52 shows the projected number of party/charter trips by state that will likely be affected by the proposed regulations under this non-preferred alternative in the Northeast region.

#### Changes in Expenditures Associated with Black Sea Bass Non-Preferred Alternative 1

Maximum potential losses associated with the proposed 2002 regulations can be estimated by adjusting the 1998 average trip expenditures to their 2002 equivalent and multiplying by the projected number of affected trips in 2002<sup>5</sup>. Adjusted average trip expenditures in 2002 dollars are \$76.87 for party/charter boat trips, \$55.71 for private/rental boat trips, and \$39.24 for shore trips. Thus, the multiplication of party/charter mean trip expenditures adjusted to its 2002 equivalent (\$76.87) and the projected number of affected trips in Virginia (1,117), for example, results in total expenditures of \$85,864 (Table 52). As such, if the regulations proposed under this non-preferred alternative result in a decrease in the number of party/charter boat fishing trips, Virginia businesses that supply trip-related goods and services to this mode could lose up to \$85,864 in 2002 compared to 2001. Using the same type of analysis, it was estimated that the largest potential decrease in total expenditures due to the proposed regulations would be felt by businesses operating out of the state of New Jersey (\$460,989). Potential reductions in expenditures were also estimated for the states of Massachusetts, Rhode Island, Delaware, Maryland, and North Carolina. No losses were estimated the remaining the states.

#### Overall Economic Impact of Black Sea Bass Non-Preferred Alternative 1

Using a multiplier of 1.5 - 2.0, as described in Section 5.2.1, it was estimated that the overall economic impact of the management measures in this alternative on party/charter boat anglers in Virginia, for example, could be from \$128,796 (\$85,864 x 1.5) to \$171,728 (\$85,864 x 2.0). Losses in the remaining states estimated to be effected by the proposed regulations could be from \$9,917 to \$13,222 in Massachusetts, from \$114,152 to \$152,202 in Rhode Island, from \$691,484 to \$921,978 in New Jersey, from \$186,219 to \$248,292 in Delaware, from \$236,742 to \$315,656 in Maryland, and from \$44,624 to 59,498 in North Carolina.

The potential economic losses described above (expenditures and overall economic impact sections), however, assume the worse potential impact case scenario. Losses of this magnitude are not likely to occur given that anglers in these states will continue to have the ability to engage in catch and release fishing for black sea bass and because of the

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<sup>5</sup>1998 average trip-related expenses were adjusted to their 2001 equivalent by using the Bureau of Labor Statistics Consumer Price Index. Since the price index has yet to be calculated for 2002, a 10-year average annual increase from 1992-2001 (2.82%) was used to adjust the expenditure estimates from 2001 to 2002.

various alternative target species available to these anglers. Unfortunately, very little information is available to empirically estimate how sensitive the affected anglers might be to the proposed regulations. The fact that the proposed regulations affect the number and size of the fish that can be kept or landed and do not prohibit anglers from engaging in catch and release fishing, the overall losses are likely to be somewhat lower. If the total number of recreational fishing trips is unaffected by the regulations (i.e., total expenditures remain constant) then no losses will occur to businesses that supply trip-related goods and services.

#### Gross Revenue Impacts on Party/Charter Vessels Associated with Black Sea Bass Non-Preferred Alternative 1

Party and charter vessels that target black sea bass could be directly impacted by the regulations in this alternative. Assuming catch rates and angler effort in 2002 are similar to 2001, these measures are projected to affect anglers fishing from party/charter boats in Massachusetts, Rhode Island, New Jersey, Delaware, Maryland, Virginia, and North Carolina. Total party/charter boat earnings associated with these trips can be determined by multiplying the number of potentially affected trips in each state in 2002 by the average fee paid by party/charter anglers in the Northeast region (\$39.84 - 2002 equivalent; Table 52). These earnings were apportioned to the number of federally permitted party/charter vessels that participated in the black sea bass fishery in 2000 according to homeport state in the Northeast logbook database. Thus, the potential impact per boat could be up to \$36 (\$3,426/96) in Massachusetts, \$1,578 in Rhode Island, \$4,119 in New Jersey, \$12,868 in Delaware, \$27,264 in Maryland, \$2,023 in Virginia, and \$1,542 in North Carolina (Table 52). As such, if the regulations proposed under this non-preferred alternative result in a decrease in the number of recreational fishing trips, on average, each party/charter vessel in these states could see a decrease in gross revenue in 2002.

Party/charter vessels that do not possess a federal black sea bass permit because they only fish in state waters are not represented in this assessment. Considering that 34% of the landings in 2000 came from state waters it's possible that some party/charter vessels fish only in state waters and, thus, do not hold a federal black sea bass permit. Therefore, the party/charter losses shown in this assessment would be spread over a greater number of vessels resulting in lower estimated losses per vessel.

In addition to this, anglers will continue to have the ability to engage in catch and release fishing for black sea bass and because of the numerous alternative target species available to anglers, overall recreational demand should not be adversely affected. Unfortunately, very little information is available to empirically estimate how sensitive the affected party/charter boat anglers might be to the proposed regulations. The fact that the proposed regulations affect the number and size of the fish that can be kept or landed and do not prohibit anglers from engaging in catch and release fishing, demand in the effected states should remain relatively unaffected.

While keeping fish is moderately important to anglers in the Mid-Atlantic, over 42% of anglers in New England in 1994, indicated catching fish to eat was not an important reason for marine fishing (Steinback and O=Neil 1998). Although these anglers are not likely to be the ones constrained by the regulations, findings of this study generally concur with previous studies that found non-catch reasons for participating in marine recreational fishing were rated much higher than keeping fish for food. In combination with alternative target species available to anglers, the findings of the Steinback and O=Neil (1998) study suggest that at least some of the potentially affected anglers would not reduce their effort when faced with the landings restrictions proposed under this non-preferred alternative.

### **5.3.3 Impacts of Black Sea Bass Non-Preferred Alternative 2**

This non-preferred alternative would implement a 11" TL minimum fish size, a 15 fish possession limit, and an open season from January 1 to February 28 and from May 1 to December 26 during 2002 (or a closed season from March 1 to April 31 and from December 27 to December 31). These management measures could reduce landings by approximately 12% if implemented by all the states (See EA, Sec. 6.53). Based on projected 2001 landings and the proposed recreational harvest limit for 2002, it was estimated that landings would have to be reduced 12% to achieve the harvest limit in 2002 assuming no change in angler effort or stock abundance. As such, the reduction in landings associated with the proposed management measures under this alternative would meet percent reduction required to achieve the harvest limit. Current black sea bass recreational measures in the EEZ include 11" TL minimum size, a 25 fish possession limit, and an open season from January 1 to February 28 and from May 10 to December 31 (or a closed season from March 1 to May 9). As such, the difference between this non-preferred coastwide black sea bass recreational alternative for 2002 and the status quo is a decrease in the bag limit and a slight increase in the fishing season.

VTR data indicates that the monthly contribution of black sea bass to the total catch of party/charter vessels averaged about 3.8% during the proposed closed period of time in the Northeast Region (Table 6). However, black sea bass comprised a significant portion the total catch during the closed season for the states of Virginia, Maryland, and North Carolina. It is possible that a black sea bass seasonal closure during those months could affect recreational satisfaction to such an extent that the demand for recreational party/charter trips could decrease for that time period.

#### Changes in Fishing Effort Associated with Black Sea Bass Non-Preferred Alternative 2

Staff at the Northeast Fisheries Science Center estimated the proportion of effort that fished from party/charter boats in 2001 that would have been affected by the implementation of the black sea bass measures proposed under this non-preferred alternative for the 2002 fishing year (Table 53). In North Carolina, for example, it was estimated that 0.17% of the trips aboard party/charter boats in 2001 would have been

affected by the 2002 measures. In other words, 346 (0.17%) angler trips taken aboard party/charter boats in 2001 landed at least one black sea bass that was less than 11 inches, or landed more than 25 black sea bass, or landed at least one black sea bass during the proposed closed season. Angler effort in Massachusetts, Rhode Island, New York, New Jersey, Delaware, Maryland, and Virginia would also have been affected by the proposed 2002 measures. Party/charter boat anglers in the remaining states in the Northeast Region would not have been affected by the proposed measures. Assuming angler effort in 2002 is similar to 2001 and catch rates remain about the same, Table 53 shows the projected number of party/charter trips by state that will likely be affected by the proposed regulations under this non-preferred alternative in the Northeast region.

#### Changes in Expenditures Associated with Black Sea Bass Non-Preferred Alternative 2

Maximum potential losses associated with the proposed 2002 regulations can be estimated by adjusting the 1998 average trip expenditures to their 2002 equivalent and multiplying by the projected number of affected trips in 2002<sup>6</sup>. Adjusted average trip expenditures in 2002 dollars are \$76.87 for party/charter boat trips, \$55.71 for private/rental boat trips, and \$39.24 for shore trips. Thus, the multiplication of party/charter mean trip expenditures adjusted to its 2002 equivalent (\$76.87) and the projected number of affected trips in North Carolina (346), for example, results in total expenditures of \$26,597 (Table 53). As such, if the regulations proposed under this non-preferred alternative result in a decrease in the number of party/charter boat fishing trips, North Carolina businesses that supply trip-related goods and services to this mode could lose up to \$26,597 in 2002 compared to 2001. Using the same type of analysis, it was estimated that the largest potential decrease in total expenditures due to the proposed regulations would be felt by businesses operating out of the state of New Jersey (\$2,625,572). Potential reductions in expenditures were also estimated for the states of Massachusetts, Rhode Island, New York, Delaware, Maryland, and Virginia. No losses were estimated the remaining the states.

#### Overall Economic Impact of Black Sea Bass Non-Preferred Alternative 2

Using a multiplier of 1.5 - 2.0, as described in Section 5.2.1, it was estimated that the overall economic impact of the proposed management measures on party/charter boat anglers in North Carolina, for example, could be from \$39,896 (\$26,597 x 1.5) to \$53,194 (\$26,597 x 2.0). Losses in the remaining states estimated to be effected by the proposed regulations could be from \$1,499 to \$1,998 in Massachusetts, from \$13,260 to \$17,680 in Rhode Island, from \$9,570 to \$12,760 in New York, from \$3,938,358 to \$5,251,144 in New

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<sup>6</sup>1998 average trip-related expenses were adjusted to their 2001 equivalent by using the Bureau of Labor Statistics Consumer Price Index. Since the price index has yet to be calculated for 2002, a 10-year average annual increase from 1992-2001 (2.82%) was used to adjust the expenditure estimates from 2001 to 2002.



Jersey, from \$153,173 to \$204,230 in Delaware, from \$319,280 to \$425,706 in Maryland, and from \$118,995 to 158,660 in Virginia.

The potential economic losses described above (expenditures and overall economic impact sections), however, assume the worse potential impact case scenario. Losses of this magnitude are not likely to occur given that anglers in these states will continue to have the ability to engage in catch and release fishing for black sea bass and because of the various alternative target species available to these anglers. Unfortunately, very little information is available to empirically estimate how sensitive the affected anglers might be to the proposed regulations. The fact that the proposed regulations affect the number and size of the fish that can be kept or landed and do not prohibit anglers from engaging in catch and release fishing, the overall losses are likely to be somewhat lower. If the total number of recreational fishing trips is unaffected by the regulations (i.e., total expenditures remain constant) then no losses will occur to businesses that supply trip-related goods and services.

#### Gross Revenue Impacts of Party/Charter Vessels Associated with Black Sea Bass Non-Preferred Alternative 2

Party and charter vessels that target black sea bass could be directly impacted by the regulations in this alternative. Assuming catch rates and angler effort in 2002 are similar to 2001, these measures are projected to affect anglers fishing from party/charter boats in Massachusetts, Rhode Island, New York, New Jersey, Delaware, Maryland, Virginia, and North Carolina. Total party/charter boat earnings associated with these trips can be determined by multiplying the number of potentially affected trips in each state in 2002 by the average fee paid by party/charter anglers in the Northeast region (\$39.84 - 2002 equivalent; Table 53). These earnings were apportioned to the number of federally permitted party/charter vessels that participated in the black sea bass fishery in 2000 according to homeport state in the Northeast logbook database. Thus, the potential impact per boat could be up to \$183 (\$4,582/25) in Rhode Island, \$5 in Massachusetts, \$59 in New York, \$23,462 in New Jersey, \$10,582 in Delaware, \$36,772 in Maryland, \$1,869 in Virginia, and \$1,378 in North Carolina (Table 53). As such, if the regulations proposed under this non-preferred alternative result in a decrease in the number of recreational fishing trips, on average, each party/charter vessel in these states could see a decrease in gross revenue in 2002.

Party/charter vessels that do not possess a federal black sea bass permit because they only fish in state waters are not represented in this assessment. Considering that 34% of the landings in 2000 came from state waters it's possible that some party/charter vessels fish only in state waters and, thus, do not hold a federal black sea bass permit. Therefore, the party/charter losses shown in this assessment would be spread over a greater number of vessels resulting in lower estimated losses per vessel.

In addition to this, anglers will continue to have the ability to engage in catch and release fishing for black sea bass and because of the numerous alternative target species available to anglers, overall recreational demand should not be adversely affected. Unfortunately, very little information is available to empirically estimate how sensitive the affected party/charter boat anglers might be to the proposed regulations. The fact that the proposed regulations affect the number and size of the fish that can be kept or landed and do not prohibit anglers from engaging in catch and release fishing, demand in the effected states should remain relatively unaffected.

While keeping fish is moderately important to anglers in the Mid-Atlantic, over 42% of anglers in New England in 1994, indicated catching fish to eat was not an important reason for marine fishing (Steinback and O=Neil 1998). Although these anglers are not likely to be the ones constrained by the regulations, findings of this study generally concur with previous studies that found non-catch reasons for participating in marine recreational fishing were rated much higher than keeping fish for food. In combination with alternative target species available to anglers, the findings of the Steinback and O=Neil (1998) study suggest that at least some of the potentially affected anglers would not reduce their effort when faced with the landings restrictions proposed under this non-preferred alternative.

#### **5.4 Combined Summer Flounder, Black Sea Bass, and Scup Fishery Impacts**

In 2000, 738 vessels held a Federal party/charter permit for summer flounder, black sea bass or scup. A portion of these vessels held only a summer flounder, black sea bass or scup permit, but most of the vessels held permits for at least two of the species and a large number of vessels held permits for all three species. However, according to 2000 Northeast logbook data only about one-half of the vessels (393) that held Federal permits reported angler landings of summer flounder, black sea bass or scup in 2000 (Table 54). Of the vessels that reported angler landings, a small number landed only one of the species, but most landed at least two of the species and some landed all three species during the course of the 2000 fishing year. In Massachusetts, for example, 51 vessels that held Northeast permits for all three species in 2000 reported landings on Northeast trip reports in 2000. There were 13 vessels in Massachusetts that held only black sea bass permits and reported landings in 2000; 3 vessels that held black sea bass and scup permits that reported landings; 29 vessels that held black sea bass and summer flounder permits that reported landings; 2 vessels that held only scup permits and reported landings; 20 vessels that held only summer flounder permits and reported landings; and 2 vessels that held summer flounder and scup permits that reported landings.

Potential revenue losses in 2002 may be higher than discussed in Sections 5.1.1, 5.2.1, and 5.3.1 of the RIR/IRFA for party/charter vessels that land more than one of the regulated species. Although a cumulative impact assessment of losses for all the various combinations of summer flounder, scup, and black sea bass alternatives is not provided (because this would result in 18 possible combinations of alternatives), one particularly

onerous combination of alternatives was analyzed. Table 55 shows the effect of the precautionary default for summer flounder in combination with the non-preferred alternative 1 for scup, and the preferred alternative for black sea bass. These are the alternatives that are likely to be implemented in 2002, with the exception of summer flounder. The precautionary default for summer flounder is considerably more restrictive than the conservation equivalent measures proposed under the preferred alternative. However, since the conservation equivalent measures have yet to be adopted by the states it was not possible to analyze this alternative in combination with the scup and black sea bass alternatives. Therefore, the maximum gross revenue losses associated with vessels that land summer flounder in 2002 will be considerably lower than shown in Table 55.

The cumulative maximum gross revenue loss per vessel varies by the combination of permits held and by state under this combination of alternatives (Table 55). In Rhode Island, for example, losses could reach \$6,481 for each vessel that lands all three species in 2002 as compared to 2001. In contrast, each party/charter vessel that lands all three species in Maryland could lose considerably more - up to \$32,151 in 2002. For vessels that land only black sea bass, maximum gross revenue losses were estimated at \$54 for each Rhode Island vessel, but \$26,122 for each Maryland vessel that takes passengers for-hire. On average, the largest potential losses under this combination of summer flounder, scup, and black sea bass management measures are projected for party/charter vessels operating out of New York, New Jersey, Delaware, and Maryland in 2002.

The revenue losses shown in Table 55, however, represent the maximum potential gross revenue losses per vessel. These losses were calculated by assuming that all of the angler trips constrained by the proposed measures will no longer occur. Given that anglers will continue to have the ability to engage in catch and release fishing for summer flounder, scup, and black sea bass and because of the numerous alternative target species available to anglers, the reduction in effort and associated expenditures should be substantially lower than indicated in this analysis. The lack of appropriate demand models limits our ability to empirically estimate how sensitive the affected anglers might be to the proposed regulations. Nonetheless, the fact that the proposed regulations affect the number and size of the fish that can be kept or landed and do not prohibit anglers from engaging in catch and release fishing, demand and party/charter boat revenues should remain relatively stable.

**Table 1. Procedure for establishing summer flounder recreational management measures.**

	<b>August</b>	
	Council/Board recommend recreational harvest limit.	
	<b>October</b>	
	MRFSS data available for current year through wave 4.	
	<b>November</b>	
	Monitoring Committee meeting to develop recommendations to Council: Overall % reduction required. Use of coastwide measures or state conservation equivalency. **Precautionary default measures. **Coastwide measures.	
	<b>December</b>	
	Council/Board meeting to make recommendation to NMFS State Conservation Equivalency or Coastwide measures.	
<u>State Conservation Equivalency Measures</u>		
<b>Late December</b>		-Evaluation of proposals. -ASMFC staff summarizes Technical Committee recommendations and distributes to Board.
Commission staff summarizes and distributes equivalency guideline to states.		<b>February</b>
<b>Early January</b>		Board meeting to approve/disapprove proposals and submits to NMFS within two weeks, but no later than end of February.
Council staff submits recreational measure package to NMFS. Package includes: Overall % reduction required. - Recommendation to implement conservation equivalency and precautionary default measures (Preferred Alternative). -Coastwide measures (Non-preferred Alternative).		<b>March 1 (on or around)</b>
States submit conservation equivalency proposals to ASMFC.		NMFS publishes proposed rule for recreational measures announcing the overall % reduction required, state conservation equivalency measures and precautionary default measures (as the preferred alternative), and coastwide measures as the non-preferred alternative.
<b>January 15</b>		<b>March 15</b>
ASMFC distributes state conservation equivalency proposals to Technical Committee.		During comment period, Board submits comment to inform whether conservation equivalency proposals are approved.
<b>Late January</b>		
ASMFC Technical Committee meeting:		<b>April</b>

NMFS publishes final rule announcing overall % reduction required and one of the following scenarios:  
-State specific conservation equivalency measures with precautionary default measures, or  
-Coastwide measures.

#### Coastwide Measures

##### **Early January**

Council staff submits recreational measure package to NMFS. Package includes:  
-Overall % reduction required.  
-Coastwide measures.

##### **February 15**

NMFS publishes proposed rule for recreational measures announcing the overall % reduction required and Coastwide measures.

##### **April**

NMFS publishes final rule announcing overall % reduction required and Coastwide measures.

\*\*Precautionary default measures - measures to achieve at least the % required reduction in each state, e.g., one fish possession limit and 15.5 inch bag limit would have achieved at least a 41% reduction in landings for each state in 1999.

\*\*Coastwide measures - measure to achieve % reduction coastwide.

**Table 2. Summer flounder landings (number) by state for 1998 and 2002 (assuming a 37% reduction in the 1998 landings), and the 2001 projected landings (based on waves 1-5). The percent reduction relative to 2001 landings necessary to achieve the 2002 recreational harvest limit is also presented.**

<u>State</u>	<u>1998</u>	<u>37% Reduction (2002)</u>	<u>2001*</u>	<u>% Reduction</u>
MA	383	241	144	0
RI	395	249	262	5.0
CT	261	164	151	0
NY	1230	775	686	0
NJ	2728	1719	2062	16.7
DE	219	138	143	3.5
MD	206	130	137	5.3
VA	1165	734	1306	43.8
NC	391	246	344	28.4

\* Projected.

**Table 3. The percentage contribution by state to the total summer flounder, scup, and black sea bass recreational landings (number of fish), 2000 MRFSS estimates.**

<b>State</b>	<b>Percent Summer Flounder Landings</b>	<b>Percent Scup Landings</b>	<b>Percent Black Sea Bass Landings</b>
NH	0.00	0.01	0.01
RI	10.08	16.65	5.05
MA	4.9	19.33	1.77
CT	4.70	18.11	0.38
NY	21.38	43.32	8.90
NJ	39.04	2.51	52.40
DE	4.28	0.02	4.04
MD	3.33	0.00	11.59
VA	7.54	0.04	12.01
NC	4.74	0.00	3.85
TOTAL	100.00	100.00	100.00

**Table 4. The percentage (%) contribution of summer flounder to the total catch (number) by party/charter vessels by state and month, 1996 - 2000.**

<u>STATE</u>	<u>JAN</u>	<u>FEB</u>	<u>MAR</u>	<u>APR</u>	<u>MAY</u>	<u>JUN</u>	<u>JUL</u>	<u>AUG</u>	<u>SEP</u>	<u>OCT</u>	<u>NOV</u>	<u>DEC</u>	<u>TOTAL</u>
<b>CT</b>	0.00%	0.00%	0.00%	0.00%	1.76%	3.00%	3.30%	1.96%	0.53%	0.00%	0.00%		1.47%
<b>DE</b>				0.02%	8.70%	12.79%	4.46%	12.88%	6.82%	1.58%	0.60%	0.00%	6.46%
<b>ME</b>	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.12%	0.00%	0.00%	0.00%	0.02%
<b>MD</b>	0.00%	0.00%	0.00%	0.02%	0.15%	0.46%	0.24%	0.17%	0.33%	0.06%	0.03%	0.00%	0.19%
<b>MA</b>	0.00%	0.00%	0.00%	0.00%	0.04%	0.38%	2.05%	0.54%	0.19%	0.03%	0.00%	0.00%	0.52%
<b>NH</b>			0.00%	0.00%	0.00%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
<b>NJ</b>	0.00%	0.00%	0.00%	0.10%	6.95%	14.88%	22.79%	25.65%	13.74%	4.18%	0.25%	0.01%	12.27%
<b>NY</b>	0.00%	0.00%	0.13%	0.36%	50.14%	55.72%	58.98%	43.15%	14.39%	2.56%	0.42%	0.00%	31.49%
<b>NC</b>	0.00%	0.00%	0.00%	0.00%	2.20%	1.93%	1.40%	1.05%	0.26%	0.13%	0.00%	0.00%	1.19%
<b>RI</b>	0.00%	0.00%	0.00%	0.00%	5.69%	26.02%	27.83%	2.03%	1.18%	0.10%	0.30%	0.00%	4.68%
<b>VA</b>	0.00%	0.00%	0.00%	7.04%	2.62%	2.40%	1.04%	0.83%	1.21%	0.85%	4.02%	0.10%	1.60%
<b>All</b>	0.00%	0.00%	0.01%	0.21%	13.71%	19.77%	23.29%	17.10%	10.60%	2.99%	0.44%	0.01%	12.70%

Source: Unpublished NMFS Vessel trip report data.



**Table 5. The percentage (%) contribution of scup to the total catch (number) by party/charter vessels by state and month, 1996 - 2000.**

<u>STATE</u>	<u>JAN</u>	<u>FEB</u>	<u>MAR</u>	<u>APR</u>	<u>MAY</u>	<u>JUN</u>	<u>JUL</u>	<u>AUG</u>	<u>SEP</u>	<u>OCT</u>	<u>NOV</u>	<u>DEC</u>	<u>TOTAL</u>
<b>CT</b>	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.17%	2.04%	4.94%	9.22%	1.12%		3.42%
<b>DE</b>				0.00%	0.00%	0.00%	0.00%	1.33%	0.08%	0.26%	0.00%	0.00%	0.24%
<b>ME</b>	0.00%	0.00%	0.00%	0.06%	0.01%	0.03%	0.00%	0.01%	0.00%	4.53%	0.00%	0.00%	0.39%
<b>MD</b>	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.31%	3.74%	0.66%	0.28%	0.68%
<b>MA</b>	0.00%	0.00%	0.00%	0.02%	22.80%	38.14%	19.62%	12.04%	26.02%	18.41%	0.04%	0.00%	18.87%
<b>NH</b>			0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
<b>NJ</b>	1.25%	0.59%	0.75%	0.00%	0.01%	0.02%	0.06%	1.76%	5.85%	21.41%	23.11%	1.33%	5.99%
<b>NY</b>	0.00%	0.00%	0.00%	0.00%	0.23%	0.87%	4.38%	9.93%	39.50%	50.70%	29.26%	2.06%	18.26%
<b>NC</b>	0.00%	0.00%	0.00%	0.00%	0.00%	0.41%	1.66%	2.00%	1.22%	0.51%	0.00%	0.00%	1.18%
<b>RI</b>	0.00%	0.00%	0.00%	0.00%	1.60%	0.31%	7.65%	1.25%	10.11%	40.38%	25.42%	2.99%	6.27%
<b>VA</b>	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.48%	0.12%	0.00%	0.00%	0.05%
<b>All</b>	0.81%	0.39%	0.32%	0.01%	4.45%	5.61%	3.05%	4.33%	15.97%	26.62%	21.67%	1.14%	9.09%

Source: Unpublished NMFS Vessel trip report data.

**Table 6. The percentage (%) contribution of black sea bass to the total catch (number) by party/charter vessels by state and month, 1996 - 2000.**

<u>STATE</u>	<u>JAN</u>	<u>FEB</u>	<u>MAR</u>	<u>APR</u>	<u>MAY</u>	<u>JUN</u>	<u>JUL</u>	<u>AUG</u>	<u>SEP</u>	<u>OCT</u>	<u>NOV</u>	<u>DEC</u>	<u>TOTAL</u>
<b>CT</b>	0.31%	0.00%	0.00%	0.00%	0.04%	0.01%	0.04%	0.17%	0.44%	0.56%	0.63%		0.26%
<b>DE</b>				0.14%	65.55%	33.49%	5.27%	4.70%	20.61%	43.05%	0.00%	0.00%	11.46%
<b>ME</b>	0.00%	0.00%	0.00%	0.00%	0.01%	0.01%	0.00%	0.00%	0.00%	0.31%	0.00%	0.00%	0.03%
<b>MD</b>	0.00%	0.00%	0.00%	32.59%	95.84%	91.13%	31.50%	4.31%	43.93%	89.01%	97.18%	87.72%	50.57%
<b>MA</b>	0.00%	0.00%	0.00%	0.00%	2.17%	1.95%	3.43%	2.19%	3.66%	2.28%	0.42%	0.00%	2.16%
<b>NH</b>			0.00%	0.00%	0.00%	0.00%	0.00%	0.02%	0.00%	0.00%	0.00%	0.00%	0.01%
<b>NJ</b>	10.76%	9.15%	7.76%	2.95%	34.92%	29.79%	16.33%	18.39%	43.71%	57.67%	53.10%	15.94%	30.90%
<b>NY</b>	0.11%	0.03%	0.01%	0.53%	6.84%	14.93%	11.14%	20.87%	26.50%	26.62%	33.11%	5.65%	18.32%
<b>NC</b>	0.00%	1.82%	0.00%	21.12%	30.19%	35.14%	39.70%	33.41%	44.57%	20.68%	7.03%	0.00%	33.92%
<b>RI</b>	5.68%	0.00%	0.00%	0.09%	0.08%	0.36%	1.27%	0.15%	56.61%	5.07%	19.34%	11.73%	8.25%
<b>VA</b>	80.34%	66.29%	0.17%	52.33%	66.49%	17.10%	10.39%	5.48%	58.09%	89.64%	93.18%	90.67%	35.94%
<b>All</b>	7.88%	9.37%	3.32%	2.89%	23.11%	21.00%	12.11%	11.06%	33.92%	45.92%	50.36%	14.25%	22.44%

Source: Unpublished NMFS Vessel trip report data.

**Table 7. The average proportion (%) of summer flounder caught, landed, and released alive by mode for recreational fishermen, Maine to North Carolina, 1991-2000.**

<u>Mode</u>	<u>Catch (Number)</u>	<u>Landings (Number)</u>	<u>Landings (Weight)</u>	<u>Released Alive (Number)</u>
Shore	10	6	5	11
Party/Charter	8	10	10	8
Private/Rental	82	84	85	81

Source: Personal communication from the National Marine Fisheries Service, Fisheries Statistics and Economics Division.

**Table 8. The average proportion (%) of scup caught, landed, and released alive by mode for recreational fishermen, Maine to North Carolina, 1991-2000.**

<u>Mode</u>	<u>Catch (Number)</u>	<u>Landings (Number)</u>	<u>Landings (Weight)</u>	<u>Released Alive (Number)</u>
Shore	10	9	6	12
Party/Charter	18	20	20	13
Private/Rental	72	71	74	75

Source: Personal communication from the National Marine Fisheries Service, Fisheries Statistics and Economics Division.

**Table 9. The average proportion (%) of black sea bass caught, landed, and released alive by mode for recreational fishermen, Maine to North Carolina, 1991-2000.**

<u>Mode</u>	<u>Catch (Number)</u>	<u>Landings (Number)</u>	<u>Landings (Weight)</u>	<u>Released Alive (Number)</u>
Shore	13	3	1	19
Party/Charter	37	64	65	20
Private/Rental	50	33	34	61

Source: Personal communication from the National Marine Fisheries Service, Fisheries Statistics and Economics Division.

**Table 10. Charter and party boat survey distribution and returns, 1990.**

<u>State</u>	<u>Number sent</u>	<u>Usable returns</u>	<u>Non-usable returns</u>
ME	24	5	1
NH	21	5	-
MA	80	17	9
RI	15	7	2
CT	17	4	2
NY	92	24	3
NJ	159	51	6
PA	16	7	1
DE	14	3	-
MD	4	2	-
VA	143	44	5
NC	1	1	-
FL	<u>6</u>	<u>2</u>	<u>1</u>
<b>Total</b>	592	172	30

**Table 11. Relative Customer Interest and Success in Catching Selected Species in 1989.**

**(1 = Low, 2 = Somewhat Low, 3 = Moderate, 4 = Somewhat High, and 5 = High).**

<u>Species</u>	<u>Charter boats</u>		<u>Party boats</u>	
	Interest (mean)	Success (mean)	Interest (mean)	Success (mean)
Large pelagics (marlin, tunas)	3.9	2.4	3.1	2.8
Sharks (other than dogfish)	3.2	2.4	2.1	1.9
Bluefish	3.9	3.9	4.6	4.0
Atlantic mackerel	2.4	3.0	3.5	3.5
Summer flounder	3.2	1.9	3.6	1.5
Scup	1.4	1.7	2.2	2.0
Black sea bass	2.1	2.6	3.2	2.9
Hakes	1.4	1.6	2.3	2.5
Groundfish (cod, haddock, yellowtail)	3.0	2.6	3.0	2.4
Weakfish	3.1	1.7	3.3	1.7
Striped bass	3.7	2.5	3.5	1.7
Other: spot	4.6	3.9	4.7	3.4

**Table 12. Party and charter boat operating experience in 1985 and 1989.**

	<u>Charter</u>		<u>Party</u>	
	1985 (mean)	1989 (mean)	1985 (mean)	1989 (mean)
Ave. number of trips per year	57.0	50.0	142.0	130.0
Ave. number of trips per day OR	1.0	1.0	1.3	1.4
Ave. number of days per trip	1.1	1.1	1.2	1.3
Ave. number days fishing per week	3.2	3.1	5.0	4.6
Ave. number of anglers per trip	5.2	5.1	20.9	19.5
Ave. trip price per customer (\$)	121.8	149.5	26.2	29.2
Ave. number of fish Taken per customer	10.9	8.3	15.2	9.9
Ave. number of crew members	1.4	1.4	2.1	2.0
Ave. cost of fuel & supplies (\$)	96.1	131.1	113.3	146.6

**Table 13. Recreational anglers' ratings (mean) of reasons for marine fishing, by subregion.**

Statement	New England			Mid-Atlantic		
	Not Important	Somewhat Important	Very Important	Not Important	Somewhat Important	Very Important
To Spend Quality Time with Friends and Family	4.4%	14.3%	81.3%	3.0%	12.0%	85.0%
To Enjoy Nature and the Outdoors	1.4%	10.1%	88.5%	1.1%	11.6%	87.3%
To Catch Fish to Eat	42.2%	37.4%	20.4%	29.3%	40.1%	30.6%
To Experience the Excitement or Challenge of Sport Fishing	6.2%	24.9%	68.8%	8.4%	26.0%	65.6%
To be Alone	55.0%	27.9%	17.1%	57.7%	25.8%	16.4%
To Relax and Escape from my Daily Routine	3.4%	13.3%	83.3%	2.6%	11.9%	85.5%
To Fish in a Tournament or when Citations are Available	78.6%	14.0%	7.4%	73.4%	17.1%	9.5%

**Source: Steinback *et al.*, 1999.**

**Table 14. Recreational anglers' ratings (mean) of fishing regulation methods, by subregion.**

Type of Regulation	New England		Mid-Atlantic	
	Support	Oppose	Support	Oppose
Limits on the Minimum Size of Fish You Can Keep	92.5%	7.5%	93.2%	6.8%
Limits on the Number of Fish You Can Keep	91.1%	8.9%	88.3%	11.7%
Limits on the Times of the Year When You Can Keep the Fish You Catch	78.8%	21.2%	77.1%	22.9%
Limits on the Areas You Can Fish	67.9%	32.1%	66.0%	34.0%

**Source: Steinback *et al.*, 1999.**

**Table 15. Recreational anglers' ratings (mean) of fishing regulation methods, by mode.**

Type of Regulation	Party/Charter		Private/Rental		Shore	
	Support	Oppose	Support	Oppose	Support	Oppose
Limits on the Minimum Size of Fish You Can Keep	92.1%	7.9%	94.4%	5.6%	90.1%	9.9%
Limits on the Number of Fish You Can Keep	87.9%	12.1%	90.0%	10.0%	87.7%	12.3%
Limits on the Times of the Year When You Can Keep the Fish You Catch	79.2%	20.8%	78.3%	21.7%	75.0%	25.0%
Limits on the Areas You Can Fish	74.4%	25.6%	65.9%	34.1%	63.6%	36.4%

**Source: Steinback *et al.*, 1999.**

**Table 16. Party/charter boats catch disposition (number of fish) from VTR data for all species, summer flounder, scup, and black sea bass, ME-NC, 1996-2000.**

	All species		Summer flounder		Scup		Black sea bass	
	# of fish Kept	# of fish discarded	# of fish Kept	# of fish discarded	# of fish Kept	# of fish discarded	# of fish Kept	# of fish discarded
1996	3,385,534	1,281,615	346,648	384,972	318,946	47,831	1,197,819	199,731
1997	3,836,547	1,306,266	369,334	304,634	252,359	46,530	871,321	140,667
1998	3,590,045	2,058,840	324,681	334,433	398,024	101,558	471,049	278,223
1999	3,772,959	1,957,156	200,632	529,749	418,735	69,778	672,475	405,757
2000	3,893,901	1,901,499	250,380	381,379	669,089	130,275	1,080,271	737,392

Source: Vessel Trip Report data.

**Table 17. Summary of management measures<sup>a</sup> for the summer flounder recreational fishery, 1993-2001.**

<u>Measure</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>
Harvest Limit (m lb)	8.38	10.67	7.76	7.41	7.41	7.41	7.41	7.41	7.16
Landings (m lb)	8.83	9.33	5.42	9.82	11.87	12.48	8.37	15.82	11.54 <sup>b</sup>
Possession Limit	6	8	6/8	10	8	8	8	8	3
Size Limit (in TL)	14	14	14	14	14.5	15	15	15.5	15.5
Open Season	5/15-9/30	4/15-10/15	-	-	-	-	5/29-9/11	5/10-10/2	5/25-9/4

<sup>a</sup> Federal management measures; state management measures are detailed in Tables 5 and 6.

<sup>b</sup> Projected.



**Table 18. Summer flounder recreational management measures by state, 2000.**

State	Minimum Size (inches)	Possession Limit	Open Season
Massachusetts	15.5	8	May 10 - Oct. 2
Rhode Island	15.5	8	May 10 - Oct. 2
Connecticut	15.5	8	May 10 - Oct. 2
New York	15.5	8	May 10 - Oct. 2
New Jersey	15.5	8	May 6 - Oct. 20
Delaware	15.5	8	May 10 - Oct. 2
Maryland			
Bay	15	8	May 15 - Dec. 31
Coastal	15.5	8	April 15 - Dec. 11
Potomac River Fisheries Commission	15	8	May 15 - Dec. 31
Virginia	15.5	8	March 29 - July 23 August 2 - Dec. 31
North Carolina	15	8	Jan. 1 - Dec. 31

**Table 19. Summer flounder recreational management measures by state, 2001.**

State	Minimum Size (inches)	Possession Limit	Open Season
Massachusetts	16.5	7	May 26 - Sept. 5
Rhode Island	17.5	6	May 26 - Sept. 2
Connecticut	17.5	6	All year
New York	17.0	7	May 2 - Oct. 31
New Jersey	16.0	8	May 12 - Sept. 11
Delaware	17.5	4	May 10 - Oct. 2
Maryland	17.0	8	Apr. 25 - July 24 Aug. 7 - Dec. 31
Potomac River Fisheries Commission			
Virginia	15.5	8	Mar. 29 - Jul. 24 Aug. 8 - Dec. 31
North Carolina	15.5	8	All year except

May 1 - May 14

May 15, 2002

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**Table 20. Projected recreational summer flounder landings relative to targets, for 2001, by state.**

<u>State</u>	<u>2001 Target</u>	<u>2001 Landings*</u>	<u>Difference</u>
MA	218,000	144,079	-33.9%
RI	225,000	261,621	16.3%
CT	149,000	150,606	1.1%
NY	701,000	685,661	-2.2%
NJ	1,555,000	2,062,098	32.6%
DE	125,000	143,094	14.5%
MD	117,000	136,991	17.1%
VA	664,000	1,306,312	96.7%
NC	223,000	343,683	54.1%

\*Projected based on 2000 data.

**Table 21. The percent of successful anglers landing 1 to 19 summer flounder (MRFSS Type A fish) per trip, waves 1-4, 2001.**

C_PER_T	Cumulative		Cumulative	
	Frequency	Percent	Frequency	Percent
1	1547	55.7	1547	55.7
2	712	25.6	2259	81.3
3	275	9.9	2534	91.2
4	123	4.4	2657	95.6
5	56	2.0	2713	97.7
6	33	1.2	2746	98.8
7	10	0.4	2756	99.2
8	8	0.3	2764	99.5
9	6	0.2	2770	99.7
10	2	0.1	2772	99.8
11	3	0.1	2775	99.9
16	2	0.1	2777	100.0
19	1	0.0	2778	100.0

**Table 22. The percent of successful anglers landing 1 to 30 summer flounder (MRFSS Type A fish) per trip, 1992.**

C_PER_T	Cumulative		Cumulative	
	Frequency	Percent	Frequency	Percent
1	1622	51.9	1622	51.9
2	652	20.9	2274	72.8
3	395	12.6	2669	85.4
4	186	6.0	2855	91.4
5	120	3.8	2975	95.2
6	57	1.8	3032	97.0
7	20	0.6	3052	97.7
8	28	0.9	3080	98.6
9	3	0.1	3083	98.7
10	17	0.5	3100	99.2
11	1	0.0	3101	99.2
12	10	0.3	3111	99.6
13	3	0.1	3114	99.6
14	1	0.0	3115	99.7
15	7	0.2	3122	99.9
16	1	0.0	3123	99.9

21	1	0.0	3124	100.0
30	1	0.0	3125	100.0

**Table 23. The percent of measured summer flounder (MRFSS Type A fish) less than 14" TL (1996), 14.5" TL (1997), 15" TL (1998 and 1999), 15.5" TL (2000), and states specific size limits (2001). The number in parentheses is sample size.**

<u>State</u>	<u>1996</u>		<u>1997</u>		<u>1998</u>		<u>1999</u>		<u>2000</u>		<u>2001*</u>		<u>Size Limit</u>
ME	-		-		-		-		-		-		-
NH	-		-		-		-		0	(1)	-		-
MA	2.4	(41)	17.1	(35)	2.9	(105)	25	(24)	23.3	(43)	4.8	(21)	16.5
RI	4.4	(573)	6	(469)	11.2	(402)	11.9	(160)	18.1	(282)	14.7	(190)	17.5
CT	3.9	(305)	6	(282)	11.1	(350)	15.5	(258)	2.9	(379)	3.2	(126)	17.5
NY	7.2	(373)	7.6	(384)	13.5	(281)	5.9	(272)	5.5	(325)	4.9	(266)	17.0
NJ	8.1	(1430)	3.8	(1489)	15.7	(1314)	4.1	(635)	9.8	(705)	15.6	(1096)	16.0
DE	6.6	(739)	9.9	(487)	11.7	(622)	19	(216)	5.2	(249)	9.3	(302)	17.5
MD	9.4	(31)	12.1	(33)	33.3	(150)	3.8	(263)	9.1	(243)	4.3	(94)	17.0
VA	4.1	(813)	3.4	(595)	7.4	(838)	0.5	(183)	4.4	(386)	4.9	(864)	15.5
NC	30.8	(1155)	31.6	(998)	56.2	(1239)	59.4	(544)	56.0	(703)	65.3	(579)	15.5
CST	11.4	(5460)	11	(4772)	22.9	(5301)	18.9	(2555)	17.1	(3316)	13.9	(3538)	15.5

\* includes only wave 1-4 data.

**Table 24. Percent of summer flounder landings for each wave, 1994-1998.**

	<u>Jan-Feb</u>	<u>Mar-Apr</u>	<u>May-Jun</u>	<u>Jul-Aug</u>	<u>Sep-Oct</u>	<u>Nov-Dec</u>
NH	0%	0%	0%	0%	100%	0%
MA	0%	0%	25%	71%	4%	0%
RI	0%	0%	26%	70%	3%	0%
CT	0%	0%	17%	76%	7%	0%
NY	0%	0%	28%	59%	13%	0%
NJ	0%	0%	25%	47%	28%	0%
DE	0%	0%	25%	64%	10%	0%
MD	0%	3%	27%	61%	9%	0%
VA	0%	3%	41%	38%	16%	0%
NC	0%	6%	26%	32%	30%	7%
Coast	0%	0.9%	28%	51%	19%	0%

**Table 25. Summer flounder, scup, and black sea bass recreational harvest by year and area, Maine to North Carolina.**

Year	Summer Flounder (A+B1) (number of fish)		Scup (A+B1) (number of fish)		Black Sea Bass (A+B1) (number of fish)	
	State < 3 mi	EEZ > 3 mi	State < 3 mi	EEZ > 3 mi	State < 3 mi	EEZ > 3 mi
1995	95.94%	4.06%	67.22%	32.78%	19.71%	80.29%
1996	94.26%	5.74%	93.29%	6.71%	23.95%	76.05%
1997	90.83%	9.17%	91.18%	8.82%	15.15%	84.85%
1998	93.87%	6.13%	89.12%	10.88%	16.13%	83.87%
1999	88.30%	11.70%	91.38%	8.62%	27.36%	72.64%
2000	88.71%	11.29%	91.66%	8.34%	33.72%	66.28%
Average	91.83%	8.17%	88.49%	11.51%	22.02%	77.98%

Source: MRFSS.

**Table 26. The effect of various size and possession limits on 2001 summer flounder recreational landings. The tables contain the proportional reduction in number of summer flounder landed assuming regulations are 100% effective (Table A) and adjusting for the effectiveness of 2001 regulations (Table B).**

**Table A - 100% Effective**

		Size (TL ")							
BAG	-	15.0	15.5	16.0	16.5	17.0	17.5	18.0	
-		0.010	0.124	0.160	0.253	0.341	0.439	0.517	0.602
1		0.476	0.524	0.536	0.566	0.604	0.651	0.693	0.736
2		0.222	0.296	0.321	0.378	0.444	0.524	0.586	0.653
3		0.115	0.206	0.239	0.312	0.389	0.479	0.547	0.624
4		0.061	0.162	0.196	0.281	0.364	0.457	0.530	0.612
5		0.034	0.142	0.176	0.266	0.352	0.447	0.523	0.607
6		0.020	0.133	0.169	0.260	0.346	0.443	0.520	0.604
7		0.014	0.128	0.164	0.256	0.343	0.441	0.518	0.602
8		0.010	0.124	0.160	0.253	0.341	0.439	0.517	0.602

**Table B - Adjusted**

		Size (TL ")							
BAG	-	15.0	15.5	16.0	16.5	17.0	17.5	18.0	
-		0.009	0.019	0.020	0.084	0.196	0.299	0.384	0.493
1		0.409	0.413	0.413	0.435	0.488	0.543	0.592	0.652
2		0.164	0.170	0.170	0.216	0.306	0.393	0.462	0.552
3		0.081	0.089	0.090	0.146	0.249	0.344	0.419	0.521
4		0.040	0.049	0.050	0.113	0.222	0.320	0.400	0.507
5		0.024	0.034	0.035	0.098	0.209	0.308	0.391	0.500
6		0.016	0.026	0.027	0.091	0.202	0.303	0.387	0.496
7		0.012	0.022	0.023	0.087	0.198	0.300	0.385	0.494
8		0.009	0.019	0.020	0.084	0.196	0.299	0.384	0.493



**Table 27. The effect of various size and possession limits on 2001 summer flounder recreational landings by state. The tables contain the proportional reduction in number of summer flounder landed and are adjusted for the effectiveness of regulations in each state.**

<b>Coast</b>								
<b>Size (TL")</b>								
<b>Bag 0</b>	<b>15.0</b>	<b>15.5</b>	<b>16.0</b>	<b>16.5</b>	<b>17.0</b>	<b>17.5</b>	<b>18.0</b>	
1	0.409	0.413	0.413	0.435	0.488	0.543	0.592	0.652
2	0.164	0.170	0.170	0.216	0.306	0.393	0.462	0.552
3	0.081	0.089	0.090	0.146	0.249	0.344	0.419	0.521
4	0.040	0.049	0.050	0.113	0.222	0.320	0.400	0.507
5	0.024	0.034	0.035	0.098	0.209	0.308	0.391	0.500
6	0.016	0.026	0.027	0.091	0.202	0.303	0.387	0.496
7	0.012	0.022	0.023	0.087	0.198	0.300	0.385	0.494
8	0.009	0.019	0.020	0.084	0.196	0.299	0.384	0.493

<b>Massachusetts</b>								
<b>Size (TL")</b>								
<b>Bag 0</b>	<b>15.0</b>	<b>15.5</b>	<b>16.0</b>	<b>16.5</b>	<b>17.0</b>	<b>17.5</b>	<b>18.0</b>	
1	0.238	0.238	0.238	0.238	0.238	0.286	0.524	0.571
2	0.000	0.000	0.000	0.000	0.000	0.190	0.429	0.476
3	0.000	0.000	0.000	0.000	0.000	0.190	0.429	0.476
4	0.000	0.000	0.000	0.000	0.000	0.190	0.429	0.476
5	0.000	0.000	0.000	0.000	0.000	0.190	0.429	0.476
6	0.000	0.000	0.000	0.000	0.000	0.190	0.429	0.476
7	0.000	0.000	0.000	0.000	0.000	0.190	0.429	0.476
8	0.000	0.000	0.000	0.000	0.000	0.190	0.429	0.476

<b>Rhode Island</b>								
<b>Size (TL")</b>								
<b>Bag 0</b>	<b>15.0</b>	<b>15.5</b>	<b>16.0</b>	<b>16.5</b>	<b>17.0</b>	<b>17.5</b>	<b>18.0</b>	
1	0.417	0.417	0.417	0.417	0.417	0.417	0.417	0.462
2	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.295
3	0.068	0.068	0.068	0.068	0.068	0.068	0.068	0.250
4	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.235
5	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.227
6	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.220
7	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.220
8	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.220

<b>Connecticut</b>								
<b>Size (TL")</b>								
<b>Bag 0</b>	<b>15.0</b>	<b>15.5</b>	<b>16.0</b>	<b>16.5</b>	<b>17.0</b>	<b>17.5</b>	<b>18.0</b>	
1	0.414	0.414	0.414	0.414	0.414	0.414	0.414	0.477
2	0.180	0.180	0.180	0.180	0.180	0.180	0.180	0.270
3	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.207
4	0.072	0.072	0.072	0.072	0.072	0.072	0.072	0.189
5	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.171
6	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.153

7	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.144
8	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.135

**Table 27 (continued). The effect of various size and possession limits on 2001 summer flounder recreational landings by state. The tables contain the proportional reduction in number of summer flounder landed and are adjusted for the effectiveness of regulations in each state.**

<b>New York</b>								
<b>Size (TL")</b>								
<b>Bag 0</b>	<b>15.0</b>	<b>15.5</b>	<b>16.0</b>	<b>16.5</b>	<b>17.0</b>	<b>17.5</b>	<b>18.0</b>	
1	0.345	0.345	0.345	0.345	0.345	0.345	0.400	0.468
2	0.123	0.123	0.123	0.123	0.123	0.123	0.217	0.319
3	0.047	0.047	0.047	0.047	0.047	0.047	0.149	0.255
4	0.021	0.021	0.021	0.021	0.021	0.021	0.128	0.238
5	0.009	0.009	0.009	0.009	0.009	0.009	0.115	0.226
6	0.004	0.004	0.004	0.004	0.004	0.004	0.111	0.221
7	0.000	0.000	0.000	0.000	0.000	0.000	0.106	0.217
8	0.000	0.000	0.000	0.000	0.000	0.000	0.106	0.217

<b>New Jersey</b>								
<b>Size (TL")</b>								
<b>Bag 0</b>	<b>15.0</b>	<b>15.5</b>	<b>16.0</b>	<b>16.5</b>	<b>17.0</b>	<b>17.5</b>	<b>18.0</b>	
1	0.379	0.379	0.379	0.379	0.479	0.567	0.644	0.712
2	0.154	0.154	0.154	0.154	0.318	0.465	0.572	0.655
3	0.080	0.080	0.080	0.080	0.268	0.430	0.548	0.636
4	0.042	0.042	0.042	0.042	0.243	0.411	0.532	0.622
5	0.028	0.028	0.028	0.028	0.235	0.403	0.526	0.617
6	0.024	0.024	0.024	0.024	0.231	0.399	0.524	0.614
7	0.021	0.021	0.021	0.021	0.230	0.398	0.524	0.614
8	0.019	0.019	0.019	0.019	0.229	0.397	0.524	0.614

<b>Delaware</b>								
<b>Size (TL")</b>								
<b>Bag 0</b>	<b>15.0</b>	<b>15.5</b>	<b>16.0</b>	<b>16.5</b>	<b>17.0</b>	<b>17.5</b>	<b>18.0</b>	
1	0.308	0.308	0.308	0.308	0.308	0.308	0.308	0.408
2	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.258
3	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.217
4	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.201
5	0.037	0.037	0.037	0.037	0.037	0.037	0.037	0.194
6	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.187
7	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.181
8	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.174

<b>Maryland</b>								
<b>Size (TL")</b>								
<b>Bag 0</b>	<b>15.0</b>	<b>15.5</b>	<b>16.0</b>	<b>16.5</b>	<b>17.0</b>	<b>17.5</b>	<b>18.0</b>	
1	0.370	0.370	0.370	0.370	0.370	0.370	0.410	0.450
2	0.020	0.020	0.020	0.020	0.020	0.020	0.120	0.290
3	0.010	0.010	0.010	0.010	0.010	0.010	0.110	0.280
4	0.000	0.000	0.000	0.000	0.000	0.000	0.110	0.280
5	0.000	0.000	0.000	0.000	0.000	0.000	0.110	0.280
6	0.000	0.000	0.000	0.000	0.000	0.000	0.110	0.280

7	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.110	0.280
8	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.110	0.280

**Table 27 (continued). The effect of various size and possession limits on 2001 summer flounder recreational landings by state. The tables contain the proportional reduction in number of summer flounder landed and are adjusted for the effectiveness of regulations in each state.**

<b>Virginia</b>								
<b>Size (TL")</b>								
<b>Bag 0</b>	<b>15.0</b>	<b>15.5</b>	<b>16.0</b>	<b>16.5</b>	<b>17.0</b>	<b>17.5</b>	<b>18.0</b>	
1	0.513	0.513	0.513	0.563	0.613	0.686	0.723	0.758
2	0.225	0.225	0.225	0.348	0.439	0.539	0.596	0.656
3	0.116	0.116	0.116	0.270	0.374	0.487	0.547	0.620
4	0.055	0.055	0.055	0.229	0.335	0.452	0.522	0.602
5	0.028	0.028	0.028	0.203	0.310	0.429	0.508	0.594
6	0.013	0.013	0.013	0.189	0.298	0.423	0.504	0.591
7	0.005	0.005	0.005	0.181	0.292	0.421	0.502	0.588
8	0.001	0.001	0.001	0.178	0.289	0.421	0.502	0.588

<b>North Carolina</b>								
<b>Size (TL")</b>								
<b>Bag 0</b>	<b>15.0</b>	<b>15.5</b>	<b>16.0</b>	<b>16.5</b>	<b>17.0</b>	<b>17.5</b>	<b>18.0</b>	
1	0.329	0.329	0.329	0.474	0.599	0.691	0.783	0.882
2	0.099	0.099	0.099	0.289	0.493	0.645	0.743	0.868
3	0.026	0.026	0.026	0.243	0.474	0.632	0.743	0.868
4	0.000	0.000	0.000	0.230	0.474	0.632	0.743	0.868
5	0.000	0.000	0.000	0.230	0.474	0.632	0.743	0.868
6	0.000	0.000	0.000	0.230	0.474	0.632	0.743	0.868
7	0.000	0.000	0.000	0.230	0.474	0.632	0.743	0.868
8	0.000	0.000	0.000	0.230	0.474	0.632	0.743	0.868

**Table 28. Summary of management measures for the scup recreational fishery, 1996-2001.**

<u>Measure</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>
Harvest Limit (m lb)	-	1.947	1.553	1.238	1.238	1.76
Landings (m lb)	2.156	1.198	0.875	1.886	5.183	4.970 <sup>a</sup>
Possession Limit	-	-	-	-	-	50
Size Limit (in TL) <sup>b</sup>	7	7	7	7	-	9
Open Season	-	-	-	-	-	8/15-10/31

<sup>a</sup> Projected based on waves 1-4.

<sup>b</sup> Coastwide minimum size limit, some states have larger minimum size limits.

**Table 29. Scup recreational management measures by state, 2000.**

<u>State</u>	<u>Minimum Size</u>	<u>Possession Limit</u>
Massachusetts	9"	50
Rhode Island	9"	50
Connecticut	8"	50
New York	7"	50
New Jersey	7"	50
Delaware	7"	None
Maryland	7"	None
Virginia	7"	50
North Carolina	7"	None

**Table 30. Scup recreational management measures by state, 2001.**

<u>State</u>	<u>Minimum Size</u>	<u>Possession Limit</u>	<u>Open Season</u>
Massachusetts	9"	50 fish	Jan. 1-Oct. 6
Rhode Island	10"	50 fish	May 26-Sept. 2
Connecticut	9"	25 fish	June 3-Oct. 23
New York	9"	50 fish	July 1-Nov. 17
New Jersey	9"	50 fish	July 4-Dec. 31
Delaware	8"	50 fish	All year
Maryland	7"	50 fish	All year
Virginia	8"	50 fish	All year
North Carolina	8"	50 fish	All year (with the exception of May 1-May 14)

**Table 31. The percent of successful anglers landing 1 to 50 scup (MRFSS Type A fish) per trip, waves 1-4, 2001.**

C_PER_T	Frequency	Percent	Frequency	Percent
1	129	26.0	129	26.0
2	90	18.1	219	44.1
3	59	11.9	278	55.9
4	28	5.6	306	61.6
5	32	6.4	338	68.0
6	24	4.8	362	72.8
7	18	3.6	380	76.5
8	29	5.8	409	82.3
9	7	1.4	416	83.7
10	27	5.4	443	89.1
11	6	1.2	449	90.3
12	4	0.8	453	91.1
13	11	2.2	464	93.4
15	6	1.2	470	94.6
17	1	0.2	471	94.8
18	5	1.0	476	95.8
20	3	0.6	479	96.4
21	3	0.6	482	97.0
23	2	0.4	484	97.4
25	2	0.4	486	97.8
35	2	0.4	488	98.2
36	3	0.6	491	98.8

42	3	0.6	494	99.4
48	1	0.2	495	99.6
50	2	0.4	497	100.0



**Table 32. The percent of successful anglers landing 1 to 203 scup (MRFSS Type A fish) per trip, 2000.**

C_PER_T	Cumulative		Cumulative	
	Frequency	Percent	Frequency	Percent
1	86	16.8	86	16.8
2	67	13.1	153	29.9
3	52	10.2	205	40.1
4	29	5.7	234	45.8
5	29	5.7	263	51.5
6	24	4.7	287	56.2
7	19	3.7	306	59.9
8	19	3.7	325	63.6
9	12	2.3	337	65.9
10	21	4.1	358	70.1
12	11	2.2	369	72.2
13	20	3.9	389	76.1
14	1	0.2	390	76.3
15	17	3.3	407	79.6
16	2	0.4	409	80.0
17	5	1.0	414	81.0
18	2	0.4	416	81.4
19	2	0.4	418	81.8
20	11	2.2	429	84.0
22	5	1.0	434	84.9
23	1	0.2	435	85.1
24	8	1.6	443	86.7
25	10	2.0	453	88.6
26	2	0.4	455	89.0
29	1	0.2	456	89.2
30	14	2.7	470	92.0
31	1	0.2	471	92.2
32	5	1.0	476	93.2
37	3	0.6	479	93.7
38	4	0.8	483	94.5
40	2	0.4	485	94.9
42	2	0.4	487	95.3
45	4	0.8	491	96.1
46	1	0.2	492	96.3
47	1	0.2	493	96.5
48	1	0.2	494	96.7
50	11	2.2	505	98.8
60	1	0.2	506	99.0
65	1	0.2	507	99.2
70	1	0.2	508	99.4
87	1	0.2	509	99.6
100	1	0.2	510	99.8
203	1	0.2	511	100.0

**Table 33. The percent of measured scup (MRFSS Type A fish) less than 7, 8, 9, and 10" TL by state, 2000 and 2001<sup>1</sup>. The number in parentheses is sample size.**

<u>State</u>	2000				
	<u>7"</u>	<u>8"</u>	<u>9"</u>	<u>10"</u>	
ME	-	-	-	-	(0)
NH	-	-	-	-	(0)
MA	35.7	42.9	42.9	42.9	(28)
RI	0	0	0.7	9.3	(151)
CT	0	2.3	21	57.4	(176)
NY	0.6	19.6	31.9	46.6	(163)
NJ	25	25	100	100	(4)
DE	0	0	60	100	(10)
MD	-	-	-	-	(0)
VA	0	0	0	0	(1)
NC	0	0	0	0	(2)
Total	2.2	9.2	20.9	40.6	(535)
<u>State</u>	2001 <sup>1</sup>				
	<u>7"</u>	<u>8"</u>	<u>9"</u>	<u>10"</u>	
ME	-	-	-	-	(0)
NH	-	-	-	-	(0)
MA	0	0	2.7	15.1	(73)
RI	0	2.9	10.4	27.7	(376)
CT	0	0.4	0.4	5.4	(223)
NY	0	0	11.8	29.4	(34)
NJ	0	0	3.8	38.5	(26)
DE	0	0	50	50	(2)
MD	-	-	-	-	(0)
VA	-	-	-	-	(0)
NC	0	0	0	0	(3)
Total	0	1.6	6.5	20.1	(737)

<sup>1</sup> Waves 1-4

**Table 34. The effect of various size and possession limits on 2001 scup recreational landings. The tables contain the proportional reduction in number of scup landed assuming regulations are 100% effective (Table A) and adjusting for the effectiveness of the 2001 management measures (Table B).**

**Table A - 100% Effective**

	Size (TL <sup>4</sup> )				
	BAG No	7	8	9	10
	0.017	0.017	0.028	0.052	0.129
1	0.832	0.832	0.833	0.838	0.849
2	0.702	0.702	0.706	0.714	0.733
3	0.603	0.603	0.611	0.621	0.653
4	0.518	0.518	0.529	0.541	0.583
5	0.449	0.449	0.459	0.475	0.522
6	0.387	0.387	0.397	0.413	0.466
7	0.333	0.333	0.344	0.360	0.418
8	0.283	0.283	0.294	0.311	0.374
9	0.251	0.251	0.262	0.281	0.345
10	0.221	0.221	0.232	0.253	0.319
15	0.150	0.150	0.161	0.185	0.256
20	0.110	0.110	0.120	0.145	0.221
25	0.084	0.084	0.095	0.119	0.196
30	0.062	0.062	0.072	0.097	0.174
35	0.039	0.039	0.050	0.075	0.151
40	0.026	0.026	0.036	0.061	0.137
45	0.020	0.020	0.031	0.055	0.132
50	0.017	0.017	0.028	0.052	0.129

**Table B - Adjusted**

	Size (TL <sup>4</sup> )				
	BAG No	7	8	9	10
	0.018	0.018	0.018	0.018	0.097
1	0.832	0.832	0.832	0.832	0.844
2	0.703	0.703	0.703	0.703	0.723
3	0.607	0.607	0.607	0.607	0.640
4	0.524	0.524	0.524	0.524	0.568
5	0.456	0.456	0.456	0.456	0.505
6	0.392	0.392	0.392	0.392	0.446
7	0.337	0.337	0.337	0.337	0.397
8	0.286	0.286	0.286	0.286	0.351
9	0.255	0.255	0.255	0.255	0.322
10	0.226	0.226	0.226	0.226	0.294
15	0.156	0.156	0.156	0.156	0.229
20	0.114	0.114	0.114	0.114	0.193
25	0.087	0.087	0.087	0.087	0.167
30	0.064	0.064	0.064	0.064	0.144
35	0.041	0.041	0.041	0.041	0.120
40	0.027	0.027	0.027	0.027	0.106
45	0.021	0.021	0.021	0.021	0.100

50 0.018 0.018 0.018 0.018 0.097

**Table 35. Average percent of scup landed (in number) by wave, based on 1996-2000 MRFSS landings data.**

State	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5	Wave 6
MA	0.0	0.0	37.4	31.5	31.1	0.0
RI	0.0	0.0	4.9	48.1	45.7	1.3
CT	0.0	0.0	8.2	49.6	42.2	0.0
NY	0.0	0.0	22.0	27.7	48.8	1.5
NJ	0.0	0.3	0.0	3.0	78.6	18.1
DE	0.0	0.0	0.0	9.0	89.9	1.1
MD	0.0	0.0	0.0	46.2	0.0	53.8
VA	0.0	0.0	0.0	0.0	87.8	12.2
NC	0.0	3.3	40.9	31.3	24.5	0.0
Coast	0.0	0.4	12.6	27.4	49.8	9.8

**Table 36. Projected reduction in scup landings (in number) associated with closing one day per wave, based on 1996-2000 MRFSS landings data.**

State	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5	Wave 6
MA	-	-	0.61	0.51	0.51	-
RI	-	-	0.08	0.78	0.75	0.02
CT	-	-	0.13	0.80	0.69	0.00
NY	-	-	0.36	0.45	0.80	0.02
NJ	-	0.01	-	0.05	1.29	0.30
DE	-	-	-	0.15	1.47	0.02
MD	-	-	-	0.74	-	0.88
VA	-	-	-	-	1.44	0.20
NC	-	0.05	0.67	0.50	0.40	-
Coast	-	0.01	0.21	0.44	0.82	0.16

**Table 37. Summary of management measures for the black sea bass recreational fishery, 1996-2001.**

<u>Measure</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>
Harvest Limit (m lb)	-	-	3.148	3.148	3.148	3.148
Landings (m lb)	4.0	4.3	1.2	1.7	3.9	3.6 <sup>1</sup>
Possession Limit	-	-	- <sup>2</sup>	- <sup>2</sup>	- <sup>2</sup>	25
Size Limit (TL in)	9	9	10	10	10	11
Open Season	-	-	1/1-7/30 8/16-12/31	-	-	1/1-2/28 5/10-12/31

<sup>1</sup> Projected.

<sup>2</sup> There is no federal possession limit but some states implemented a 20 fish possession limit in these years.

**Table 38. Black sea bass recreational management measures by state, 2000.**

<u>State</u>	<u>Minimum Size</u>	<u>Possession Limit</u>	<u>Closed Season</u>
Massachusetts	12"	20	None
Rhode Island	10"	None	None
Connecticut	10"	20	None
New York	10"	None	None
New Jersey	10"	None	None
Delaware	10"	None	None
Maryland	10"	None	None
PRFC	10"	None	None
Virginia	10"	50	None
North Carolina	10"	20 <sup>A</sup>	None

<sup>A</sup> 20 Fish possession limit applies only south of Cape Hatteras, no bag limit north of Cape Hatteras.

**Table 39. Black sea bass recreational management measures by state, 2001.**

<u>State</u>	<u>Minimum Size</u>	<u>Possession Limit</u>	<u>Closed Season</u>
Massachusetts	12"	20	1/1-5/9
Rhode Island	11"	25	3/1-5/9
Connecticut	11"	25	1/1-5/9
New York	11"	25	3/1-5/9
New Jersey	11"	25	3/1-5/9
Delaware	11"	25	2/29-5/9
Maryland	11"	25	2/29-5/9
PRFC			
Virginia	11"	25	1/1-3/31 7/15-8/14
North Carolina	10"	25 fish-N. of Cape Hatteras	3/1-5/9 - N. of Cape Hatteras

**Table 40. The effect of various size and possession limits on 2001 black sea bass recreational landings. The tables contain the proportional reduction in number of black sea bass landed assuming the regulations were 100% effective in 2001 (Table A) and adjusting for the effectiveness of 2001 management measures (Table B).**

**Table A - 100% Effective**

BAG No	Size (TL ")					
	8	9	10	11	12	
-	0.000	0.000	0.001	0.016	0.088	0.315
1	0.739	0.739	0.740	0.741	0.753	0.807
2	0.561	0.561	0.562	0.566	0.596	0.692
3	0.459	0.459	0.460	0.469	0.510	0.616
4	0.383	0.383	0.384	0.393	0.440	0.556
5	0.330	0.330	0.331	0.340	0.394	0.518
6	0.286	0.286	0.287	0.297	0.354	0.487
7	0.247	0.247	0.248	0.260	0.321	0.463
8	0.215	0.215	0.216	0.227	0.295	0.443
9	0.192	0.192	0.193	0.204	0.274	0.429
10	0.170	0.170	0.171	0.183	0.254	0.416
11	0.152	0.152	0.153	0.165	0.236	0.404
12	0.135	0.135	0.136	0.148	0.219	0.394
13	0.118	0.118	0.119	0.131	0.202	0.384
14	0.105	0.105	0.105	0.118	0.188	0.377
15	0.091	0.091	0.092	0.104	0.174	0.369
20	0.036	0.036	0.037	0.052	0.125	0.336
25	0.000	0.000	0.001	0.016	0.088	0.315

**Table B - Adjusted**

BAG No	Size (TL ")					
	8	9	10	11	12	
-	0.000	0.000	0.000	0.000	0.000	0.249
1	0.729	0.729	0.729	0.729	0.729	0.789
2	0.556	0.556	0.556	0.556	0.556	0.662
3	0.462	0.462	0.462	0.462	0.462	0.579
4	0.386	0.386	0.386	0.386	0.386	0.513
5	0.335	0.335	0.335	0.335	0.335	0.472
6	0.291	0.291	0.291	0.291	0.291	0.437
7	0.255	0.255	0.255	0.255	0.255	0.411
8	0.226	0.226	0.226	0.226	0.226	0.389
9	0.203	0.203	0.203	0.203	0.203	0.373
10	0.181	0.181	0.181	0.181	0.181	0.360
11	0.161	0.161	0.161	0.161	0.161	0.347
12	0.143	0.143	0.143	0.143	0.143	0.335
13	0.124	0.124	0.124	0.124	0.124	0.325
14	0.109	0.109	0.109	0.109	0.109	0.316
15	0.094	0.094	0.094	0.094	0.094	0.308
20	0.040	0.040	0.040	0.040	0.040	0.271
25	0.000	0.000	0.000	0.000	0.000	0.249



**Table 41. Average percent of black sea bass landed (in number) by wave, 1996-2000, based on 1996-2000 MRFSS landings data.**

<u>State</u>	<u>Wave 1</u>	<u>Wave 2</u>	<u>Wave 3</u>	<u>Wave 4</u>	<u>Wave 5</u>	<u>Wave 6</u>
MA	0.0000	0.0000	23.4694	24.6675	51.6401	0.2230
RI	0.0000	0.0029	1.8545	20.2479	64.9094	12.9853
CT	0.0000	0.0000	6.5206	62.5768	30.9027	0.0000
NY	0.0000	0.0000	9.6851	38.9277	47.8741	3.5131
NJ	0.0000	1.7127	26.9043	15.4321	52.4008	3.5500
DE	0.0000	0.7649	36.8219	29.6058	24.1154	8.6920
MD	0.0000	3.3434	34.1283	13.5413	16.8959	32.0911
VA	0.0000	3.5027	29.7212	17.9100	25.5224	23.3438
NC	0.0000	8.5527	26.8782	30.8952	15.9682	17.7056
Coast	0.0000	2.1402	27.0501	17.6799	42.1276	11.0022

**Table 42. Projected reduction in black sea bass landings (in number) associated with closing one day per wave, based on 1996-2000 MRFSS landings data.**

<u>State</u>	<u>Wave 1</u>	<u>Wave 2</u>	<u>Wave 3</u>	<u>Wave 4</u>	<u>Wave 5</u>	<u>Wave 6</u>
MA	0.0000	0.0000	0.3847	0.3979	0.8466	0.0037
RI	0.0000	0.0000	0.0304	0.3266	1.0641	0.2129
CT	0.0000	0.0000	0.1069	1.0093	0.5066	0.0000
NY	0.0000	0.0000	0.1588	0.6279	0.7848	0.0576
NJ	0.0000	0.0281	0.4411	0.2489	0.8590	0.0582
DE	0.0000	0.0125	0.6036	0.4775	0.3953	0.1425
MD	0.0000	0.0548	0.5595	0.2184	0.2770	0.5261
VA	0.0000	0.0574	0.4872	0.2889	0.4184	0.3827
NC	0.0000	0.1402	0.4406	0.4983	0.2618	0.2903
Coast	0.0000	0.0351	0.4434	0.2852	0.6906	0.1804

**Table 43. Number of summer flounder recreational fishing trips, recreational harvest limit, and recreational landings from 1991 to 2001.**

<b>Year</b>	<b>Number of Fishing Trips<sup>a</sup></b>	<b>Recreational Harvest Limit (million lb)</b>	<b>Recreational Landings of Summer Flounder (million lb)<sup>b</sup></b>
1990	3,834,176	None	5.13
1991	4,980,921	None	7.96
1992	4,170,563	None	7.15
1993	4,984,715	8.38	8.83
1994	6,162,288	10.67	9.33
1995	5,084,208	7.76	5.42
1996	5,309,788	7.41	9.82
1997	5,990,337	7.41	11.87
1998	5,675,168	7.41	12.48
1999	4,506,102	7.41	8.37
2000	5,974,229	7.41	15.82
2001	N/A	7.16	11.54 <sup>c</sup>
2002	-	9.72	-

<sup>a</sup> Estimated number of recreational fishing trips (expanded) where the primary or secondary target species was summer flounder, Maine through North Carolina. Source: Scott Steinback, NMFS/NER/NEFSC.

<sup>b</sup> From Maine to North Carolina. Source: MRFSS.

<sup>c</sup> Projected landings based on 2000 data for waves 1-5 (January through October).

N/A = Data not available.

**Table 44. MRFSS projected total estimated angler effort in 2001, by state**

State	Party/Charter	Private/Rental	Shore
ME	19,479	440,115	465,676
NH	82,724	174,954	98,224
MA	132,969	2,635,385	2,140,101
RI	18,067	687,073	838,642
CT	46,056	946,189	664,210
NY	313,090	2,264,205	1,864,932
NJ	621,705	3,963,417	2,895,917
DE	75,476	653,069	399,800
MD	171,098	2,273,064	1,216,239
VA	93,861	2,644,507	1,466,907
NC	203,592	2,116,700	4,359,757
Total	1,778,117	18,798,678	16,410,405

**Table 45. Non-preferred coastwide alternative for summer flounder - effected party/charter effort, maximum gross revenue losses, and the estimated maximum gross revenue loss per party/charter vessel (federally permitted) in each state in the Northeast Region (ME-NC).**

State	MRFSS Projected Total Estimated Angler Effort in 2002 Aboard Party/Charter Boats	Estimated Percent of Angler Effort Subject to Measures	Estimated Angler Trips Aboard Party/Charter Boats Subject to Measures	Maximum Gross Revenue Losses to Supporting Businesses (\$'s)	Number of Participating Party/Charter Vessels (VTR 2000)	Average Estimated Maximum Gross Revenue Loss per Party/Charter Vessel in 2002 (\$'s)
ME	19,479	0.0%	0	0	10	0
NH	82,724	0.0%	0	0	17	0
MA	132,969	0.0%	0	0	102	0
RI	18,067	0.26%	47	\$3,613	28	\$67
CT	46,056	0.0%	0	0	10	0
NY	313,090	0.0%	0	0	66	0
NJ	621,705	0.26%	1,616	\$124,222	67	\$2,669
DE	75,476	0.25%	189	\$14,528	5	\$1,506
MD	171,098	0.008%	14	\$1,076	3	\$120
VA	93,861	0.54%	507	\$38,973	25	\$996
NC	203,592	0.0%	0	0	13	0



**Table 46. Average daily trip expenditures by recreational fishermen in the Northeast region by mode, in 1998.**

Expenditures	Party/Charter	Private/Rental	Shore
	\$		
Travel	4.00	4.09	4.41
Food, drink, refreshments	17.10	15.51	16.73
Lodging at motels, cabins, lodges, campgrounds	5.49	1.65	5.37
Public transportation	1.06	0.53	0.76
Boat fuel	0	15.24	0
Guide or package fees	35.60	0	0
Access and/or boat launching fees	0.67	3.06	0.44
Equipment	1.70	0.37	0.22
Bait	1.67	6.64	5.21
Ice	1.31	2.69	1.92
Total	68.60	49.78	35.06

**Table 47. Council Preferred Scup Alternative - effected party/charter effort, maximum gross revenue losses, and the estimated maximum gross revenue loss per party/charter vessel (federally permitted) in each state in the Northeast Region (ME-NC).**

State	MRFSS Projected Total Estimated Angler Effort in 2002 Aboard Party/Charter Boats	Estimated Percent of Angler Effort Subject to Measures	Estimated Angler Trips Aboard Party/Charter Boats Subject to Measures	Maximum Gross Revenue Losses to Supporting Businesses (\$'s)	Number of Participating Party/Charter Vessels (VTR 2000)	Average Estimated Maximum Gross Revenue Loss per Party/Charter Vessel in 2002 (\$'s)
ME	19,479	0.0%	0	0	2	0
NH	82,724	0.0%	0	0	10	0
MA	132,969	2.08%	2,766	\$212,622	58	\$1,890
RI	18,067	0.36%	65	\$4,997	14	\$185
CT	46,056	0.06%	30	\$2,306	8	\$149
NY	313,090	0.004%	12	\$922	28	\$17
NJ	621,705	0.03%	165	\$12,684	30	\$219
DE	75,476	0.53%	401	\$30,825	2	\$7,988
MD	171,098	0.0%	0	\$0	3	\$0
VA	93,861	0.0%	0	\$0	12	\$0
NC	203,592	0.0%	0	0	2	0

**Table 48. NMFS Scup Alternative 1 - effected party/charter effort, maximum gross revenue losses, and the estimated maximum gross revenue loss per party/charter vessel (federally permitted) in each state in the Northeast Region (ME-NC).**

State	MRFSS Projected Total Estimated Angler Effort in 2002 Aboard Party/Charter Boats	Estimated Percent of Angler Effort Subject to Measures	Estimated Angler Trips Aboard Party/Charter Boats Subject to Measures	Maximum Gross Revenue Losses to Supporting Businesses (\$'s)	Number of Participating Party/Charter Vessels (VTR 2000)	Average Estimated Maximum Gross Revenue Loss per Party/Charter Vessel in 2002 (\$'s)
ME	19,479	0.0%	0	0	2	0
NH	82,724	0.0%	0	0	10	0
MA	132,969	3.41%	4,534	\$348,529	58	\$3,114
RI	18,067	4.05%	732	\$56,269	14	\$2,083
CT	46,056	1.1%	507	\$38,973	8	\$2,525
NY	313,090	3.01%	9,435	\$725,268	28	\$13,425
NJ	621,705	0.11%	677	\$52,041	30	\$899
DE	75,476	0.55%	415	\$31,901	2	\$8,267
MD	171,098	0.0%	0	\$0	3	\$0
VA	93,861	0.0%	0	\$0	12	\$0
NC	203,592	0.0%	0	0	2	0



**Table 49. NMFS Scup Alternative 2 - effected party/charter effort, maximum gross revenue losses, and the estimated maximum gross revenue loss per party/charter vessel (federally permitted) in each state in the Northeast Region (ME-NC).**

State	MRFSS Projected Total Estimated Angler Effort in 2002 Aboard Party/Charter Boats	Estimated Percent of Angler Effort Subject to Measures	Estimated Angler Trips Aboard Party/Charter Boats Subject to Measures	Maximum Gross Revenue Losses to Supporting Businesses (\$'s)	Number of Participating Party/Charter Vessels (VTR 2000)	Average Estimated Maximum Gross Revenue Loss per Party/Charter Vessel in 2002 (\$'s)
ME	19,479	0.0%	0	0	2	0
NH	82,724	0.0%	0	0	10	0
MA	132,969	7.34%	9,760	\$750,251	58	\$6,704
RI	18,067	6.99%	1,262	\$97,010	14	\$3,591
CT	46,056	1.2%	553	\$42,509	8	\$2,754
NY	313,090	3.48%	10,900	\$837,883	28	\$15,509
NJ	621,705	1.27%	7,903	\$607,504	30	\$10,495
DE	75,476	0.78%	589	\$45,276	2	\$11,733
MD	171,098	0.0%	0	\$0	3	\$0
VA	93,861	0.0%	0	\$0	12	\$0
NC	203,592	0.0%	0	0	2	0

**Table 50. Non-Preferred Scup Alternative 3 - effected party/charter effort, maximum gross revenue losses, and the estimated maximum gross revenue loss per party/charter vessel (federally permitted) in each state in the Northeast Region (ME-NC).**

State	MRFSS Projected Total Estimated Angler Effort in 2002 Aboard Party/Charter Boats	Estimated Percent of Angler Effort Subject to Measures	Estimated Angler Trips Aboard Party/Charter Boats Subject to Measures	Maximum Gross Revenue Losses to Supporting Businesses (\$'s)	Number of Participating Party/Charter Vessels (VTR 2000)	Average Estimated Maximum Gross Revenue Loss per Party/Charter Vessel in 2002 (\$'s)
ME	19,479	0.0%	0	0	2	0
NH	82,724	0.0%	0	0	10	0
MA	132,969	9.09%	12,086	\$929,051	58	\$8,302
RI	18,067	9.59%	1,733	\$133,216	14	\$4,932
CT	46,056	2.66%	1,225	\$94,166	8	\$6,101
NY	313,090	4.32%	13,512	\$1,038,667	28	\$19,226
NJ	621,705	1.31%	8,169	\$627,951	30	\$10,848
DE	75,476	0.78%	1,034	\$79,484	2	\$20,597
MD	171,098	0.0%	0	\$0	3	\$0
VA	93,861	0.0%	0	\$0	12	\$0
NC	203,592	0.0%	0	0	2	0

**Table 51. Preferred Black Sea Bass Alternative - effected party/charter effort, maximum gross revenue losses, and the estimated maximum gross revenue loss per party/charter vessel (federally permitted) in each state in the Northeast Region (ME-NC).**

State	MRFSS Projected Total Estimated Angler Effort in 2002 Aboard Party/Charter Boats	Estimated Percent of Angler Effort Subject to Measures	Estimated Angler Trips Aboard Party/Charter Boats Subject to Measures	Maximum Gross Revenue Losses to Supporting Businesses (\$'s)	Number of Participating Party/Charter Vessels (VTR 2000)	Average Estimated Maximum Gross Revenue Loss per Party/Charter Vessel in 2002 (\$'s)
ME	19,479	0.0%	0	0	7	0
NH	82,724	0.0%	0	0	14	0
MA	132,969	0.0%	0	0	96	0
RI	18,067	0.19%	34	\$2,614	25	\$54
CT	46,056	0.0%	0	0	8	0
NY	313,090	0.0%	0	0	56	0
NJ	621,705	0.72%	4,476	\$344,070	58	\$3,075
DE	75,476	1.84%	1,392	\$107,003	5	\$11,091
MD	171,098	1.15%	1,967	\$151,251	3	\$26,122
VA	93,861	1.07%	1,004	\$77,202	22	\$1,818
NC	203,592	0.17%	346	\$26,605	10	\$1,378

**Table 52. Non-Preferred Black Sea Bass Alternative 1 - effected party/charter effort, maximum gross revenue losses, and the estimated maximum gross revenue loss per party/charter vessel (federally permitted) in each state in the Northeast Region (ME-NC).**

State	MRFSS Projected Total Estimated Angler Effort in 2002 Aboard Party/Charter Boats	Estimated Percent of Angler Effort Subject to Measures	Estimated Angler Trips Aboard Party/Charter Boats Subject to Measures	Maximum Gross Revenue Losses to Supporting Businesses (\$'s)	Number of Participating Party/Charter Vessels (VTR 2000)	Average Estimated Maximum Gross Revenue Loss per Party/Charter Vessel in 2002 (\$'s)
ME	19,479	0.0%	0	0	7	0
NH	82,724	0.0%	0	0	14	0
MA	132,969	0.06%	86	\$6,611	96	\$36
RI	18,067	5.48%	990	\$76,101	25	\$1,578
CT	46,056	0.0%	0	0	8	0
NY	313,090	0.0%	0	0	56	0
NJ	621,705	0.96%	5,997	\$460,989	58	\$4,119
DE	75,476	2.14%	1,615	\$124,146	5	\$12,868
MD	171,098	1.20%	2,053	\$157,828	3	\$27,264
VA	93,861	1.19%	1,117	\$85,864	22	\$2,023
NC	203,592	0.19%	387	\$29,749	10	\$1,542

**Table 53. Non-Preferred Black Sea Bass Alternative 2 - effected party/charter effort, maximum gross revenue losses, and the estimated maximum gross revenue loss per party/charter vessel (federally permitted) in each state in the Northeast Region (ME-NC).**

State	MRFSS Projected Total Estimated Angler Effort in 2002 Aboard Party/Charter Boats	Estimated Percent of Angler Effort Subject to Measures	Estimated Angler Trips Aboard Party/Charter Boats Subject to Measures	Maximum Gross Revenue Losses to Supporting Businesses (\$'s)	Number of Participating Party/Charter Vessels (VTR 2000)	Average Estimated Maximum Gross Revenue Loss per Party/Charter Vessel in 2002 (\$'s)
ME	19,479	0.0%	0	0	7	0
NH	82,724	0.0%	0	0	14	0
MA	132,969	0.01%	13	\$999	96	\$5
RI	18,067	0.64%	115	\$8,840	25	\$183
CT	46,056	0.0%	0	0	8	0
NY	313,090	0.18%	83	\$6,380	56	\$59
NJ	621,705	5.49%	34,156	\$2,625,572	58	\$23,462
DE	75,476	1.76%	1,328	\$102,115	5	\$10,582
MD	171,098	1.62%	2,769	\$212,853	3	\$36,772
VA	93,861	1.10%	1,032	\$79,330	22	\$1,869
NC	203,592	0.17%	346	\$26,597	10	\$1,378

**Table 54. Number of vessels that held federal Northeast party/charter permits in 2000 and reported landings in 2000, by permitted species/species groups<sup>a</sup>.**

State	Held Fluke, BSB, and Scup	Held BSB Only	Held BSB and Scup	Held BSB and Fluke	Held Scup Only	Held Fluke Only	Held Fluke and Scup	Total Permits	
ME		2	2	0	3	0	8	0	15
NH		9	1	0	4	0	3	1	18
MA		51	13	3	29	2	20	2	120
RI		13	1	1	10	0	5	0	30
CT		5	0	1	2	1	2	1	12
NY		24	4	2	26	0	14	2	72
NJ		25	6	2	25	1	15	2	76
DE		2	1	0	2	0	1	0	6
MD		2	0	0	1	0	0	0	3
VA		10	1	1	10	1	5	0	28
NC		1	0	0	9	0	2	1	13
Total		144	29	10	121	5	75	9	393

a-Columns are based on the combinations of permits held and are mutually exclusive.

**Table 55. Cumulative effect of the measures proposed under the Precautionary Default Alternative for summer flounder, NMFS Scup Alternative 1 for scup, and the Preferred Black Sea Bass Alternative. Values indicate the estimated maximum gross revenue loss in 2002 per party/charter vessel by permitted species/species group and homeport state<sup>a</sup>.**

State	Held Fluke, BSB, and Scup	Held BSB Only	Held BSB and Scup	Held BSB and Fluke	Held Scup Only	Held Fluke Only	Held Fluke and Scup
ME	0	0	0	0	0	0	0
NH	0	0	0	0	0	0	0
MA	\$3,119	0	\$3,114	\$5	\$3,114	\$5	\$3,119
RI	\$6,481	\$54	\$2,137	\$4,398	\$2,083	\$4,344	\$6,427
CT	\$3,477	0	\$2,525	\$952	\$2,525	\$952	\$3,477
NY	\$29,374	0	\$13,425	\$15,949	\$13,425	\$15,949	\$29,374
NJ	\$29,421	\$3,075	\$3,974	\$28,522	\$899	\$25,447	\$26,346
DE	\$35,908	\$11,091	\$19,358	\$19,358	\$8,267	\$16,550	\$24,817
MD	\$32,151	\$26,122	\$26,122	\$32,151	0	\$6,029	6,029
VA	\$2,745	\$1,818	\$1,818	\$2,745	0	\$927	\$927
NC	\$1,378	\$1,378	\$1,378	\$1,378	0	0	0

a-Revenue losses are shown for all possible mutually exclusive combinations of summer flounder, scup, and black sea bass permits for active vessels by state.

## REFERENCES

- 1) Steinback, S. and B. Gentner. 2001. Marine angler expenditures in the northeast region, 1998. U.S. Department of Commerce, NOAA Technical Memorandum NMFS-F/SPO-47.
- 2) Steinback, S., J. O'Neil, E. Thunberg, A. Gautam, M. Osborn. 1999. Volume I: Summary report of methods and descriptive statistics for the 1994 northeast region marine recreational economics survey. U.S. Department of Commerce, NOAA Technical Memorandum NMFS-F/SPO-37.