



MAY 08 2015

To All Interested Government Agencies and Public Groups:

Under the National Environmental Policy Act, an environmental review has been performed on the following action.

TITLE: Special Management Zone (SMZ) Designation for Artificial Reef Cites in the EEZ, RIN 648-BD42

LOCATION: Exclusive Economic Zone off the east coast of Delaware

SUMMARY: This action to implement SMZs on four artificial reefs was requested by the Mid-Atlantic Fishery Management Council to reduce recreational/commercial gear conflicts on four artificial reefs. The artificial reef SMZs each encompass approximately one square nautical mile. All vessels operating in the SMZs would only be allowed to conduct fishing with hook and line and spear (including the taking by hand). Because of the small areas designated as SMZs, few commercial vessels will be affected.

RESPONSIBLE

OFFICIAL: John K. Bullard
Regional Administrator
National Marine Fisheries Service, National Oceanic and Atmospheric Administration (NOAA)
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978-281-9200

The environmental review process led us to conclude that this action will not have a significant impact on the environment. Therefore, an environmental impact statement was not prepared. A copy of the finding of no significant impact (FONSI), including the environmental assessment, is enclosed for your information.

Although NOAA is not soliciting comments on this completed EA/FONSI we will consider any comments submitted that would assist us in preparing future NEPA documents. Please submit any written comments to the Responsible Official named above.

Sincerely,

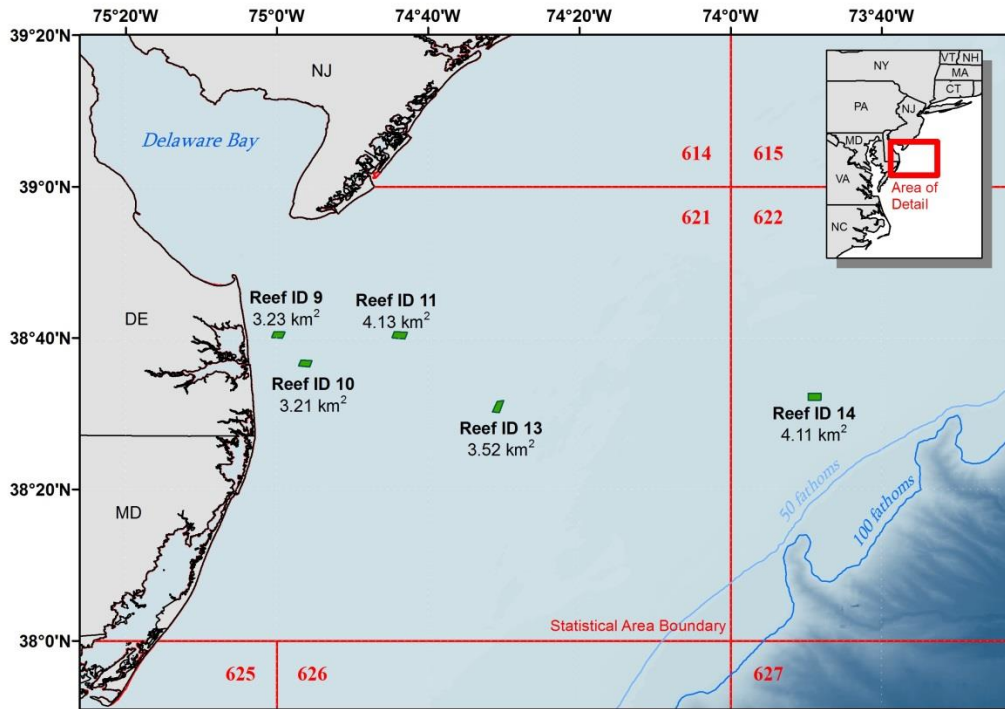
For: Patricia A. Montanio
NOAA NEPA Coordinator

Enclosure



Special Management Zone (SMZ) Designation for Artificial Reef Sites in the EEZ

A Final Environmental Assessment Including an Initial Regulatory Flexibility Analysis



April 2014

Prepared By:
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55 Great Republic Drive
Gloucester, MA 01930



NOAA FISHERIES | Greater Atlantic Region
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

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LIST OF ACRONYMS

ACL	Annual Catch Limit
ASMFC	Atlantic States Marine Fisheries Commission or Commission
CEA	Cumulative Effects Assessment
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
COE	Army Corps of Engineer
CZMA	Coastal Zone Management Act
DFW	Delaware Division of Fish and Wildlife
DPS	Distinct Population Segment
DPSWG	Data Poor Stocks Working Group
EA	Environmental Assessment
EEZ	Exclusive Economic Zone
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EO	Executive Order
ESA	Endangered Species Act
FR	Federal Register
FMP	Fishery Management Plan
FONSI	Finding of No Significant Impact
IRFA	Initial Regulatory Flexibility Analysis
LNG	Liquefied Natural Gas
LOF	List of Fisheries
MAFMC	Mid-Atlantic Fishery Management Council
MMPA	Marine Mammal Protection Act
MSA	Magnuson-Stevens Fishery Conservation and Management Act
NAO	National Oceanic and Atmospheric Administration Administrative Order
NEFOP	Northeast Fisheries Observer Program
NEFSC	Northeast Fisheries Science Center
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
PRA	Paperwork Reduction Act
RFA	Regulatory Flexibility Act
RIR	Regulatory Impact Review
SFA	Sustainable Fisheries Act
SFR	US Fish and Wildlife Service Sport Fish Restoration
SBA	Small Business Administration
SMZ	Special Management Zones
SSC	Scientific and Statistical Committee
VECs	Valued Ecosystem Components

1.0 INTRODUCTION

In a letter dated February 27, 2013 (Appendix A), the Northeast Regional Administrator of the National Marine Fisheries Service (NMFS) received a request from the Mid-Atlantic Fishery Management Council (MAFMC or Council) to designate five reef sites in the Exclusive Economic Zone (EEZ) as Special Management Zones (SMZ) under provisions of Amendment 9 to the Summer Flounder, Scup and Black Sea Bass Fishery Management Plan (FMP). The justification for this request was based on the need to ameliorate gear conflicts between hook and line fishermen and fixed pot/trap gear at those sites. Additionally, the Delaware Division of Fish and Wildlife (DFW) may face termination of funding for its artificial reef program in the EEZ under the US Fish and Wildlife Service Sport Fish Restoration (SFR) Program (which is effectively the DFWs sole source of funding for its reef program) if this alleged gear conflict issue is not resolved.

In accordance with the National Environmental Policy Act (NEPA), this Environmental Assessment (EA) presents information on the physical, biological, habitat, and socio-economic ecosystem impacts that would result from the SMZ designation of the artificial reef sites described herein.

At its June 2011 meeting in Port Jefferson, New York, the Council received a request from the Delaware DFW to designate its five artificial reefs located in the Exclusive Economic Zone (EEZ) as Special Management Zones (SMZs). Amendment 9 to the Summer Flounder, Scup and Black Sea Bass FMP (approved by NMFS on 17 October 1996; see 61 FR 58467, November 15, 1996) incorporated a provision into the FMP (Section 9.1.2.7) that allows for the designation of artificial reefs in the EEZ as SMZs, if so petitioned by the permit holder.

The current regulatory language pertaining to the SMZ provision of the FMP (76 FR 60638, Sept. 29, 2011) can be found at 50 CFR Part 648: Subpart I - Management of the Black Sea Bass Fishery as follows:

§ 648.148 Special management zones.

The recipient of a U.S. Army Corps of Engineers permit for an artificial reef, fish attraction device, or other modification of habitat for purposes of fishing may request that an area surrounding and including the site be designated by the MAFMC as a special management zone (SMZ). The MAFMC may prohibit or restrain the use of specific types of fishing gear that are not compatible with the intent of the artificial reef or fish attraction device or other habitat modification within the SMZ. The establishment of an SMZ will be effected by a regulatory amendment, pursuant to the following procedure:

(a) A SMZ monitoring team comprised of members of staff from the MAFMC, NMFS Northeast Region, and NMFS Northeast Fisheries Science Center will evaluate the request in the form of a written report, considering the following criteria:

- (1) Fairness and equity;
- (2) Promotion of conservation;
- (3) Avoidance of excessive shares;

- (4) Consistency with the objectives of Amendment 9 to the Summer Flounder, Scup, and Black Sea Bass Fishery Management Plan, the Magnuson-Stevens Act, and other applicable law;
- (5) The natural bottom in and surrounding potential SMZs; and
- (6) Impacts on historical uses.

(b) The MAFMC Chairman may schedule meetings of MAFMC's industry advisors and/or the SSC to review the report and associated documents and to advise the MAFMC. The MAFMC Chairman may also schedule public hearings.

(c) The MAFMC, following review of the SMZ monitoring team's report, supporting data, public comments, and other relevant information, may recommend to the Regional Administrator that a SMZ be approved. Such a recommendation will be accompanied by all relevant background information.

(d) The Regional Administrator will review the MAFMC's recommendation. If the Regional Administrator concurs in the recommendation, he or she will publish a proposed rule in the Federal Register in accordance with the recommendations. If the Regional Administrator rejects the MAFMC's recommendation, he or she shall advise the MAFMC in writing of the basis for the rejection.

(e) The proposed rule to establish a SMZ shall afford a reasonable period for public comment. Following a review of public comments and any information or data not previously available, the Regional Administrator will publish a final rule if he or she determines that the establishment of the SMZ is supported by the substantial weight of evidence in the record and consistent with the Magnuson-Stevens Act and other applicable law.

1.0 Basis/Justification for SMZ Request

In a letter to Dr. Chris Moore dated April 19, 2011 (Appendix A), the DFW formally requested that the Council designate its five artificial sites currently permitted in the EEZ, (as defined by the Army Corps of Engineer [COE] permit number CENAP-OP-R-20050059-1) under the SMZ provisions of Amendment 9 to the Summer flounder, Scup and Black Sea bass FMP described above. In the SMZ request letter it was noted that "the DFW has been receiving complaints from hook and line anglers regarding fouling of fishing gear in commercial pots and lines on ocean reef sites for more than 10 years". In a presentation to the Council at its June 2011 meeting, the DFW also identified "a gear conflict between hook and line fishermen and fixed pot/trap fishermen" (including fixed commercial gear targeting black sea bass, lobster and conchs) in which hook and line fishermen foul their hooks on this fixed gear resulting in lost rigs (on both actively fished pots and lost "ghost" gear).

In its SMZ request letter, the DFW also noted that "more recently the USFWS Sportfish Restoration Program Office in Hadley, MA has begun receiving complaints from fishing groups and individuals from the Mid-Atlantic" (the SMZ Monitoring Team assumed these complaints refer to gear conflicts). Finally, the DFW noted that they were notified by USFWS in March 2011 "that when gear conflicts occur, pot fishing on reef sites is not consistent with the objectives of their Sportfish Restoration Program. State reef programs must be able to limit gear

conflicts by regulations in state waters or by way of SMZ's for sites in the EEZ in order to comply with the goals of the Sportfish Restoration Program." This theme was also articulated during a presentation to the Council by the USFWS entitled Dingell – Johnson Sport Fish Restoration Program (SFRP) - Recreational and Commercial Fishing Conflicts on Artificial Reefs - Implications for Federal Funding. That presentation described the artificial reef grant objectives of USFWS to be "to increase diversity, abundance and availability of reef-dependent species sought by recreational fishermen through creation of artificial reefs and to provide increased fishing opportunities for recreational anglers". The major issues from the USFWS perspective include 1) proliferation of commercial fishing traps/pots on artificial reefs constructed with Dingell-Johnson Sport Fish Restoration (SFR) funds, 2) commercial/recreational gear conflict interferes with accomplishment of artificial reef grant objectives and 3) absence of mechanisms to manage commercial fishing on reefs located in State-controlled waters and the Exclusive Economic Zone. The USFWS noted the following implications for SFR funding in cases where commercial/recreational gear conflicts are not remedied: 1) replacement of expended funds 2) suspension or termination of project for noncompliance and 3) declare the State ineligible to participate in SFR program. In April 2011, the USFWS terminated SFR Program funding for New Jersey's artificial reef program based on concerns regarding conflicts involving hook and line recreational fishermen and fixed pot/trap gear on the states artificial reefs (see 12 April 2011 letter from John Organ to Bob Martin in Appendix A).

SMZ Team Actions

Based on requirements described in § 648.148, an SMZ Monitoring Team was formed consisting of members of MAFMC Staff, the Northeast Fisheries Science Center (NEFSC), and the Northeast Regional Office (NERO) to evaluate the SMZ request submitted to the MAFMC by Delaware. The Monitoring Team evaluated Delaware's SMZ request for 5 reef sites in the EEZ based on the criteria developed in Amendment 9 in the form of a written report (Appendix B). After their review, the SMZ Team recommended that Delaware's request for SMZ status for the five artificial reef sites be considered by the Council.

The findings of the Team were:

1. Based on vessel trip reports, there is only evidence of potential gear conflicts on two of the five Delaware reef sites.
2. Designation of four of the sites as SMZs would be consistent with past Council policy relative to the permitting and deployment of these sites, but not for one site the Council had opposed during its initial 1996 permitting process.
3. Significant precedent exists in other regions to conclude that designation of the five artificial reef sites (which would include gear restriction at the sites) would be consistent with the Magnuson-Stevens Act and other applicable law.
4. The recommendation the Council makes with respect to the 5 Delaware reefs has implications for the 30 other artificial reef sites in the EEZ. Designation of the Delaware reef sites would not impact a significant number of entities. However, this conclusion may be different if the Council were considering SMZ status for all 35 EEZ sites.

Council Recommendation

Based on the Team's findings and subsequent Council review, the Council considered a set of five options to implement the SMZs, and publicized these options during several to public hearings. The major actions in the options were:

1. No Action.
2. Designate some of the five Reefs as SMZs
3. Designate all of the five Artificial Reefs as SMZs
4. Seasonal restrictions
5. Buffer Zone

The Council further reviewed the SMZ management options and public hearings on the five options. After consideration of public input, the Council recommend to NMFS that all five artificial reefs be established as SMZs, through a regulatory amendment, that would allow only hook and line and spear fishing, including the taking by hand in the artificial reefs designated areas (all year round), and that these measures be implemented with a 500-yard buffer around each artificial reefs site. The buffer area was recommended to improve enforcement of the recommended SMZ management measures for the artificial reefs. No buffer and a 1,000-yard buffer were also considered by the Council, but not preferred because considered too small to effectively protect the SMZs (no buffer) or needlessly too large (1,000 yard buffer) and disruptive to commercial fishing near the artificial reefs.

It is important to note that there are 30 additional artificial reefs permitted to other states which exist within the EEZ portion of the black sea bass management unit (Table 1). The USFWS termination letter of SFR Program funding to the New Jersey state reef programs for failure to resolve the stated gear conflict issue (see Appendix A) eliminating SFR Program funding for that state's artificial reef program. An important policy implication for consideration is that SFR Program funding for Delaware's artificial reef program, as well as other state artificial reef programs in the Mid-Atlantic region, may be terminated by the USFWS if solutions to the gear conflict concerns raised by the USFWS are not addressed.

Table 1. Artificial reefs currently permitted by state within the black sea bass FMP management unit (Maine to North Carolina).

State	Number of Reef Sites	Comments
Maine, New Hampshire, Massachusetts, Rhode Island and Connecticut	0	
New York	2	There are two sites, but one permit has expired and may or may not be renewed
New Jersey	13	
Delaware	5	
Maryland	7	MD's ocean reefs are now permitted and managed by the City of Ocean City, MD
Virginia	5	
*North Carolina	3	The 3 different sites are under 1 permit
Total	35	
*NC information includes only reef sites north of Cape Hatteras		
Survey conducted on 7/24/2012 by Paul Perra by contacting State Marine Fisheries Managers and/or Artificial Reef Program Managers		

Proposed Rule Comments

NMFS received comments from the State of Delaware, the Atlantic States Marine Fisheries Commission (ASMFC), Councils, and the public regarding the designation of Site 14 and the enforcement buffer.

At their 2014 August meetings, the ASMFC and the Mid-Atlantic Fishery Management Council voted to recommend removing the inclusion of an enforcement buffer around any reef sites designated as SMZs after receiving input from the State of Delaware opposing the inclusion of a 500 yard buffer around each reef site. The inclusion of a 500 yard enforcement buffer surrounding each SMZ would roughly double the area of the SMZs relative to the current permitted reef site areas, which the Council argues would be contrary to the intent of the State of Delaware when they made the SMZ designation request.

In addition, the ASMFC and the Mid-Atlantic Council concurred with comments from the New England Fishery Management Council (NEFMC) concerning the designation of Reef Site 14 as

an SMZ (Appendix A). The NEFMC noted that a lot of fishing activities related to the Atlantic sea scallop, monkfish and skate fisheries occur in or near the vicinity of Site 14. They also noted that negative economic impacts could result from an SMZ designation at Site 14 with no apparent benefit since, to date, there have been no reef materials placed at that location. In response to these concerns, the Mid-Atlantic Council voted to remove Reef Site 14 from consideration as an SMZ under the proposed action. The Mid-Atlantic Council's comments were detailed in a letter to the Regional Administrator dated August 19, 2014 (Appendix A).

Based upon input from the the State of Delaware, the ASMFC, Councils and the public during the proposed rule comment period, NMFS has rejected Reef Site 14 from further SMZ consideration in this Final EA (see Section 3.3). Additionally, NMFS has identified SMZ Buffer Alternative 1- No Buffer as the preferred alternative in this Final EA.

1.1 Development History of Delaware Reef Sites

The Delaware DFW received authorization to begin constructed artificial reef sites at 11 sites in the Delaware Bay and the Atlantic Ocean in November 1994 (pursuant to COE Permit CENAP-OP_R_199400886-1). That permit allowed for construction of three reef sites in the EEZ including reef sites 9, 10 and 11 (see below for a complete description of each reef site). Deployment of materials on reefs sites 9 and 10 began in August 1995 and on site 11 in January 1996.

The DFW received a second permit from the COE in January 2006 (permit number CENAP-OP-R-200500059-1) that authorized the continued deployment of artificial reef materials at the 11 original sites (referenced above) and at three new sites, two of which are located in the EEZ (reef sites 13 and 14). Deployment of reef materials on reef site 13 commenced in December 2007 and to date, no materials have been deployed by DFW on site 14 (J. Tinsman, pers. comm.). It is important to note that DFW's original COE permit pre-dated the implementation of the SMZ provision implemented in Amendment 9. However, an opportunity existed for the DFW to petition the Council for SMZ status for any and/or all of its reef sites during the permitting process in 2006.

1.2 Delaware Reef Sites Description

The Delaware artificial reefs are part of a complex of 14 artificial reefs sites, permitted by the US Army Corps of Engineers and maintained by the State of Delaware. The sites are in Delaware Bay and the Atlantic Ocean. Only the five artificial reef sites (sites 9, 10, 11, 13, and 14) maintained in Federal waters are described here (Figure 1). Information on the location of five artificial reefs and the species that might inhabit the artificial reef sites are primarily from the U.S. Army Corps of Engineers Artificial Reef Permit to the Delaware Department of Natural Resources and Environmental Control Division of Fish and Wildlife # CENAP-OP-R-200500059-1.

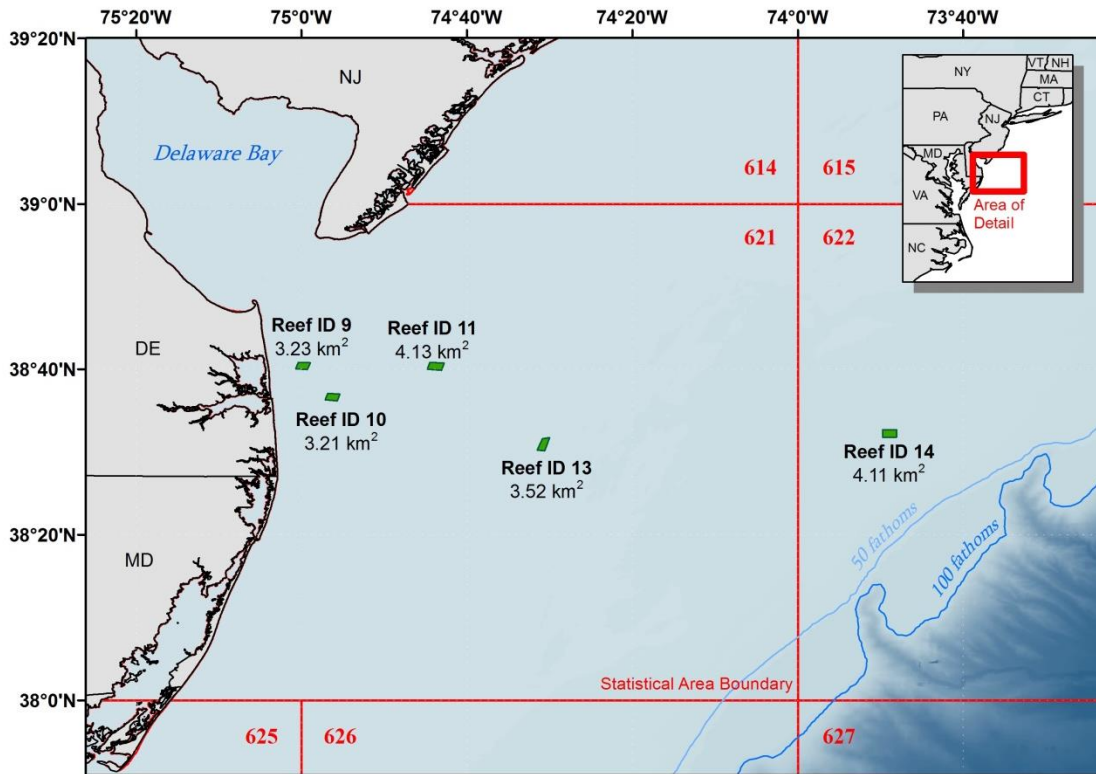


Figure 1. Location of five artificial reef sites in the EEZ

Site 9

Artificial Reef Site #9 is 3.2 km² (0.94 square nautical miles) in area, is located 4.5 nautical miles northeast of Indian River Inlet, Delaware and has an authorized minimum vertical clearance of fifty (50) feet above all structures at mean low water elevation. It has a depth range is 52-64 feet. The nearest ports are Roosevelt Inlet (12 NM) and Indian River Inlet (4.5 NM). The reef is composed of tires and concrete. The epifaunal community is blue mussel. The fish in the area are black sea bass, tautog, weakfish, striped bass, summer flounder, and croaker. The primary substrate is sand. Latitude and longitude corner coordinates are: SE 38°39.970' - 074°59.300' -SW 38°40.050' - 075°00.700' - NE 38°40.800' - 074°58.900' - NW 38°40.850' - 075°00.400.

Site 10

Artificial Reef Site #10 is 3.2 km² (0.94 square nautical miles) in area, is located 5.5 nautical miles east of Indian River Inlet and has an authorized minimum vertical clearance of fifty (50) feet above all structures at mean low water elevation. It has a depth range of 56-64 feet. The nearest port is Indian River Inlet (5.4 NM). The reef is composed of concrete, tires, ships and barges. The epifaunal community is blue mussel. Fish in the area are black sea bass, tautog, weakfish, striped bass, summer flounder, and croaker. The primary substrate is hard sand. Latitude and longitude corner coordinates are: SE 38°36.200' - 074°55.674' - SW 38°36.296' - 074°57.150' - NE 38°37.000' - 074°55.375' - NW 38°37.100' - 074°56.800'.

Site 11

Artificial Reef Site #11 is 4.1 km² (1.2 square nautical miles) in area, is located 16.5 nautical miles east of Indian River Inlet and has an authorized minimum vertical clearance of fifty (50) feet above all structures at mean low water elevation. It has a depth range of 68-88 feet. The nearest port is Indian River Inlet (16.5 NM). The reef is composed of NYC subway cars, military vehicles and ships. The epifaunal community is blue mussel. Fish in the area are black sea bass, tautog, bluefish, and summer flounder. The primary substrate is sand. Latitude and longitude corner coordinates are: SE 38°39.880' - 074°43.050' - SW 38°40.000' - 074°44.800' - NE 38°40.750' - 074°42.750' - NW 38°40.850' - 074°44.500'.

Site 13

Artificial Reef Site #13 is 3.5 km² (1.0 square nautical miles) in area, is located 26 nautical miles east of Indian River Inlet and has an authorized minimum vertical clearance of sixty (60) feet above all structures at mean low water elevation. It has a depth range of 120-130 feet. The nearest port is Indian River Inlet (26 NM) and Cape Henlopen (32 NM). The reef is composed of subway cars and ships. The epifaunal community is soft coral, northern coral, anemone, and ectoproct. The listing for hard corals as possible species for sites 13 in by the U.S. Army Corps of Engineers was speculative in nature and not based on any sampling or observations. The presence of hard corals is unlikely at Site 13. Monitoring of Site 13 has shown that it supports mostly a blue mussel bottom community with soft coral and anemones gradually becoming more dominant over time. (Personal communication, J. Tinsman, DFW). Fish in the area are black sea bass, tautog, winter flounder, cod, and red hake. The primary substrate is sand. Latitude and longitude corner coordinates are: SE 38°30.140' - 074°30.580' - SW 38°30.220' - 074°31.500' - NE 38°31.735' - 074°30.020' - NW 38°31.616' - 074°30.865.

Site 14

Artificial Reef Site #14 is 4.1 km² (1.2 square nautical miles) in area, is located 58 nautical miles east of Indian River Inlet and has an authorized minimum vertical clearance of eighty (80) feet above all structures at mean low water elevation. It has a depth range of 180-186 feet. The nearest port is Indian River Inlet (58 NM), Cape Henlopen (612 NM), Cape May Inlet (55 NM), and Ocean City MD (61NM). No artificial materials have been deployed yet at this site. The epifaunal community is soft coral, northern coral, anemone, and ectoproct. The listing for hard corals as possible species for Site 14 in by the U.S. Army Corps of Engineers was speculative in nature and not based on any sampling or observations. The presence of hard corals is unlikely at Site 14 (Personal communication, J. Tinsman, DFW). Fish in the area are black sea bass, tautog, winter flounder, cod, and red hake. The primary substrate is sand. Latitude and longitude corner coordinates are: SE 38°31.800' - 073°48.067' - SW 38°31.800' - 073°49.767' - NE 38°32.700' - 073°48.067' - NW 38°32.700' - 073°49.767'.

Materials Allowed on the Reefs:

Under the US Army Corps of Engineers permit for the Delaware reef program, artificial reef materials permitted for use on the sites are (2) separate categories. The first are specifically designed reef materials. These design materials are materials constructed to maximize surface area for attracting organisms to provide specific habitat requirements for targeted reef fish and other marine species. The second category of reef materials allowed is identified as materials of opportunity. Materials of opportunity that could be used for construction of artificial reef

structures would include, but not limited to, concrete, rock, surplus ships, barges, tanks, armored personnel carriers, and obsolete subway cars. In accordance with the National Artificial Reef Plan, and the US Army Corps of Engineers, all materials of opportunity, must be properly cleaned, dismantle where necessary, and inspected prior to deployment to assure that they are clean and free of contaminants.

2.0 PURPOSE AND NEED OF THE ACTION

The purpose of this action is to consider the request by the MAFMC to designate artificial reef sites in the EEZ as Special Management Zones under provisions of Amendment 9 to the Summer Flounder, Scup, and Black Sea Bass Fishery Management Plan. This action is needed to ameliorate gear conflicts at those sites. The gear conflicts are primarily between hook and line fishermen and fixed pot/trap gear.

3.0 PROPOSED ACTION AND ALTERNATIVES

The following sections describe the proposed action and other alternatives considered in this assessment.

3.1 Designation of Delaware permitted artificial reef sites as SMZs with associated gear and seasonal restrictions

NMFS would designate the SMZs as described in Amendment 9 to the Summer Flounder, Scup and Black Sea Bass FMP. Provisions of Amendment 9 allow NMFS to prohibit or restrain the use of specific types of fishing gear that are not compatible with the intent of the artificial reef or fish attraction device or other habitat modification within the SMZ.

If NMFS chooses to designate any of the reef sites as SMZs (Section 3.1.1.1), the specific restrictions (gear(s), season, buffer) that would be prohibited would be determined by NMFS under Sections 3.1.1.2 to 3.2 below. The degree of potential impact from SMZ designation on various fishing sectors would depend on these specific restrictions.

3.1.1 No Action

Under this alternative NMFS would take no action and the Delaware artificial reef sites in the EEZ would remain open to all gear types year round. This alternative would deny the Delaware and MAFMC request to grant SMZ status for the EEZ reef sites and allegations of gear conflicts would likely continue. Delaware could potentially lose a portion or all of its funding for maintenance and construction of artificial reef sites in the EEZ under the Wallops-Breaux Sportfish Restoration Program if no action is taken.

Delaware's entire artificial reef program (personnel, materials deployment, and permitting and monitoring) is supported by USFWS funding. The SRP funding is a very stable funding source for the Delaware artificial reef program, not subject to the annual Congressional budget process. The SRP is supported by a trust fund derived from an excise tax and import duties on certain items related to sport fishing, and a portion of motorboat and small motor fuel tax revenues.

SRP funds are essential to Delaware's artificial reef program and not likely to be replaced if terminated by the FWS. Continued funding is important because artificial reef development is not complete when the first materials are placed on a site. It is a dynamic and ongoing process. As an example, from 2001-2003 Delaware began an aggressive program to place cost effective reef materials on its largest ocean site (Reef site 11). A total of 997 NYC subway cars were placed on the site. An expanse of featureless sand bottom, holding few fish was quickly turned into a relatively densely developed site holding millions of fish and providing over 17,000 angler trips annually from DE, NJ and MD. These materials were expected to last for about 25 years as high profile structure. During this period of degradation, development will have to continue, gradually adding vessels and other materials which may last for 100 years or longer. Other sites, like site #13, are still only about 1-2% developed and site #14 has no reef material in place at this time. The more reef material on a site, the more protective hard bottom habitat is created, and this supports an enriched food source. Delaware cannot maintain or grow the potential of its artificial reef program with past development efforts, but must secure SMZ status in order to continue to receive its SRP funding and, therefore, continue its artificial reef program.

3.1.1.1 Which Delaware permitted artificial reef sites will be designated as SMZs?

3.1.1.1.1 Alternative 1- Designate reef sites 9, 10, 11, and 13 as SMZ (preferred alternative)

Under this alternative NMFS would designate four of the Delaware reef sites as SMZs.

3.1.1.1.2 Alternative 2- Designate reef sites 11 and 13 as SMZs (only sites with documented potential for gear conflicts)

Under this alternative NMFS would designate reef sites 11 and 13 as SMZs. Little or no commercial fishing activity was documented in the vicinity of reef sites 9 and 10, so there appears to be little opportunity for gear conflicts to occur at these sites (especially for fixed pot/trap gear) unless there is some unforeseen shift in commercial fishing effort. However, commercial fishing activity on sites 11 and 13 was documented at these sites based on VTR data, so the potential for gear conflicts exists at these sites. While gill nets and long lines are not currently reported being use on the artificial reefs, they pose further potential for gear conflicts because of their ability to restricting recreational fishing on the reefs by causing fouling or snagging of hooks as recreational vessels attempt to fish on or drift over the artificial reefs. Also, displaced pot fishing vessels from the artificial reef may shift to long lines or gill nets to maintain access to their same fishing grounds, and this would continue the recreational/commercial gear conflicts on the artificial reef sites.

3.1.1.1.3 Alternative 3- Designate reef sites 9, 10 and 13 as SMZs, but not site 11

Under Alternative 3, NMFS would designate reef sites 9, 10 and 13 as SMZs. During the original permit process for reef sites 9, 10 and 11, the Council opposed the granting of a permit for reef site 11 by the COE because there were indications that considerable commercial fishing activity took place at this location. Therefore, NMFS could designate reef sites 9, 10 and 13 as SMZs but not site 11 based on the argument that it would remain consistent with that historical position. However, site 11 appears to be the area that has the greatest potential for gear conflicts between hook & line gear and fixed pot/trap gear.

3.1.1.2 What Gear Restrictions Will be Associated with the SMZs?

These gear restriction alternatives would apply to the reefs designated in Section 3.1.1.1 and during the time periods associated with the alternatives under Section 3.1.1.3.

3.1.1.2.1 Alternative 1- Prohibit use of fixed pot/trap gear on sites designated as SMZs

Under this alternative, NMFS would prohibit the use of fixed pot/trap gear on reef sites designated as SMZs.

3.1.1.2.2 Alternative 2- Restrict fishing activities in designated SMZ sites to hook & line and spear fishing gear only (preferred alternative)

Under this alternative, NMFS would prohibit the use all fishing gear on reef sites designated as SMZs, except hook & line and spear-fishing gear. Under this alternative, the use of commercial hook & line fishing gear within the designated boundaries of SMZs would still be permitted, however the use of all other commercial fishing gears would be prohibited (i.e., gill nets, long lines, etc.).

3.1.1.3 What Seasonal Restrictions Will be Associated with the SMZs?

These seasonal restriction alternatives would apply to the reefs designated in Section 3.1.1.1.

3.1.1.3.1 Alternative 1 Designate SMZs during periods when federal recreational fishery for black sea bass is open

Under Alternative 1, NMFS would designate all or some of the Delaware EEZ reef sites as SMZs when the recreational season for the federal black sea bass is open. Since the rationale for the SMZ request relates to the black sea bass fishery this alternative seeks to reduce gear conflicts throughout the recreational season for black sea bass on the artificial reefs. The open season for black sea bass can vary by state and year. But as an example, NMFS implemented black sea bass recreational fishery open seasons from May 19-October 14 and November 1-December 31 for 2013. Delaware implemented open black sea bass season from January 1-February 28, May 19-October 14 and November 1-December 31 in 2013. If this Alternative is selected, the ability of the recreational fleet to fish the reefs during the Federal season could differ from the regulations for the state in which the fish will be landed. In this case the more restrictive regulations must be followed.

3.1.1.3.2 Alternative 2- Designate SMZs year round (preferred alternative)

Under this alternative the SMZ designation for any or all of the artificial reefs would be in effect for the entire calendar year.

3.1.1.3.3 Alternative 3- Designate SMZs during periods of peak recreational fishing effort (Memorial Day to Labor Day)

Under Alternative 3, the SMZ designation for any or all of the artificial reefs would be in effect from Memorial Day to Labor Day. This alternative attempts to reduce gear conflicts at Delaware reefs sites by designating SMZs during periods when the chance of gear conflicts would be expected to be at a maximum (i.e., during periods of peak recreational fishing activity).

3.2 Will the SMZ have a buffer around the artificial reef?

Law enforcement personnel have advised the Council and NMFS that any SMZ designations should include a buffer around the boundaries of the artificial reef to allow for adequate enforcement.

3.2.1 Alternative 1- No buffer (preferred alternative)

Under this alternative, there would be no buffer around the areas designated as SMZs. The boundaries of the SMZs would include the only the area within the published boundaries of the reef included in the COE permit.

3.2.2 Alternative 2- A 0.9 km (1000 yard buffer) (equivalent to 0.5 nautical miles)

Under this alternative, the areas designated as SMZs would include the area within the published boundaries of the reef included in the COE permit plus a buffer of 1000 yards (0.5 nautical miles). This buffer was specifically recommended during the Council scoping process by personnel from the US Coast Guard and NMFS Office of Law Enforcement.

3.2.3 Alternative 3 – A 0.46 km (500 yard buffer) (equivalent to 0.25 nautical miles)

Under this alternative, the areas designated as SMZs would include the area within the published boundaries of the reef included in the COE permit plus a buffer of 500 yards (0.25 nautical miles). This alternative would be closely consistent with the SMZ designations in the South Atlantic which include a 500 meter (0.27 nautical mile) buffer around artificial reef site boundaries.

3.3 Considered But Rejected Alternatives

Based upon input from the State of Delaware, the ASMFC, the New England and Mid-Atlantic Councils, and the public during the proposed rule comment period (Appendix A), NMFS reconsidered implementing a SMZ at reef site 14 and has concluded that site 14 does not meet the purpose and need for this action. Because there is no reef material at the site, reef site 14 is not currently experiencing gear conflicts like the other developed reef sites. Creating an SMZ at the site would likely result in negative economic impacts to the valuable scallop fishery. As further support for rejecting the consideration of site 14, the original proponents of the action have requested it be removed from SMZ consideration. Therefore, NMFS has rejected Reef site 14 alternative from further SMZ consideration in this Final EA.

Artificial reef site 14 is almost 60 miles offshore and overlaps with fishing grounds used by the sea scallop, skate and monkfish fisheries. Area 14 is located at a depth of about 60 meters and is within the Elephant Trunk scallop rotational area, an area that has had special management status in the Scallop FMP since 2004 when it was first closed to protect juvenile scallops. Since that time this area has become one of the more productive and valuable scallop access areas in the entire region.

The State of Delaware requested excluding the undeveloped artificial reef site 14 from SMZ designation. Site 14 is one of Delaware's permitted artificial reef sites, but no materials have been placed at the site and therefore, there is not a direct nexus to the Sport Fish Restoration (SFR) Program. Eliminating site 14 from SMZ designation would likely prevent Delaware from

using SFR monies to develop the site in the future: however, due to competing funding priorities, reduced availability of vessels for reefing, reduced appropriations and the low number of anglers that would be served by developing such a distant site, Delaware stated that they had no plans to develop this site in the foreseeable future.

In response to the concerns noted above, the Mid-Atlantic Council voted to remove Reef Site 14 from consideration as an SMZ under the proposed action at its August 2014 meeting.

4.0 AFFECTED ENVIRONMENT

This section describes the environment of the area affected by the proposed action and alternatives. NMFS identified five Valued Ecosystem Components (VECs) which are the important environmental facets used to evaluate impacts in this EA.

- Target species
- Non-target species and bycatch
- Habitat
- Protected resources
- Human communities

4.1 Description of the Managed Resource (Target Species)

4.1.1 Description of the Fisheries

Since NMFS would designate the SMZs as described in Amendment 9 to the Summer Flounder, Scup and Black Sea Bass FMP, this EA considers these three species to be the “target species” for this action

The management unit for summer flounder (*Paralichthys dentatus*) is the U.S. waters in the western Atlantic Ocean from the southern border of North Carolina northward to the U.S.-Canadian border. The management unit for both scup (*Stenotomus chrysops*) and black sea bass (*Centropristis striata*) is the U.S. waters in the western Atlantic Ocean from Cape Hatteras, North Carolina northward to the U.S.-Canadian border.

The commercial and recreational fisheries for summer flounder, scup, and black sea bass are fully described in section 3.3.2 of Amendment 13 to the FMP (MAFMC 2002) and are also outlined by principal port in section 3.4.2 of that document. Otter trawls are utilized in the commercial fisheries for all three species. In addition, floating traps and pots/traps are utilized to capture scup and black sea bass, respectively. An overview of commercial and recreational fisheries landings for each of the FMP species is provided below. The commercial landings are based on Dealer Weighout Data and recreational landings are based on Marine Recreational Fisheries Statistical Survey (MRFSS) and Marine Recreational Information Program (MRIP) data. Additional information on these fisheries can be found in Council meeting materials available at: <http://www.mafmc.org>.

4.1.1.1 Summer Flounder

The relative contributions of commercial and recreational summer flounder landings are shown in Figure 2.

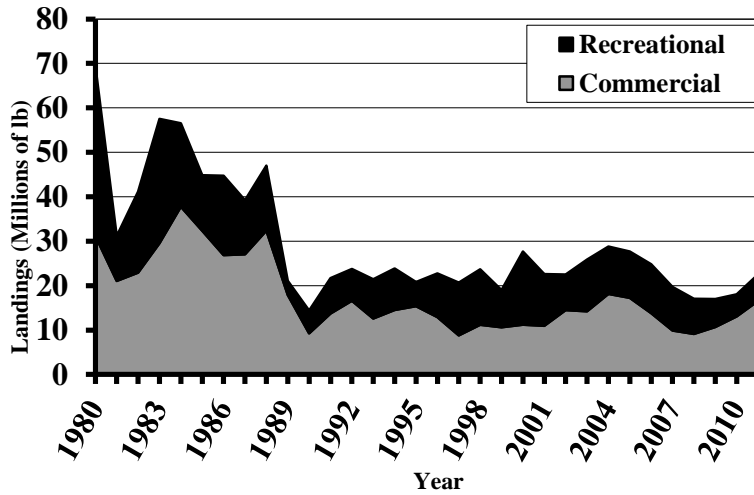


Figure 2. Summer flounder commercial and recreational landings, 1980-2011.

4.1.1.2 Scup

The relative contributions of commercial and recreational scup landings are shown in Figure 3.

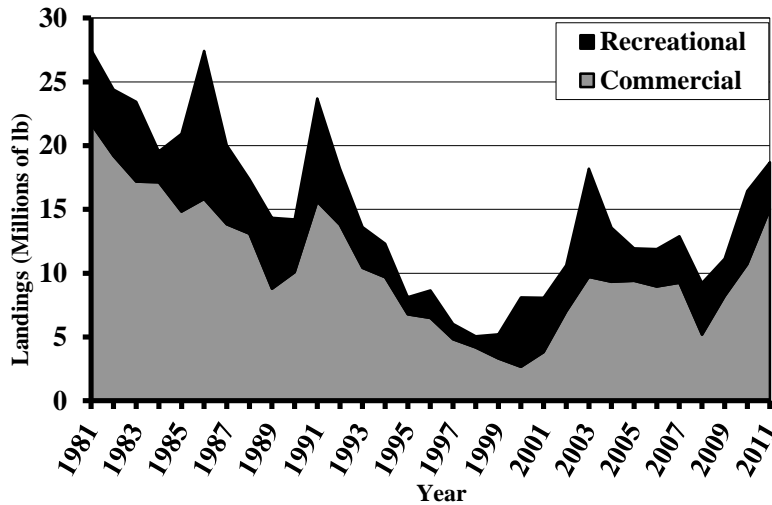


Figure 3. Scup commercial and recreational landings, 1981-2011.

4.1.1.3 Black Sea Bass

The relative contributions of commercial and recreational black sea bass landings are shown in Figure 4.

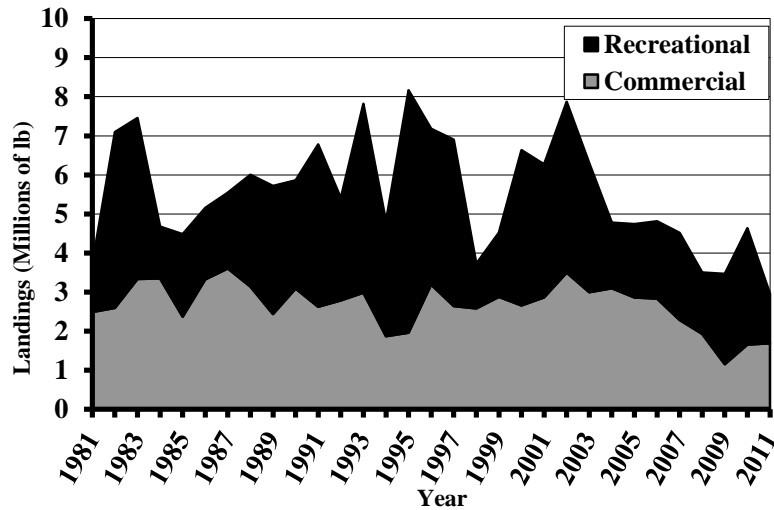


Figure 4. Black sea bass commercial and recreational landings, 1981-2011.

4.1.2 Description of the Stock (Including Status, Stock Characteristics, and Ecological Relationships)

Reports on stock status, including annual assessment and reference point update reports, Stock Assessment Workshop (SAW) reports, Stock Assessment Review Committee (SARC) reports, and Data Poor Stocks Working Group (DPSWG) reports and peer-review panelist reports are available online at the NEFSC website: <http://www.nefsc.noaa.gov/>. EFH Source Documents, which include details on stock characteristics and ecological relationships, are available at the following website: <http://www.nefsc.noaa.gov/nefsc/habitat/efh/>.

4.1.2.1 Summer Flounder

The assessment update published in July 2012 (Terceiro 2012) indicated that the summer flounder stock was not overfished and overfishing is not occurring relative to the reference points established in the SAW 47 assessment. F in 2011 = 0.241, below the reference point $F_{MSY} = 0.310$. Spawning Stock Biomass (SSB) was estimated to be 125.71 million lb, below $SSB_{MSY} = 132.44$ million lb. The summer flounder stock was determined by NMFS to be rebuilt in November of 2011 and is no longer subject to the formal rebuilding program in place since 2000.

4.1.2.2 Scup

The assessment update published in July 2012 (Terceiro 2012) indicated that the scup stock is not overfished and overfishing is not occurring relative to the DPSWG biological reference points. F in 2011 = 0.034, below the reference point $F_{MSY} = 0.177$. SSB in 2011 was estimated to be 420.0 million lb, more than double the SSB_{MSY} level of 202.9 million lb. The scup stock is considered rebuilt by NMFS.

4.1.2.3 Black Sea Bass

Based on the July 2012 update (Shepherd 2012), the stock is not overfished and overfishing is not occurring, relative to the July 2012 update of the DPSWG biological reference points. F in 2011 = 0.21, a decrease from $F = 0.41$ in 2010. This point estimate of F in 2011 is below the updated reference point of $F_{MSY} = 0.44$. SSB in 2011 is 24.6 million lb, slightly above the deterministic value of $SSB_{MSY} = 24.0$ million lb. The black sea bass stock is considered rebuilt by NMFS.

4.2 Non-Target Species And Bycatch

The summer flounder, scup and black sea bass fisheries are mixed fisheries, where squid, Atlantic mackerel, silver hake, skates, and other species are harvested with summer flounder, scup, and/or black sea bass. Black sea bass pot fishing is the most documented directed commercial fishery on or near the reef sites, and this fishery also takes American lobster (100 lobster allowed per day). Additionally, bluefish, tautog, whelk, scallop, and striped bass are typically caught on or near the reefs. Section 5.1.9 of Amendment 13 to the FMP (MAFMC 2002) provides a full description of bycatch and/or non-target species in these fisheries. The term "bycatch," as defined by the MSA, means fish that are harvested in a fishery but that are not sold or kept for personal use. Bycatch includes the discard of whole fish at sea or elsewhere, including economic and regulatory discards, and fishing mortality due to an encounter with fishing gear that does not result in capture of fish (i.e., unobserved fishing mortality). Bycatch does not include fish released alive under a recreational catch-and-release fishery management program.

4.3 Habitat (Including Essential Fish Habitat)

A description of the habitat associated with the summer flounder, scup, and black sea bass fisheries is presented in section 3.2 of Amendment 13 to the FMP (MAFMC 2002), and a brief summary of that information is given here. The impact of fishing on summer flounder, scup, and black sea bass on habitat (and EFH) and the impact of the summer flounder, scup, and black sea bass fisheries on other species' habitat and EFH can be found in Amendment 13 to the FMP (section 3.2; MAFMC 2002). Potential impacts associated with the measures proposed in this specifications document on habitat (including EFH) are discussed in section 7.2.

4.3.1 Physical Environment

Detailed information on the affected physical and biological environments inhabited by the managed resources is available in Stevenson et al. (2004). The managed resources inhabit the Northeast U.S. Shelf Ecosystem, which has been described as including the area from the Gulf of Maine south to Cape Hatteras, extending from the coast seaward to the edge of the continental shelf, including the slope sea offshore to the Gulf Stream. The continental slope includes the area east of the shelf, out to a depth of 2000 m. Four distinct sub-regions comprise the NOAA Fisheries Northeast Region: the Gulf of Maine, Georges Bank, the Mid-Atlantic Bight, and the continental slope. The Gulf of Maine is an enclosed coastal sea, characterized by relatively cold waters and deep basins, with a patchwork of various sediment types. Georges Bank is a relatively

shallow coastal plateau that slopes gently from north to south and has steep submarine canyons on its eastern and southeastern edge. It is characterized by highly productive, well-mixed waters and strong currents. The Mid-Atlantic Bight is comprised of the sandy, relatively flat, gently sloping continental shelf from southern New England to Cape Hatteras, NC. The continental slope begins at the continental shelf break and continues eastward with increasing depth until it becomes the continental rise. It is fairly homogenous, with some anomalous patches of hard bottom of the Delmarva Peninsula, and other exceptions at the shelf break, some of the canyons, the Hudson Shelf Valley, and in areas of glacially rafted hard bottom.

The Mid-Atlantic shelf is a gently sloping terrace that extends 100-200 km from shore. Primary morphological features include the shelf valleys and channels (e.g., Hudson River, Delaware River), shoal massifs, and sand ridges (Figure 5 and Figure 6). The surface of the shelf as we know it today was shaped primarily during last 15,000 years since the retreat of the Wisconsin ice sheet which advanced as far as Long Island and northern Pennsylvania, and from the advance of the sea across the land following deglaciation. The modern shelf environment, through the movement of sediment by currents and waves, has modified the basic structure.

As the ice sheet retreated, vast quantities of meltwater and sediment were carried offshore, eroding valleys into the shelf. The original Delaware River valley has been partially filled with modern sediments as the sea transgressed the shelf and the former river channels have been buried (Swift et al. 1980). The channels we see today are outflow channels for retreating estuaries that retreated shoreward as sea level rose. Depositional plains appear on the outer shelf.

The shelf contains scarps, features indicative of the position of the shoreline during still-stands in sea level during the last two million years (Figure 5 and Figure 6). Shoal retreat massifs are produced by extensive deposition at capes or estuary mouths (Swift et al. 1972). Any sharp change in the shoreline will frequently intercept the transport of sediment along the open coast and may also cause transport within the estuary to converge at the estuary mouth, producing extensive shoals of sand and gravel. With the retreat of the estuary mouth as sea level rose, new shoals continually developed and the older shoals remained stranded in deeper water. The resultant trail of these sandy shoals produced extensive depositional massifs across the shelf. Ubiquitous sand ridges are most common on the inner shelf. Frequently in groups, they have a spacing of about 2 km, mean height of 10 m and lengths of 10-50 km. They are oriented at a slight angle to the shore and have a NE-SW trend. Unlike the other shelf features, the sand ridges are more modern in origin. They maintain their shape, so they are probably in equilibrium with the present day storm currents and waves.

All of these morphological features are found on the continental shelf offshore of Delaware Bay in the area where the proposed special management zones are located. The location of the artificial reefs within each of the proposed areas is shown in relation to depth in Figure 1.

The following summary of the morphology and sediments of the Mid-Atlantic shelf is copied verbatim from Stumpf and Biggs (1988).

“The shelf sediments were supplied during the deglaciation of the early Holocene. Few sediments enter the Mid-Atlantic Bight now, most are trapped in estuaries. Yet, the shelf is a highly energetic environment. A combination of storm waves, storm currents and tidal currents continually rework locally redistribute the available sediments, often developing bedforms a meter high and a kilometer in length. The energy does not allow permanent deposition of muds, and mud lenses often appear in depression(s) during calm weather but they are dispersed again during storms. The net movement of sediment on the inner and outer shelf is southwesterly, consistent with the mean flow of bottom water. Perhaps two-thirds of this transport results from sediment resuspended by storm waves, then transported in storm and tidal currents. Thus, it appears that the inner shelf surface is highly mobile, and the sediments, bedforms and ridges are capable of substantial motion, factors which must be considered in any use of the shelf bottom.”

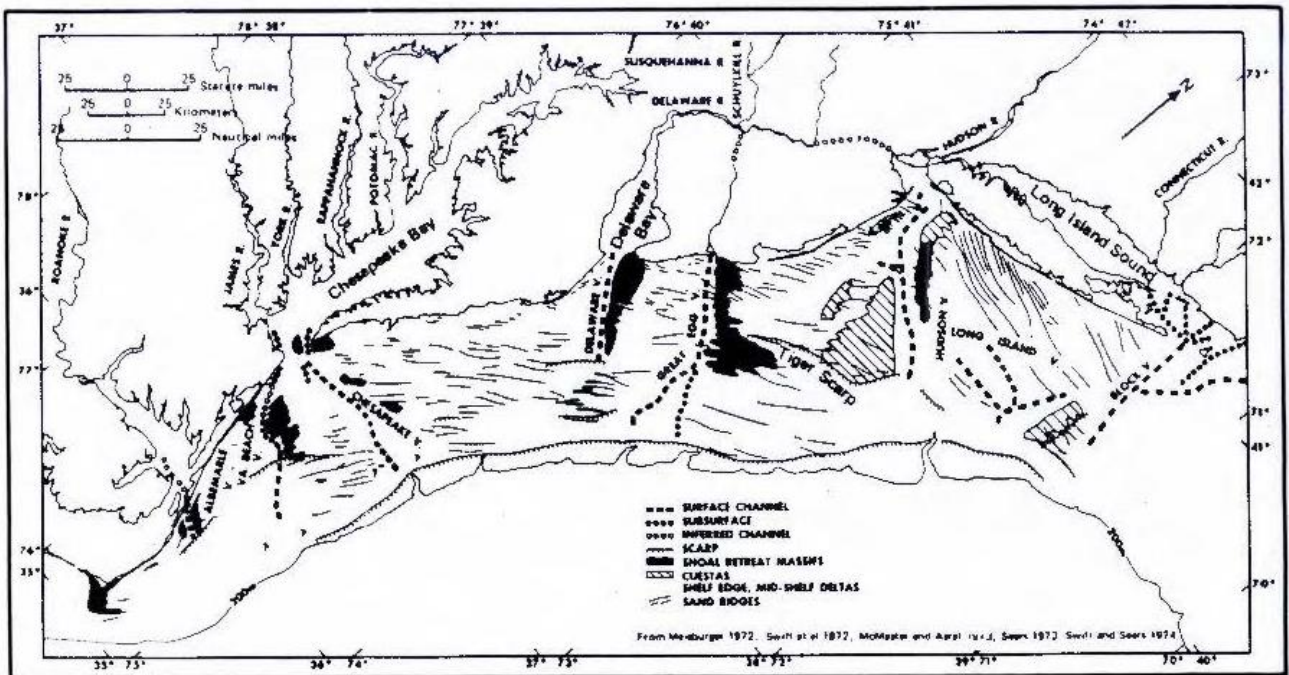


Figure 5. Middle Atlantic Bight morphology (from Freeland and Swift 1978)

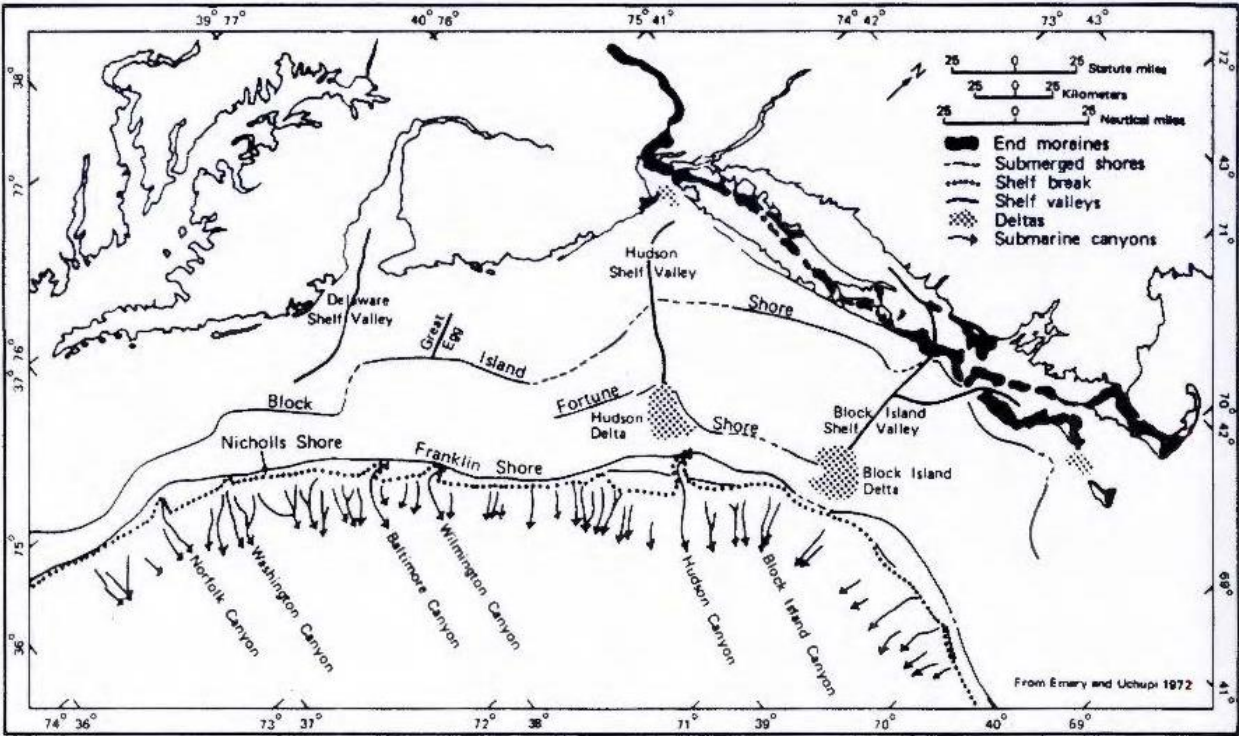


Figure 6. Major features of the Mid-Atlantic shelf (from Freeland and Swift 1978)

The environment that could potentially be affected by the proposed action overlaps with EFH for the managed resources. Figure 7 depicts the location of the artificial reefs on a depth contour map. The following sections describe where to find detailed information on EFH and any past actions taken in the FMPs to minimize adverse EFH effects to the extent practicable.

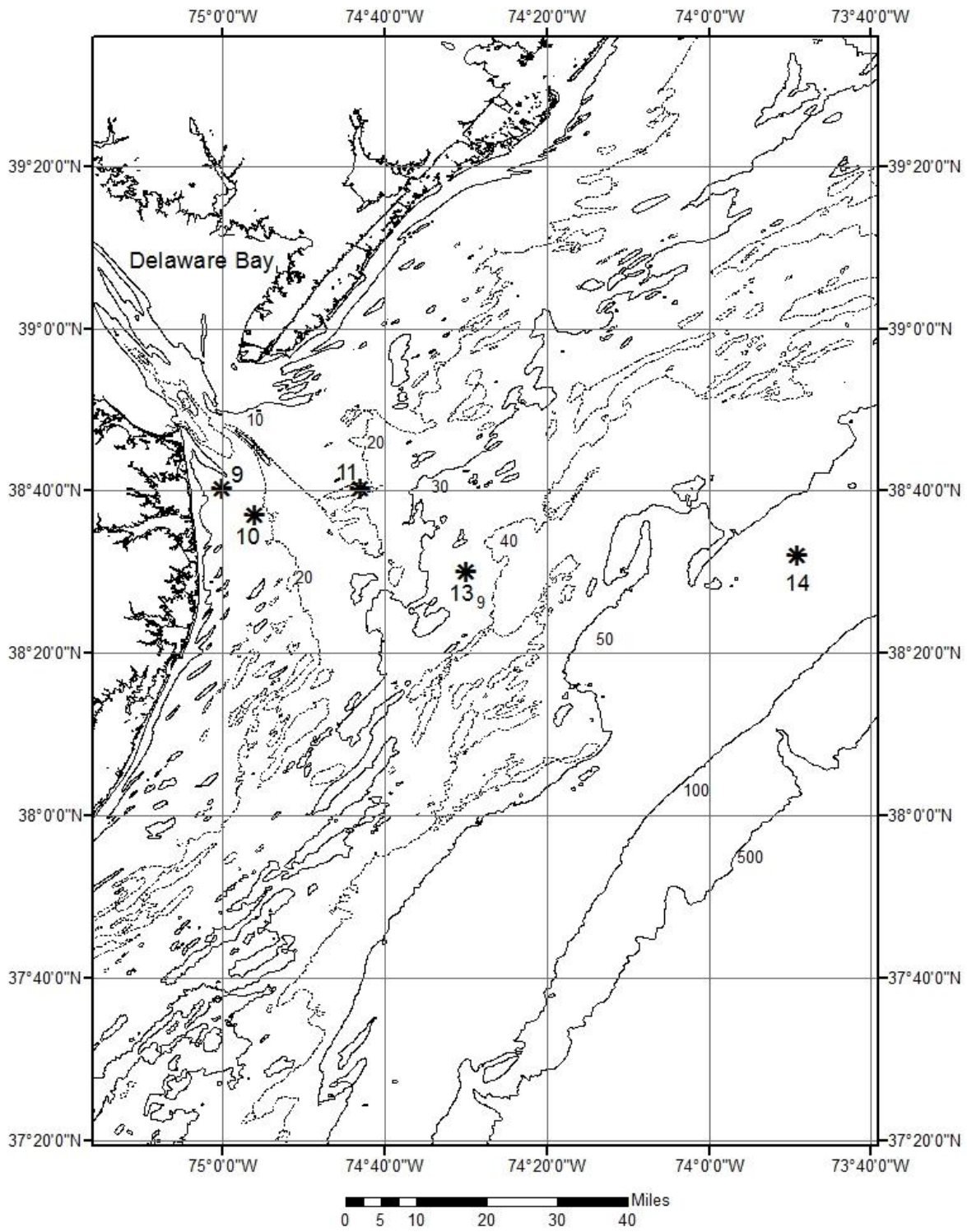


Figure 7. Depth and location of the five artificial reef sites in the EEZ considered for SMZ status. Depths are in meters

4.3.2 Essential Fish Habitat (EFH)

Information on summer flounder, scup, and black sea bass habitat requirements can be found in the documents titled, "Essential Fish Habitat Source Document: Summer Flounder, *Paralichthys dentatus*, Life History and Habitat Characteristics" (Packer et al. 1999), "Essential Fish Habitat Source Document: Scup, *Stenotomus chrysops*, Life History and Habitat Characteristics" (Steimle et al. 1999a), "Essential Fish Habitat Source Document: Black Sea Bass, *Centropristis striata*, Life History and Habitat Characteristics" (Steimle et al. 1999b) and an update of that document, "Essential Fish Habitat Source Document: Black Sea Bass, *Centropristis striata*, Life History and Habitat Characteristics" (Drohan et al. 2007). Electronic versions of these source documents are available at the following website: <http://www.nefsc.noaa.gov/nefsc/habitat/efh/>. The current designations of EFH by life history stage for summer flounder, scup, and black sea bass are provided in Table 1 in Appendix A, and are also available at the following website: <http://www.nero.noaa.gov/hcd/list.htm>. A summary description of EFH for summer flounder, scup, and black sea bass is provided here.

Summer flounder spawn during the fall and winter over the open ocean areas of the continental shelf. Planktonic larvae are often found in the northern part of the Middle Atlantic Bight from September to February and in the southern part from November to May. From October to May, larvae and postlarvae migrate inshore, entering coastal and estuarine nursery areas. Juveniles are distributed inshore and in many estuaries throughout the range of the species during spring, summer, and fall. Summer flounder exhibit strong seasonal inshore-offshore movements. Adult flounder normally inhabit shallow coastal and estuarine waters during the warmer months of the year and remain offshore during the colder months. EFH includes pelagic waters, demersal waters, saltmarsh creeks, seagrass beds, mudflats, and open bay areas, from the Gulf of Maine through North Carolina.

Scup spawn once annually, over weedy or sand-covered areas in the spring. Scup eggs and newly hatched larvae are found in open water in bays and sounds of Southern New England during the spring-summer. Juvenile and adult scup are demersal using inshore waters in the spring and moving offshore in the winter. EFH includes demersal waters, sands, mud, mussel and seagrass beds, from the Gulf of Maine through Cape Hatteras, North Carolina.

The northern population of black sea bass spawns in the Middle Atlantic Bight continental shelf during the spring through fall, primarily between Virginia and Cape Cod, Massachusetts. Spawning begins in the spring in the southern portion of the population range, i.e., off North Carolina and Virginia, and progresses north into southern New England waters in the summer-fall; these pelagic eggs are closely associated with spawning. Collections of ripe fish and egg distributions indicate that the species spawns primarily on the inner continental shelf between Cape Hatteras, North Carolina and Cape Cod, Massachusetts. The duration of larval stage and habitat-related settlement cues are unknown; therefore, distribution and habitat use of this pelagic stage may only partially overlap with that of the egg stage. Adult black sea bass are also very structure oriented, especially during their summer coastal residency. Unlike juveniles, they tend to enter only larger estuaries and are most abundant along the coast. Larger fish tend to be found in deeper water than smaller fish. A variety of coastal structures are known to be

attractive, and these include shipwrecks, rocky and artificial reefs, mussel beds and any other object or source of shelter on the bottom. In the warmer months, inshore, resident adult black sea bass are usually found associated with structured habitats. EFH for black sea bass is pelagic waters, structured habitat (e.g., sponge beds), rough bottom shellfish, sand and shell, from the Gulf of Maine through Cape Hatteras, North Carolina.

There are other lifestages of federally-managed species that have designated EFH that may be susceptible to adverse impacts from bottom-tending mobile gear; descriptions of these are given in Table 2 of Appendix C (from Stevenson et al. 2004).

4.3.3 Fishery Impact Considerations

Any actions implemented in the FMP that affect species with overlapping EFH were considered in the EFH assessment for Amendment 13 to the Summer Flounder, Scup, and Black Sea Bass FMP (MAFMC 2002). In the commercial fisheries for these managed resources, summer flounder are primarily landed by bottom otter trawls, scup are primarily landed by fish pots/traps, bottom and midwater trawls, and lines, and black sea bass are primarily landed by fish pots/traps, bottom and midwater trawls, and lines. Amendment 13 included alternatives to minimize the adverse impacts of fishing gear on EFH (as required pursuant to section 303(a)(7) of the MSA). As stated in section 3.2 of Amendment 13, the Council determined that both mobile bottom tending and stationary gear have a potential to adversely impact EFH. The analysis in that document also indicated that no management measures were needed, because in Federal waters the fishery is conducted primarily in high energy mobile sand and bottom habitat, where gear impacts are minimal and/or temporary in nature. On that basis, the Council selected the no action alternative, from among the suite of alternatives to minimize fishing gear impacts on EFH in Amendment 13 to the FMP. There have been no significant changes to the manner in which the summer flounder, scup, and black sea bass fishery is prosecuted, and none of the alternatives being considered in this document would adversely affect EFH (see section 7.0); therefore, the effects of fishing on EFH have not been re-evaluated since Amendment 13 to the FMP, and no alternatives to minimize adverse effects on EFH are presented in this document. The FMP limits recreational specifications for summer flounder, scup, and black sea bass to minimum fish size requirements, possession limits, and restrictions on the open fishing season. The principal gears used in the recreational fishery for summer flounder are rod and reel and handline. The potential adverse impacts of these gears on EFH for any of the federally-managed species in the region are minimal (Stevenson et al. 2004).

4.4 Protected Resources

There are numerous species inhabiting the environment, within the management unit of the three species managed through this FMP, that are afforded protection under the Endangered Species Act (ESA) of 1973 (i.e., for those designated as threatened or endangered) and the Marine Mammal Protection Act of 1972 (MMPA). Table 2 provides species formally listed as threatened or endangered under the ESA, with two additional candidate species, that occur within the management units for summer flounder, scup, and black sea bass.

NMFS most recently completed formal ESA section 7 consultation on the summer flounder, scup, and black sea bass fishery, as well as six other Northeast fisheries, on December 16, 2013

(NMFS 2013). In-depth information on the ESA-listed species of marine mammals, sea turtles, and fish that overlap and potentially interact with the fishery can be found in the biological opinion prepared for that consultation, located at <http://www.nero.noaa.gov/protected/section7/bo/actbiops/batchedfisheriesopinionfinal121613.pdf>. In that biological opinion, NMFS concluded that the summer flounder, scup, and black sea bass fishery would not jeopardize the continued existence of any ESA-listed species.

Table 2. Species endangered and threatened under the ESA that are found in the environment utilized by the summer flounder, scup, and black sea bass fisheries.

Species	Common name	Scientific Name	Status
Cetaceans	North Atlantic right whale	<i>Eubalaena glacialis</i>	Endangered
	Humpback whale	<i>Megaptera novaeangliae</i>	Endangered
	Fin whale	<i>Balaenoptera physalus</i>	Endangered
	Blue whale	<i>Balaenoptera musculus</i>	Endangered
	Sei whale	<i>Balaenoptera borealis</i>	Endangered
	Sperm whale	<i>Physeter macrocephalus</i>	Endangered
Sea Turtles	Leatherback turtle	<i>Dermochelys coriacea</i>	Endangered
	Kemp's ridley turtle	<i>Lepidochelys kempii</i>	Endangered
	Green turtle	<i>Chelonia mydas</i>	Threatened ¹
	Hawksbill turtle	<i>Eretmochelys imbricata</i>	Endangered
	Loggerhead turtle ²	<i>Caretta caretta</i>	Threatened
Fishes	Shortnose sturgeon	<i>Acipenser brevirostrum</i>	Endangered
	Atlantic salmon	<i>Salmo salar</i>	Endangered
	Atlantic sturgeon	<i>Acipenser oxyrinchus</i>	
	Gulf of Maine DPS		Threatened
	New York Bight DPS		Endangered
	Chesapeake Bay DPS		Endangered
	Carolina DPS		Endangered
	South Atlantic DPS		Endangered
	Cusk	<i>Brosme brosme</i>	Candidate
	Dusky shark	<i>Carcharhinus obscurus</i>	Candidate

¹ Green turtles in U.S. waters are listed as threatened except for the Florida breeding population which is listed as endangered. Due to the inability to distinguish between these populations away from the nesting beach, green turtles are considered endangered wherever they occur in U.S. waters.

² Northwest Atlantic distinct population segment (DPS) of loggerhead turtles.

Two species found within the management unit of the fishery (cusk and dusky shark) are candidate species for listing under the ESA (Table 2). Candidate species receive no substantive or procedural protection under the ESA (i.e., conference provisions requirement of the ESA applies only if a candidate species is proposed for listing); however, NMFS recommends that project proponents consider implementing conservation actions to limit the potential for adverse effects on candidate species from any proposed project. The Protected Resources Division of the NMFS Greater Atlantic Regional Fisheries Office has initiated review of recent stock assessments, bycatch information, and other information for the candidate species. Any conservation measures deemed appropriate for these species will follow the information from these reviews.

Sections 4.4.1 and 4.4.2 below document the recreational and commercial fishery interactions. Descriptions of the distributions of species with recent interactions within the management units for summer flounder, scup, and black sea bass are provided in Section 4.4.3 below. More detailed description of the species listed in Table 7, including their environment, ecological relationships and life history information including recent stock status, is available at: http://www.nero.noaa.gov/prot_res/.

4.4.1 Recreational Fisheries Interactions

The principle gears used in the recreational fishery for summer flounder, scup, and black sea bass are rod and reel and handline. The level of listed species interactions in recreational fisheries is difficult to estimate. However, in general, recreational fisheries are considered to have very limited interaction with ESA-listed or MMPA protected species. Observations of state recreational fisheries have shown that loggerhead, leatherback, Kemp's ridley, and green sea turtles are known to bite baited hooks, and loggerheads frequently ingest the hooks. A summary of known impacts of hook-and-line captures on loggerhead sea turtles can be found in the TEWG (1998, 2000, 2009) reports. Additional information on recreational fishing impacts on sea turtles can be found on pages 214 and 222 of the recently completed formal section 7 consultation (NMFS 2013). Anecdotal information indicates that recreational anglers periodically foul hook Atlantic sturgeon while in pursuit of other recreational species such as striped bass, but these impacts are believed to be infrequent occurrences, and thought to be well below the level which would impact the continued survivability of Atlantic sturgeon (Damon-Randall, NMFS, Protected Resources Division, pers. comm.). Recreational fishermen do contribute to difficulties for ESA-listed and MMPA protected marine species 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). As previously stated, recreational fishermen are 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 in this document would modify the manner in which the fishery is

prosecuted. Potential impacts to ESA-listed and MMPA protected species associated with the proposed measures are discussed in Section 5.1.4.

4.4.2 Commercial Fisheries Interactions

A description of the areas fished commercially for summer flounder, scup, and black sea bass (i.e., area affected by the proposed action) is given in Section 4.5.2. The commercial fishery for summer flounder is primarily prosecuted with otter trawls, while those for scup and black sea bass are primarily prosecuted with otter trawls and pots/traps. These fisheries are mixed fisheries (indiscriminate), where squid, Atlantic mackerel, silver hake, skates, and other species are harvested with summer flounder, scup, and/or black sea bass. The List of Fisheries (LOF) classifies U.S. commercial fisheries into Categories according to the level of interactions that result in incidental mortality or serious injury of marine mammals (Table 3).

Marine Mammals

Based on NMFS Northeast Fisheries Observer Program (NEFOP) database for the period of January 2007 through December 2011, there were 10 observed interactions between marine mammals in the Mid-Atlantic bottom trawl and gill net fishery, where summer flounder, scup, or black sea bass were the fishing trip targets. Specifically, in the bottom otter trawl fishery, one Risso's dolphin was dead (fresh), four common dolphins were dead (fresh), one unknown dolphin was observed in unknown condition, and one harbor porpoise was dead (moderately decomposed). In the gill net fishery, one gray seal was dead (moderately decomposed), and two unknown seals were dead (unknown condition). There have been no observed interactions of fin and humpback whales, or other whales such as Sei or Right whales, with the Atlantic mixed species trap/pot fishery; however, the lobster trap/pot fishery has been involved in entanglements with large cetaceans.

Table 3. Commercial Fisheries Classification based on 2013 List of Fisheries (LOF).

Fishery (Action Area)	Resource	Gears	LOF	Potential for Interactions
See Section 4.1.1 for a description of the areas fished for the managed resources	summer flounder, scup, and black sea bass	Mid-Atlantic bottom trawl fishery	Cat. II	bottlenose, common, Risso's and white-sided dolphins; short- and long-finned pilot whales; harbor and seals
		Northeast bottom trawl	Cat. II	bottlenose, common, and white-sided dolphins; harbor porpoise; harbor, gray, and harp seals; short and long-finned pilot whale; minke whale (Canadian East Coast)
	scup and black sea bass	Atlantic mixed species trap/pot fishery	Cat. II	fin whale and humpback whale (classified by analogy due to lobster pot entanglements)

Sea Turtles

The NEFOP database for the period of January 2007 through December 2011 indicate there were 25 sea turtle takes where summer flounder was the species being targeted during trips where bottom otter trawls were used. Of these 25 takes, 15 were loggerhead turtles released alive, 4 were loggerheads released alive and resuscitated, and 3 were loggerheads that were dead (fresh). The remaining takes included one Kemp's ridley turtle (dead, fresh), one leatherback turtle (released alive), and one unknown, hard-shell turtle (dead, severely decomposed).

Since 1992, all vessels using bottom trawls to fish for summer flounder in specific areas and times off VA and NC have been required to use NMFS-approved Turtle Excluder Devices (TEDs) in their nets (57 FR 57358, December 4, 1992; 50 CFR 223.206(d)(2)(iii)). NMFS is considering similar measures to protect threatened and endangered sea turtles in the western Atlantic Ocean and Gulf of Mexico from incidental capture, which could be implemented under the ESA.

Warden (2011) developed a generalized additive model of loggerhead interaction rates using the NEFOP database. The model-predicted loggerhead interactions and commercial fishing data were used to estimate the numbers of interactions for the trawl fleet from 2005-2008. Interaction rates were the highest south of 37°N, and estimated adult interactions were highest from 37-39°N in shallow water (< 50 m) and warmer temperatures (> 15°C). Compared to 1996-2004 (Murray 2008), the predicted average annual loggerhead interaction in the trawl fisheries has decreased as a result of decreased trawling effort. Annual days fished in the late 1990s were > 30,000 but were less than 12,000 in the mid- to late 2000s. The combined effects of finfish trawling regulations are believed to have resulted in this decrease in effort. The most recent formal section 7 consultation (NMFS 2013) summarizes the level of sea turtle take exempted annually in the summer flounder, scup, and black sea bass fishery and has a summary of anticipated takes of loggerheads in the fishery as described in Warden (2011).

Atlantic Sturgeon

Atlantic sturgeon is an anadromous species that spawns in relatively low salinity, river environments, but spends most of its life in the marine and estuarine environments from Labrador, Canada to the Saint Johns River, Florida (Holland and Yelverton 1973, Dovel and Berggen 1983, Waldman et al. 1996, Kynard and Horgan 2002, Dadswell 2006, ASSRT 2007). Tracking and tagging studies have shown that subadult and adult Atlantic sturgeon that originate from different rivers mix within the marine environment, utilizing ocean and estuarine waters for life functions such as foraging and overwintering (Stein et al. 2004a, Dadswell 2006, ASSRT 2007, Laney et al. 2007, Dunton et al. 2010). Fishery-dependent data as well as fishery-independent data demonstrate that Atlantic sturgeon use relatively shallow inshore areas of the continental shelf; primarily waters less than 50 m (Stein et al. 2004b, ASMFC 2007, Dunton et al. 2010). The data also suggest regional differences in Atlantic sturgeon depth distribution with sturgeon observed in waters primarily less than 20 m in the Mid-Atlantic Bight and in deeper waters in the Gulf of Maine (Stein et al. 2004b, ASMFC 2007, Dunton et al. 2010). Information on population sizes for each Atlantic sturgeon DPS is very limited. Based on the best available information, NMFS has concluded that bycatch, vessel strikes, water quality and water availability, dams, lack of regulatory mechanisms for protecting the fish, and dredging are the most significant threats to Atlantic sturgeon.

Since the ESA listing of Atlantic sturgeon, the NEFSC has completed new population estimates using data from the Northeast Area Monitoring and Assessment (NEAMAP) survey (Kocik et al. 2013). Atlantic sturgeon are frequently sampled during the NEAMAP survey. NEAMAP has been conducting trawl surveys from Cape Cod, Massachusetts to Cape Hatteras, North Carolina in nearshore waters at depths to 18.3 meters (60 feet) during the fall since 2007 and depths up to 36.6 meters (120 feet) during the spring since 2008 using a spatially stratified random design with a total of 35 strata and 150 stations per survey. The information from this survey can be directly used to calculate minimum swept area population estimates during the fall, which range from 6,980 to 42,160 with coefficients of variation between 0.02 and 0.57 and during the spring, which range from 25,540 to 52,990 with coefficients of variation between 0.27 and 0.65. These are considered minimum estimates because the calculation makes the unlikely assumption that the gear will capture 100% of the sturgeon in the water column along the tow path. Efficiencies less than 100% will result in estimates greater than the minimum. The true efficiency depends on many things including the availability of the species to the survey and the behavior of the species with respect to the gear. True efficiencies much less than 100% are common for most species. The NEFSC's analysis also calculated estimates based on an assumption of 50% efficiency, which reasonably accounts for the robust, yet not complete sampling of the Atlantic sturgeon, oceanic temporal and spatial ranges, and the documented high rates of encounter with NEAMAP survey gear and Atlantic sturgeon. For this analysis, NMFS has determined that the best available scientific information for the status of Atlantic sturgeon at this time are the population estimates derived from NEAMAP swept area biomass (Kocik et al. 2013) because the estimates are derived directly from empirical data with few assumptions. NMFS has determined that using the median value of the 50% efficiency as the best estimate of the Atlantic sturgeon ocean population is most appropriate at this time. This results in a total population size estimate of 67,776 fish, which is considerably higher than the estimates that were available at the time of listing. This estimate is the best available estimate of Atlantic sturgeon abundance at the time of this analysis. The ASMFC has begun work on a benchmark assessment for Atlantic sturgeon to be completed in 2014, which would be expected to provide an updated population estimate and stock status. The ASMFC is currently collecting public submissions of data for use in the assessment: http://www.asmfc.org/press_releases/2013/pr20AtlSturgeonStockAssmtPrep.pdf.

4.4.3 Description of Species with Interactions

The following provides descriptions of ESA-listed and MMPA protected resources which have had recent interactions with the managed resources (most recent 5 years, 2007-2011; section 6.3.2) and include the Risso's dolphin, common dolphin, harbor porpoise, gray seal, loggerhead sea turtle (Northwest Atlantic DPS), Kemp's ridley sea turtle, leatherback sea turtle, and Atlantic sturgeon. Detailed descriptions of other ESA-listed and MMPA protected species that are distributed within the management units of summer flounder, scup, and black bass are available at the following website: <http://www.nmfs.noaa.gov/pr/>.

Sea Turtles: The Northwest Atlantic DPS of loggerhead sea turtle occurs throughout the temperate and tropical regions of the Atlantic, Pacific and Indian Oceans (Dodd 1988). Loggerhead sea turtles are found in a wide range of habitats throughout the temperate and tropical regions of the Atlantic. These habitats include open ocean, continental shelves, bays,

lagoons, and estuaries (NMFS & USFWS 2008). Because they are limited by water temperatures, loggerhead sea turtles do not usually appear on the summer foraging grounds in the Gulf of Maine until June, but are found in Virginia as early as April. They remain in these areas until as late as November and December in some cases, but the large majority leaves the Gulf of Maine by mid-September.

Kemp's ridley turtles have one major nesting site, a single stretch of beach near Rancho Nuevo, Tamaulipas, Mexico (Carr 1963). Juvenile Kemp's ridleys inhabit northeastern US coastal waters where they forage and grow in shallow coastal areas during the summer months. Juvenile Kemp's ridleys migrate southward with autumnal cooling and are found predominantly in shallow coastal embayments along the Gulf Coast during the late fall and winter months. Kemp's ridleys found in mid-Atlantic waters are primarily post-pelagic juveniles averaging 40 cm in carapace length, and weighing less than 20 kg. After loggerheads, they are the second most abundant sea turtle in Virginia and Maryland waters, arriving there during May and June and then emigrating to more southerly waters from September to November (Lutcavage and Musick 1985).

Leatherback turtles are widely distributed and can be found throughout the waters of the Atlantic, Pacific, Caribbean, and the Gulf of Mexico. Leatherbacks are predominantly pelagic and exhibit broad thermal tolerances. Evidence suggests that adults engage in routine migrations between boreal, temperate and tropical waters (NMFS & USFWS 1992). Located in the northeastern waters during warmer months, this species is found in coastal waters of the continental shelf and near the Gulf Stream edge, but rarely in the inshore areas.

Additional information on these and other sea turtle species that do not have recent documented interactions with the directed managed resource fisheries can be found at: <http://www.nmfs.noaa.gov/pr/species/turtles/>.

Small Cetaceans: Numerous small cetacean species, including Risso's dolphins, common dolphins, and harbor porpoises, occur within the area from Cape Hatteras through the Gulf of Maine where the managed resource fisheries are prosecuted. Risso's dolphins are distributed worldwide in tropical and temperate seas, and in the Northwest Atlantic occur from Florida to eastern Newfoundland (Leatherwood et al. 1976; Baird and Stacey 1990). Off the Northeast U.S. coast, Risso's dolphins are distributed along the continental shelf edge from Cape Hatteras northward to Georges Bank during spring, summer, and autumn (CETAP 1982; Payne et al. 1984). In winter, the range is in the Mid-Atlantic Bight and extends outward into oceanic waters (Payne et al. 1984).

Common dolphins are distributed worldwide in temperate and subtropical seas. In the northeastern U.S., common dolphins are distributed along the continental slope and associated with Gulf Stream features. Common dolphins occur from Cape Hatteras northeast to Georges bank from mid-January to May, moving to Georges bank and the Scotian Shelf from mid-summer to autumn (Waring et al. 2012).

The Gulf of Maine/Bay of Fundy stock of harbor porpoises is concentrated in the northern Gulf of Maine and southern Bay of Fundy region from July to September, generally in waters less than 150 m deep. In the fall and spring, harbor porpoises are widely distributed from New Jersey to Maine, with the majority of the population found over the continental shelf. In the winter, harbor porpoises can be found in the waters off New Jersey to North Carolina, and in lower densities in the waters off New York to New Brunswick, Canada. There does not appear to be a temporally coordinated migration or a specific migratory route to and from the Bay of Fundy region (Waring et al. 2012).

Additional information on these species and other small cetaceans that do not have recent documented interactions with the directed managed resource fisheries can be found at: <http://www.nmfs.noaa.gov/pr/species/mammals/cetaceans/>.

Pinnipeds: Of the four species of seals expected to occur in the area, harbor seals have the most extensive distribution with sightings occurring as far south as 30° N (Katona et al. 1993). Grey seals are the second most common seal species in U.S. EEZ waters, occurring primarily in New England (Katona et al. 1993; Waring et al. 2006). Pupping colonies for both species are also present in New England, although the majority of pupping occurs in Canada. Harp and hooded seals are less commonly observed in U.S. EEZ waters. Both species form aggregations for pupping and breeding off of eastern Canada in the late winter/early spring, and then travel to more northern latitudes for molting and summer feeding (Waring et al. 2006). However, individuals of both species are also known to travel south into U.S. EEZ waters and sightings as well as strandings of each species have been recorded for both New England and Mid-Atlantic waters (Waring et al. 2009). Additional information on seal species can be found at: <http://www.nmfs.noaa.gov/pr/species/mammals/pinnipeds/>.

Fishes: Atlantic sturgeon is an anadromous species that spawns in relatively low salinity, river environments, but spends most of its life in the marine and estuarine environments from Labrador, Canada to the Saint Johns River, Florida (Holland and Yelverton 1973, Dovel and Berggen 1983, ASSRT 2007). Tracking and tagging studies have shown that sub-adult and adult Atlantic sturgeon that originate from different rivers mix within the marine environment, utilizing ocean and estuarine waters for life functions such as foraging and overwintering (Stein et al. 2004, Dadswell 2006, ASSRT 2007, Laney et al. 2007, Dunton et al. 2010). Fishery-dependent data as well as fishery-independent data demonstrate that Atlantic sturgeon use relatively shallow inshore areas of the continental shelf; primarily waters less than 50 m (Stein et al. 2004, ASMFC TC 2007, Dunton et al. 2010). The data also suggest regional differences in Atlantic sturgeon depth distribution with sturgeon observed in waters primarily less than 20 m in the Mid-Atlantic Bight and in deeper waters in the Gulf of Maine (Stein et al. 2004, ASMFC TC 2007, Dunton et al. 2010). Additional information on Atlantic sturgeon and other ESA-listed fishes can be found at: <http://www.nmfs.noaa.gov/pr/species/fish/>.

4.5 Human Communities and Economic Environment

4.5.1 Fishery Descriptions

A detailed description of the economic aspects of the commercial and recreational fisheries for summer flounder, scup, and black sea bass was presented in Sections 3.3.1, 3.3.2, and 3.3.3, respectively, of Amendment 13 to the FMP (MAFMC 2002). Recent trends in landings and ex-vessel values are presented below.

4.5.1.1 Summer Flounder

The ex-vessel value of summer flounder landings in 2011 was approximately \$29.9 million resulting from commercial landings of 16.6 million lb, with an average ex-vessel price estimated at \$1.80/lb. The value of commercial landings of summer flounder from 2009 to 2011 averaged \$25.8 million, with an average ex-vessel price of \$1.91/lb. In general, summer flounder landings for smaller tonnage vessels tend to be greater in the summer months, while landings for larger tonnage vessels tend to be greater in the winter months. On average, higher prices tend to occur during the summer months. This price fluctuation is likely in response to supply. Recent summer flounder, scup, and black sea bass landing patterns among ports are presented in Section 4.5.3.

Summer flounder continues to be an important component of the recreational fishery. Estimates of primary species sought as reported by anglers in recent intercept surveys indicate that summer flounder recreational trips have shown an upward trend, ranging from 3.8 million in 1992 to 6.1 million in 2001. For the 2009 to 2011 period, summer flounder recreational fishing trips were estimated at 4.6, 4.5, and 4.5 million, respectively.

4.5.1.2 Scup

Commercial scup landings were approximately 15.0 million lb (from ME to Cape Hatteras, NC) and valued at \$8.2 million in 2011 (\$0.55/lb). The value of commercial landings of scup from 2009 to 2011 averaged \$7.17 million, with an average ex-vessel price of \$0.66/lb. Recent summer flounder, scup, and black sea bass landing patterns among ports are presented in Section 4.5.3.

Scup continues to be an important component of the recreational fishery. Estimates of primary species sought as reported by anglers in recent intercept surveys indicate that scup recreational trips have shown an upward trend, ranging from 0.20 million in 1997 to 0.97 million in 2003. For the 2009 to 2011 period, scup recreational fishing trips were estimated at 0.54, 0.70, and 0.48 million, respectively.

4.5.1.3 Black Sea Bass

Commercial black sea bass landings were approximately 1.71 million lb (from ME to Cape Hatteras, NC) and valued at \$5.4 million in 2011 (\$3.20/lb). The value of commercial landings of black sea bass from 2009 to 2011 averaged \$4.79 million, with an average ex-vessel price of \$3.12/lb. Recent summer flounder, scup, and black sea bass landing patterns among ports are presented in Section 4.5.3.

Black sea bass continues to be an important component of the recreational fishery. Estimates of primary species sought as reported by anglers in recent intercept surveys indicate that black sea bass recreational trips have shown an upward trend, ranging from 0.14 million in 1999 to 0.42 million in 2010. For the 2009 to 2011 period, black sea bass recreational fishing trips were estimated at 0.39, 0.42, and 0.19 million, respectively.

4.5.2 Description of the Areas Fished

The baseline impact of the summer flounder, scup, and black sea bass commercial fisheries on the environment is fully described in section 3.2.8 of Amendment 13 to the FMP (MAFMC 2002). It should be noted that the VTR data presented does not represent every trip made in these three fisheries because state-only permitted vessel effort may not be captured through VTRs.

4.5.2.1 Summer Flounder

NMFS 2011 VTR data indicated that 17,885 trips, by five major gear types, caught a total of 14.94 million lb of summer flounder; landing 14.77 million lb and discarding 0.17 million lb. The majority of the trips and catch were made by bottom otter and beam trawls (74.9 percent of trips, 97.6 percent of catch), followed by handline “other” (10.2 percent of trips, 1.0 percent of catch), gillnets (11 percent of trips, 0.9 percent of catch), scallop dredges (2.9 percent of trips, 0.4 percent of catch), and pots and traps (0.6 percent of trips, less than 0.1 percent of catch). There were seven statistical areas (Figure 8), which individually accounted for greater than 5 percent of the summer flounder catch in 2011 (Table 4). Collectively, these seven areas accounted for 77 percent of the summer flounder catch. There were six statistical areas, which individually accounted for greater than 5 percent of the trips which caught summer flounder in 2011 (Table 5). Collectively, these six areas accounted for 78 percent of the trips that caught summer flounder and 38 percent of the 2011 summer flounder catch.

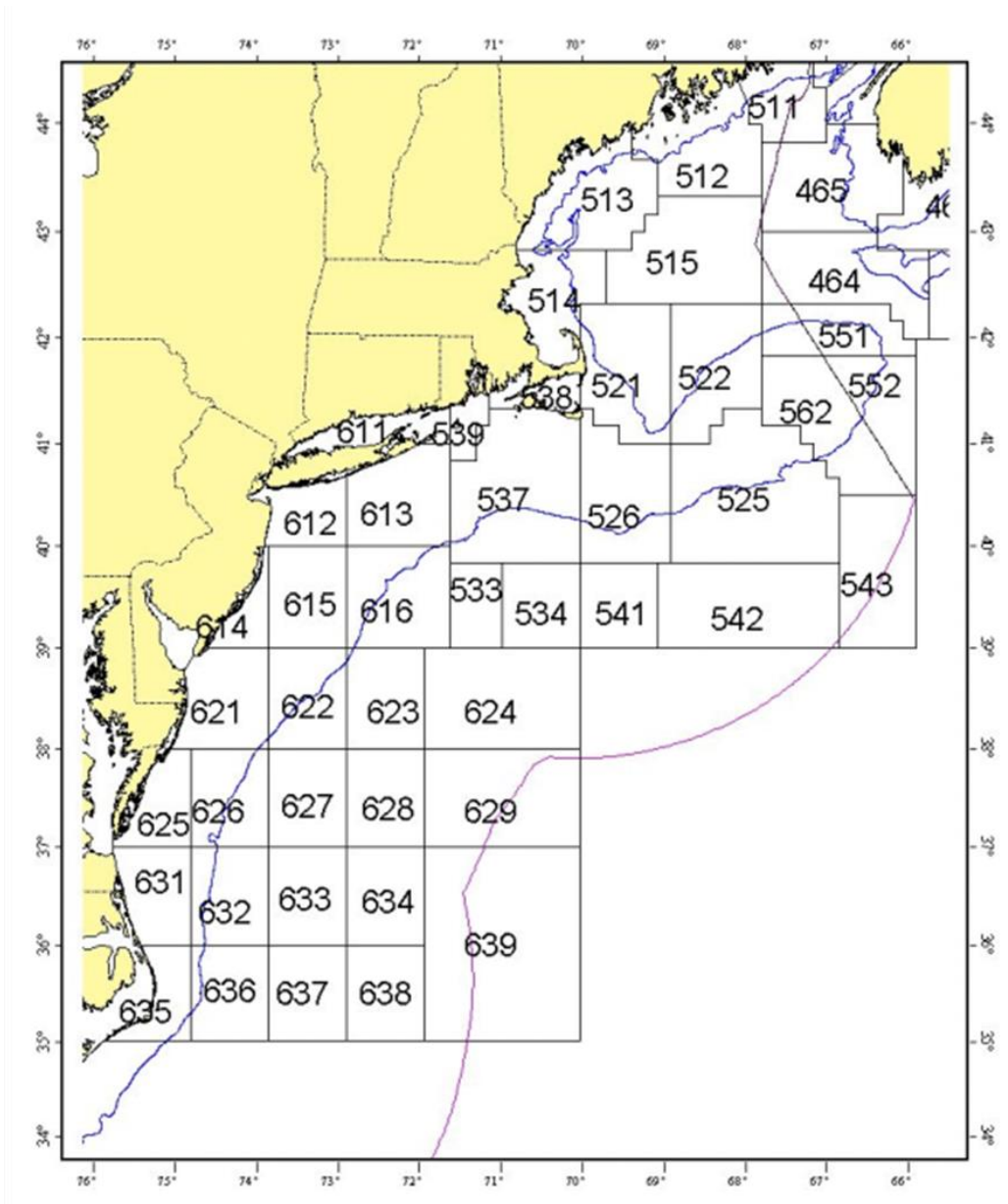


Figure 8. NMFS Northeast statistical areas.

Table 4. Statistical areas that accounted for at least 5 percent of the summer flounder, scup, or black sea bass catch in 2011, NMFS VTR data.

Statistical Area	Summer Flounder (percent)	Scup (percent)	Black Sea Bass (percent)
616	21.15	32.25	13.60
537	14.45	12.31	4.17
626	10.98	0.06	4.37
622	10.75	4.76	19.74
612	8.19	0.87	2.81
621	5.51	0.11	17.66
613	5.73	12.73	4.52
611	3.80	11.73	4.43
539	4.23	17.15	4.88
615	4.13	2.92	7.15

Table 5. Statistical areas that accounted for at least 5 percent of the summer flounder, scup, or black sea bass trips in 2011, NMFS VTR data.

Statistical Area	Summer Flounder (percent)	Scup (percent)	Black Sea Bass (percent)
539	17.06	24.99	18.03
611	15.81	25.78	17.89
612	15.73	5.28	12.95
613	13.75	14.94	14.25
537	9.47	7.96	6.71
538	6.40	11.60	6.58
616	4.43	6.08	6.47

4.5.2.2 Scup

NMFS 2011 VTR data indicated that 9,390 trips, by four major gear types, caught a total of 11.40 million lb of scup. Of these, 11.2 million lb of scup were landed, and 0.21 million lb were discarded. The majority of the trips and catch were made by bottom otter and beam trawls (70.5 percent of trips, 93.9 percent of catch), followed by hand line "other" (11.2 percent of trips, 0.89

percent of catch), pots and traps (11.2 percent of trips, 2.8 percent of catch), gillnets (6.6 percent of trips, 0.26 percent of catch), and weirs (0.1 percent of trips, 0.4 percent of catch). There were five statistical areas, which individually accounted for greater than 5 percent of the scup catch in 2011 (Table 4). Collectively, these five areas accounted for 86 percent of the scup catch. There were seven statistical areas, which individually accounted for greater than 5 percent of the trips which caught scup in 2011 (Table 5). Collectively, these seven areas accounted for 97 percent of the trips that caught scup and 89 percent of the 2011 scup catch.

4.5.2.3 Black Sea Bass

NMFS 2011 VTR data indicated that 7,511 trips, by four major gear types, caught a total of 1.37 million lb of black sea bass. Of these, 1.29 million lb of black sea bass were landed, and 0.09 million lb were discarded. The majority of the trips and catch were made by bottom otter and beam trawls (54.8 percent of trips, 52.7 percent of catch), followed by pots and traps (26.2 percent of trips, 40.5 percent of catch), handline “other” (14.31 percent of trips, 6.4 percent of catch), and gillnets (4.2 percent of trips, 0.7 percent of catch). There were four statistical areas, which individually accounted for greater than 5 percent of the black sea bass catch in 2011 (Table 4). Collectively, these four areas accounted for 58.2 percent of the black sea bass catch. There were seven statistical areas, which individually accounted for greater than 5 percent of the trips which caught black sea bass in 2011 (Table 5). Collectively, these seven areas accounted for 83 percent of the trips that caught black sea bass and 39 percent of the 2011 black sea bass catch.

4.5.3 Port and Community Description

The ports and communities that are dependent on summer flounder, scup, and black sea bass are fully described in Amendment 13 to the FMP (section 3.4; MAFMC 2002). Additional information on "Community Profiles for the Northeast US Fisheries" can be found at <http://www.nefsc.noaa.gov/read/socialsci/communityProfiles.html>.

To examine recent landings patterns among ports, 2011 NMFS dealer data are used. The top commercial landings ports for summer flounder, scup, and black sea bass by pounds landed are shown in Table 6.

Table 6. Top ports of landing (in lb) for summer flounder (FLK), scup (SCP), and black sea bass (BSB), based on NMFS 2011 dealer data. Since this table includes only the “top ports,” it may not include all of the landings for the year. Note: C = Confidential

Port	Landings of FLK (lb)	# FLK Vessels	Landings of SCP (lb)	# SCP Vessels	Landings of BSB (lb)	# BSB Vessels
PT. JUDITH, RI	2,443,489	117	4,407,054	116	157,016	124
WANCHESE, NC	1,276,173	31	121,649	17	55,708	33
HAMPTON, VA	1,723,032	48	289,441	26	109,348	30
NEWPORT NEWS, VA	2,195,166	44	321,160	23	70,351	26
PT. PLEASANT, NJ	1,116,575	41	1,129,143	25	138,062	33
CAPE MAY, NJ	783,800	53	421,411	23	115,896	40
BEAUFORT, NC	334,725	9	C	C	19,508	8
ORIENTAL, NC	408,044	11	546	4	3,511	8
ENGELHARD, NC	400,301	12	74,835	5	18,931	9
MONTAUK, NY	662,762	71	2,326,640	81	80,609	73
BELFORD, NJ	534,740	20	301,518	16	5,851	15
NEW BEDFORD, MA	573,826	84	724,475	49	53,773	45
CHINCOTEAGUE, VA	657,941	31	182,974	9	59,323	10
HAMPTON BAY, NY	285,021	38	505,652	36	23,317	34
LOWLAND, NC	169,421	6	42,939	5	9,350	6
STONINGTON, CT	299,970	22	334,651	24	12,347	17
OCEAN CITY, MD	228,720	22	54,229	5	166,959	14
BARNEGAT LIGHT/LONG BEACH, NJ	312,815	35	14,405	8	5,651	7
WOODS HOLE, MA	7,562	13	4,560	7	6,411	7
NEWPORT, RI	90,643	18	290,549	16	10,229	18
MATTITUCK, NY	138,962	4	129,123	4	47,559	3
LITTLE COMPTON, RI	72,976	24	1,374,451	19	33,763	21
PT. LOOKOUT, NY	90,964	7	347,568	6	3,461	7
NANTUCKET, MA	135,343	15	47,712	9	823	8
FALMOUTH, MA	201,615	23	38,319	28	53,677	31
AMAGANSETT, NY	64,720	5	169,978	4	8,560	5
SWAN QUARTER, NC	141,100	3	--	--	--	--
NEW LONDON, CT	30,941	3	134,578	5	760	3
TIVERTON, RI	C	C	C	C	C	C

A “top port” is defined as any port that landed at least 100,000 lb of summer flounder, scup, or black sea bass. Related data for the recreational fisheries are shown in Table 7. However, due to the nature of the recreational database, it is inappropriate to desegregate to less than state levels. The level of precision of annual harvest estimates from recreational data depend on the survey sample sizes, the frequency of sampled angler trips that caught the species, and the variability of numbers caught among those trips. Harvest estimates are always progressively less precise at lower levels of stratification. Thus port-level recreational data are not shown.

Table 7. MRIP estimates of 2011 recreational harvest (numbers of fish kept) and total catch (numbers of fish) for summer flounder (FLK), scup (SCP) and black sea bass (BSB).

State	FLK Harvest (# of fish kept)	FLK Catch (# of fish caught)	SCP Harvest (# of fish kept)	SCP Catch (# of fish caught)	BSB Harvest (# of fish kept)	BSB Catch (# of fish caught)
ME	0	0	0	0	0	738
NH	0	0	0	0	0	0
MA	58,371	240,958	785,204	1,959,635	194,751	575,403
RI	161,125	885,622	567,697	1,230,165	50,203	271,024
CT	47,072	391,628	932,637	1,471,639	8,378	53,960
NY	376,198	7,671,294	714,789	1,712,309	274,473	1,167,316
NJ	736,849	8,832,809	44,813	79,787	148,486	1,450,706
DE	66,820	682,322	40	618	42,961	254,001
MD	15,346	487,882	11	146	47,445	400,637
VA	317,674	2,304,657	10,413	18,152	18,964	463,000
NC	60,422	61,629	607	883	95,004	1,157,569

4.5.4 Analysis of Permit Data

Federally Permitted Vessels

This analysis estimates that in 2011, there were 2,039 vessels with one or more of the following three commercial or recreational federal Northeast permits: summer flounder, scup, and black sea bass (Table 8). A total of 911, 761, and 799 federal commercial permits for summer flounder, scup, and black sea bass, respectively, had been issued to Northeast region fishing vessels (Table 8). For party/charter operators, a total of 845, 761, and 819 federal permits were issued for summer flounder, scup, and black sea bass, respectively (Table 8).

These three fisheries (summer flounder, scup, and black sea bass) have vessels permitted as commercial, party/charter for participation in recreational fisheries, or both. Of the 2,039 vessels with at least one federal permit, there were 1,150 that held only commercial permits for summer flounder, scup, and/or black sea bass while there were 791 vessels that held only a recreational permit. The remaining vessels (98) held some combination of recreational and commercial permits (Table 8). Whether engaged in a commercial or recreational fishing activity, vessels may hold any one of seven combinations of summer flounder, scup, and black sea bass permits. The total number of vessels holding any one of these possible combinations of permits by species and commercial or recreational status are reported in Table 8.

Table 8. Summary of number of vessels holding federal commercial and/or recreational permit combinations for summer flounder (FLK), scup (SCP) and black sea bass (BSB), 2011.

Comm. Permit Combinations	Recreational Permit Combinations								Row Total
	No Rec. Permit	FLK Only	SCP Only	BSB Only	FLK/ SCP	FLK/ BSB	SCP/ BSB	FLK/ SCP/ BSB	
No Comm. Permit	0	36	7	18	14	52	13	651	791
FLK Only	299	1	0	1	0	0	2	4	307
SCP Only	44	0	0	1	0	2	0	7	54
BSB Only	111	4	0	2	1	5	0	12	135
FLK/ SCP	84	0	0	0	0	0	0	4	88
FLK/ BSB	43	0	0	0	0	1	0	1	45
SCP/ BSB	121	3	0	0	0	0	0	24	148
FLK/ SCP/ BSB	448	2	0	0	2	0	0	19	471
Column Total	1,150	46	7	22	17	60	15	722	2,039

Row sums in Table 8 indicate the total number of vessels that have been issued some unique combination of commercial permits. For example, there were 299 vessels whose only commercial permit was for summer flounder. By contrast, there were 448 vessels that held all three commercial permits. Column totals in Table 8 indicate the total number of vessels that have been issued some unique combination of federal recreational permits. For example, there

were 7 vessels whose only recreational permit was for scup, while 722 vessels held all three recreational permits. Each cell in Table 15 reports the total number of vessels that have a unique combination of recreational and commercial permits by species. For example, the cell entry of 1 in row 2 column 2 indicates that there was 1 vessel that held the unique combination of single summer flounder commercial permit and a single summer flounder recreational permit. Note that each cell entry in row 1 corresponds to vessels that held no commercial permit for summer flounder, scup or black sea bass, while each cell entry in column 1 corresponds to vessels that held no such recreational permit.

In addition to summer flounder, scup, and black sea bass, there are a number of alternative commercial or recreational fisheries for which any given vessel might possess a federal permit. The total number of vessels holding any one or more of these other permits is reported in Table 9.

Of the vessels that hold at least one federal permit for summer flounder, scup, or black sea bass, the largest number of commercial permit holders are held by Massachusetts vessels, followed by New Jersey, New York, Rhode Island, North Carolina, and Virginia (Table 10). The fewest permits are held by Pennsylvania, Florida, and Delaware vessels. In terms of average tonnage, the largest commercial vessels are found in Pennsylvania, followed by Virginia, Connecticut, North Carolina, Massachusetts, and New Jersey. In terms of average length, the largest commercial vessels are found in Virginia, Pennsylvania, and North Carolina followed by Connecticut, New Jersey, Massachusetts, and Rhode Island. In terms of average horse power, the largest commercial vessels are found in Pennsylvania followed by Connecticut, Virginia, and New Jersey.

For party/charter vessels (Table 11), the largest numbers of permit holders are found in Massachusetts, followed by New Jersey and New York. The fewest permits are in Florida and North Carolina. As might be expected, recreational vessels are smaller on average than commercial vessels. In terms of average length, the largest party/charter vessels operate out of principal ports in the state of Florida, followed by Connecticut, Pennsylvania, New York, North Carolina, New Jersey, and Maryland. In terms of average horse power, the largest recreational vessels are found in Florida, North Carolina, and Virginia.

For vessels that hold a combination of commercial and party/charter permits, most vessels operate out of ports in the state of New York followed by Massachusetts, New Jersey, North Carolina, and Rhode Island (Table 12). Like the vessels that hold only party/charter summer flounder, scup, or black sea bass permits, these vessels are generally smaller than exclusively commercial vessels.

Summer flounder landings are allocated by state, though vessels are not constrained to land in their home state. It can be useful, therefore, to examine the degree to which vessels from different states make it a practice to land in states other than their home state.

Table 9. Federal northeast region permits held by summer flounder, scup, and black sea bass commercial and recreational vessels, 2011. Note: LA= limited access; OA = open access; DAS = days at sea; P/C=party/charter; GOM = Gulf of Maine.

Northeast Permits	Commercial Only (n= 1,150)		Party/Charter Only (n= 791)		Commercial and Party/Charter (n= 98)	
	Vessels (No.)	Percent of Total	Vessels (No.)	Percent of Total	Vessels (No.)	Percent of Total
Ocean Quahog	482	42	9	1	10	10
Surfclam	487	42	8	1	8	8
Scallop - LA DAS	310	27	0	0	0	0
Scallop - ITQ	177	15	3	0	3	3
Scallop - limited entry GOM general category	47	4	3	0	2	2
Scallop - incidental general category	217	19	2	0	1	1
Non-trap Lobster (comm.)	681	59	15	2	22	22
P/C Lobster	0	0	20	3	5	5
Lobster Trap (commercial)	325	28	56	7	29	30
P/C Multi- Species	2	0	612	77	36	37
Commercial Multispecies	10	1	3	0	0	0
Multispecies - OA other than P/C Multispecies	428	37	297	38	42	43
P/C Squid/ Mackerel/ Butterfish	0	0	687	87	74	76
Commercial Squid/ Mackerel/ Butterfish	1,047	91	298	38	75	77

Table 11 (Continued). Federal northeast region permits held by summer flounder, scup, and black sea bass commercial and recreational vessels, 2011.

Northeast Permits	Commercial Only (n= 1,150)		Party/Charter Only (n= 791)		Commercial and Party/Charter (n= 98)	
	Vessels (No.)	Percent of Total	Vessels (No.)	Percent of Total	Vessels (No.)	Percent of Total
Commercial Bluefish	1,088	95	381	48	93	95
P/C Bluefish	6	1	736	93	87	89
Spiny Dogfish	1,059	92	478	60	86	88
Herring - LA all area permit	17	1	0	0	0	0
Herring - LA area 2 & 3	4	0	0	0	0	0
Herring - LA incidental	39	3	0	0	2	2
Herring - OA	837	73	366	46	71	72
Red Crab Incidental	756	66	147	19	41	42
Red Crab 75,000 lb trip limit	0	0	0	0	0	0
Red Crab > 75,000 lb trip limit	0	0	0	0	0	0
Skate	996	87	336	42	73	74
Tilefish Commercial (IFQ + incidental categories combined)	927	81	393	50	75	77
tilefish P/C	2	0	313	40	38	39
Monkfish	523	45	5	1	10	10
Incidental Monkfish	687	60	411	52	77	79

Table 10. Descriptive data from northeast region permit files for commercial vessels, 2011.

	CT	DE	FL	MA	MD	ME	NC	NH	NJ	NY	PA	RI	VA	Other
No. of Permits by Mailing Address State	25	6	2	384	17	57	98	27	210	122	1	120	82	2
No. of Permits by Home Port State	27	5	5	406	15	44	102	21	200	129	5	109	81	1
No. of Permits by Principal Port State	28	4	1	397	15	42	91	22	206	126	1	121	96	0
Average Length by Principal Port	61	37	18	54	47	37	63	40	60	44	64	52	66	NA
Average Tonnage by Principal Port	90	13	2	82	29	37	82	28	78	38	109	58	102	NA
Average Horse Power by Principal Port	596	314	50	470	369	244	492	290	521	342	850	411	566	NA
Percent Home Port Equal Principal Port	96	100	100	99	93	98	91	91	93	97	0	88	74	0

Table 11. Descriptive data from northeast region permit files for party/charter vessels, 2011.

	CT	DE	FL	MA	MD	ME	NC	NH	NJ	NY	PA	RI	VA	Other
No. of Permits by Mailing Address State	27	34	5	209	31	34	14	34	178	115	17	55	32	6
No. of Permits by Home Port State	23	36	7	207	33	34	19	35	176	119	10	60	30	2
No. of Permits by Principal Port State	24	32	3	206	33	38	17	33	186	117	3	62	35	2
Average Length by Principal Port	48	36	52	35	41	34	43	39	42	45	48	34	41	NA
Average Tonnage by Principal Port	32	16	51	17	28	15	25	21	27	31	34	16	23	NA
Average Horse Power by Principal Port	685	517	1,168	464	665	431	956	568	616	593	723	448	710	NA
Percent Home Port Equal Principal Port	83	97	100	98	82	89	100	100	92	96	0	94	83	100

Table 12. Descriptive data from northeast region permit files for combination commercial/recreational vessels, 2011.

	CT	DE	MA	NC	NJ	NY	RI	VA	Other
No. of Permits By Mailing Address State	3	4	15	10	13	36	8	7	2
No. of Permits By Home Port State	1	4	19	9	11	37	6	8	3
No. of Permits by Principal Port State	1	4	15	11	12	36	10	7	2
Average Length by Principal Port	42	53	33	43	52	40	42	45	NA
Average Tonnage by Principal Port	13	38	14	33	38	28	32	26	NA
Average Horse Power by Principal Port	700	775	320	374	564	405	560	619	NA
Percent Home Port Equal Principal Port	100	100	100	100	92	100	60	100	100

With the exception of the state of Pennsylvania, a high percentage of commercial vessel owners list the same state as both the vessel owner’s declared principal port of landing and their identified home port (Table 10).

A high percentage of recreational vessel owners list the same state as both the vessel owner’s declared principal port of landing and their identified home port, with the exception of Pennsylvania (Table 11). With the exception of the state of Rhode Island, a high percentage of recreational/commercial vessel owners list the same state as both the vessel owner’s declared principal port of landing and their identified home port (Table 12).

Those vessels which have generally made it a practice to land in their home state may have less inherent flexibility in altering their landing state to adjust to smaller quotas in their home state.

Dealers

There were 263 Federally-permitted dealers who bought summer flounder, scup and/or black sea bass in 2011 from Maine through North Carolina. They were distributed by state as indicated in Table 13. Employment data for these specific firms are not available. In 2011, these dealers from Maine through North Carolina bought approximately \$29.9 million worth of summer flounder; \$8.2 million worth of scup; and \$5.4 million worth of black sea bass.

Table 13. Dealers reporting buying summer flounder, scup, and/or black sea bass, by state (from NMFS commercial landings database) in 2011.

Number of Dealers	MA	RI	CT	NY	NJ	DE	MD	VA	NC	Other
	50	43	12	61	35	3	5	23	28	3

4.5.5 Recreational Fishery at the Five Artificial Reef Sites

Recreational fishing data used to describe activity at the five reef sites, were derived from aerial surveys conducted by the Delaware Department of Natural Resources and Environmental Control (DNREC), NMFS’ Marine Recreational Fisheries Statistics Survey (MRFSS), Northeast Federal Vessel Trip Reports, and angler expenditure data collected by NMFS.

The DNREC has conducted bi-weekly randomized aerial flight surveys over Delaware’s permitted artificial reef sites since 1997. The aerial flight surveys follow a stratified, random sampling design, and provide bi-monthly recreational fishing estimates of vessel and angler trips by two modes (headboat or private/charter) on the reef sites. Headboats are identified by the presence of the required Coast Guard life raft on the top deck. Private and charter boats are not distinguishable from one another by air, and thus are classified together. Recreational vessels identified as drifting or anchored are included in the survey. Sailboats and vessels in transit are

not included in the counts. A complete description of the DNREC aerial survey program and methods can be found in Hense, *et. al.* (2012).

Data collected through the MRFSS program, which became the Marine Recreational Information Program (MRIP) in 2011, provides estimates of recreational catch, effort, and participation across states, fishing modes, and two-month waves. The MRFSS data is also post-stratified spatially to provide estimates of catch and effort according to area fished (inland, state waters, and the federal exclusive economic zone). The MRFSS spatial estimates, however, are generally not sufficient for describing recreational fishing activity at a more disaggregate level - such as recreational fishing activity occurring at an artificial reef. Please see <http://www.st.nmfs.noaa.gov/st1/recreational/index.html> for further information on the MRFSS program.

All five of the reef sites are located in federal waters and both commercial and for-hire vessels fishing in those waters, for federally permitted species, are required to submit Vessel Trip Reports (VTRs) to NMFS. As part of this mandatory reporting requirement, the latitude and longitude of the area fished on a given trip are recorded. Questions remain concerning the reliability of the spatial data recorded on the logbooks, but these data provide at least some ability to identify commercial and for-hire trips fishing on the reef sites.

Inflation adjusted angler expenditure data collected in New Jersey and Delaware in 2006 are used to estimate anglers' trip expenditures and the gross revenue earned by for-hire boats fishing on the five reef sites. These data were collected as part of a nationwide angler expenditure study conducted by NMFS and are described in Gentner and Steinback (2006).

4.5.5.1 Reef Site 9

DNREC aerial survey data show that the number of private/charter angler trips has ranged from a low of 216 in 2010 to a high of 538 in 2006 (Figure 9). Private/charter angler trips increased in 2011 though after four consecutive years of declines. The number of angler trips taken aboard headboats has been consistently lower than private/charter angler trips every year since 2004. In 2005 and in 2009, the DNREC aerial survey data show anglers did not take a single trip to reef site 9 aboard headboats. In total, between 288 and 1,087 angler trips have been taken annually to reef site 9 between 2004 and 2011.

The number of private/charter boat trips far exceeded the number of headboat trips taken to reef site 9 each year since 2004 (Figure 10; DNREC aerial survey data). The number of private/charter boat trips ranged from a low of 64 in 2010 to a high of 149 in 2006. Headboat boat trips reached a high of 26 in 2004 and have fallen to 10 during the past two years. The number of passengers on each headboat trip fishing on reef site 9 since 2004 averaged about 22, whereas private/charter trips averaged about 3.5.

Figure 9. Reef Site 9 - Estimated Number of Angler Trips by Mode

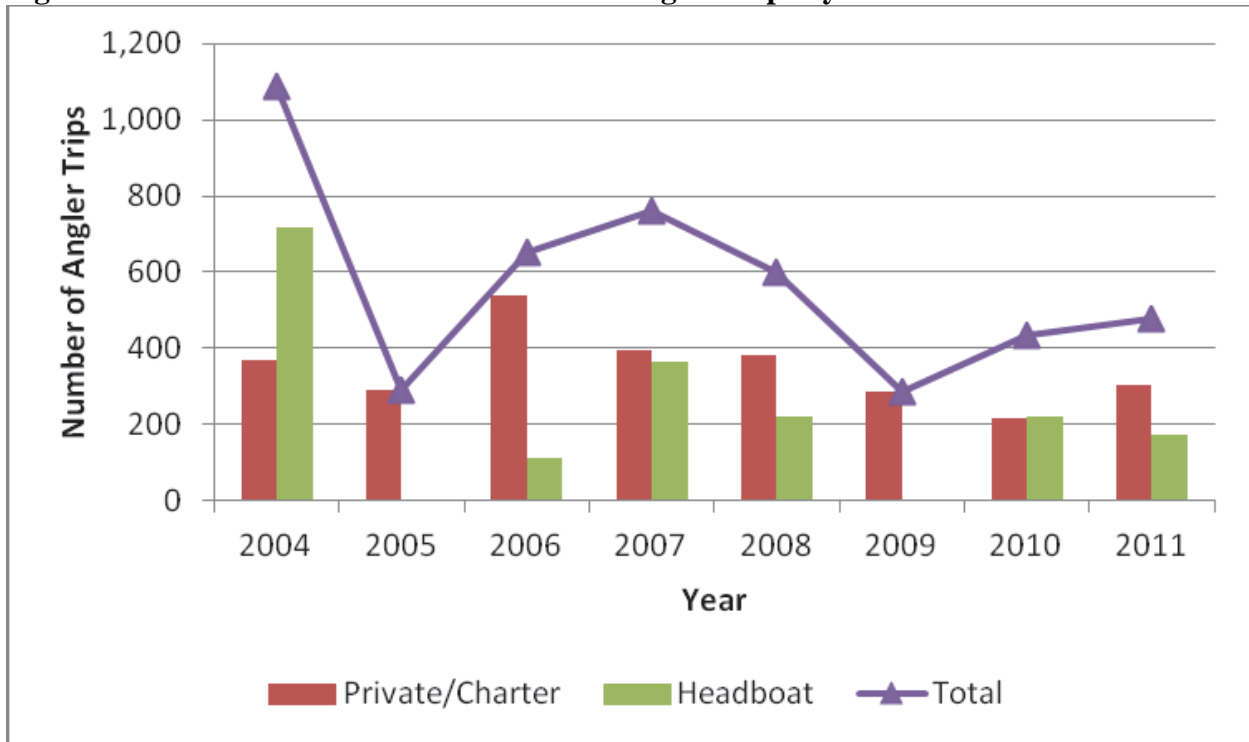
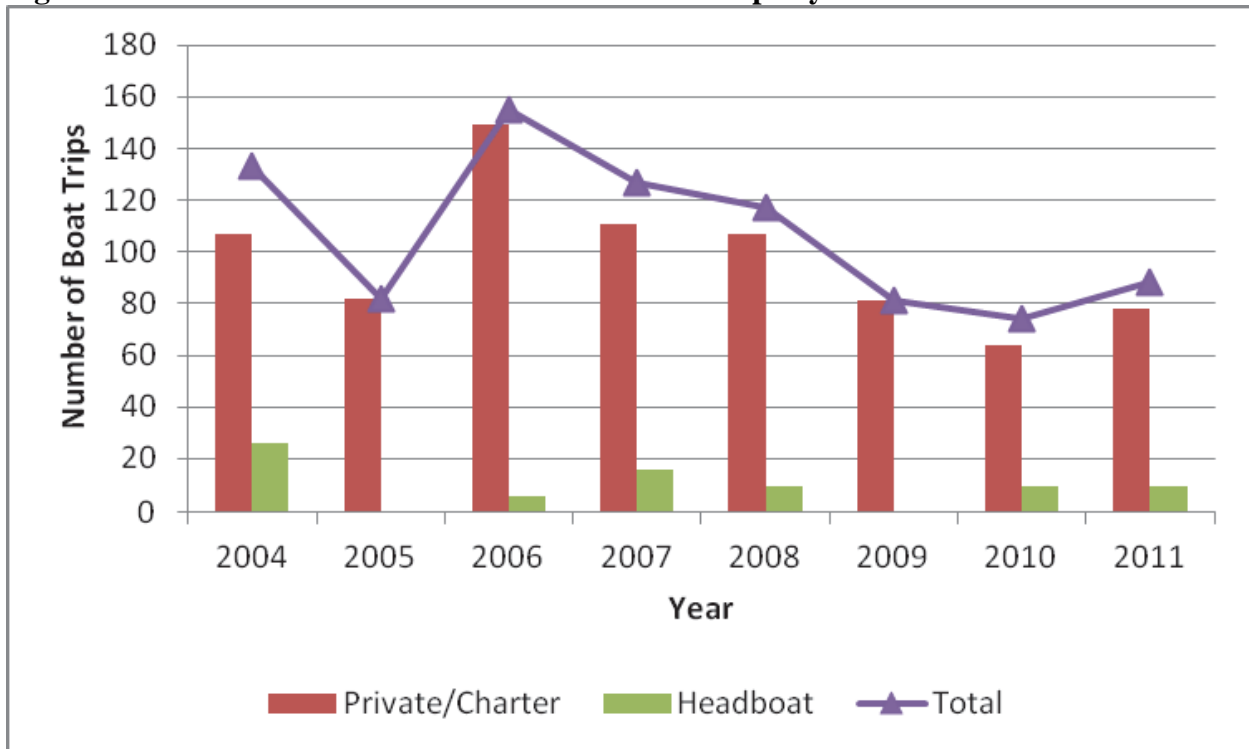


Figure 10. Reef Site 9 - Estimated Number of Boat Trips by Mode



4.5.5.2 Reef Site 10

Reef site 10 is estimated to have considerably more recreational fishing activity than reef site 9. DNREC aerial survey data show that 3,610 angler fishing trips were taken aboard private/charter boats in 2011 and another 2,200 angler fishing trips occurred aboard headboats (Figure 11). Private/charter angler effort and headboat angler effort has generally been increasing at reef site 10 since 2006.

The number of private/charter boat trips and headboat trips to reef site 10 are also considerably higher than at reef site 9. In 2011, 1,034 private/charter boat trips were estimated to have fished at reef site 10 and another 108 headboat trips (Figure 12). This is about 13 times higher than the number of boat trips taken to reef site 9 in 2011.

Figure 11. Reef Site 10 - Estimated Number of Angler Trips by Mode

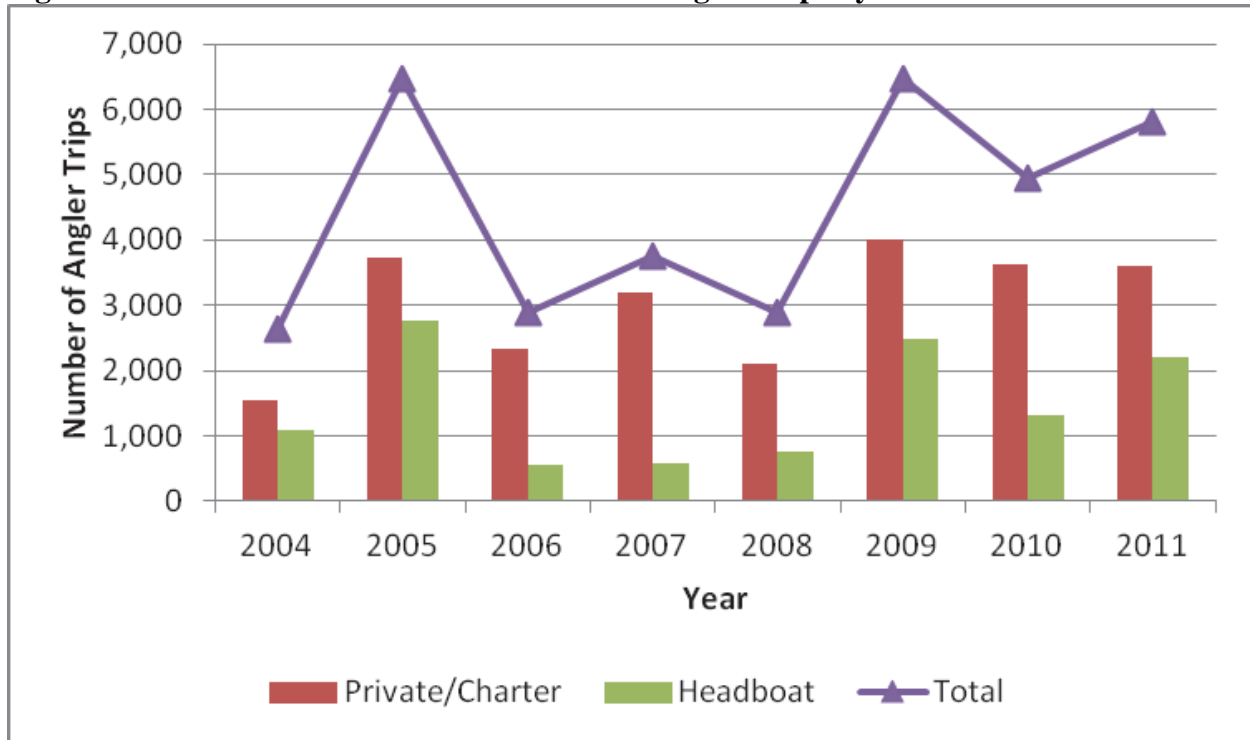
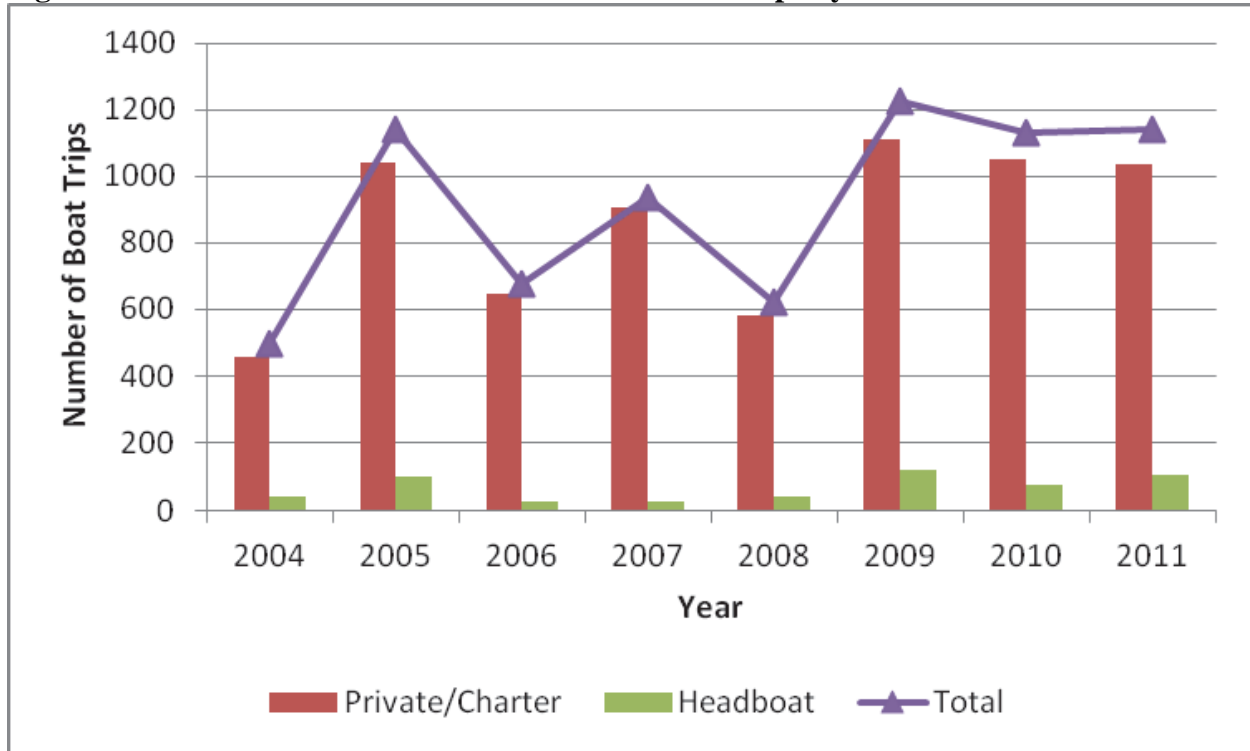


Figure 12. Reef Site 10 – Estimated Number of Boat Trips by Mode



4.5.5.3 Reef Site 11

Recreational fishing activity at reef site 11 has consistently been the highest of the five reef sites during the past 8 years. The number of angler trips occurring at the site reached over 16,000 in 2005, and has declined since, but still exceeded 9,600 in 2010 and 2011 (DNREC aerial survey data; Figure 13)

The number of boat trips reached over 2,600 in 2005 and 2007 (Figure 14). Since 2005 the number of boat trips has declined, but still exceeds the number of boat trips taken to any of the other four reef sites.

Figure 13. Reef Site 11 - Estimated Number of Angler Trips by Mode

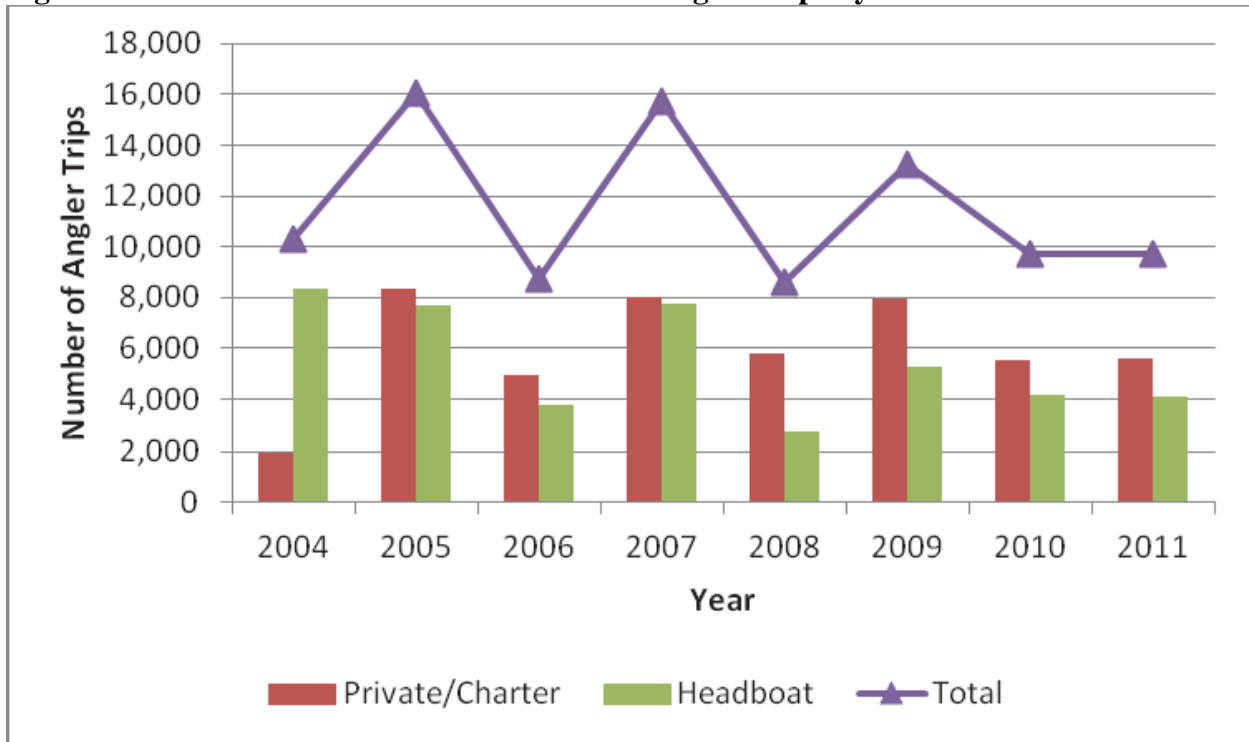
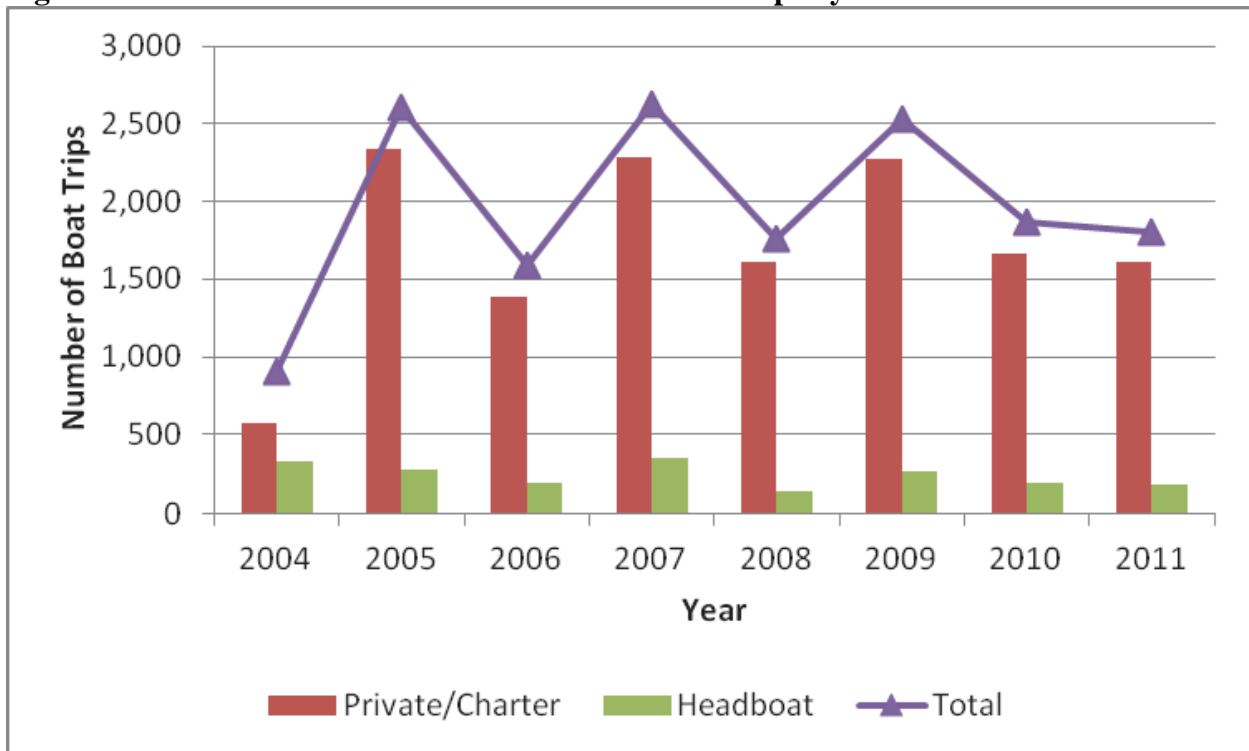


Figure 14. Reef Site 11 – Estimated Number of Boat Trips by Mode



4.5.5.4 Reef Site 13 (Del-Jersey-Land Inshore)

Reef site 13 was permitted in 2006 and was added to the DNREC aerial flight survey in 2009. Survey estimates have shown increasing recreational fishing activity at the site since 2009. Angler fishing trips at reef site 13 have increased from 440 in 2009, to 700 in 2010, to 1,969 in 2011 (Figure 15). In 2011 there was an 80% increase in private/charter angler trips and a 281% increase in headboat angler trips, relative to 2010 levels.

The number of recreational fishing boat trips at reef site 13 has also steadily increased over the past 3 years. The total number of boat trips increased from 86 in 2010, to 123 in 2011, and 240 in 2011 (Figure 16).

Figure 15. Reef Site 13 - Estimated Number of Angler Trips by Mode

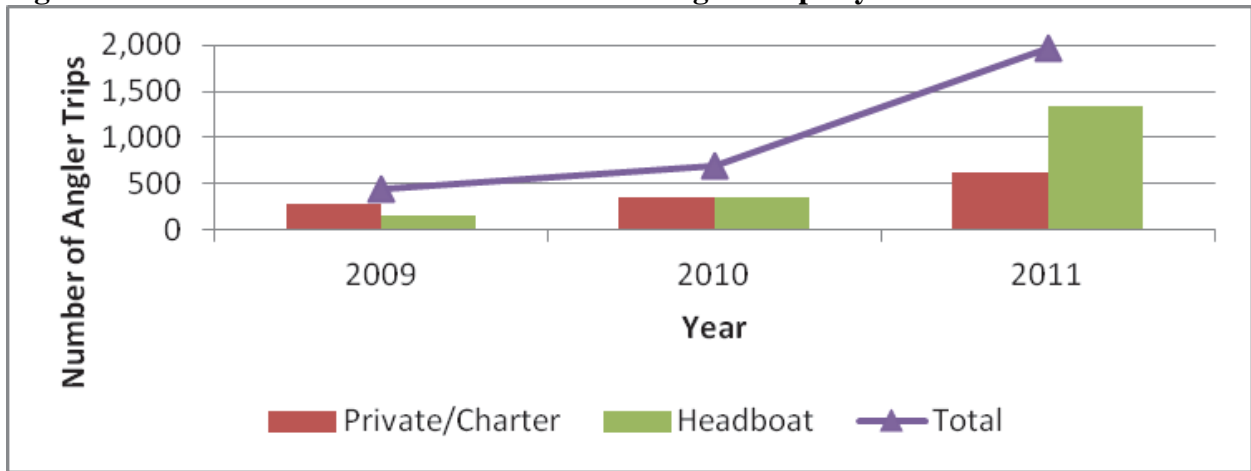
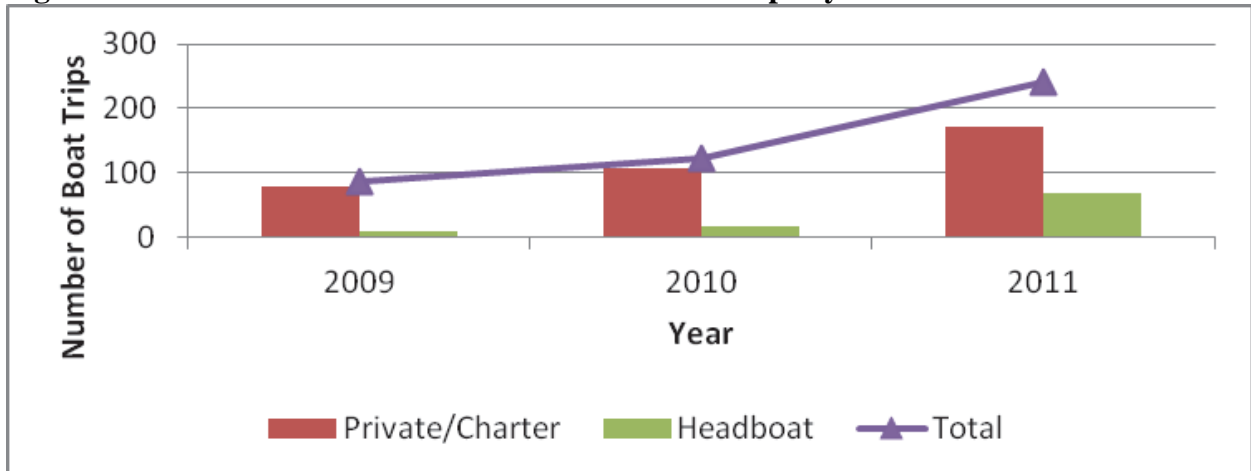


Figure 16. Reef Site 13 - Estimated Number of Boat Trips by Mode



4.5.5.5 Reef Site 14 (Del-Jersey-Land Offshore)

Reef site 14 is located 58 miles off shore and is not included in the DNREC aerial flight survey program. The total level of recreational fishing activity occurring at the site is unknown.

4.5.5.6 Angler Trips and Boat Trips by Reef Site

In light of the considerable differences in use level between reefs and the fact that decisions may be made that involve differential treatment of the reefs, Table 14 and Table 15 show the estimated number of angler trips and boat trips, respectively, at each of the reef sites from 2004 to 2011.

Table 14. Estimated Number of Angler Trips by Reef Site

	Reef Site				
	9	10	11	13	14
2004	1,087	2,632	10,284		
2005	292	6,475	16,073		
2006	652	2,894	8,716		
2007	761	3,764	15,754		
2008	600	2,879	8,603		
2009	288	6,480	13,236	440	
2010	436	4,951	9,693	700	
2011	476	5,810	9,689	1,969	

¹ Includes angler trips aboard private boats, charter boats, and head boats

Table 15. Estimated Number of Boat Trips by Reef Site

	Reef Site				
	9	10	11	13	14
2004	133	498	902		
2005	82	1,142	2,607		
2006	155	675	1,584		
2007	127	935	2,625		
2008	117	624	1,756		
2009	81	1,228	2,532	86	
2010	74	1,129	1,863	123	
2011	88	1,142	1,798	240	

¹ Includes boat trips aboard private boats, charter boats, and head boats

4.5.5.7 NMFS' Northeast VTR Data

Annual Northeast VTR data also provide an indication of the number of for-hire boat trips (headboat and charter) occurring at each reef site. The reported latitude and longitude coordinates of for-hire trips contained in the VTR data base from 2004 through 2010 were overlaid onto the coordinates of the 5 artificial reefs using geographical information system mapping (GIS). Two SMZ buffer zones around the five artificial reefs are also being considered under this action (0.25 nautical miles and 0.50 nautical miles) so for-hire trips within the two buffer zones were retained for this assessment.

The numbers of for-hire VTR trips that reported fishing within the actual latitude and longitude coordinates of the reef sites during 2004 through 2010 are shown in Table 16. For-hire activity reported within the coordinates of reef site 11 during 2004 through 2010 was the highest, followed by reef site 10. There was only one reported for-hire trip at reef site 9 in 2007 and at reef site 14 in 2008. There were no reported for-hire trips within the coordinates of reef site 13 from 2004 through 2010.

Table 16. Number of Reported VTR For-Hire Trips within the Reef Sites

	Reef Site				
	9	10	11	13	14
2004	0	0	14	0	0
2005	0	4	7	0	0
2006	0	3	17	0	0
2007	1	7	24	0	0
2008	0	12	14	0	1
2009	0	16	11	0	0
2010	0	0	2	0	0

The number of for-hire VTR trips that reported fishing within 0.25 nautical miles of the reef sites during 2004 through 2010 are shown in Table 17. Inclusion of reported trips within a 0.25 nautical mile buffer zone around the reef sites resulted in 59 additional for-hire trips that occurred at the reef sites from 2004 through 2010. Trips that occurred at reef site 9 increased by 23, although all of the the additional trips were made by one vessel that reported the exact same latitude and longitude coordinates on all 23 trips – just outside the actual coordinates of reef site 9. Trips at reef site 10 increased by 11, trips at reef site 11 increased by 24, trips at reef site 13 increased by one, and reef site 14 remained the same.

Table 17. Number of Reported VTR For-Hire Trips within 0.25 Nautical Miles of the Reef Sites

	Reef Site				
	9	10	11	13	14

2004	3	0	15	0	0
2005	2	4	10	0	0
2006	2	4	26	1	0
2007	3	7	25	0	0
2008	4	20	20	0	1
2009	10	18	15	0	0
2010	0	0	2	0	0

Table 18 shows the numbers of for-hire VTR trips that reported fishing within 0.50 nautical miles of the reef sites. Expanding the buffer zone from 0.25 nautical miles to 0.50 nautical miles results in only 20 additional for-hire trips that occurred at the reef sites from 2004 through 2010. Trips that occurred at reef site 9 increased by 2, trips at reef site 10 increased by 5, trips at reef site 11 increased by 13, and trips at reef site 13 and reef site 14 remained the same.

Table 18. Number of Reported VTR For-Hire Trips within 0.50 Nautical Miles of the Reef Sites

	Reef Site				
	9	10	11	13	14
2004	4	0	18	0	0
2005	2	4	12	0	0
2006	2	4	28	1	0
2007	3	10	27	0	0
2008	5	22	21	0	1
2009	10	18	18	0	0
2010	0	0	2	0	0

Since the VTRs measure headboat and charter activity combined, these data are not directly comparable to the DNREC estimates of recreational fishing activity. Nonetheless, when compared to the DNREC estimates of headboat activity alone, the reported number of for-hire fishing trips from the VTRs is considerably lower than reported by the DNREC. This may be because federally permitted for-hire vessels are only required to report location information for a given trip once when fishing within a single NMFS statistical area – which are considerably larger than the coordinates of a reef site. Therefore, the location information in the VTRs may not accurately reflect all of the areas fished on a given trip. The VTR estimates of for-hire fishing activity at the five reef sites should be considered a lower bound approximation of the actual number of trips occurring at the sites. The reasons for the decline in reported VTR for-hire trips within or near reef site’s 9, 10, and 11 in 2010 are not clear. The DNREC estimates of headboat activity at the reef sites do not indicate the same downward trend in 2010. Although the reported number of for-hire trips from the VTRs is lower than reported by the DNREC in each of the 7 years examined, the VTR data show the same general trend in trips to the reef sites in all years except 2010.

VTR landings reported for charter and headboats fishing within 0.50 nautical miles of the reef sites from 2008 through 2010 were calculated for reef site 10 and 11. Twelve different species were reported being harvested by recreational fishermen at reef site 10. Black sea bass, fluke, croaker, triggerfish, and scup were the primary species harvested, in order, at reef site 10. Eighteen different species were reported being harvested by recreational fishermen at reef site 11 from 2008 through 2010, but almost $\frac{3}{4}$ were black sea bass and fluke.

4.5.5.8 Angler Expenditures

The total value recreational anglers place on the opportunity to fish at each of the five reef sites can be separated into (1) actual expenditures and (2) non-monetary benefits associated with satisfaction. In other words, anglers incur expenses to fish (purchases of gear, bait, boats, fuel, etc.), but do not pay for the fish they catch or retain nor for the enjoyment of many other attributes of the fishing experience (socializing with friends, being out on the water, etc.). Despite the obvious value of these fish and other attributes of the experience to anglers, no direct expenditures are made for them, hence the term "non-monetary" benefits. In order to determine the magnitude of non-monetary benefits associated with fishing at the five reef sites, demand curves for recreational fishing must be constructed. Unfortunately, data limitations preclude the ability to construct these demand curves for recreational fishing at the five reef sites. Therefore, the angler assessment provided here is limited to describing only actual expenditures by anglers fishing at the five reef sites.

Anglers' expenditures generate and sustain employment and personal income in the production and marketing of fishing-related goods and services. An economic study of marine recreational fishermen conducted in 2006 estimated that average trip expenditures were \$39.14 for anglers fishing from a private/rental boat and \$107.13 for anglers that fished from a party/charter boat in the Northeast region of the U.S. (Gentner and Steinback 2008). Trip-related goods and services included expenditures on private transportation, public transportation, food, lodging, boat fuel, private boat rental fees, party/charter fees, access/boat launching fees, equipment rental, bait, and ice.

Apart from trip-related expenditures, anglers also purchase fishing equipment and other durable items that are used for many trips (i.e., rods, reels, clothing, boats, etc.). Although some of these items may have been purchased specifically to fish at one of the artificial reef sites, the fact that these items can be used for multiple trips creates difficulty when attempting to associate durable expenditures with the artificial reefs. Therefore, only trip-related expenditures are used in this assessment.

Assuming the average trip expenditures estimated in Gentner and Steinback (2008) are equivalent to the expenditures of anglers fishing at the five reef sites, total angler expenditures at each reef site can be estimated by multiplying the expenditure estimates by the number of angler trips fished at a reef site by mode. Proportions calculated from MRIP angler effort data were used to assign separate estimates of private boat angler effort and charter angler effort to the single DNREC private/charter effort estimate for each reef site. MRIP effort estimates in 2011 from DE and NJ anglers fishing in federal waters were used to calculate the proportions (75% private boat, 25% charter).

Table 19 shows the estimated total trip expenditures incurred by anglers to fish at each of the five reef sites in 2011. Anglers fishing at reef site 11 spent the most (\$838.4 thousand) while anglers fishing at reef site 9 spent the least (\$39.7 thousand). Expenditure estimates for reef site 14 are unavailable because the DNREC does not include that site in their aerial survey program. In total, across all reef sites, charter/headboat angler expenditures were over three times higher than private boat angler expenditures. Private boat anglers spent an estimated \$333.0 thousand on trip expenditures while charter/headboat anglers spent over \$1.2 million to fish at reef sites 9, 10, 11, and 13.

Table 19. Estimated Angler Trip Expenditures by Reef Site and Mode in 2011*

Reef Site	Private Boat	Charter/Headboat	Total
9	\$9,891	\$29,823	\$39,714
10	\$118,237	\$370,842	\$489,078
11	\$184,069	\$654,307	\$838,376
13	\$20,536	\$179,146	\$199,681
14	-	-	-

*The angler trip expenditure estimates from 2006 were converted to 2011 dollars using the Bureau of Labor Statistics Consumer Price Index.

4.5.5.9 For-Hire Revenue

A component of angler trip expenditures when fishing aboard a charter/headboat is the passenger access fee. Access fees, in turn, are the primary income generator for for-hire businesses. By multiplying the inflation adjusted average for-hire passenger fare estimated in Gentner and Steinback (2008) by the number of charter/headboat angler trips fished at each reef site, an estimate of gross earnings by for-hire businesses from each reef site can be developed. In 2011, for-hire boats earned an estimated \$16.2 thousand in gross revenue from fishing at reef site 9, \$201.5 thousand fishing at site 10, \$355.5 thousand fishing at site 11, and \$97.3 thousand fishing at site 13.

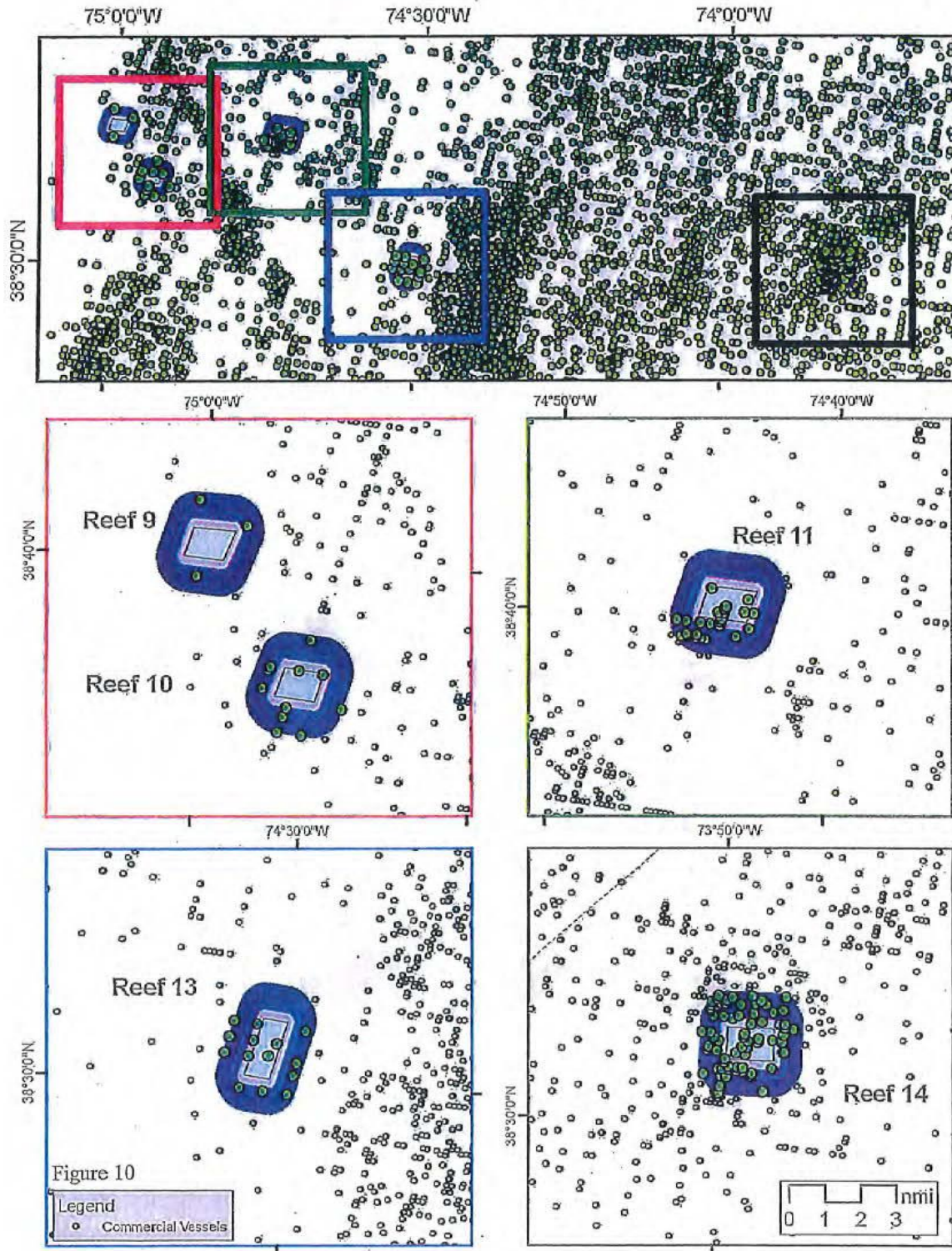
4.5.6 Commercial Fishery at the Five Artificial Reef Sites

Commercial fishing data obtained from Northeast federal dealer reports (VTRs) and the federal Northeast permit data base were used to describe commercial fishing activity at the five reef sites. In combination, these data provide estimates of total annual landings, the ex-vessel value of landings, and descriptive information about the permitted vessels fishing on the reef sites. These data provide the capability to identify vessels that fished on the reef sites and to compare total annual gross revenues earned by each of those vessels to their annual gross revenues earned while fishing only at the reef sites.

The same GIS procedure described above to estimate the number of for-hire trips that occurred at each reef site was used to evaluate commercial fishing activity by reef site. That is, the reported latitude and longitude coordinates of commercial fishing trips contained in the VTR data base from 2004 through 2010 were overlaid onto the coordinates of the 5 artificial reefs using geographical information system mapping (Figure 17, Figure 18, Figure 19). Two SMZ buffer zones around the five artificial reefs are also being considered under this action (0.25 nautical

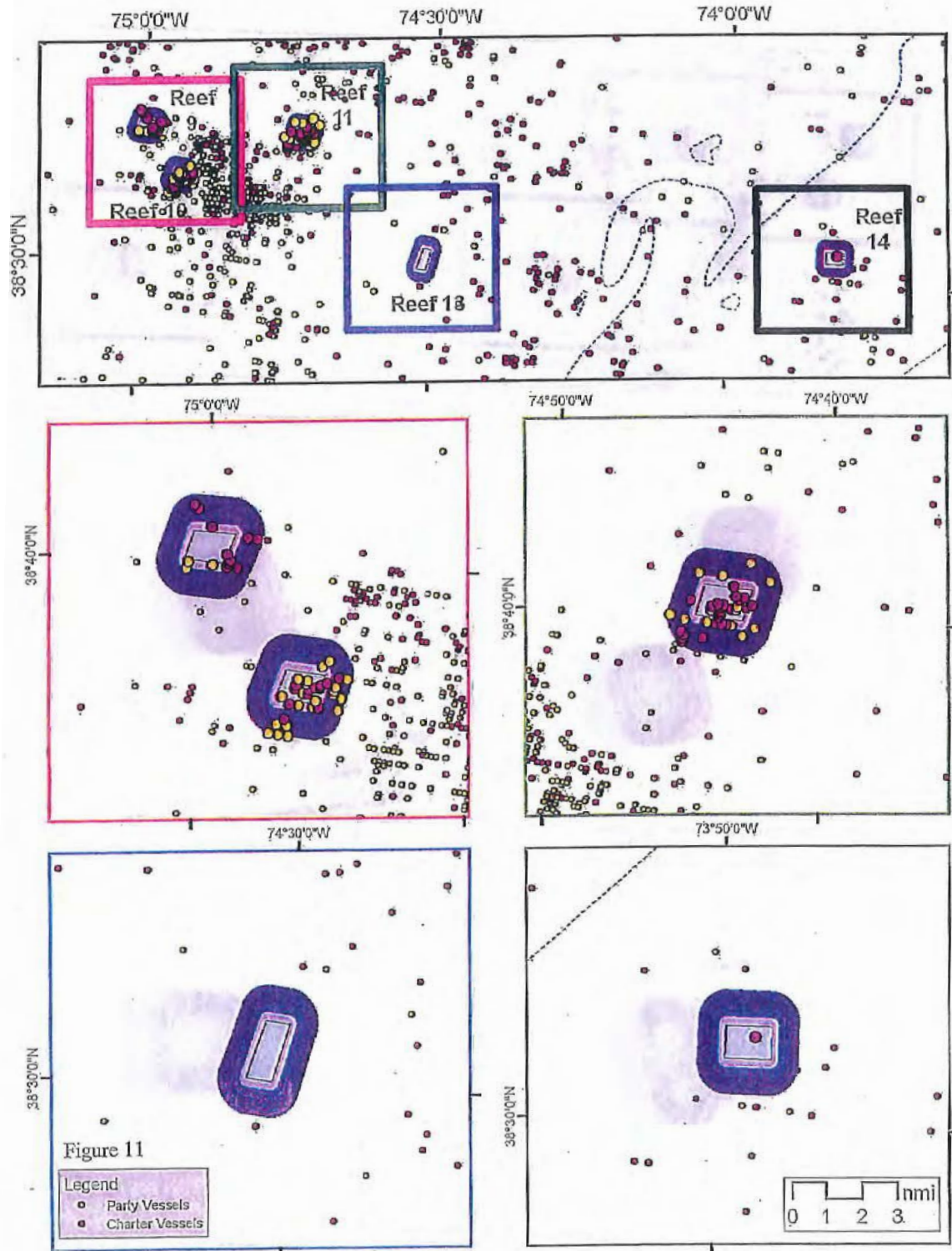
miles and 0.50 nautical miles) so all commercial fishing VTR trips within the two buffer zones were retained for this assessment.

Figure 17. VTR trips from 2004-2010 in proximity to artificial reefs using all gears other than handline gear.



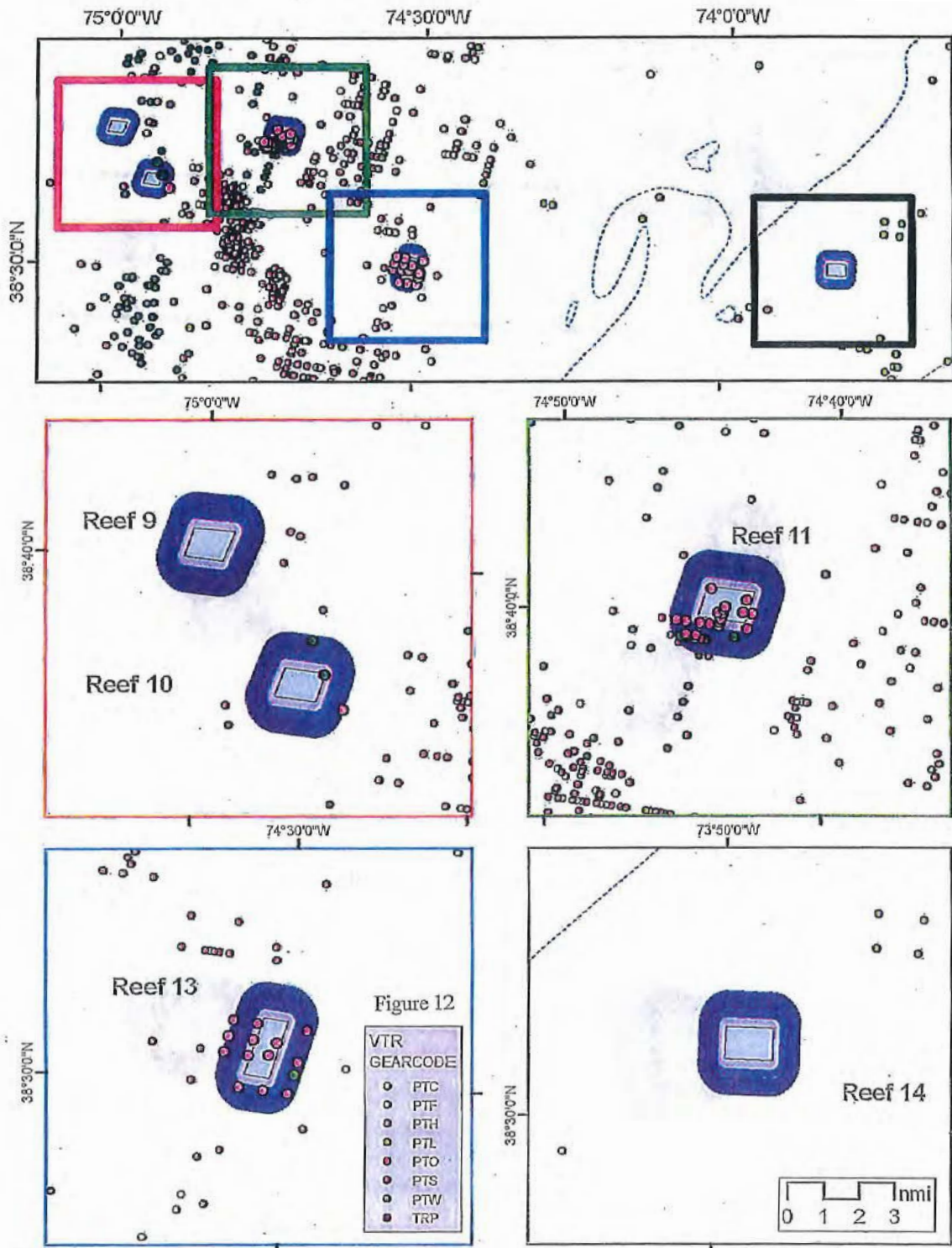
* Points vary by color according to fleet category, larger circles were used to distinguished points that are within 1 nautical mile of a reef. Reefs (in green) were buffered by 1/4, 1/2 and 1 nautical mile (blue hues).

Figure 18. VTR trips from 2004-2010 in proximity to artificial reefs using handline gear.



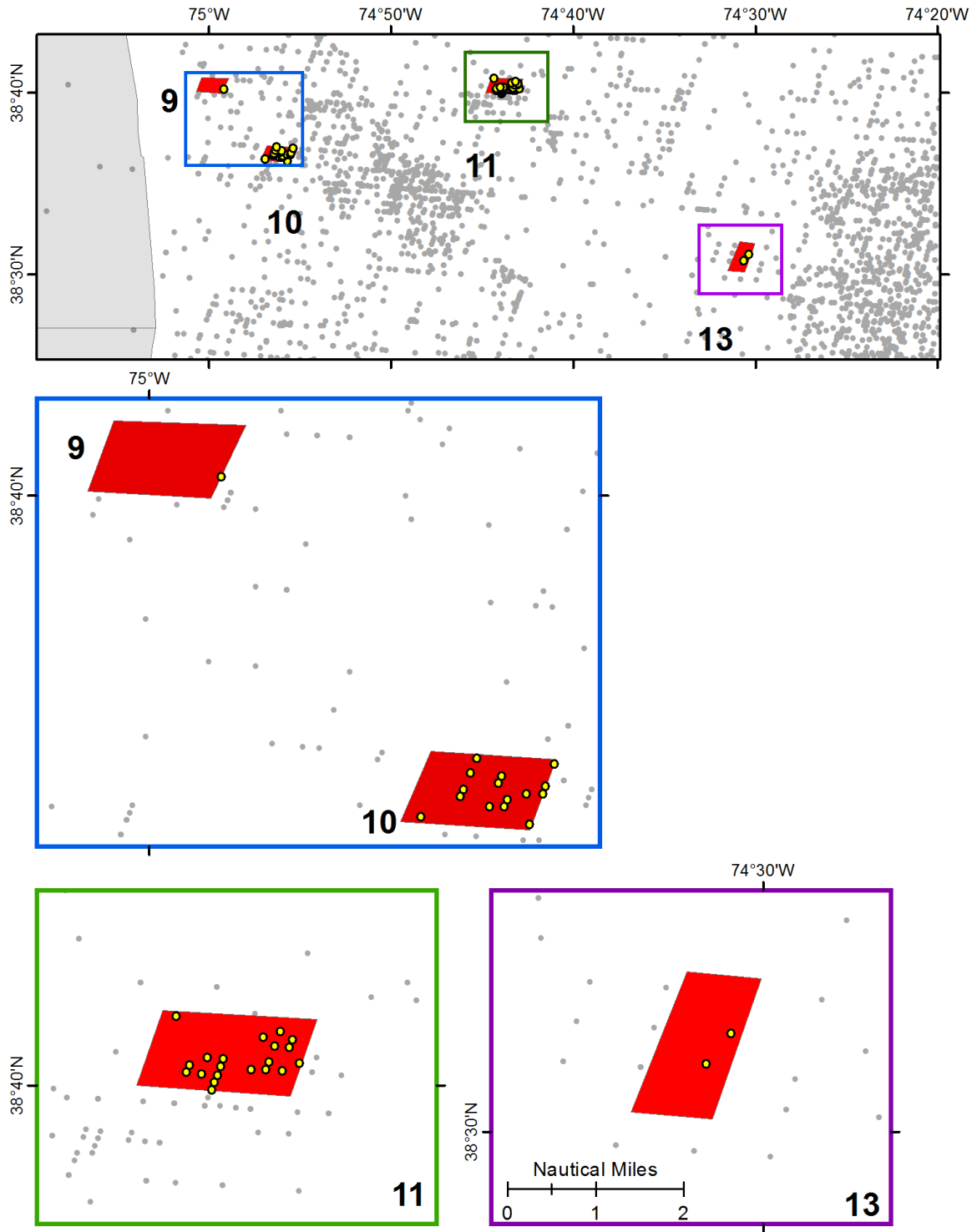
* Points vary by color according to fleet category, larger circles were used to distinguished points that are within 1 nautical mile of a reef. Reefs (in green) were buffered by 1/4, 1/2 and 1 nautical mile (blue hues).

Figure 19. VTR trips from 2004-2010 in proximity to artificial reefs using commercial port and trap gear.



* Points vary by color according to fleet category, larger circles were used to distinguished points that are within 1 nautical mile of a reef. Reefs (in green) were buffered by 1/4, 1/2 and 1 nautical mile (blue hues).

Figure 20. VTR Trips from 2004-2010 in proximity reef site 9, 10, 11 and 13 for all gear types



VTR trips from 2004-2010 for all gear types. Points in yellow overlap the artificial reefs.

The number of commercial fishing VTR trips that reported fishing within the actual latitude and longitude coordinates of the reef sites during 2004 through 2010 are shown in Table 20. No trips were reported within the coordinates of reef site 9 from 2004 through 2010. One commercial trip using pot gear was reported at reef site 10 in 2005 and one trip was reported that used trawl gear at reef site 10 in 2010. Reef site 11 had 17 trips that reported setting pot gear during 2004 through 2010. Reef site 13 had 3 reported pot gear trips in 2004 and reef site 14 had 7 reported dredge gear trips and 3 reported trawl gear trips in 2009.

Table 20. Number of Reported VTR Commercial Fishing Trips within the Reef Sites, by Gear Type.

	Reef Site and Gear Type						
	9	10		11	13	14	
		Trawl	Pot/Trap	Pot/Trap	Pot/Trap	Dredge	Trawl
2004	0	0	0	5	3	0	0
2005	0	0	1	2	0	0	0
2006	0	0	0	3	0	0	0
2007	0	0	0	0	0	0	0
2008	0	0	0	2	0	0	0
2009	0	0	0	5	0	7	3
2010	0	1	0	0	0	0	0

The number of commercial fishing VTR trips that reported fishing within 0.25 nautical miles of the reef sites during 2004 through 2010 are shown in Table 21. Inclusion of reported trips within 0.25 nautical miles resulted in 93 additional trips occurring at the reefs during 2004 through 2009. No additional commercial trips were reported within 0.25 nautical miles of reef site 9. Trips at reef site 10 remained the same with one commercial pot trip in 2005 and one trawl trip in 2010. Reported commercial pot gear trips increased by 40 at Reef site 11, but a steady decline in trips occurred within 0.25 nautical miles of the reef during 2004 through 2010, as only 3 trips were reported in 2010. Commercial pot gear trips at reef site 13 increased by 39 and have generally been increasing since 2004. In 2010 12 trips were reported within 0.25 nautical miles of reef site 13. Trips at reef site 14 increased by 14 under a 0.25 nautical mile buffer, but all of the additional reported commercial fishing pot trips occurred in 2009 when using dredge gear trawl gear.

Table 21. Number of Reported VTR Commercial Fishing Trips within 0.25 Nautical Miles of the Reef Sites, by Gear Type

	Reef Site and Gear Type						
	9	10		11	13	14	
		Trawl	Pot/Trap	Pot/Trap	Pot/Trap	Dredge	Trawl
2004	0	0	0	10	3	0	0
2005	0	0	1	25	0	0	0
2006	0	0	0	7	2	0	0
2007	0	0	0	0	1	0	0
2008	0	0	0	4	10	0	0
2009	0	0	0	8	14	17	7
2010	0	1	0	3	12	0	0

The number of commercial fishing VTR trips that reported fishing within 0.50 nautical miles of the reef sites during 2004 through 2010 are shown in Table 22. Expanding the buffer zone from 0.25 nautical miles to 0.50 nautical miles resulted in a total of 42 additional trips at the reef sites from 2004 through 2010. One additional trip was reported at reef site 9 that used gillnet gear, 3 additional trips at reef site 10 (1 trawl, 2 gillnet), 10 trips at reef site 11 (pot/trap), 4 at reef site 13 (pot/trap), and 24 at reef site 14 (20 dredge, 4 trawl).

Table 22. Number of Reported VTR Commercial Fishing Trips within 0.50 Nautical Miles of the Reef Sites, by Gear Type

	Reef Site and Gear Type							
	9	10		11	13	14		
	Gillnet	Trawl	Pot/Trap	Gillnet	Pot/Trap	Pot/Trap	Dredge	Trawl
2004	0	0	0	0	14	3	0	0
2005	0	0	1	2	27	2	0	0
2006	0	0	0	0	11	2	0	0
2007	0	0	0	0	0	1	0	0
2008	0	0	0	0	4	11	0	0
2009	0	0	0	0	8	15	36	11
2010	1	2	0	0	3	12	1	0

Species landed on commercial trips that were reported within 0.50 nautical miles of the reef sites varied across reefs. From 2008 through 2010, at reef site 11, lobster, channeled whelk, and black sea bass comprised the majority of landings. Lobster comprised 23% of total landings and 43% of ex-vessel value, channeled whelk 30% of landings and 25% of value, and black sea bass 22% of landings and 25% of total value. Landings at reef site 13 from 2008 through 2010 consisted primarily of black sea bass. Black sea bass comprised 84% of total landings and 87% of total ex-

vessel value. No commercial fishing trips were reported at reef site 14 in 2008, but in 2009 and 2010 there were 37 reported trips using dredge gear and 11 using trawl gear. Landings on these trips consisted almost entirely of sea scallops. Sea scallops comprised 98% of the landings and 99% of the total value. Only 1 gillnet trip was reported at reef site 9 from 2008 through 2010 and only 2 trawl trips were reported at reef site 10 in 2010. Confidentiality rules prohibit releasing information on fewer than three vessels.

The spatial location data contained in the VTRs for commercial fishing vessels may underestimate the frequency of trips fishing within the buffer zones of the reef sites. Similar to for-hire vessel trips, commercial fishermen are only required to report location information for a given trip once when fishing within a single NMFS statistical area – which are considerably larger than the coordinates of a reef site. Therefore, the location information in the VTRs may not accurately reflect all of the areas fished on a given trip. This is especially true for mobile gear trips that dredge or trawl over miles of ocean bottom on a single trip. The VTR estimates of commercial fishing activity at the five reef sites should be considered a lower bound approximation of the actual number of trips occurring at the sites.

Acknowledging the aforementioned limitations of the spatial location data contained in the VTRs, the ex-vessel value of landings at each reef site still provide the best available data to assess the importance of the sites to commercial fishermen. Thus, for purposes of this assessment, VTR data were used to calculate landings values at each reef site during 2008, 2009, and 2010. The reported latitude and longitude coordinates of commercial fishing trips in the VTR data base were overlaid onto the coordinates of the 5 artificial reefs using geographical information system mapping (GIS). Two SMZ buffer zones around the five artificial reefs are also being considered under this action (0.25 nautical miles and 0.50 nautical miles) so all commercial fishing VTR trips within the two buffer zones were retained for this assessment.

Table 23 shows the total ex-vessel value of commercial fishery landings within the actual latitude and longitude coordinates of the five artificial reefs during 2008 through 2010. No reported commercial landings occurred at reef site 9 during this time period and the value of landings at reef site 10 was inconsequential (<\$300). Landings revenue within the coordinates of reef site 11 totaled less than \$2.4 thousand in 2008 and just over \$4.0 thousand in 2009. No commercial landings were reported at reef site 11 in 2010. Additionally, no commercial vessels reported landings within the coordinates of reef site 13 from 2008 through 2010. Lastly, although no commercial fishery landings were reported within the latitude and longitude coordinates of reef site 14 during 2008 and 2010, landings totaled over \$114 thousand in gross value in 2009. All vessels reporting landings within the actual coordinates of reef site 14 in 2009 used mobile gear (dredge and trawl) and sea scallops comprised 99% of the total value on those trips.

Table 23. Total Ex-vessel Value of Commercial Fishery Landings within the Reef Sites (\$'s)

	Reef Site 9	Reef Site 10	Reef Site 11	Reef Site 13	Reef Site 14
2008	\$0	\$0	\$2,386	\$0	\$0
2009	\$0	\$0	\$4,009	\$0	\$114,013

2010 \$0 \$282 \$0 \$0 \$0

Table 24 shows the total ex-vessel value of commercial fishery landings within 0.25 nautical miles of each reef site from 2008 through 2010. The addition of a 0.25 nautical mile buffer zone around the coordinates of the artificial reefs resulted in increased commercial fishing ex-vessel revenue obtained from reef site’s 11, 13, and 14. Revenue derived from reef site’s 9 and 10 remained the same, but revenue obtained at reef site 11 increased by \$6,851 in 2008, \$3,616 in 2009, and \$3,159 in 2010 after accounting for commercial trips that occurred within 0.25 nautical miles of the reef sites. At reef site 13, there were no commercial trips reported within the actual coordinates of the reef site from 2008 through 2010, but 10 commercial mobile gear trips were reported within 0.25 nautical miles of the reef in 2009. Ex-vessel revenue totaled over \$114 thousand on those 10 trips in 2009.

Table 24. Total Ex-vessel Value of Commercial Fishery Landings within 0.25 Nautical Miles by Reef Site (\$’s)

	Reef Site 9	Reef Site 10	Reef Site 11	Reef Site 13	Reef Site 14
2008	\$0	\$0	\$9,237	\$27,315	\$0
2009	\$0	\$0	\$7,625	\$22,037	\$272,543
2010	\$0	\$282	\$3,159	\$31,790	\$0

Table 25 shows the total ex-vessel value of commercial fishery landings within 0.50 nautical miles of each reef site. Expanding the buffer zones around the reef sites from 0.25 nautical miles to 0.50 nautical miles resulted in almost no changes to ex-vessel revenues obtained from landings at the reef sites, except at reef site 14. The ex-vessel value of landings at reef site 14 increased by \$432.5 thousand in 2009 and \$74.6 thousand in 2010 when the buffer zone was expanded from 0.25 nautical miles to 0.50 nautical miles. The entire increase in ex-vessel revenues was derived from mobile gear trips and sea scallops comprised over 99% of the value on those trips.

Table 25. Total Ex-vessel Value of Commercial Fishery Landings within 0.50 Nautical Miles by Reef Site (\$’s)

	Reef Site 9	Reef Site 10	Reef Site 11	Reef Site 13	Reef Site 14
2008	\$0	\$0	\$9,237	\$27,594	\$0
2009	\$0	\$0	\$7,625	\$22,399	\$705,075
2010	\$109	\$5,556	\$3,159	\$31,790	\$74,569

The number of federally permitted commercial vessels that reported landings within the latitude and longitude coordinates of the reef sites from 2008 through 2010 is shown in Table 276. In 2008, only one vessel fishing with pot gear reported landings within the coordinates of any of the five reef sites. In 2009, two vessels fishing pot gear, four vessels fishing with dredge gear, and one vessel fishing with trawl gear reported trips within the confines of any of the five reef sites. In 2010, only one vessel using trawl gear reported trips within the coordinates of the reef sites. No vessels reported landings at the reef sites in all three years, one vessel reported landings in

two of the three years, and seven vessels reported landings in only one of the three years. A total of 8 unique commercial vessels reported landings within the coordinates of the reef sites from 2008 – 2010.

Table 26. Number of Vessels with Landings within the Coordinates of the Reef Sites by Gear Type, and their Percent of Total Annual Ex-vessel Revenue Landed at the Reef Sites

	Gear Type			Percent of Total Annual Revenue			
	Pot/Trap	Dredge	Trawl	<5%	5-9%	10-19%	20-29%
2008	1	0	0	1	0	0	0
2009	2	4	1	4	3	0	0
2010	0	0	1	1	0	0	0

On average, ex-vessel revenues obtained from landings within the coordinates of the reef sites represented approximately 3% of each vessel’s total annual gross revenues from all of its fishing trips during 2008, 2009, and 2010. On an annual basis, 6 vessels obtained less than 5% of their total annual revenues from landings while fishing within the coordinates of the reef sites from 2008 - 2010, and 3 obtained 5-9% (Table 27).

The number of federally permitted vessels that reported landings within 0.25 nautical miles of the reef sites is shown in Table 27. Expanding the reef site areas by 0.25 nautical miles resulted in 2 additional vessels with pot/trap landings in 2008, 1 additional vessel with pot/trap landings in 2009, 4 additional vessels with dredge landings in 2009, 1 additional vessel with trawl landings in 2009, and 3 vessels with pot/trap landings in 2010 within 0.25 nautical miles of the reef sites. Two vessels reported landings at the reef sites in all three years, one vessel reported landings in two of the three years, and 12 vessels reported landings in only one of the three years. Thus, a total of 15 unique vessels reported landings within 0.25 nautical miles of the reef sites from 2008 – 2010.

Table 27. Number of Vessels with Landings within 0.25 Nautical Miles of the Reef Sites by Gear Type, and their Percent of Total Annual Ex-vessel Revenue Landed at the Reef Sites

	Gear Type			Percent of Total Annual Revenue			
	Pot/Trap	Dredge	Trawl	<5%	5-9%	10-19%	20-29%
2008	3	0	0	1	1	0	1
2009	3	8	2	5	3	4	1
2010	3	0	1	3	0	1	0

On average, ex-vessel revenues obtained from landings within 0.25 nautical miles of the reef sites represented approximately 7% of each vessel’s total annual gross revenues from all of its fishing trips during 2008, 2009, and 2010. On an annual basis, 9 vessels obtained less than 5% of their total annual revenues from landings while fishing at the reef sites from 2008 - 2010, 4 obtained 5-9%, 5 obtained 10-19%, and 2 obtained 20-29% (Table 27).

The number of federally permitted vessels that reported landings within 0.50 nautical miles of the reef sites is shown in Table 28. Increasing the buffer from 0.25 nautical miles to 0.50 nautical miles resulted in 1 additional vessel with pot/trap landings in 2009, 6 additional vessels

with dredge landings in 2009, 1 additional vessel with trawl landings in 2010, and 1 additional vessel with gillnet landings in 2010 within 0.5 nautical miles of the reef sites. Three vessels using pot/trap gear reported landings at the reef sites in all 3 years, 19 vessels using mobile gear reported landings in only one of the three years, 1 vessel using pot/trap gear reported landings in only one of the three years, and 1 vessel using gillnet gear reported landings in only one of the three years. This means that a total of 24 unique vessels reported landings within 0.50 nautical miles of the reef sites from 2008 – 2010.

Table 28. Number of Vessels with Landings within 0.50 Nautical Miles of the Reef Sites by Gear Type, and their Percent of Total Annual Ex-vessel Revenue Landed at the Reef Sites

	Gear Type				Percent of Total Annual Revenue			
	Pot/Trap	Dredge	Trawl	Gillnet	<5%	5-9%	10-19%	20-29%
2008	3	0	0	0	1	1	0	1
2009	4	14	2	0	8	5	3	4
2010	3	1	2	1	5	1	1	0

On average, ex-vessel revenues obtained from landings within 0.50 nautical miles of the reef sites represented approximately 8% of each vessel’s total annual gross revenues from all of its fishing trips during 2008, 2009, and 2010. On an annual basis, 14 vessels obtained less than 5% of their total annual revenues from landings while fishing at the reef sites from 2008 - 2010, 7 obtained 5-9%, 4 obtained 10-19%, and 5 obtained 20-29% (Table 28).

The number of vessels with landings within the coordinates of the reef sites by homeport state are shown in Table 29, Table 30, and Table 31 show vessels with landings by homeport state within 0.25 nautical miles and 0.5 nautical miles of the reef sites.

Table 29. Number of Vessels with Landings within the Coordinates of the Reef Sites by Homeport State

	Home Port State				
	NJ	DE	MD	VA	NC
2008	1	0	0	0	0
2009	4	0	0	1	2
2010	0	0	1	0	0

Table 30. Number of Vessels with Landings within 0.25 Nautical Miles of the Reef Sites by Homeport State

	Home Port State				
	NJ	DE	MD	VA	NC
2008	1	2	0	0	0
2009	7	1	1	1	3
2010	1	2	1	0	0

Table 31. Number of Vessels with Landings within 0.50 Nautical Miles of the Reef Sites by Homeport State

	Home Port State				
	NJ	DE	MD	VA	NC
2008	1	2	0	0	0
2009	8	2	1	2	4
2010	1	2	2	1	1

The revenue estimates and estimates of the number of vessels fishing at the reef sites shown in this section should be considered lower bound estimates. As previously mentioned, commercial fishing vessels are only required to report location information for a given trip once when fishing within a single NMFS statistical area. NMFS statistical areas are considerably larger than the coordinates of a reef site, so the location information in the VTRs may not accurately reflect all of the areas fished on a given trip. Therefore, the VTR estimates of commercial fishing activity at the five reef sites should be considered a lower bound approximation of the actual activity occurring at the sites.

5.0 IMPACTS OF PROPOSED ACTION AND ALTERNATIVES

5.1 Impact Assessment

Section 5.1 establishes criteria for evaluating the impact of each alternative on the VECs identified in Section 4.0, and discusses impacts.

Evaluation Criteria

This EA evaluates the potential impacts using the criteria outlined in **Error! Reference source not found.** Impacts from all alternatives are judged relative to the baseline conditions, as described in Section 4.0, and compared to each other.

Table 32. Evaluation Criteria and Impact Definitions

Impact Definition			
VEC	Direction		
	Positive (+)	Negative (-)	Negligible (Negl)
Target species, Non-Target Species/Bycatch, and Protected Resources	Actions that increase stock/population size	Actions that decrease stock/population size	Actions that have little or no positive or negative impacts to stocks/populations
Physical Environment/Habita/EFH	Actions that improve the quality or reduce disturbance of habitat	Actions that degrade the quality or increase disturbance of habitat	Actions that have no positive or negative impact on habitat quality
Human Communities	Actions that increase revenue and social well-being of fishermen and/or associated businesses	Actions that decrease revenue and social well-being of fishermen and/or associated businesses	Actions that have no positive or negative impact on revenue and social well-being of fishermen and/or associated businesses
Impact Qualifiers:			
Low (L, as in low positive or low negative)	To a lesser degree		
High (H; as in high positive or high negative)	To a substantial degree		
Likely	Some degree of uncertainty associated with the impact		

5.1.1 Impacts to Target Species

5.1.1.1 Designation of Delaware permitted artificial reef sites as SMZs with associated gear and seasonal restrictions

5.1.1.1.1 No Action

The No Action alternative maintains the status quo. No SMZs would be designated and no gear or seasonal restrictions would be implemented on any of the artificial reef sites. There would be no direct impacts on the targeted populations of fish taken on the artificial reefs, and no change to the operation of the commercial or recreational fisheries. However, under the No Action Alternative gear conflicts between the recreational and commercial fishery would likely continue in some of the areas within the artificial reef sites. This could have some indirect, low negative impacts on target species because gear conflicts can inhibit the orderly management of the fishery and the ability to control overall fishing effort among the commercial and recreational fishing groups.

Additionally, the program to maintain the artificial reefs would also be in jeopardy of losing its U.S. FWS funding because FWS policy is not to continue to use Sportfish Restoration (SFR) funding for artificial reefs that do not have a mechanism to allow for recreational fishing access. Without continued funding for maintenance the artificial reefs would lose productivity over time. This would result in localized low negative impacts to the target species that utilize the artificial reefs.

In summary, the No Action would have negligible impact on the overall population of target species, but would have localized low negative impacts on target species at the artificial reefs.

5.1.1.1.2 Which Delaware permitted artificial reef sites will be designated as SMZs?

5.1.1.1.2.1 Alternative 1- Designate reef sites 9, 10, 11 and 13 as SMZ (preferred alternative)

Alternative 1 would implement SMZs at four reef sites. Alternative 1 would solely provide for the ability to restrict gear use on the four artificial reef sites. Fishing on the four artificial reef sites would be controlled by instituting measures to restrict fishing that causes gear conflicts. The fishing that would have taken place on the sites would shift out of the SMZs and take place next to the SMZs or in other areas.

Alternative 1 would not affect any annual catch limits (ACLs) so there would be no direct biological effects on the overall target species populations. While there may be some indirect low positive impacts associated with a more orderly managed fishery, the area designated for the four artificial reef sites is a very small area 14 km² (4.08square nautical miles) compared to where the fisheries take place for the target species found on or near the reef site. Therefore, the impact of Alternative 1 on the overall target species population would be negligible.

Under Alternative 1, the program to maintain the artificial reefs would not be in jeopardy of losing its U.S. FWS funding. The FWS would allow continued use of SFR funding for the artificial reefs because they would have a mechanism to allow for recreational fishing access

throughout the year. With continued funding for upkeep, the artificial reefs would maintain productivity over time. This would have localized low positive impacts on the target species inhabiting the SMZ reefs.

In summary, Alternative 1 would have negligible impact on the overall population of target species. However, Alternative 1 would have localized low positive impacts on target species at the reef sites due to the maintenance of the reef. Since Alternative 1 would designate the most SMZs, it would have the most localized low positive impacts on target species compared to Alternatives 2 and 3.

5.1.1.1.2.2 Alternative 2- Designate reef sites 11 and 13 as SMZs (only sites with documented potential for gear conflicts)

Alternative 2 would implement SMZs at two of the artificial reef sites (sites 11 and 13). Out of the sites under consideration for SMZ designation, these two sites are the only sites that have documented potential for gear conflicts.

Alternative 2 would solely provide for the ability to restrict gear use on two artificial reef sites. Fishing on the two artificial reef sites would be controlled by instituting measures to restrict fishing that causes gear conflicts. The fishing that would have taken place on the sites would shift out of the SMZs and take place next to the SMZs or in other areas. Alternative 2 would not affect any ACLs so there would be no direct biological effects on the overall target species populations. While there may be some indirect low positive impacts associated with a more orderly managed fishery, the area designated for the two artificial reef sites is a small area 7.6 km² (2.2 square nautical miles) compared to where the fisheries take place for the target species found on or near the reef site. Therefore, the impact of Alternative 2 on the overall target species population would be negligible.

Under Alternative 2, the program to maintain two artificial reefs would not be in jeopardy of losing its U.S. FWS funding. The FWS would allow continued use of SFR funding for the artificial reefs because they would have a mechanism to allow for recreational fishing access throughout the year. With continued funding for upkeep, the artificial reefs would maintain productivity over time. This would have low positive impacts on the target species inhabiting the SMZ reefs.

In summary, Alternative 2 would have negligible impact on the overall population of target species. However, Alternative 2 would have localized low positive impacts on target species at the SMZ reef sites due to the continued maintenance of the reefs. Since Alternative 2 designates the least number of SMZ sites, it would have the least localized low positive impacts on target species compared to Alternatives 1 and 3.

5.1.1.1.2.3 Alternative 3- Designate reef sites 9, 10 and 13 as SMZs, but not site 11

Alternative 3 would implement SMZs at three of the artificial reef sites (sites 9, 10 and 13), and not at artificial reef site 11. Out of the sites requested for SMZ designation, site 11 was the only site with documented commercial activity near it before the artificial reefs were created. It also

has the most potential for gear conflict because it is the most used site by the recreational fisheries sector, and has documented commercial activity on or near it.

Alternative 3 would solely provide for the ability to restrict gear use on three of the artificial reef sites. Fishing on the three artificial reef sites would be controlled by instituting measures to restrict fishing that causes gear conflicts. The fishing that would have taken place on the sites that would shift out of the SMZs and take place next to the SMZs or move to other areas. Alternative 3 would not affect any ACLs so there would be no direct biological effects on the fish stocks inhabiting the artificial reef sites. While there may be some indirect low positive impacts associated with a more orderly managed fishery, the area designated for the four artificial reef sites is a comparatively very small area 9.9 km² (2.88 square nautical miles) as compared to where the fisheries take place for the target species found on or near the reef site. Therefore, the impact of Alternative 3 on the overall target species populations would be negligible.

Under Alternative 3, three artificial reefs would have their recreational/gear conflicts removed, but U.S. FWS funding for the DE artificial reef program would remain in jeopardy. The FWS may not allow continued use of SRP funding for the artificial reefs because there would not be a mechanism to allow for recreational fishing access on reef site 11. This would have negative impacts on the target species. Even if there was continued funding for upkeep of the 3 artificial reefs given SMZ status, the artificial reef program, without SMZ status for reef site 11 (Delaware's largest reef) would lose potential productivity over time. This would have localized low negative impacts on the target species inhabiting the reefs.

In summary, Alternative 3 would have negligible impact on the overall population of the target species. However, Alternative 3 would have localized low positive impacts on target species at the SMZ reef sites do to the continued maintenance of the reef. Alternative 3 would provide less localized positive benefits than the alternative that designates 5 SMZs (Alternative 1), and more localized positive benefits than the alternative that designates 3 SMZs (Alternative 2).

5.1.1.1.3 What Gear Restrictions Will be Associated with the SMZs?

5.1.1.1.3.1 Alternative 1- Prohibit use of fixed pot/trap gear on sites designated as SMZs

Alternative 1 would prohibit the use of fixed pot/trap gear on the SMZs. Fixed pot/trap gear has the most potential for gear conflict on the artificial reef sites because it is the most used commercial gear on the sites (primarily for black sea bass), and the lines from pot/trap gear are cited by the recreational fishery sector as inhibiting their ability to fish the reefs. The pot/trap lines disrupt the ability to drift hooks over the artificial reefs, and, therefore, make the artificial reefs inaccessible to recreational fishing. Also, commercial channeled whelk fishing, which uses pots/traps, has been reported near the sites.

Commercial black sea bass fishing on the artificial reefs could still take place by commercial hook and line fishing, and any restricted trap/pot fishing would likely move to the areas next to the SMZs or to other areas. While this alternative addresses the current issues of fixed trap/pot fishing inhibiting access of the recreational fleet to the artificial reefs, it does not protect against

other commercial gear being used on the artificial sites that could damage the artificial reefs (such as trawls or dredges) or inhibit recreational fishing access (such as gillnets). Alternative 1 would not affect any ACLs so there would be no direct biological effects on the overall target species populations. While there may be some indirect low positive impacts associated with a more orderly managed fishery, the area of the gear restrictions is a very small area 18.2 km² (5.3 square nautical miles) compared to where the fisheries take place for the target species found on or near the reef site. Therefore, the impact of Alternative 1 on the overall target species population would be negligible.

Under Alternative 1, the program to maintain the artificial reefs would likely not be in jeopardy of losing its U.S. FWS funding. The FWS would likely allow continued use of SFR funding for the artificial reefs because the major gear conflict on the reefs would be eliminated and there would be a mechanism to allow for recreational fishing access throughout the year. With continued funding for upkeep, the artificial reefs would maintain productivity over time. This would have localized low positive impacts on the target species inhabiting the SMZ reefs.

In summary, Alternative 1 would have negligible impact on the overall population of target species. However, Alternative 1 would likely have localized low positive impacts on target species at the reef sites due to the maintenance of the reef. While Alternative 1 may have less low positive impacts than Alternative 2 due to a less orderly fishery, these impacts are indirect and minor. Therefore, Alternative 1 would have negligible impacts on target species compared to Alternative 2.

5.1.1.1.3.2 Alternative 2- Restrict fishing activities in designated SMZ sites to hook & line and spear fishing gear only (preferred alternative)

Alternative 2 would restrict fishing activities in the designated SMZ sites to hook & line and spear fishing gear only (including the taking by hand). Commercial black sea bass fishing on artificial reefs could still take place by commercial hook and line fishing, and any restricted trap/pot fishing would likely move to the areas next to the SMZs or to other areas.

Alternative 2 protects against all commercial gear being used on the artificial sites that could damage the artificial reefs (such as trawls or dredges) or inhibit recreational fishing access (such as gillnets). The commercial gear would likely move to the areas next to the SMZs or to other areas.

Alternative 2 would not affect any ACLs so there would be no direct biological effects on the overall target species populations. While there may be some indirect low positive impacts associated with a more orderly managed fishery, the area of the gear restrictions is a very small area 14 km² (4.08 square nautical miles) compared to where the fisheries take place for the target species found on or near the reef site. Therefore, the impact of Alternative 1 on the overall target species population would be negligible.

Under Alternative 2, the program to maintain the artificial reefs would not be in jeopardy of losing its U.S. FWS funding. The FWS would allow continued use of SFR funding for the

artificial reefs because they would have a mechanism to allow for recreational fishing access throughout the year. With continued funding for upkeep, the artificial reefs would maintain productivity over time. This would have localized low positive impacts on the target species inhabiting the SMZ reefs.

In summary, Alternative 2 would have negligible impact on the overall population of target species. However, Alternative 2 would have localized low positive impacts on target species at the reef sites due to the maintenance of the reef. While Alternative 2 may have more low positive impacts than Alternative 1 due to a more orderly fishery, these impacts are indirect and minor. Therefore, Alternative 1 would have negligible impacts on target species compared to Alternative 2.

5.1.1.1.4 What Seasonal Restrictions Will be Associated with the SMZs?

5.1.1.1.4.1 Alternative 1 Designate SMZs during periods when recreational fishery for black sea bass is open

Alternative 1 would designate SMZs only during periods when the recreational fishery for black sea bass is open. It would restrict fishing activities only when the recreational black sea bass fishery is open in order to reduce gear conflicts at the artificial reef sites.

Alternative 1 would not affect any ACLs so there would be no direct biological effects on the overall target species populations. Different types of fishing take place year round near and among the artificial sites, and fishing with pots/traps, trawls, and dredges have been documented on or near them. Any restricted fishing within the sites that takes place during the black sea bass recreational season would move out of the SMZs and take place next to the SMZs or in other areas. While there may be some indirect low positive impacts associated with a more orderly managed fishery, the area of the gear restrictions is a very small area (up to about 4 square nautical miles) compared to where the fisheries take place for the target species found on or near the reef site. Therefore, the impact of Alternative 1 on the overall target species population would be negligible.

Under Alternative 1, the program to maintain the artificial reefs may be in jeopardy of losing its U.S. FWS funding. FWS policy is not likely to continue to use SFR funding for artificial reefs that do not have a mechanism to allow for recreational fishing access. Since Alternative 1 would not provide year-round access to the recreational fleet it is unclear if funding for the maintenance of the artificial reefs would continue. If the reef is not maintained it would lose productivity over time. This would result in localized low negative impacts to the target species that utilize the SMZs.

Under this alternative the potential for gear conflicts between the recreational and commercial fishery may likely continue in the artificial reef sites when the recreational season for black sea bass is closed. This is because it is likely that some of the recreational fleet may remain on the artificial reefs after a black sea bass closure to fish for other species. While the potential for extended seasonal closures for black sea bass during the year is unknown, it is a concern. If black sea bass stock levels drop or catch levels rapidly increase, management actions to address

this may cause substantial recreational closed seasons to come into play. This would confound the attempt of this option to reduce gear conflicts on the artificial reef sites, because recreational fishing access would likely continue to be inhibited by the commercial activity allowed on the artificial reefs during the black sea bass recreational closures.

In summary, Alternative 1 would have negligible impacts on the overall target species population. However, Alternative 1 would have localized low negative impacts on target species at the reef sites if funding/maintenance is lost. Alternative 1 would have low negative impacts compared to Alternative 2 (year round gear restrictions) as a result of a less orderly fishery and the availability of funding for reef maintenance. Alternative 1 would likely have negligible impacts compared to Alternative 3 (gear restrictions during peak recreational fishing season) as both would have similar low negative impacts on target species.

5.1.1.1.4.2 Alternative 2- Designate SMZs year round (preferred alternative)

Alternative 2 would designate SMZ measures year round. This would provide comprehensive ability to restrict fishing activities in order to reduce gear conflicts at the artificial reef sites year round.

Alternative 2 would not affect any ACLs so there would be no direct biological effects on the overall target species populations. Different types of fishing take place year round near and among the artificial sites, and fishing with pots/traps, trawls, and dredges have been documented on or near them. Any restricted fishing that would have taken place in the SMZ would have to move out of the SMZs and take place next to the SMZs or in other areas. Under this alternative the gear conflicts between the recreational and commercial fishery would be reduced year-round. While there may be some indirect low positive impacts associated with a more orderly managed fishery, the area of the gear restrictions is a very small area (up to about 4 square nautical miles) compared to where the fisheries take place for the target species found on or near the reef site. Therefore, the impact of Alternative 2 on the overall target species population would be negligible.

Under Alternative 2, the program to maintain the artificial reefs would not be in jeopardy of losing its U.S. FWS funding. The FWS would allow continued use of SFR funding for the artificial reefs because they would have a mechanism to allow for recreational fishing access throughout the year. With continued funding for upkeep, the artificial reefs would maintain productivity over time. This would have localized low positive impacts on the target species inhabiting the SMZ reefs.

In summary, Alternative 2 would have negligible impacts on the overall target species population. However, Alternative 2 would have localized low positive impacts on target species at the reef sites due to continued maintenance of the reef. Alternative 2 would have low positive impacts compared to Alternative 1 (restrictions during the black sea bass season) and Alternative 3 (gear restrictions during peak recreational fishing season) as a result of a more orderly fishery and the availability of funding for reef maintenance.

5.1.1.1.4.3 Alternative 3- Designate SMZs during periods of peak recreational fishing effort (Memorial Day to Labor Day)

Alternative 3 would designate SMZs only during the peak recreational fishing periods from Memorial Day to Labor Day.

Alternative 3 would not affect any ACLs so there would be no direct biological effects on the overall target species populations. Different types of fishing take place year round near and among the artificial sites, and fishing with pots/traps, trawls, and dredges have been documented on or near them. Any restricted fishing within the sites that takes place during the black sea bass recreational season would move out of the SMZs and take place next to the SMZs or in other areas. While there may be some indirect low positive impacts associated with a more orderly managed fishery, the area of the gear restrictions is a very small area (up to about 4 square nautical miles) compared to where the fisheries take place for the target species found on or near the reef site. Therefore, the impact of Alternative 1 on the overall target species population would be negligible.

Under Alternative 3, the program to maintain the artificial reefs may be in jeopardy of losing its U.S. FWS funding. FWS policy is not to continue to use SFR funding for artificial reefs that do not have a mechanism to allow for recreational fishing access. Since Alternative 3 would not provide year-round access to the recreational fleet it is unclear if funding for the maintenance the artificial reefs would continue. If the reef is not maintained it would lose productivity over time. This would result in localized low negative impacts to the target species that utilize the SMZs.

Under this alternative the potential for gear conflicts between the recreational and commercial fishery would likely continue on the artificial reef sites outside of the peak recreational fishing season. This is because part of the recreational fleet normally remains in the area to fish on the artificial reefs in the off season (roughly October through May). This would confound the attempt of this alternative to reduce gear conflicts on the artificial reef sites, because recreational fishing access would likely continue to be inhibited by the commercial activity allowed on the artificial reefs during the off-season period.

In summary, Alternative 3 would have negligible impacts on the overall target species population. However, Alternative 3 would have localized low negative impacts on target species at the reef sites if funding/maintenance is lost. Alternative 1 would have low negative impacts compared to Alternative 2 (year round gear restrictions) as a result of a less orderly fishery and the availability of funding for reef maintenance. Alternative 3 would likely have negligible impacts compared to Alternative 2 (gear restrictions during black sea bass season) as both would have similar low negative impacts on target species.

5.1.1.2 Will the SMZ have a buffer around the artificial reef?

5.1.1.2.1 Alternative 1- No buffer

Alternative 1 would implement SMZs at designated artificial reef sites with no enforcement buffer area around the artificial reef sites. The enforcement area for the artificial reef sites would

be the exact area designated in the COE Permit for the sites totaling 14 km² (4.08 square nautical miles). Enforcing measures right at the COE designated lines would make enforcement of the SMZs difficult. This is because of the problem of dealing with the comparatively small area of the SMZs, which would have their exact COE lines subject to the movement of overlapping fishing gear caused by natural at sea processes that drift gear, lines, and buoys.

At 14 km² (4.08 square nautical miles), the designated total SMZ area would be smaller under Alternative 1 than Alternative 2 totaling 56.8 km² (16.56 square nautical miles) and Alternative 3 totaling 32 km² (9.32 square nautical miles). Alternative 1 would be less restrictive to commercial fishing than the other two buffer zone alternatives, but would also allow for a less orderly managed fishery. Therefore, Alternative 1 would have low negative impacts on target species compared to Alternatives 2 and 3.

5.1.1.2.2 Alternative 2- 1000 yard buffer (equivalent to 0.5 nautical miles)

Alternative 2 would implement a 0.9 km (1,000 yard) (0.5 nautical mile) enforcement buffer zone around the artificial reef sites designated as SMZs. The enforcement area around the sites would be the 0.5 nautical miles more around the outer boundary of the COE Border for the sites.

Even with the 0.5 nautical mile buffer, the total designated area for the artificial reef sites is a small area up to about 56.8 km² (16.56 square nautical miles) as compared to where the fisheries take place for the target species found on or near the reef site. With the 0.5 nautical mile buffer, fishing on the artificial sites could be easily controlled to reduce gear conflicts. Any fishing that might be restricted on the SMZs would move out of the SMZs to near the SMZs or other areas. Therefore, the impact of Alternative 2 on the overall target species population would be negligible.

Enforcing measures with the 0.5 nautical mile buffer around the COE designated lines would make enforcement of the SMZs more effective than Alternative 1 because it would remove the problem of dealing with the comparatively small area of the SMZs, having their exact COE lines, being overlapped by fishing gear affected by natural at sea processes that cause drifting gear, lines, and buoys.

Alternative 2 is the most restrictive buffer alternative to commercial fishing activities. It allows for easier enforcement of the artificial reef area within the SMZs, and therefore, provides for a more orderly managed fishery, when compared to the other two buffer alternatives. Therefore, Alternative 2 would have low positive impacts on target species compared to Alternatives 1 and 3.

5.1.1.2.3 Alternative 3- 500 yard buffer (equivalent to 0.25 nautical miles) (preferred alternative)

Alternative 3 would implement a 500 yard (4.6 km) (0.25 nautical mile) enforcement buffer zone around the artificial reef sites designated as SMZs. The enforcement area around the sites would be 0.25 nautical miles more around the outer boundary of the COE Border for the artificial reef sites.

Even with the 0.25 nautical mile buffer, the total designated area for the artificial reef sites is a small area (up to about 32 km²) (9.32 square nautical miles) as compared to where the fisheries take place for the target species found on or near the reef site. With the 0.25 nautical mile buffer, fishing on the artificial sites could be easily controlled to reduce gear conflicts. Any fishing that might be restricted on the SMZs would move out of the SMZs to near the SMZs or other areas. Therefore, the impact of Alternative 3 on the overall target species population would be negligible.

While not as effective as Alternative 2's 0.5 nautical mile buffer, Alternative 3's 0.25 nautical mile buffer mostly removes the problem of dealing with the comparatively small area of the SMZs, having their exact COE lines, being overlapped by fishing gear affected by natural at sea processes that cause drifting gear, lines, and buoys.

Alternative 3 is the second most restrictive buffer alternative to commercial fishing activities. It allows for easier enforcement of the artificial reef area within the SMZs, and therefore, provides for a more orderly managed fishery with low positive impacts to target species when compared to Alternative 1. However, Alternative 3 would have low negative impacts on target species compared to Alternative 2 because it would result in a somewhat less orderly fishery.

5.1.2 Impacts to Non-Target Species and Bycatch

5.1.2.1 Designation of Delaware permitted artificial reef sites as SMZs with associated gear and seasonal restrictions

5.1.2.1.1 No Action

The No Action alternative maintains the status quo. No SMZs would be designated and no gear or seasonal restrictions would be implemented on any of the artificial reef sites. There would be no direct impacts to the non-target and bycatch species populations on the artificial reefs. However, under the No Action Alternative gear conflicts between the recreational and commercial fishery would likely continue in some of the areas within the artificial reef sites. This could have some indirect, low negative impacts on non-target species and bycatch because gear conflicts can inhibit the orderly management of the fishery and the ability to control overall fishing effort among the commercial and recreational fishing groups.

Additionally, the program to maintain the artificial reefs would also be in jeopardy of losing its U.S. FWS funding because FWS policy is not to continue to use SFR funding for artificial reefs that do not have a mechanism to allow for recreational fishing access. Without continued funding for the maintenance the artificial reefs would lose productivity over time. This would result in localized low negative impacts to the non-target species and bycatch species that utilize the SMZs.

In summary, the No Action would have negligible impact on the overall population of non-target species, but would have localized low negative impacts on non-target and bycatch species at the artificial reefs.

5.1.2.1.2 Which Delaware permitted artificial reef sites will be designated as SMZs?

5.1.2.1.2.1 Alternative 1- Designate reef sites 9, 10, 11 and 13 as SMZ (preferred alternative)

Alternative 1 would solely provide for the ability to restrict gear use on four artificial reef sites. Fishing on the four artificial reef sites would be controlled by instituting measures to restrict fishing that causes gear conflicts. The fishing that would have taken place on the sites would shift out of the SMZs and take place next to the SMZs or in other areas. Alternative 1 would not affect any ACLs so there would be no direct biological effects on the overall non-target and bycatch species populations assuming there is a relatively constant ratio of non-target species and bycatch to target species. While there may be some indirect low positive impacts associated with a more orderly managed fishery, the area designated for the four artificial reef sites is a small area 14 km² to 56.8 km² (4.08 to 16.56 square nautical miles) depending on the buffer zone used) compared to where the fisheries take place for the major non-target species found on or near the reef site. Therefore, the impact of Alternative 1 on the overall non-target species population would be negligible.

Under Alternative 1, the program to maintain the artificial reefs would not be in jeopardy of losing its U.S. FWS funding. The FWS would allow continued use of SFR funding for the artificial reefs because they would have a mechanism to allow for recreational fishing access throughout the year. With continued funding for upkeep, the artificial reefs would maintain productivity over time. This would have localized low positive impacts on the non-target species inhabiting the SMZ reefs.

In summary, Alternative 1 would have negligible impact on the overall population of non-target species and bycatch. However, Alternative 1 would have localized low positive impacts on non-target species at the reef sites due to the maintenance of the reef. Since Alternative 1 would designate the most SMZs, it would have the most localized low positive impacts on non-target species compared to Alternatives 2 and 3.

5.1.2.1.2.2 Alternative 2- Designate reef sites 11 and 13 as SMZs (only sites with documented potential for gear conflicts)

Alternative 2 would implement SMZs at two of the artificial reef sites (sites 11 and 13 a). Out of the sites under consideration for SMZ designation, these two sites are the only sites that have documented potential for gear conflicts.

Alternative 2 would solely provide for the ability to restrict gear use on all two of the artificial reef sites. Fishing on artificial reef sites 11 and 13 would be controlled by instituting measures to restrict fishing that causes gear conflicts. The fishing that would have taken place on the sites would shift out of the SMZs and take place next to the SMZs or in other areas. Alternative 2 would not affect any ACLs so there would be no direct biological effects on the overall non-target and bycatch species populations assuming there is a relatively constant ratio of non-target species and bycatch to target species. While there may be some indirect low positive impacts

associated with a more orderly managed fishery, the area designated for the three artificial reef sites is a small area 7.6 km² to 30 km² (about 2.2 to 8.74 square nautical miles) depending on the buffer zone used compared to where the fisheries take place for the major non-species found on or near the reef sites. Therefore, the impact of Alternative 3 on the overall non-target species and bycatch population would be negligible.

Under Alternative 2, the program to maintain two of the artificial reefs would not be in jeopardy of losing its U.S. FWS funding. The FWS would allow continued use of SFR funding for the artificial reefs because they would have a mechanism to allow for recreational fishing access throughout the year. With continued funding for upkeep, the artificial reefs would maintain productivity over time. This would have low positive impacts on the non-target species inhabiting the SMZ reefs.

In summary, Alternative 2 would have negligible impact on the overall population of non-target species and bycatch. However, Alternative 2 would have localized low positive impacts on non-target species at the SMZ reef sites do to the maintenance of the reef. Since Alternative 2 designates the least number of SMZ sites, it would have the least localized low positive impacts on non- target species compared to Alternatives 1 and 3.

5.1.2.1.2.3 Alternative 3- Designate reef sites 9, 10 and 13 as SMZs, but not site 11

Alternative 3 would implement SMZs at three of the artificial reef sites (sites 9, 10 and 13), and not at artificial reef site 11. Out of the sites considered for SMZ designation, site 11 was the only site with documented commercial activity near it before the artificial reefs were created. It also has the most potential for gear conflict because it is the most used site by the recreational fisheries sector, and has documented commercial activity on or near it.

Alternative 3 would solely provide for the ability to restrict gear use on three artificial reef sites. Fishing on the three artificial reef sites would be controlled by instituting measures to restrict fishing that causes gear conflicts. The fishing that would have taken place on the sites that would shift out of the SMZs and take place next to the SMZs or move to other areas. Alternative 3 would not affect any ACLs so there would be no direct biological effects on the overall non-target and bycatch species populations assuming there is a relatively constant ratio of non-target species and bycatch to target species. While there may be some indirect low positive impacts associated with a more orderly managed fishery, the area designated for the three artificial reef sites is a comparatively very small area 9.9 to 41.6 km² (about 2.88 to 12.13 square nautical miles) depending on the buffer zone use as compared to where the fisheries take place for the major non-target species found on or near the reef site. Therefore, the impact of Alternative 3 on the overall non-target species populations would be negligible.

Under Alternative 3, the program to maintain three artificial reefs would not be in jeopardy of losing its U.S. FWS funding. The FWS would allow continued use of SFR funding for the artificial reefs because they would have a mechanism to allow for recreational fishing access throughout the year. With continued funding for upkeep, the artificial reefs would maintain productivity over time. This would have localized low positive impacts on the non-target species inhabiting the SMZ reefs.

In summary, Alternative 3 would have negligible impact on the overall population of non-target species and bycatch. However, Alternative 3 would have localized low positive impacts on non-target species at the SMZ reef sites due to the maintenance of the reef. Alternative 3 would provide less localized positive benefits than the alternative that designates 5 SMZs (Alternative 1), and more localized positive benefits than the alternative that designates 3 SMZs (Alternative 2).

5.1.2.1.3 What Gear Restrictions Will be Associated with the SMZs?

5.1.2.1.3.1 Alternative 1- Prohibit use of fixed pot/trap gear on sites designated as SMZs

Alternative 1 would prohibit the use of fixed pot/trap gear on the SMZs.

Fixed pot/trap gear has the most potential for gear conflict on the artificial reef sites because it is the most used commercial gear on the sites (primarily for black sea bass), and the lines from pot/trap gear are cited by the recreational fishery sector as inhibiting their ability to fish the reefs. The pot/trap lines disrupt the ability to drift hooks over the artificial reefs, and, therefore, make the artificial reefs inaccessible to recreational fishing. Black sea bass pot fishing is the most documented directed commercial fishery on or near the reef sites, and black sea bass vessels with Federal permits fishing in the area can be allowed a 100 lb American lobster catch per day (50 CFR 697.26). Also, commercial channeled whelk fishing, which uses pots/traps, has been reported near the sites.

Commercial black sea bass fishing on artificial reefs could still take place by commercial hook and line fishing, and any restricted trap/pot fishing would likely move to the areas next to the SMZs or to other areas. While this alternative addresses the current issues of fixed trap/pot fishing inhibiting access of the recreational fleet to the artificial reefs, it does not protect against other commercial gear being used on the artificial sites that could damage the artificial reefs (such as trawls or dredges) or inhibit recreational fishing access (such as gillnets).

Alternative 1 would not affect any ACLs so there would be no direct biological effects on the overall non-target and bycatch species populations assuming there is a relatively constant ratio of non-target species and bycatch to target species. While there may be some indirect low positive impacts associated with a more orderly managed fishery, the area of the gear restrictions is a very small area (up to about 4 square nautical miles) compared to where the fisheries take place for the major non-species found on or near the reef site. Therefore, the impact of Alternative 1 on the overall non-target species population would be negligible.

Under Alternative 1, the program to maintain the artificial reefs would likely not be in jeopardy of losing its U.S. FWS funding. The FWS would likely allow continued use of SFR funding for the artificial reefs because the major gear conflict on the reefs would be eliminated. With continued funding for upkeep, the artificial reefs would maintain productivity over time. This would have localized low positive impacts on the non-target species inhabiting the SMZ reefs.

In summary, Alternative 1 would have negligible impact on the overall population of non-target and bycatch species. However, Alternative 1 would likely have localized low positive impacts on non-target species at the reef sites due to the maintenance of the reef. While Alternative 1 may have less low positive impacts than Alternative 2 due to a less orderly fishery, these impacts are indirect and minor. Therefore, Alternative 1 would have negligible impacts on non-target species compared to Alternative 2.

5.1.2.1.3.2 Alternative 2- Restrict fishing activities in designated SMZ sites to hook & line and spear fishing gear only (preferred alternative)

Alternative 2 would restrict fishing activities in the designated SMZ sites to hook & line and spear fishing gear only (including the taking by hand). Commercial black sea bass fishing on artificial reefs could still take place by commercial hook and line fishing, and any restricted trap/pot fishing would likely move to the areas next to the SMZs or to other areas.

Alternative 2 protects against all commercial gear being used on the artificial sites that could damage the artificial reefs (such as trawls or dredges) or inhibit recreational fishing access (such as gillnets). The commercial gear would likely move to the areas next to the SMZs or to other areas.

Alternative 2 would not affect any ACLs so there would be no direct biological effects on the overall non-target and bycatch species populations assuming there is a relatively constant ratio of non-target species and bycatch to target species. While there may be some indirect low positive impacts associated with a more orderly managed fishery, the area of the gear restrictions is a very small area (up to about 4 square nautical miles) compared to where the fisheries take place for the major non-species found on or near the reef site. Therefore, the impact of Alternative 1 on the overall non-target species population would be negligible.

Under Alternative 2, the program to maintain the artificial reefs would not be in jeopardy of losing its U.S. FWS funding. The FWS would allow continued use of SFR funding for the artificial reefs because gear conflicts on the reefs would be eliminated. With continued funding for upkeep, the artificial reefs would maintain productivity over time. This would have localized low positive impacts on the non-target species inhabiting the SMZ reefs.

In summary, Alternative 2 would have negligible impact on the overall population of non-target and bycatch species. However, Alternative 2 would have localized low positive impacts on non-target species at the reef sites due to the maintenance of the reef. While Alternative 2 may have more low positive impacts than Alternative 1 due to a more orderly fishery, these impacts are indirect and minor. Therefore, Alternative 1 would have negligible impacts on non-target and bycatch species compared to Alternative 2.

5.1.2.1.4 What Seasonal Restrictions Will be Associated with the SMZs?

5.1.2.1.4.1 Alternative 1 Designate SMZs during periods when recreational fishery for black sea bass is open

Alternative 1 would designate SMZs only during periods when the recreational fishery for black sea bass is open. It would restrict fishing activities only when the recreational black sea bass fishery is open in order to reduce gear conflicts at the artificial reef sites.

Alternative 1 would not affect any ACLs so there would be no direct biological effects on the overall non-target and bycatch species populations assuming there is a relatively constant ratio of non-target species and bycatch to target species. Different types of fishing take place year round near and among the artificial sites, and fishing with pots/traps, trawls, and dredges have been document on or near them. Any restricted fishing within the sites that takes place during the black sea bass recreational season would move out of the SMZs and take place next to the SMZs or in other areas. While there may be some indirect low positive impacts associated with a more orderly managed fishery, the area of the gear restrictions is a very small area (up to about 4 square nautical miles) compared to where the fisheries take place for the major non-target species found on or near the reef site. Therefore, the impact of Alternative 1 on the overall non-target species population would be negligible.

Under Alternative 1, the program to maintain the artificial reefs may be in jeopardy of losing its U.S. FWS funding. FWS policy is not to continue to use SFR funding for artificial reefs that do not have a mechanism to allow for recreational fishing access. Since Alternative 1 would not provide year-round access to the recreational fleet it is unclear if funding for the maintenance of the artificial reefs would continue. If the reef is not maintained it would lose productivity over time. This would result in localized low negative impacts to the non-target species that utilize the SMZs.

Under this alternative the potential for gear conflicts between the recreational and commercial fishery may likely continue in the artificial reef sites when the recreational season for black sea bass is closed. This is because it is likely that some of the recreational fleet may remain on the artificial reefs after a black sea bass closure to fish for other species. While the potential for extended seasonal closures for black sea bass during the year is unknown, it is a concern. If black sea bass stock levels drop or catch levels rapidly increase, management actions to address this may cause substantial recreational closed seasons to come into play. This would confound the attempt of this option to reduce gear conflicts on the artificial reef sites, because recreational fishing access would likely continue to be inhibited by the commercial activity allowed on the artificial reefs during the black sea bass recreational closures.

In summary, Alternative 1 would have negligible impacts on the overall non-target species population. However, Alternative 1 would have localized low negative impacts on non-target species at the reef sites if funding/maintenance is lost. Alternative 1 would have low negative impacts compared to Alternative 2 (year round gear restrictions) as a result of a less orderly fishery and the availability of funding for reef maintenance. Alternative 1 would likely have

negligible impacts compared to Alternative 3 (gear restrictions during peak recreational fishing season) as both would have similar low negative impacts on non-target species.

5.1.2.1.4.2 Alternative 2- Designate SMZs year round (preferred alternative)

Alternative 2 would designate SMZ measures year round. This would provide comprehensive ability to restrict fishing activities in order to reduce gear conflicts at the artificial reef sites year round.

Alternative 2 would not affect any ACLs so there would be no direct biological effects on the overall non-target and bycatch species populations assuming there is a relatively constant ratio of non-target species and bycatch to target species. Different types of fishing take place year round near and among the artificial sites, and fishing with pots/traps, trawls, and dredges have been documented on or near them. Any restricted fishing that would have taken place in the SMZ would have to move out of the SMZs and take place next to the SMZs or in other areas. Under this alternative the gear conflicts between the recreational and commercial fishery would be reduced year-round. While there may be some indirect low positive impacts associated with a more orderly managed fishery, the area of the gear restrictions is a very small area (up to about 4 square nautical miles) compared to where the fisheries take place for the major non-target species found on or near the reef site. Therefore, the impact of Alternative 2 on the overall non-target species population would be negligible.

Under Alternative 2, the program to maintain the artificial reefs would not be in jeopardy of losing its U.S. FWS funding. The FWS would allow continued use of SFR funding for the artificial reefs because they would have a mechanism to allow for recreational fishing access throughout the year. With continued funding for upkeep, the artificial reefs would maintain productivity over time. This would have localized low positive impacts on the non-target species inhabiting the SMZ reefs.

In summary, Alternative 2 would have negligible impacts on the overall non-target and bycatch species population. However, Alternative 2 would have localized low positive impacts on non-target species at the reef sites due to continued maintenance of the reef. Alternative 2 would have low positive impacts compared to Alternative 1 (restrictions during the black sea bass season) and Alternative 3 (gear restrictions during peak recreational fishing season) as a result of a more orderly fishery and the availability of funding for reef maintenance.

5.1.2.1.4.3 Alternative 3- Designate SMZs during periods of peak recreational fishing effort (Memorial Day to Labor Day)

Alternative 3 would designate SMZs only during the peak recreational fishing periods from Memorial Day to Labor Day.

Alternative 3 would not affect any ACLs so there would be no direct biological effects on the overall non-target and bycatch species populations assuming there is a relatively constant ratio of non-target species and bycatch to target species. Different types of fishing take place year round near and among the artificial sites, and fishing with pots/traps, trawls, and dredges have been documented on or near them. Any restricted fishing within the sites that takes place during the

black sea bass recreational season would move out of the SMZs and take place next to the SMZs or in other areas. While there may be some indirect low positive impacts associated with a more orderly managed fishery, the area of the gear restrictions is a very small area (up to about 4 square nautical miles) compared to where the fisheries take place for the major non-species found on or near the reef site. Therefore, the impact of Alternative 3 on the overall non-target species population would be negligible.

Under Alternative 3, the program to maintain the artificial reefs may be in jeopardy of losing its U.S. FWS funding. FWS policy is not to continue to use SFR funding for artificial reefs that do not have a mechanism to allow for recreational fishing access. Since Alternative 3 would not provide year-round access to the recreational fleet it is unclear if funding for the maintenance the artificial reefs would continue. If the reef is not maintained it would lose productivity over time. This would result in localized low negative impacts to the non-target species that utilize the SMZs.

Under this alternative the potential for gear conflicts between the recreational and commercial fishery would likely continue on the artificial reef sites outside of the peak recreational fishing season. This is because part of the recreational fleet normally remains in the area to fish on the artificial reefs in the off season (roughly October through May). This would confound the attempt of this alternative to reduce gear conflicts on the artificial reef sites, because recreational fishing access would likely continue to be inhibited by the commercial activity allowed on the artificial reefs during the off-season period.

In summary, Alternative 3 would have negligible impacts on the overall non-target species and bycatch population. However, Alternative 3 would have localized low negative impacts on non-target species at the reef sites if funding/maintenance is lost. Alternative 1 would have low negative impacts compared to Alternative 2 (year round gear restrictions) as a result of a less orderly fishery and the availability of funding for reef maintenance. Alternative 3 would likely have negligible impacts compared to Alternative 2 (gear restrictions during black sea bass season) as both would have similar low negative impacts on non-target species and bycatch.

5.1.2.2 Will the SMZ have a buffer around the artificial reef?

5.1.2.2.1 Alternative 1- No buffer

Alternative 1 would implement SMZs at designated artificial reef sites with no enforcement buffer area around the artificial reef sites. The enforcement area around the artificial reef sites would be the exact area designated in the COE Permit for the sites. Enforcing measures right at the COE designated lines would make enforcement of the SMZs difficult. This is because of the problem of dealing with the comparatively small area of the SMZs, which would have their exact COE lines subject to the movement of overlapping fishing gear caused by natural at sea processes that drift gear, lines, and buoys.

At 14 km² (4.08 square nautical miles) the designated SMZ total area would be smaller under Alternative 1 than Alternative 2 (56.8 km²) (16.56 square nautical miles) and Alternative 3 (32 km²) (9.32 square nautical miles). Alternative 1 would be less restrictive to commercial fishing

than the other two other buffer zone alternatives, but would also allow for a less orderly managed fishery. Therefore, Alternative 1 would have low negative impacts on non-target species and bycatch compared to Alternatives 2 and 3.

5.1.2.2.2 Alternative 2- 1000 yard buffer (equivalent to 0.5 nautical miles)

Alternative 2 would implement a 0.9 km (1,000 yard) (0.5 nautical mile) enforcement buffer zone around the artificial reef sites designated as SMZs. The enforcement area around the sites would be the 0.5 nautical miles more around the outer boundary of the COE Border for the sites.

Even with the 0.5 nautical mile buffer, the total designated area for the artificial reef sites is a small area up to about 56.8 km² (16.56 square nautical miles) as compared to where the fisheries take place for the major non-target species found on or near the reef site. With the 0.5 nautical mile buffer, fishing on the artificial sites could be easily controlled to reduce gear conflicts. Any fishing that might be restricted on the SMZs would move out of the SMZs to near the SMZs or other areas. Therefore, the impact of Alternative 2 on the overall non-target species population would be negligible.

Enforcing measures with the 0.5 nautical mile buffer around the COE designated lines would make enforcement of the SMZs more effective than Alternative 1 because it would remove the problem of dealing with the comparatively small area of the SMZs, having their exact COE lines, being overlapped by fishing gear affected by natural at sea processes that cause drifting gear, lines, and buoys.

Alternative 2 is the most restrictive buffer alternative to commercial fishing activities. It allows for easier enforcement of the artificial reef area within the SMZs, and therefore, provides for a more orderly managed fishery, when compared to the other two buffer alternatives. Therefore, Alternative 2 would have low positive impacts on non-target species and bycatch compared to Alternatives 1 and 3.

5.1.2.2.3 Alternative 3- 500 yard buffer (equivalent to 0.25 nautical miles) (preferred alternative)

Alternative 3 would implement a 500 yard (4.6 km²)(0.25 nautical mile) enforcement buffer zone around the artificial reef sites designated as SMZs. The enforcement area around the sites would be 0.25 nautical miles more around the outer boundary of the COE Border for the artificial reef sites.

Even with the 0.25 nautical mile buffer, the total designated area for the artificial reef sites is a small area (32 km²) (9.32 square nautical miles) as compared to where the fisheries take place for the major non-target species found on or near the reef site. With the 0.25 nautical mile buffer, fishing on the artificial sites could be easily controlled to reduce gear conflicts. Any fishing that might be restricted on the SMZs would move out of the SMZs to areas near the SMZs or other areas. Therefore, the impact of Alternative 3 on the overall non-target species population would be negligible.

While not as effective as Alternative 2's 0.5 nautical mile buffer, Alternative 3's 0.25 mile buffer mostly removes the problem of dealing with the comparatively small area of the SMZs, having their exact COE lines, being overlapped by fishing gear affected by natural at sea processes that cause drifting gear, lines, and buoys.

Alternative 3 is the second most restrictive buffer alternative to commercial fishing activities. It allows for easier enforcement of the artificial reef area within the SMZs, and therefore, provides for a more orderly managed fishery with low positive impacts to non-target species when compared to Alternative 1. However, Alternative 3 would have low negative impacts on non-target species compared to Alternative 2 because it would result in a less orderly fishery.

5.1.3 Impacts to Habitat

5.1.3.1 Designation of Delaware permitted artificial reef sites as SMZs with associated gear and seasonal restrictions

5.1.3.1.1 No Action

The No Action alternative maintains the *status quo*. No SMZs would be designated and no gear or seasonal restrictions would be implemented on any of the artificial reef sites. Commercial and recreational fishing on the reefs would remain unrestricted. The potential for habitat damage from the use of commercial gears that could damage habitat (especially trawls or dredges) on the artificial reef sites would continue. Also, gear conflicts between the recreational and commercial fishery would likely continue in some of the areas within the artificial reef sites.

Additionally, the program to maintain the artificial reefs would be in jeopardy of losing its U.S. FWS funding because FWS policy is not to continue to use SFR funding for artificial reefs that do not have a mechanism to allow for recreational fishing access. Without continued funding for the maintenance of the artificial reefs, the habitat would degrade over time.

While the No Action would have low negative impacts on the habitat at the four artificial reef sites, the reefs comprise a very small area 14 km² (4.08 square nautical miles) compared to the habitat for the major species found on or near the reef sites.

In summary, the No Action would have low negative impacts on the habitat at the artificial reefs. However, the impact of No Action on the overall habitat would be negligible.

5.1.3.1.2 Which Delaware permitted artificial reef sites will be designated as SMZs?

5.1.3.1.2.1 Alternative 1- Designate reef sites 9, 10, 11 and 13 as SMZ (preferred alternative)

Alternative 1 would implement SMZs at four reef sites. There would be low positive impacts to habitat at all the artificial reef sites as commercial fishing on the reef sites could be restricted through the SMZ.

Black sea bass pot fishing is the most common commercial fishing on the artificial reef sites. Also, whelk and lobster fishing take place near the sites. Having the ability to restrict the use of commercial pots/traps from the reef may have low positive effects to habitat over time because of the damage to habitat that the black sea bass, whelk, or lobster pots and/or their lines would have on the bottom habitat would be restricted or eliminated. It would provide the ability to protect the small highly productive habitat areas on the artificial reef sites. The degree of habitat benefits would depend on the gear restrictions put in place by the SMZ. Overall, Alternative 1, at a minimum, would protect more artificial reef habitat 14 km² (4.08 square nautical miles) than all other SMZ designation options. Depending on the buffer zone selected to improve enforcement of the SMZs from 14 km² to 56.8 km² (4.08 to 16.56 square nautical miles) of habitat could be protected.

Under Alternative 1, the program to maintain the artificial reefs would not be in jeopardy of losing its U.S. FWS funding. The FWS would allow continued use of SFR funding for the artificial reefs because they would have a mechanism to allow for recreational fishing access throughout the year. With continued funding for upkeep, the artificial reefs would maintain habitat quality over time. This would have localized low positive impacts on the habitat at the SMZ reefs.

However, since the reef sites are only a very small portion 14 km² (4.08 nautical square miles) of the greater habitat in the region and commercial fishing effort would likely still occur adjacent to the SMZ or other areas, overall impacts on habitat would be negligible compared to the No Action.

5.1.3.1.2.2 Alternative 2- Designate reef sites 11 and 13 as SMZs (only sites with documented potential for gear conflicts)

Alternative 2 would implement SMZs at two artificial reef sites. These sites have documented potential for gear conflicts. Commercial fishing on the two reef sites could be restricted through the SMZs. Black sea bass pot fishing is the most common commercial fishing on the artificial reef sites. Also, whelk and lobster fishing take place near the sites. Alternative 2 would protect the small highly productive habitat areas on the two artificial reef sites. It would have similar low positive impacts at the SMZ artificial reef sites as discussed in Alternative 1. However, these localized benefits would only occur at reef sites 11 and 13 which cover approximately 2.2 nautical square miles of bottom habitat. Alternative 2 would not provide for a mechanism to protect the remaining two artificial reef sites (sites 9 and 10). Therefore, Alternative 2 would have low negative impacts on the habitat at the reef sites compared to Alternative 1, Alternative 3, and the No Action.

Because the reef sites are only a very small portion (7.6 to 30 km²) (2.2 to 8.74 nautical square miles), depending on the buffer used, of the greater habitat in the region, and because displaced commercial fishing effort would likely still occur adjacent to the SMZ or in other areas, the overall impacts on habitat from Alternative 2 would be negligible.

5.1.3.1.2.3 Alternative 3- Designate reef sites 9, 10 and 13 as SMZs, but not site 11

Alternative 3 would implement SMZs at three artificial reef sites. Site 11 would not receive SMZ status. Site 11 has documented commercial use pre and post its' artificial reef COE designation, and is also highly used by the recreational sector.

Alternative 3 would protect the small highly productive habitat areas on the three artificial reef sites. It would have similar positive impacts at the SMZ artificial reef sites as discussed in Alternative 1. However, these localized benefits would only occur at reef sites 9, 10 and 13 which cover approximately 2.88 nautical square miles of bottom habitat. Alternative 3 would not provide for a mechanism to protect the habitat at site 11 from degradation by commercial fishing gear. Therefore, Alternative 3 would have low negative impacts on the habitat at the reef sites compared to Alternative 1, and low positive impacts compared to Alternative 2 and the No Action.

Because the reef sites are only a very small portion (9.9 to 41.6 km²) (2.88 to 12.13 nautical square miles), depending on the buffer used, of the overall habitat in the region and displaced commercial fishing effort would likely still occur adjacent to the SMZ or in other areas, the overall impact of Alternative 3 on habitat would be negligible.

5.1.3.1.3 What Gear Restrictions Will be Associated with the SMZs?

5.1.3.1.3.1 Alternative 1- Prohibit use of fixed pot/trap gear on sites designated as SMZs

Alternative 1 would prohibit fixed pot/trap gear at all SMZ artificial reef sites. Fixed pot/trap gear has the most potential for gear conflict on the artificial reef sites because it is the most used commercial gear on the sites (primarily for black sea bass), and the lines from pot/trap gear are cited by the recreational fishery sector as inhibiting their ability to fish the reefs. The pot/trap lines disrupt the ability to drift hooks over the artificial reefs, and, therefore, make the artificial reefs inaccessible to recreational fishing. Also, commercial channeled whelk fishing, which uses pots/traps, has been reported near the sites. Commercial black sea bass fishing on artificial reefs could still take place by commercial hook and line fishing, and any restricted trap/pot fishing would likely move to the areas next to the SMZs or to other areas. While this alternative addresses the current issues of fixed trap/pot fishing inhibiting access of the recreational fleet to the artificial reefs, it does not protect against other commercial gear being used on the artificial sites that could damage the artificial reefs (such as trawls or dredges) or inhibit recreational fishing access (such as gillnets).

Alternative 1 would restrict the use of pots/traps from the reef and may have some low positive impacts on habitat at the SMZ artificial reefs over time because of the destruction of habitat that the black sea bass, whelk, or lobster pots/traps and/or their lines would have on the bottom habitat.

Additionally, the program to maintain the artificial reefs would likely not be in jeopardy of losing its U.S. FWS funding. The FWS would likely allow continued use of SFR funding for the artificial reefs because the major gear conflict on the reefs would be eliminated. With continued

funding for upkeep, the artificial reefs would maintain productivity over time. This would have localized low positive impacts on the target species inhabiting the SMZ reefs.

However, depending on the buffer zone selected and the number of reefs designated as SMZs the area with gear restrictions would be a very small portion 14 km² to 56.8 km² (4.08 to 16.56 square nautical miles), of the overall habitat in the region and the displaced commercial fishing effort would likely still occur adjacent to the SMZ or in other areas, overall impacts on habitat would be negligible compared to the No Action.

Overall, Alternative 1 would have negligible habitat impacts, but it would slightly better protect the small highly productive habitat areas on the artificial reef sites compared to the No Action because recreational fishing and pot/trap fishing is the major gear current gear conflict on the artificial reef sites.

5.1.3.1.3.2 Alternative 2- Restrict fishing activities in designated SMZ sites to hook & line and spear fishing gear only (preferred alternative)

Alternative 2 would restrict fishing activities in the designated SMZs to hook and line and spearfishing (including the taking by hand). Alternative 2 protects against all commercial gear being used on the artificial sites that could damage the artificial reefs (such as trawls or dredges) or inhibit recreational fishing access (such as gillnets). The commercial gear would likely move to the areas next to the SMZs or to other areas.

Alternative 2 would restrict the use of commercial gear on the SMZ artificial reef sites to only hook and line. This would have some low positive impacts on habitat at the SMZ artificial reefs over time because of the destruction of habitat would be reduced. These low positive benefits would be greater than Alternative 1 because more gear that could damage the reefs would be restricted.

Additionally, the program to maintain the artificial reefs would not be in jeopardy of losing its U.S. FWS funding. The FWS would allow continued use of SFR funding for the artificial reefs because gear conflicts would be minimized. With continued funding for upkeep, the artificial reefs would maintain productivity over time. This would have localized low positive impacts on the habitat at the SMZ reefs.

While there may be some low positive impacts at the artificial reef sites, the area of the gear restrictions is a small area, and restricted gears would likely shift to areas near the SMZs or other areas. Depending on the buffer zone selected and the number of reefs designated as SMZs, from 14 km² to 56.8 km² (4.08 to 16.56 square nautical miles) would have restricted gear use compared to the overall habitat for the major species found on or near the reef sites. Therefore, the impact of Alternative 2 on habitat would be negligible overall.

In summary, Alternative 2 would have negligible impact on the overall habitat of the region. However, Alternative 2 would have localized low positive impacts on habitat at the reef sites due to the continued maintenance of the reef and greater restrictions on commercial gear when compared to Alternative 1 and the No Action.

5.1.3.1.4 What Seasonal Restrictions Will be Associated with the SMZs?

5.1.3.1.4.1 Alternative 1 Designate SMZs during periods when recreational fishery for black sea bass is open

Alternative 1 would restrict fishing activities in designated SMZ sites only during periods when the recreational fishery for black sea bass is open. Since black sea bass, whelk and lobster, fishing take place on or near the artificial reef sites, an SMZ period closure during the recreational season could restrict commercial gear use on the artificial reefs protecting the artificial reef sites from the possible effects of more habitat destruction during the recreational fishing season. Therefore, Alternative 1 would provide localized low positive benefits to the bottom habitat at the artificial reefs designated as SMZs. Restricting the use of commercial pots/traps and dredges would protect the artificial reef sites from the possible effects of more habitat destruction during the recreational fishing season.

However, the program to maintain the artificial reefs may be in jeopardy of losing its U.S. FWS funding. FWS policy is not to continue to use SFR funding for artificial reefs that do not have a mechanism to allow for recreational fishing access year round. Because Alternative 1 would not provide year-round access to the recreational fleet it is unclear if funding for the maintenance of the artificial reefs would continue. If the reef is not maintained it would lose habitat productivity over time. This would result in localized low negative impacts to the habitat at the SMZs.

Restricted gears would likely shift to areas near the SMZs or other areas. Depending on the buffer zone selected and the number of reefs designated as SMZs, from 14 km² to 56.8 km² (4.08 to 16.56 square nautical miles) would have restricted gear use during the black sea bass season. The gears restricted would likely shift to areas near the SMZs or to other areas. However, compared to the overall habitat for the major species found on or near the reef sites this is a small area. Therefore, the impact of Alternative 2 on habitat would be negligible overall.

Although it should provide more habitat protection than the No Action, Alternative 1 is expected to result in negligible impacts to habitat protection overall. Additionally, because the black sea bass fishery would likely not be open year round, SMZ habitat would not be guaranteed to be protected year round.

In summary, Alternative 1 would have negligible impacts habitat overall. Due primarily to the length of the closure restricting destructive commercial gear, Alternative 1 would have low negative impacts on habitat at the SMZ sites when compared with Alternative 2, and likely low positive impacts when compared to Alternative 3, as long as there are no extended closures to the recreational black sea bass fishing season.

5.1.3.1.4.2 Alternative 2- Designate SMZs year round (preferred alternative)

Alternative 2 would designate SMZs year round. There would no periods without a mechanism to restrict fisheries. Since black sea bass, whelk and lobster fishing take place on or near the artificial reef sites, a year round SMZ period would restrict commercial gear use on the artificial reefs providing protection at the artificial reef sites from the possible effects of habitat

destruction by commercial fishing gear throughout the year. Therefore, Alternative 2 would provide localized low positive benefits to the bottom habitat at the artificial reefs designated as SMZs. Restricted gears would likely shift to areas near the SMZs or other areas.

However, the program to maintain the artificial reefs would not be in jeopardy of losing its U.S. FWS funding. The FWS would allow continued use of SFR funding for the artificial reefs because they would have a mechanism to allow for recreational fishing access throughout the year. With continued funding for upkeep, the artificial reefs would maintain productivity over time. This would have localized low positive impacts on the habitat at the SMZ reefs.

Depending on the buffer zone selected and the number of reefs designated as SMZs, from 14 km² to 56.8 km² (4.08 to 16.56 square nautical miles) would have restricted gear use. The SMZ area is small compared to the total habitat area for the species fished for on the artificial reefs. Therefore, Alternative 2 would have negligible impacts to habitat overall. Since the SMZ would be in place year round, Alternative 3 would provide more habitat protection and low positive impacts compared to Alternatives 1 and 3.

5.1.3.1.4.3 Alternative 3- Designate SMZs during periods of peak recreational fishing effort (Memorial Day to Labor Day)

Alternative 3 would designate SMZ sites only during the peak recreational fishing period from Memorial Day to Labor Day. Therefore, it would implement a mechanism that could only restrict fishing activities in the artificial reef sites from Memorial Day to Labor Day. This could result in some low positive impacts to the habitat at the artificial reef sites, because commercial gears destructive to habitat could be restricted during this part of the year. Restricted gears would likely shift to areas near the SMZs or other areas.

However, the program to maintain the artificial reefs could be in jeopardy of losing its U.S. FWS funding. FWS policy is not to continue to use SFR funding for artificial reefs that do not have a mechanism to allow for recreational fishing access. Since Alternative 3 would not provide year-round access to the recreational fleet it is unclear if funding for the maintenance of the artificial reefs would continue. If the reef is not maintained it would lose habitat productivity over time. This would result in localized low negative impacts to the habitat at the SMZs.

Depending on the buffer zone selected and the number of reefs designated as SMZs, from 14 km² to 56.8 km² (4.08 to 16.56 square nautical miles) would have restricted gear use Memorial Day to Labor Day. The total habitat area protected is small when compared to the total habitat for black sea bass, lobster and whelk in the region. Therefore, Alternative 3 would result in negligible impacts to overall habitat, but it has the potential to protect the small highly productive habitat areas on the artificial reef sites during part of the year. Alternative 3 would provide less habitat protection, and, therefore, would have low negative impacts to habitat compared with Alternative 2, as well as Alternative 1, as long as there are no extended closures to the recreational fishing season.

5.1.3.2 Will the SMZ have a buffer around the artificial reef?

5.1.3.2.1 Alternative 1- No buffer

Alternative 1 would implement SMZs at the artificial reef sites with no enforcement area buffer around the sites. The enforcement area around the sites would be the exact area designated in the COE Permit for the sites. Any restrictions to gear use on the artificial reef sites would be enforced strictly to the area designated by the COE Permit. The designated total SMZ area would 14 km² (4.08 square nautical miles). This would be smaller than other alternatives with buffer areas, and is a very small area compared to the overall habitat in the region. Therefore, Alternative 1 would have negligible impacts on overall habitat.

Enforcement of commercial fishing regulations for these species in and around the SMZs would be difficult because of the problems enforcing gear exactly at the designated border of the COE Artificial Reef Permit Border (COE Border). Enforcement right at the COE Border is difficult because of the varied at sea behavior of drifting gear, lines, and buoys. Some low negative impacts to habitat could occur under Alternative 1 if enforceability is limited and commercial gear drifted onto the reef.

5.1.3.2.2 Alternative 2- 1000 yard buffer (equivalent to 0.5 nautical miles)

Alternative 2 would implement SMZs with a 0.9 km (1,000 yard) (0.5 nautical mile) enforcement buffer zone around the artificial reef sites designated as SMZs.

The enforcement area around the sites would be extended out 0.5 nautical miles farther than the exact area designated in the COE Permit for the sites. Enforcing gear lines out to 0.5 nautical miles beyond the COE Border would reduce the difficulty of dealing with the varied at sea behavior of drifting gear, lines, and buoys around the comparatively small SMZ areas.

The 0.5 nautical mile buffer would designated the most area for the SMZs, thereby, protecting the most habitat. It would also be the most enforceable of all buffer alternatives. Therefore, Alternative 2 would have low positive impacts on habitat compared to Alternatives 1 and 3. The total area protected is a small area up from 30 to 56.8 km² (8.74 to 16.56 square nautical miles) depending on the number of SMZ designations, compared to the total habitat in the region. Therefore, Alternative 2 would have negligible impacts on habitat overall. However, the buffer would ensure that the highly productive bottom habitat on the artificial reef sites can be properly protected.

5.1.3.2.3 Alternative 3- 500 yard buffer (equivalent to 0.25 nautical miles) (preferred alternative)

Alternative 3 would implement SMZs with a 500 yard (0.25 nautical mile) area enforcement buffer around the artificial reef sites. The enforcement area around the sites would be extended out 0.25 nautical miles farther than the exact area designated in the COE Permit for the sites.

The 0.25 nautical mile buffer would designate the second most area for the SMZs from 17.1 to 32 km² (4.98 to 9.32 square nautical miles) depending on the number of SMZ designations. This

therefore, protects the second most habitat of all the three buffer alternatives. The total area protected by Alternative 3 is a very small area compared to the total black sea bass, lobster and whelk habitat in the region. However, the buffer would ensure that the highly productive bottom habitat on the artificial reef sites can be properly protected. Therefore, Alternative 3 would provide low positive benefits to habitat at the SMZ sites and negligible impacts to habitat overall.

5.1.4 Impacts to Protected Resources

5.1.4.1 Designation of Delaware permitted artificial reef sites as SMZs with associated gear and seasonal restrictions

5.1.4.1.1 No Action

The No Action alternative maintains the *status quo*. No SMZs would be designated and no gear or seasonal restrictions would be implemented on any of the artificial reef sites. Gear conflicts between the recreational and commercial fishery would likely continue in some of the areas within the artificial reef sites. However, since fishing behavior would not be altered, the No Action would have negligible impacts on protected resources.

5.1.4.1.2 Which Delaware permitted artificial reef sites will be designated as SMZs?

5.1.4.1.2.1 Alternative 1- Designate reef sites 9, 10, 11 and 13 as SMZ (preferred alternative)

Alternative 1 would implement SMZs at four reef sites. SMZ designation would allow for restriction to commercial gear use on four sites. Black sea bass pot/trap fishing is the most common commercial fishing on the artificial reef sites. Also, whelk and lobster fishing take place near the sites. Lobster fishing is mostly a bycatch in black sea bass pots/traps, the whelk fishery also uses pot/traps, and scallops are primarily taken by dredges. If the SMZ are designated and are used to restrict the use of commercial gears from the artificial reefs, this would not reduce the amount of fishing gear in the water that could interact with protected resources.

The total area of all the SMZs would be comparatively very small 14 km² (4.08 square nautical miles) and have few documented fishing trips on them when compared to the total area the black sea bass, lobster and whelk fisheries take place. The small amount of commercial fishing that becomes restricted from the artificial reef sites would simply shift to areas near the artificial reef sites or move to other open areas. Minor shifts in placement of commercial gears should not increase or decrease interactions with protected resources. Therefore, Alternative 1 would have negligible impacts on protected resources compared to No Action. While there would be the most potential commercial gear shifted under Alternative 1, the amount of gear is very small overall. Therefore, Alternative 1 would have a negligible impact on protected resources compared to Alternative 2 or 3.

5.1.4.1.2.2 Alternative 2- Designate reef sites 11 and 13 as SMZs (only sites with documented potential for gear conflicts)

Alternative 2 would implement SMZs at two artificial reef sites. SMZ designation would allow for restrictions on commercial gear use at two artificial reef sites. If the SMZ restricts the use

of commercial gears from the artificial reefs, this would not reduce the amount of fishing gear in the water. The total area of the SMZs under Alternative 2 would be very small 7.6 km² (2.2 square nautical miles) and have few documented fishing trips on them when compared to the total area where the black sea bass, lobster and whelk fisheries take place. The small amount of commercial fishing that becomes restricted from the two artificial reef sites would simply shift to areas near the artificial reef sites or move to other open areas. Minor shifts in placement of commercial gears should not increase or decrease interactions with protected resources. Therefore, Alternative 2 would have negligible impacts on protected resources compared to the No Action. There would be the least potential commercial gear shifted under Alternative 2 compared to the other action alternatives. Since this is still a minor amount of gear, Alternative 2 would have negligible impacts on protected resources compared to Alternatives 1 and 3.

5.1.4.1.2.3 Alternative 3- Designate reef sites 9, 10 and 13 as SMZs, but not site 11

Alternative 3 would implement SMZs at three artificial reef sites (sites 9, 10 and 13, but not 11).

SMZ designation would allow for restrictions on commercial gear use at three artificial reef sites. If the SMZ restricts the use of commercial gears from the artificial reefs, this would not reduce the amount of fishing gear in the water that would interact with protected resources. The total area for the SMZ are very small 9.9 km² (2.88 square nautical miles) and have few documented fishing trips on them, when compared to the total area where the black sea bass, lobster and whelk fisheries take place. The small amount of commercial fishing that becomes restricted from the three artificial reef sites would simply shift to areas near the artificial reef sites, or move to other open areas. Minor shifts in placement of commercial gears should not increase or decrease interactions with protected resources. Therefore, Alternative 3 would have negligible impacts on protected resources compared to No Action. While Alternative 3 would potentially shift more commercial gear shifted than Alternative 2, and less commercial gear than Alternative 3, the amount of gear is very small overall. Therefore, Alternative would have a negligible impacts on protected resources compared to Alternatives 1 or 2.

5.1.4.1.3 What Gear Restrictions Will be Associated with the SMZs?

5.1.4.1.3.1 Alternative 1- Prohibit use of fixed pot/trap gear on sites designated as SMZs

Alternative 1 would restrict the use of fixed trap/pot gear on the artificial reef sites designated as SMZs.

Black sea bass pot/trap fishing, is the most common commercial fishing on the artificial reef sites. Also, whelk and lobster fishing take place near the sites. Lobster fishing is mostly a bycatch in the black sea bass pots/traps and the whelk fishery also uses pot/traps. If the SMZs restrict the use of fixed pot/trap gears from the artificial reefs, this would not reduce the amount of fishing gear in the water. When compared to the total area where the black sea bass, lobster, and whelk, fisheries take place, the fixed pot/trap fishing gear restricted from the SMZ would comprise a relatively small amount of gear because the artificial reefs proposed SMZ areas have few documented fishing trips on them. This small amount of gear would simply shift to areas near the artificial reef site SMZs, or move to other open areas.

Minor shifts in placement of fixed pot/trap gear should not increase or decrease interactions with protected resources. Therefore, Alternative 1 would have negligible impacts on protected resources compared to No Action. While there would likely be less gear shifted under Alternative 1 when compared to Alternative 3, the amount of gear shifted is very small overall. Therefore, Alternative 1 would have negligible impacts on protected resources compared to Alternative 2.

5.1.4.1.3.2 Alternative 2- Restrict fishing activities in designated SMZ sites to hook & line and spear fishing gear only (preferred alternative)

Alternative 2 would restrict all commercial fishing gear on the artificial reef sites designated as SMZs, except for hook and line and spear fishing gear (including the taking by hand).

Black sea bass pot/trap fishing, is the most common commercial fishing on the artificial reef sites. Also, whelk and lobster fishing take place near the sites. Lobster fishing is mostly a bycatch in the black sea bass pots/traps and the whelk fishery also uses pot/traps. All these gears would be restricted from the designated SMZ artificial reefs sites. However, this would not reduce the amount of fishing gear in the water that could interact with protected resources. The total SMZ area designated would only be approximately 4 nautical square miles, and the amount of gear that would be restricted from the SMZs is comparatively very little, when compared to the total gear used in the black sea bass, lobster, and whelk, fisheries. There have been few documented commercial fishing trips on the proposed SMZ sites. The small amount of commercial gear that would be restricted from the SMZ artificial reef sites would simply shift to areas near the artificial reef site SMZs or move to other open areas. Minor shifts in placement of these gears should not increase or decrease interactions with protected resources. Therefore, Alternative 3 would have negligible impacts on protected resources compared to No Action. While there would likely be more gear and gear types shifted under Alternative 2 when compared to Alternative 1, the amount of gear is very small overall. Therefore, Alternative 2 would have negligible impacts on protected resources compared to Alternative 1.

5.1.4.1.4 What Seasonal Restrictions Will be Associated with the SMZs?

5.1.4.1.4.1 Alternative 1 Designate SMZs during periods when recreational fishery for black sea bass is open

Alternative 1 would restrict fishing activities in designated SMZ sites only during periods when the recreational fishery for black sea bass is open.

A SMZ period closure during the recreational season could restrict commercial gear use on the artificial reefs. The SMZ area is very small (4 nautical square miles) compared to where the total fisheries for the species fished for on the artificial reefs take place. The small amount of commercial gear that would be restricted from the SMZ artificial reef sites when the recreational fishery is open would simply shift to areas near the artificial reef SMZ sites or move to other open areas.

Minor shifts in placement of these gears should not increase or decrease interactions with protected resources. Therefore, Alternative 1 would have negligible impacts on protected

resources compared to No Action. There would likely be less gear shifted under Alternative 1 when compared to Alternative 2, and more or less gear than Alternative 3, depending on the extent of recreational fishery closures making comparison to that alternative variable. However, the amount of gear effected is very little overall. Therefore, Alternative 1 would have negligible impacts on protected resources. Compared to Alternatives 2 it would likely have more, but still negligible impacts, and could have more or less negligible impacts than Alternative 3 depending on the length of the black sea bass season.

5.1.4.1.4.2 Alternative 2- Designate SMZs year round (Preferred alternative)

Alternative 2 would restrict fishing activities in designated SMZ sites year round. A SMZ year round closure could restrict commercial gear use on the artificial reefs. The SMZ area is a small 14 km² (4.08 nautical square miles) area compared to where the total fisheries for the species fished for on the artificial reefs take place. The small amount of commercial gear that would be restricted from the SMZ artificial reef sites would simply shift to areas near the artificial reef sites or move to other open areas. Minor shifts in placement of these gears should not increase or decrease interactions with protected resources. Therefore, Alternative 2 would have negligible impacts on protected resources compared to No Action. Alternative 2 would potentially shift the most gear of all the seasonal alternatives. However, the amount of gear that would be shifted out of the SMZs is very little overall. Therefore, Alternative 2 is considered to have a negligible impact on protected resources compared to Alternatives 1 and 3, which would also have .

5.1.4.1.4.3 Alternative 3- Designate SMZs during periods of peak recreational fishing effort (Memorial Day to Labor Day)

Alternative 3 would designate SMZ sites only during the peak recreational periods from Memorial Day to Labor Day. It would implement a mechanism that could restrict fishing activities in the artificial reef sites only from Memorial Day to Labor Day.

During the non-SMZ status period for the artificial reefs (after Labor Day through to the next Memorial Day; roughly October through April), the restricted gears would also be allowed to return to the SMZ artificial reef areas. The SMZ area is very small (up to about 4 nautical square miles) compared to where the total fisheries for the species fished for on the artificial reefs take place. The small amount of commercial gear that would be restricted from the SMZ artificial reef sites will simply shift to areas near the artificial reef sites or move to other open areas. Minor shifts in placement of these gears should not increase or decrease interactions with protected resources. Therefore, Alternative 3 would have negligible impacts on protected resources compared to No Action. There would likely be less gear shifted under Alternative 3 when compared to Alternative 2, and more or less gear than Alternative 1, depending on the extent of recreational fishery closures. However, the amount of gear that would be shifted out of the SMZs is very small overall. Therefore, Alternative 3 would have negligible impacts on protected resources. Compared to Alternative 1 and Alternative 2, which also are expected to have negligible impacts.

5.1.4.2 Will the SMZ have a buffer around the artificial reef?

5.1.4.2.1 Alternative 1- No buffer

Alternative 1 would implement SMZs at the artificial reef sites with no enforcement buffer around the sites. The enforcement area around the sites would be the exact area designated in the COE Permit for the sites.

Any restrictions to gear use on the artificial sites would be enforced strictly to the area designated by the COE Permit. The designated area would be smaller than other options with a buffer, and is a very small 14 km² (4.08 square nautical miles) area compared to where the overall fishing for species on artificial reefs takes place. The black sea bass, lobster and whelk, fishing on the sites could be restricted, but the restricted gears for those fisheries would simply shift to areas near the artificial reef sites, or move to other open areas. Also, enforcement of the SMZs would be difficult because of the problem of enforcing gear exactly at the COE Border. Enforcement right at the COE Border is difficult because of the varied at sea behavior of drifting gear, lines, and buoys over a very small area compared to the total area where the black sea bass, lobster and whelk fisheries exist. The limited enforcement ability with no buffer should not increase or decrease interactions with protected resources. Therefore, Alternative 1 would have negligible impacts on protected resources.

5.1.4.2.2 Alternative 2- 1000 yard buffer (equivalent to 0.5 nautical miles)

Alternative 2 would implement SMZs with a 0.9 km (1,000 yard) (0.5 nautical mile) enforcement buffer around the artificial sites. The enforcement area around the sites would be extended out 0.5 nautical miles farther than the exact area designated in the COE Permit for the sites. Enforcing gear lines 0.5 nautical miles beyond the COE Border would reduce the difficulty of dealing with the varied at sea behavior of drifting gear, lines, and buoys around the comparatively small SMZ areas.

With the Alternative 2 buffer, fishing restrictions on the artificial reef sites would be the most enforceable. Depending on the number of SMZ sites designated. The total designated area would be larger than other buffer alternatives, but still is a small area (30 to 56.8 km²) (8.74 to 16.56 square nautical miles) compared to where the total fishery for the species found on the artificial reefs exists. The restricted gears would simply shift to areas near the artificial reef sites, or move to other open areas. Minor shifts in placement of gear should not increase or decrease interactions with protected resources. Therefore, Alternative 2 would have negligible impacts on protected resources compared to Alternative 1. While Alternative 2 has the most potential of the buffer options to shift gear, the overall amount of gear that would shift is very small. Therefore, Alternative 2 would have negligible impacts on protected resources compared to Alternative 3.

5.1.4.2.3 Alternative 3- 500 yard buffer (equivalent to 0.25 nautical miles) (Preferred alternative)

Alternative 3 would implement SMZs with a 0.46 km (500 yard) (0.25 nautical mile) area enforcement buffer around the artificial reef sites. The enforcement area around the sites would be extended out 0.25 nautical miles farther than the exact area designated in the COE Permit for

the sites. Enforcing gear lines 0.25 nautical miles beyond the COE Border would reduce the difficulty of dealing with the varied at sea behavior of drifting gear, lines, and buoys around the comparatively small SMZ areas.

With the buffer, fishing restrictions on the artificial reef sites would be enforceable in most cases. The designated area for the SMZs would be larger than Alternative 1, but smaller than the Alternative 2 buffer. Depending on the number of SMZs designated, the SMZs would cover a small area of 17.1 to 32 km² (4.98 to 9.32 square nautical miles) compared to where the total fisheries for the species on the artificial reefs take place. Commercial fishing on the sites could be restricted, but the restricted gears for those fisheries would simply shift to areas near the artificial reef sites, or move to other open areas. Minor shifts in placement of gear should not increase or decrease interactions with protected resources. Therefore, Alternative 3 would have negligible impacts on protected resources compared to Alternative 1. While Alternative 3 has less potential to shift gear than Alternative 2, the overall amount of gear that would shift is very small. Therefore, Alternative 3 would have negligible impacts on protected resources compared to Alternative 2.

5.1.5 Impacts to Human Communities

5.1.5.1 Designation of Delaware permitted artificial reef sites as SMZs with associated gear and seasonal restrictions

5.1.5.1.1 No Action

The No Action alternative maintains the status quo. No SMZs would be designated and no gear or seasonal restrictions would be implemented on any of the artificial reef sites.

Recreational and commercial gear conflicts would continue on some of the artificial reefs and could increase in incidence and spread to all the reefs in the future. With continued gear conflicts on the artificial reef sites some recreational fishing effort would shift away from the artificial reefs because commercial gears on the reefs can restrict recreational fishing access. The economic and social benefits the artificial reefs provide to the recreational fleet would be reduced.

Few commercial vessels fish on or near the artificial reef sites under consideration in this action. There were 8 documented vessels fishing within the actual coordinates of the artificial reefs from 2008 through 2010 with landings valued at \$2,386 in 2008, \$118,022 in 2009, and \$282 in 2010. However, of the \$118 thousand in revenue obtained from fishing at the reef sites in 2009, 97% was obtained from reef site 14 – a site no longer being considered for SMZ designation under this action. Commercial vessels fishing within the actual coordinates of reef site 9, 10, 11 and 13 from 2008 through 2010 obtained only \$6,677 in ex-vessel revenue from the sites.

The No Action would have negligible impacts on vessels that conduct pot/trap fishing on or near the artificial reef sites. Of the vessels documented making trips within the coordinates of the reef sites during 2008 through 2010, only two reported using pot/trap gear. The average percent

annual revenue from fishing within the coordinates of the reef sites for one of the pot/trap vessels was less than 5% and ranged from 5 to 10% for the other.

Under No Action, the recreational fleet would likely shift to other areas, and lose some of its prime fishing area on the artificial reefs. The economic benefits by angler expenditures (\$1.53 million in 2011) and the gross revenue to charter/party vessels (\$670,500 in 2011) generated by recreational fishing trips to the artificial reefs, would be reduced. Recreational fishing tips may shift to other areas, but may not remain as numerous because catch rates away from the productive artificial reefs may be lower.

The program to maintain the artificial reefs would also be in jeopardy of losing its U.S. FWS funding because FWS policy is not to continue to use SFR funding for artificial reefs that do not have a mechanism to allow for recreational fishing access. Without continued funding for maintenance the artificial reefs would lose productivity over time. This would reduce the recreational and the commercial catch on and near them, and result in low negative economic impacts to both the recreational and commercial vessels that fish them.

In summary, No Action would have low negative social and economic impacts on the recreational fleet in both the short and long term. The No Action would have negligible social and economic impacts on the commercial fishery in the short term as their fishing activities would not be altered. However, No Action may have some low negative impacts on the commercial fleet in the long term because the reefs may lose their maintenance funding and become less productive.

5.1.5.1.2 Which Delaware permitted artificial reef sites will be designated as SMZs?

5.1.5.1.2.1 Alternative 1- Designate reef sites 9, 10, 11 and 13 as SMZ (Preferred alternative)

Alternative 1 would implement SMZs with gear restrictions at four artificial reef sites.

Few commercial vessels fish on or near the artificial reef sites under consideration in this action. There were 8 documented vessels fishing within the actual coordinates of the artificial reefs from 2008 through 2010 with landings valued at \$2,386 in 2008, \$118,022 in 2009, and \$282 in 2010. However, of the \$118 thousand in revenue obtained from fishing at the reef sites in 2009, 97% was obtained from reef site 14 – a site no longer being considered for SMZ designation under this action. Only 4 commercial vessels reported fishing within the actual coordinates of reef site 9, 10, 11 and 13 from 2008 through 2010 and these vessels obtained only \$6,677 in ex-vessel revenue from the sites. Three of the vessels fished with pot/trap gear and one vessel reported fishing with trawl gear. Thus, Alternative 1 would have virtually no impact on trawl or scallop fishing because it would not alter their fishing activities. An average dredge or trawl trip covers about 5 miles, and vessels using dredges or trawls would avoid the rough bottom of the small (about 1 square nautical mile each) artificial reefs areas.

Alternative 1 would likely have low negative impacts on vessels that conduct pot/trap fishing on or near the artificial reef sites. However, these vessels could likely shift to fishing areas near the artificial reef sites or other open areas, and recoup any economic loss. Only three vessels are

documented making pot/trap fishing trips within the coordinates of reef site 9, 10, 11, and 13 from 2008-2010. The average percent annual revenue from fishing near the sites for the three pot/trap vessels ranged from between 0 and 5% to between 5 and 10%. The amount of area prohibited to fixed pot/trap gear would be a comparatively small area of 18.3 km² (5.3 square nautical miles) compared to where the total area that black sea bass fishery exists.

Compared to the No Action, the recreational fleet would be provided better access the artificial reef site areas as prime fishing area under Alternative 1. The economic benefits provided by angler expenditures (\$1.53 million in 2011) and the gross revenue to charter/party vessels (\$670,500 in 2011) generated by recreational fishing trips to the artificial reefs, would continue or be enhanced.

Under Alternative 1, the program to maintain four artificial reefs would not be in jeopardy of losing its U.S. FWS funding. The FWS would allow continued use of Sportfish Restoration funding for the artificial reefs because they would have a mechanism to allow for recreational fishing access throughout the year. With continued funding for upkeep, the artificial reefs would maintain productivity over time. This would maintain or enhance the recreational catch on and around the reefs.

Overall, Alternative 1 would result in low positive economic impacts to the recreational fleet and likely have low negative to negligible economic effects on the commercial fishery compared to the No Action. Since it designates the most SMZ sites it would have the greatest positive impacts on the recreational fleet and would be most likely to have some low negative impacts on the commercial fleet.

5.1.5.1.2.2 Alternative 2- Designate reef sites 11 and 13 as SMZs (only sites with documented potential for gear conflicts)

Alternative 2 would implement SMZs at two reef sites (11 and 13). Out of the sites under consideration for SMZ designation, only these two sites, have documented potential for gear conflicts. The amount of area prohibited to fixed pot/trap gear would be a comparatively small area of 7.6 km² (2.2 square nautical miles) compared to where the total area that black sea bass fishery exists.

Alternative 2 would have similar impacts to Alternative 1. Alternative 2 would similarly have negligible impacts on trawl or scallop fishing because it would not alter their fishing activities. Alternative 2 would also have low negative impacts on vessels that conduct pot/trap fishing on or near the artificial reef sites.

Compared to the No Action, the recreational fleet would be provided better access the prime fishing area on artificial reef site areas. The economic benefits provided by angler expenditures (\$1.53 million in 2011) and the gross revenue to charter/party vessels (\$670,500 in 2011) generated by recreational fishing trips to the artificial reefs, would continue or be enhanced. However, these economic benefits would be less than under Alternative 1 because only two reefs

would be designated as SMZs and maintenance/productivity may be jeopardized if SFR funding is lost for sites 9 and 10.

5.1.5.1.2.3 Alternative 3- Designate reef sites 9, 10 and 13 as SMZs, but not site 11

Alternative 3 would implement SMZs at three (sites 9, 10 and 13) of the reef sites. Out of the sites considered for SMZ designation site 11 would not be given SMZ status. This site has had commercial fishing carried out on or near it before the artificial reef was built. Also, site 11 is the most used site by the recreational fisheries sector. The amount of area prohibited to fixed pot/trap gear would be a comparatively small area of 9.9 km² (2.88 square nautical miles) compared to where the total area that black sea bass fishery exists.

Alternative 3 would have similar impacts to Alternative 1 and 2. Alternative 3 would similarly have negligible impacts on trawl or scallop fishing because it would not alter their fishing activities. Alternative 3 would also have low negative impacts on vessels that conduct pot/trap fishing on or near the artificial reef sites.

Compared to the No Action, the recreational fleet would be provided better access the prime fishing area on artificial reef sites. The economic benefits provided by angler expenditures (\$1.53 million in 2011) and the gross revenue to charter/party vessels (\$670,500 in 2011) generated by recreational fishing trips to the artificial reefs, would continue or be enhanced. However, these economic benefits would be less than under Alternative 1 because only three reefs would be designated as SMZs and maintenance/productivity may be jeopardized if SFR funding is lost for site 11. The low positive economic benefits under Alternative 3 would be greater than those realized under Alternative 2 because the recreational fleet would have better access to more reefs.

Overall, Alternative 3, in the short term, would result in low positive economic impacts to recreational fleet and likely have low negative to negligible economic effects on the commercial fishery compared to the No Action. Over the long term, there could be more negative impacts to the recreational fleet because the FWS may not allow continued use of SRP funding for the artificial reefs because there would not be a mechanism to allow for recreational fishing access on reef site 11. Without funding sites would lose productivity, and this would result in less fishing trips to the sites.

Since Alternative 3 designates the second most SMZ sites (three sites) it would have the second most positive socio-economic impacts on the recreational fleet, at least in the short term if SRP funding can be maintained for the three sites, and would be the second most likely alternative to have some low negative impacts on the commercial fleet.

5.1.5.1.3 What Gear Restrictions Will be Associated with the SMZs?

5.1.5.1.3.1 Alternative 1- Prohibit use of fixed pot/trap gear on sites designated as SMZs

Alternative 1 would prohibit the use of fixed pot/trap gear on sites designated as SMZs. Fixed pot trap gear has the most potential for gear conflict on the artificial reef sites because it is the

most documented used commercial gear on or near the sites (primarily for black sea bass fishing), and the gear cited by the recreational fishery sector as inhibiting recreational fishing access. Black sea bass vessels with Federal permits fishing in the area can be allowed a 100 lb American lobster catch per day (50 CFR 697.26). Commercial channeled whelk fishing, which uses pots or traps, has been reported near the sites.

Few commercial vessels fish on or near the artificial reef sites under consideration in this action. There were 8 documented vessels fishing within the actual coordinates of the artificial reefs from 2008 through 2010 with landings valued at \$2,386 in 2008, \$118,022 in 2009, and \$282 in 2010. However, of the \$118 thousand in revenue obtained from fishing at the reef sites in 2009, 97% was obtained from reef site 14 – a site no longer being considered for SMZ designation under this action. Only 4 commercial vessels reported fishing within the actual coordinates of reef site 9, 10, 11 and 13 from 2008 through 2010 and these vessels obtained only \$6,677 in ex-vessel revenue from the sites. Three of the vessels fished with pot/trap gear and one vessel reported fishing with trawl gear. Thus, Alternative 1 would have virtually no impact on trawl or scallop fishing because it would not alter their fishing activities. An average dredge or trawl trip covers about 5 miles, and vessels using dredges or trawls would avoid the rough bottom of the small (about 1 square nautical mile each) artificial reefs areas.

Alternative 1 would likely have low negative impacts on vessels that conduct pot/trap fishing on or near the artificial reef sites. However, these vessels could likely shift to fishing areas near the artificial reef sites or other open areas, and recoup any economic loss. Only three vessels are documented making pot/trap fishing trips within the coordinates of reef site 9, 10, 11, and 13 from 2008-2010. The average percent annual revenue from fishing near the sites for the three pot/trap vessels ranged from between 0 and 5% to between 5 and 10%. The amount of area prohibited to fixed pot/trap gear would be a comparatively small area of 18.3 km² (5.3 square nautical miles) compared to where the total area that black sea bass fishery exists.

The recreational fleet would continue to use the artificial reef site areas as prime fishing area. The economic benefits provided by angler expenditures (\$1.53 million in 2011) and the gross revenue to charter/party vessels (\$670,500 in 2011) generated by recreational fishing trips to the artificial reefs, would continue.

Additionally, the program to maintain the artificial reefs would likely not be in jeopardy of losing its U.S. FWS funding. The FWS would likely allow continued use of SFR funding for the artificial reefs because the major gear conflict on the reefs would be eliminated. With continued funding for upkeep, the artificial reefs would maintain productivity over time. This would maintain or enhance the recreational catch on and around the SMZ reefs.

Overall, Alternative 1 would result in low positive economic impacts to recreational fishery and likely have low negative to negligible economic effects on the commercial fishery as compared to the No Action. It would have less positive impact to the recreational fleet and less negative impact to the commercial fleet than Alternative 2 which restricts all commercial gear, except hook and line fishing.

5.1.5.1.3.2 Alternative 2- Restrict fishing activities in designated SMZ sites to hook & line and spear fishing gear only (Preferred alternative)

Alternative 2 would prohibit the use of all gear except hook and line and spear fishing only (including the taking by hand) on sites designated as SMZs. Fixed pot/trap gear has the most potential for gear conflict on the artificial reef sites because it is the most used commercial gear on the sites (primarily for black sea bass), and the gear cited by the recreational fishery fisheries sector as inhibiting recreational fishing access. However, prohibiting other gear types would insure more comprehensive protection for the artificial reef SMZs. Fishing on the reefs with gillnets, trawls or dredges could cause gear conflicts in the future and inhibit recreational fishing access and economic benefits.

Black sea bass vessels with Federal permits fishing in the area can be allowed a 100 lb American lobster catch per day (50 CFR 697.26). Commercial channeled whelk fishing, which uses pots or traps, has been reported near the sites.

Few commercial vessels fish on or near the artificial reef sites under consideration in this action. There were 8 documented vessels fishing within the actual coordinates of the artificial reefs from 2008 through 2010 with landings valued at \$2,386 in 2008, \$118,022 in 2009, and \$282 in 2010. However, of the \$118 thousand in revenue obtained from fishing at the reef sites in 2009, 97% was obtained from reef site 14 – a site no longer being considered for SMZ designation under this action. Only 4 commercial vessels reported fishing within the actual coordinates of reef site 9, 10, 11 and 13 from 2008 through 2010 and these vessels obtained only \$6,677 in ex-vessel revenue from the sites. Three of the vessels fished with pot/trap gear and one vessel reported fishing with trawl gear. While Alternative 2 would prohibit most commercial gear, it would have negligible impacts on trawl or scallop fishing because fishing on or near the reefs is rare. An average dredge or trawl trip covers about 5 nautical miles, and vessels using dredges or trawls would avoid the rough bottom of the small (about 1 square nautical mile each) artificial reefs areas.

Alternative 2 would likely have low negative impacts on vessels that conduct pot/trap fishing on or near the artificial reef sites. However, these vessels could likely shift to fishing areas near the artificial reef sites or other open areas, and recoup any economic loss. Only three vessels are documented making pot/trap fishing trips within the coordinates of reef site 9, 10, 11, and 13 from 2008-2010. The average percent annual revenue from fishing near the sites for the three pot/trap vessels ranged from between 0 to 5% and 5 to 10%. The amount of area prohibited to fixed pot/trap gear would be a small area from 7.6 up to 56.8 km² (2.2 up to 16.56 square nautical miles), depending on the number of sites designated and buffer zone used, compared to where the total area that black sea bass fishery exists.

The recreational fleet would continue to use the artificial reef site areas as prime fishing area. The economic benefits provided by angler expenditures (\$1.53 million in 2011) and the gross revenue to charter/party vessels (\$670,500 in 2011) generated by recreational fishing trips to the artificial reefs, would continue.

Under Alternative 2, the program to maintain the artificial reefs would not be in jeopardy of losing its U.S. FWS funding. The FWS would allow continued use of SFR funding for the artificial reefs because they would have a mechanism to allow for recreational fishing access. With continued funding for upkeep, the artificial reefs would maintain productivity over time. This would maintain or enhance the recreational catch on and around the reefs.

Overall, Alternative 2 would result in low positive economic and social impacts to recreational fishery and likely have low negative to negligible effects on the commercial fishery as compared to the No Action. It would have more low positive social and economic impacts to the recreational fleet and less negative impacts to the commercial fleet compared to Alternative 1 which only restricts fixed pot/trap gear.

5.1.5.1.4 What Seasonal Restrictions Will be Associated with the SMZs?

5.1.5.1.4.1 Alternative 1- Designate SMZs during periods when recreational fishery for black sea bass is open

Alternative 1 would designate SMZs on the artificial reefs only during periods when the black sea bass recreational fishing season is open. Commercial fishing could be restricted on the artificial reefs only while the regulatory recreational fishing season for black sea bass takes place. Recreational/commercial gear conflicts could continue at the sites when the recreational black sea bass season is closed, because the recreational fleet may continue to fish on the sites for other species, or continue to catch and release back sea bass. With continued gear conflicts on the artificial reef sites some recreational fishing effort may shift away from the artificial reefs after the black sea bass fishing season because commercial gears on the reefs would restrict recreational fishing access.

The social and economic benefits the artificial reefs provide to the recreational fleet would be reduced in the black sea bass offseason. Also, the program to maintain the artificial reefs would be in jeopardy of losing its U.S. FWS funding because FWS policy is not to continue to use SFR funding for artificial reefs that do not have a mechanism to allow for recreational fishing access throughout the year. Without continued funding for the maintenance of the artificial reefs, over time, the artificial reefs will lose productivity. This would reduce the recreational and the commercial catch on and near them, and result in low negative economic impacts to both the recreational and commercial vessels that fish them.

While Alternative 1 would prohibit commercial gear during the black sea bass season, it would have negligible impacts on trawl or scallop fishing because fishing on or near the reefs is rare. An average dredge or trawl trip covers about 5 nautical miles, and vessels using dredges or trawls would avoid the rough bottom of the small (about 1 square nautical mile each) artificial reefs areas.

Alternative 1 would likely have low negative impacts on vessels that conduct pot/trap fishing on or near the artificial reef sites. However, these vessels could likely shift to fishing areas near the artificial reef sites or other open areas, and recoup any economic loss. Only 3 vessels are documented making pot/trap fishing trips within the coordinates of reef site 9, 10, 11, and 13

from 2008-2010. The average percent annual revenue from fishing at the sites for the three pot/trap vessels ranged from between 0 to 5% and 5 to 10%. The amount of area prohibited to fixed pot/trap gear would be a comparatively very small area from 7.6 up to 56.8 km² (2.2 up to 16.56 square nautical miles), depending on the number of sites designated and buffer zone used, compared to where the total area that black sea bass fishery exists.

The recreational fleet would continue to use the artificial reef site areas as prime fishing area during black sea bass season. However, the recreational fleet would likely shift to other areas, and lose some of its prime fishing area for part of the year.

Overall, Alternative 1 would have low positive social and economic impacts on the recreational fleet and negligible to low negative impacts on the commercial fleet compared to the No Action. The low positive impacts to the recreational fleet realized under Alternative 1 would be less than those realized under Alternative 2 (year round seasonal SMZ). Depending on length of the recreational black sea bass seasonal closures, Alternative 1 could have more or less economic and social benefits for the recreational fleet than Alternative 3.

5.1.5.1.4.2 Alternative 2- Designate SMZs year round (Preferred alternative)

Alternative 2 would designate SMZ on the artificial reefs year round. The gear conflicts on the artificial reef sites could be addressed throughout the year. The recreational fleet could be given access to the reefs year round. Commercial access would be restricted from the artificial reefs. The low positive social and economic benefits the artificial reefs provide to the recreational fleet would continue or be enhanced. Also, the program to maintain the artificial reefs would not be in jeopardy of losing its U.S. FWS funding because the FWS would allow continued use of SFR funding for the artificial reefs because they would have a mechanism to allow for recreational fishing access throughout the year. With continued funding for maintenance, the reef will maintain productivity over time. This would maintain or enhance the recreational catch on and around the reefs. The commercial vessels would move off the artificial reefs year round, but would likely still receive some benefit of fish coming off the artificial reefs.

Since trawl and dredge fishing using mobile gear would normally avoid the rough bottom of the artificial reef sites, this type of fishing would not see a shift in fishing activities and Alternative 2 would have negligible economic and social impacts.

Alternative 3 would likely have low negative impacts on vessels that conduct pot/trap fishing on or near the artificial reef sites. However, these vessels could likely shift to fishing areas near the artificial reef sites or other open areas, and recoup any economic loss. Only three vessels are documented making pot/trap fishing trips within the coordinates of reef site 9, 10, 11, and 13 from 2008-2010. The average percent annual revenue from fishing at the sites for the three pot/trap vessels ranged from between 0 to 5% and 5 to 10%. The amount of area prohibited to fixed pot/trap gear would be a comparatively small area from 7.6 up to 56.8 km² (2.2 up to 16.56 square nautical miles), depending on the number of sites designated and buffer zone used, compared to where the total area that black sea bass fishery exists.

For the recreational fleet, the economic benefits provided by angler expenditures (\$1.53 million in 2011) and the gross revenue to charter/party vessels (\$750,500 in 2011) generated by recreational fishing trips to the artificial reefs, would likely be maintained or enhanced. This is because uninhibited recreational fishing access to the productive artificial reefs can be provided year round. This will likely keep the overall number of recreational fishing trips high, because recreational fishermen tend to make more trips to areas with higher catch rates.

Overall Alternative 2 would have negligible to low negative economic effects to the commercial vessels and low positive socio-economic effects to the recreational vessels that fish the artificial reefs when compared with Alternative 1.

Compared to the two alternatives to implement SMZs during part of the year (Alternatives 1 and 3), Alternative 2 would have the most positive economic impacts on the recreational fleet and most negative impacts on the commercial fleet. However, none of these impacts would be significant.

5.1.5.1.4.3 Alternative 3- Designate SMZs during periods of peak recreational fishing effort (Memorial Day to Labor Day)

This alternative would restrict fishing activities in designated SMZ sites only during the peak recreational period from Memorial Day to Labor Day. During the non SMZ status period for the artificial reefs (after Labor Day through to the next Memorial Day (roughly October through April), the recreational commercial gear conflicts could still occur. While the majority of recreational trips take place on the artificial reefs during the peak season, there is no guarantee that recreational fishing would not continue at a high level after Labor Day due to the variability in fish availability, and regulatory changes. Also, it is highly likely recreational fishing activity for black sea bass (particularly by charter/party boats) will continue on the artificial reefs during the winter when no SMZs would be in place. While recreational activity would be less in the off season, Alternative 3 could still lead to continued gear conflicts with the commercial fleet that could deny a key part of the recreational fleet access to the artificial reefs for part of the year.

With continued gear conflicts on the artificial reef sites some recreational fishing effort may shift away from the artificial reefs after the peak fishing season because commercial gears on the reefs can restrict recreational fishing access. Therefore, some of the economic and social benefits the artificial reefs provide to the recreational fleet would be reduced. Also, the program to maintain the artificial reefs would be in jeopardy of losing its U.S. FWS funding because FWS policy is not to continue to use SFR funding for artificial reefs that do not have a mechanism to allow for recreational fishing access throughout the year. Without continued funding for the maintenance of the artificial reefs, over time, the artificial reefs will lose productivity. This would reduce the recreational and the commercial catch on and near them, and result in low negative economic impacts to both the recreational and commercial vessels that fish them.

Since trawl and dredge fishing using mobile gear would normally avoid the rough bottom of the artificial reef sites, this type of fishing would not see a shift in fishing activities and Alternative 3 would have negligible economic and social impacts.

Alternative 3 would have low negative socio-economic impacts on vessels that conduct pot/trap fishing on or near the artificial reef sites. However, these vessels could likely shift to fishing areas near the artificial reef sites or other open areas, and recoup any economic loss. Only three vessels are documented making pot/trap fishing trips within the coordinates of reef site 9, 10, 11, and 13 from 2008-2010. The average percent annual revenue from fishing at the sites for the three pot/trap vessels ranged from between 0 to 5% and 5 to 10%. The amount of area prohibited to fixed pot/trap gear would be a comparatively small area from 7.6 up to 56.8 km² (2.2 up to 16.56 square nautical miles), depending on the number of sites designated and buffer zone used, compared to where the total area that black sea bass fishery exists.

The recreational fleet would continue to use the artificial reef site areas as prime fishing area during peak recreational fishing season. However, the recreational fleet would likely shift to other areas, and lose some of its prime fishing area for part of the year.

Overall, Alternative 3 would have low positive social and economic impacts on the recreational fleet and negligible to low negative impacts on the commercial fleet compared to No Action. The low positive impacts to the recreational fleet realized under Alternative 3 would be less than those realized under Alternative 2 (year round seasonal SMZ). Depending on length of time recreational black sea bass seasonal closures, Alternative 3 could have more or less economic and social benefits for the recreational fleet than Alternative 1.

5.1.5.2 Will the SMZ have a buffer around the artificial reef?

5.1.5.2.1 Alternative 1- No buffer

Alternative 1 would implement SMZs with no enforcement buffer around the artificial sites. The enforcement area around the sites would be the exact area designated in the COR Permit for the sites totaling 14 km² (4.08 square nautical miles) if all four sites under consideration are designated as SMZs. Enforcing the use of restricted gear on the exact lines would be difficult because of the varied at sea behavior of drifting gear, lines, and buoys over a very small area (about 1 square nautical mile per SMZ).

With no buffer area there still would be a mechanism that could restrict commercial gear use on all SMZ sites strictly to the area designated by the COE site permit. However, the ability to set up the proper recreational fishing drifting patterns to effectively fish hooks on or over the reefs could be compromised. This disruption could reduce fishing success. Recreational fishing tips may shift to other areas that are likely to have lower catch rates than the highly productive artificial reef sites. This may cause a reduction in the overall number of recreational fishing trips, because recreational fishermen tend to make fewer trips to areas with lower catch rates. Therefore, Alternative 1 would have low negative socio-economic impacts on the recreational fleet as it could continue to restrict their full access to the reefs.

Alternative 1 would have negligible socio-economic impacts on the commercial fleet as their fishing activities would not be altered.

5.1.5.2.2 Alternative 2- 1000 yard buffer (equivalent to 0.5 nautical miles)

Alternative 2 would implement SMZs with a 0.9 km (1,000 yard buffer) (0.5 nautical mile) enforcement area buffer around the artificial reef sites. The enforcement area around the sites would be extended out 0.5 nautical miles farther than the exact area designated in the COE Permit for the sites. Enforcing gear lines out to 0.5 nautical miles beyond the COE Border would reduce the difficulty of dealing with the varied at sea behavior of drifting gear, lines, and buoys around the comparatively small SMZ areas.

Restricting commercial gear set near the sites to 0.5 nautical miles would allow the recreational fleet to use fishing drift patterns that would not be disrupted by commercial gear, and thus provide proper fishing access to the artificial reefs. It is likely that the economic and social benefits the artificial reefs provide to the recreational fleet would be maintained or enhanced compared to Alternative 1. This is because recreational fishing trips may increase to the artificial reef sites, because fishing access to the highly productive artificial reefs would be improved. This may cause an increase in the overall number of recreational fishing trips, because recreational fishermen tend to make more trips to areas with higher catch rates. Since trawl and dredge fishing using mobile gear would normally avoid the rough bottom of the artificial reef sites, this type of fishing would not see a shift in fishing activities and Alternative 2 would have negligible economic and social impacts.

Alternative 2 would likely have low negative socio-economic impacts on vessels that conduct pot/trap fishing on or near the artificial reef sites compared to Alternative 1. However, these vessels could likely shift to fishing areas near the SMZs or other open areas, and recoup any economic loss.

Overall, Alternative 2 is the most restrictive of the buffer alternatives. It would restrict gear use from 7.6 up to 56.8 km² (2.2 up to 16.56 square nautical miles), depending on the number of sites designated and buffer zone used. It is likely it would result in low positive socio-economic impacts to the recreational fleet because it is easiest to enforce and would ensure less gear conflicts and better catch rates for the recreational fleet. It has the potential to have more negative effects on the commercial sector than Alternative 1 or Alternative 3 the (0.25 nautical mile buffer), but these effects would likely be minor.

5.1.5.2.3 Alternative 3- 500 yard buffer (equivalent to 0.25 nautical miles) (Preferred alternative)

Alternative 3 would implement a 4.6 km (500 yard buffer) (0.25 nautical miles) around the artificial reef sites. The enforcement area around the sites would be extended out 0.25 nautical miles farther than the exact area designated in the COE Permit for the sites. It would restrict gear use from 17.1 km² up to 32 km² (4.98 up to 9.32 square nautical miles), depending on the number of SMZs designated. Enforcing gear lines out to 0.25 nautical miles beyond the COE Border would, in most cases, reduce the difficulty of dealing with the varied at sea behavior of drifting gear, lines, and buoys around the comparatively small SMZ areas.

Restricting commercial gear set near the sites to 0.25 nautical miles would allow the recreational fleet to use fishing drift patterns that would not be disrupted by commercial gear, and thus provide proper fishing access to the artificial reefs. It is likely that the economic and social benefits the artificial reefs provide to the recreational fleet would be maintained or enhanced compared to Alternative 1. This is because recreational fishing trips may increase to the artificial reef sites, because fishing access to the highly productive artificial reefs would be improved. This may cause an increase in the overall number of recreational fishing trips, because recreational fishermen tend to make more trips to areas with higher catch rates. However, these benefits would likely be less than those realized under Alternative 2 (0.5 nautical mile buffer). Since trawl and dredge fishing using mobile gear would normally avoid the rough bottom of the artificial reef sites, this type of fishing would not see a shift in fishing activities and Alternative 3 would have negligible economic and social impacts.

Alternative 3 would restrict gear use in 32 km² (9.32 square nautical miles), if all four SMZs under consideration are designated. It would likely have low negative socio-economic impacts on vessels that conduct pot/trap fishing on or near the artificial reef sites compared to Alternative 1 which would restrict gear in almost twice the area. However, these vessels could likely shift to fishing areas near the artificial reef sites or other open areas, and recoup any economic loss.

Overall Alternative 3 would likely have negligible to low negative economic impacts to the commercial fleet and low positive socio-economic impacts to the recreational fleet that fish the artificial reefs. Alternative 3 is less restrictive than Alternative 2. Therefore, the low negative impacts expected under Alternative 3 would be less than under Alternative 2. Alternative 3 would still give adequate benefits to the recreational sector, because of the ability to enforce the buffer would reduce gear conflicts and give better catch rates for the recreational sector. Therefore, Alternative 3 would have negligible socio-economic impacts compared to Alternative 2.

5.2 Cumulative Effects Analysis

A cumulative effects analysis (CEA) is required by the Council on Environmental Quality (CEQ) (40 CFR part 1508.7). The purpose of CEA is to consider the combined effects of many actions on the human environment over time that would be missed if each action were evaluated separately. CEQ guidelines recognize that it is not practical to analyze the cumulative effects of an action from every conceivable perspective, but rather, the intent is to focus on those effects that are truly meaningful. A formal cumulative impact assessment is not necessarily required as part of an EA under NEPA as long as the significance of cumulative impacts have been considered (U.S. EPA 1999). The following remarks address the significance of the expected cumulative impacts as they relate to the federally managed summer flounder, scup, and black sea bass fisheries.

5.2.1 Consideration of the VECs

In Section 4.0 (Affected Environment), the VECs that exist within the summer flounder, scup, and black sea bass fishery environment are identified. Therefore, the significance of the cumulative effects will be discussed in relation to the VECs listed below.

1. Target Species (summer flounder, scup, and black sea bass)
2. Non-target species and bycatch
3. Habitat including EFH
4. Protected resources
5. Human communities

5.2.2 Geographic Boundaries

The core geographic scope for each of the VECs is focused on the Western Atlantic Ocean. The core geographic scopes for the managed resources are the range of the management units (Section 4.1). For non-target species, those ranges may be expanded and would depend on the biological range of each individual non-target species in the Western Atlantic Ocean. For habitat, the core geographic scope is focused on EFH within the EEZ but includes all habitat utilized by summer flounder, scup, black sea bass and other non-target species in the Western Atlantic Ocean. The core geographic scope for endangered and protected resources can be considered the overall range of these VECs in the Western Atlantic Ocean. For human communities, the core geographic boundaries are defined as those U.S. fishing communities directly involved in the harvest or processing of the managed resources, which were found to occur in coastal states from Maine through North Carolina (Section 4.4).

5.2.3 Temporal Boundaries

The temporal scope of past and present actions for VECs is primarily focused on actions that have occurred after FMP implementation (1988 for summer flounder; 1996 for scup and black

sea bass). For endangered and other protected resources, the scope of past and present actions is on a species-by-species basis (Section 4.3) and is largely focused on the 1980s and 1990s through the present, when NMFS began generating stock assessments for marine mammals and sea turtles that inhabit waters of the U.S. EEZ. The temporal scope of future actions for all five VECs extends about three years (2017) into the future. This period was chosen because the dynamic nature of resource management for these three species and lack of information on projects that may occur in the future make it very difficult to predict impacts beyond this timeframe with any certainty.

5.2.4 Actions Other Than Those Proposed in this Amendment

The impacts of each of the alternatives considered in this document are given in Section 5.1. **Error! Reference source not found.** presents meaningful past (P), present (Pr), or reasonably foreseeable future (RFF) actions to be considered other than those actions being considered in this specifications document. These impacts are described in chronological order and qualitatively, as the actual impacts of these actions are too complex to be quantified in a meaningful way. When any of these abbreviations occur together (i.e., P, Pr, RFF), it indicates that some past actions are still relevant to the present and/or future actions.

Past and Present Actions

The historical management practices of the Council have resulted in positive impacts on the health of the summer flounder, scup, and black sea bass stocks (Section 4.1). Numerous actions have been taken to manage the commercial and recreational fisheries for these three species through amendment and framework adjustment actions. In addition, the specifications process provides the opportunity for the Council and NMFS to regularly assess the status of the fishery and to make necessary adjustments to ensure that there is a reasonable expectation of meeting the objectives of the FMP and the targets associated with any rebuilding programs under the FMP. The statutory basis for federal fisheries management is the MSA. To the degree with which this regulatory regime is complied, the cumulative impacts of past, present, and reasonably foreseeable future federal fishery management actions on the VECs should generally be associated with positive long-term outcomes. Constraining fishing effort through regulatory actions can often have negative short-term socioeconomic impacts. These impacts are usually necessary to bring about long-term sustainability of a given resource, and as such, should, in the long-term, promote positive effects on human communities, especially those that are economically dependent upon the summer flounder, scup, and black sea bass stocks.

Non-fishing activities that introduce chemical pollutants, sewage, changes in water temperature, salinity, dissolved oxygen, and suspended sediment into the marine environment pose a risk to all of the identified VECs. Human-induced non-fishing activities tend to be localized in nearshore areas and marine project areas where they occur. Examples of these activities include, but are not limited to agriculture, port maintenance, beach nourishment, coastal development, marine transportation, marine mining, dredging and the disposal of dredged material. Wherever these activities co-occur, they are likely to work additively or synergistically to decrease habitat

quality and, as such, may indirectly constrain the sustainability of the managed resources, non-target species, and protected resources. Decreased habitat suitability would tend to reduce the tolerance of these VECs to the impacts of fishing effort. Mitigation of this outcome through regulations that would reduce fishing effort could then negatively impact human communities. The overall impact to the affected species and their habitats on a population level is unknown, but likely neutral to low negative, since a large portion of these species have a limited or minor exposure to these local non-fishing perturbations.

In addition to guidelines mandated by the MSA, NMFS reviews these types of effects through the review processes required by Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act for certain activities that are regulated by federal, state, and local authorities. The jurisdiction of these activities is in "waters of the U.S." and includes both riverine and marine habitats.

Reasonably Foreseeable Future Actions

In fishing year 2012, ACLs and AMs were first implemented for summer flounder, scup, and black sea bass (as well as other Council managed species) to ensure that catch and landings limits are not exceeded and overfishing does not occur. As a result, the Reasonably Foreseeable Future Actions over the next three years may include the implementation of accountability measures and other Council recommended adaptive adjustments to the way this new system of catch limits and accountability functions and interacts with the fishery regulations in place.

For many of the proposed non-fishing activities to be permitted under other federal agencies (such as beach nourishment, offshore wind facilities, etc.), those agencies would conduct examinations of potential impacts on the VECs. The MSA (50 CFR 600.930) imposes an obligation on other federal agencies to consult with the Secretary of Commerce on actions that may adversely affect EFH. The eight Fishery Management Councils are engaged in this review process by making comments and recommendations on any federal or state action that may affect habitat, including EFH, for their managed species and by commenting on actions likely to substantially affect habitat, including EFH.

In addition, under the Fish and Wildlife Coordination Act (Section 662), "whenever the waters of any stream or other body of water are proposed or authorized to be impounded, diverted, the channel deepened, or the stream or other body of water otherwise controlled or modified for any purpose whatever, including navigation and drainage, by any department or agency of the U.S., or by any public or private agency under federal permit or license, such department or agency first shall consult with the U.S. Fish and Wildlife Service (USFWS), Department of the Interior, and with the head of the agency exercising administration over the wildlife resources of the particular state wherein the" activity is taking place. This act provides another avenue for review of actions by other federal and state agencies that may impact resources that NMFS manages in the reasonably foreseeable future.

In addition, NMFS and the USFWS share responsibility for implementing the ESA. ESA requires NMFS to designate "critical habitat" for any species it lists under the ESA (i.e., areas that contain physical or biological features essential to conservation, which may require special management considerations or protection) and to develop and implement recovery plans for

threatened and endangered species. The ESA provides another avenue for NMFS to review actions by other entities that may impact endangered and protected resources whose management units are under NMFS' jurisdiction.

5.2.5 Magnitude and Significance of Cumulative Effects

In determining the magnitude and significance of the cumulative effects, the additive and synergistic effects of the proposed action, as well as past, present, and future actions, must be taken into account. The following section discusses the effects of these actions on each of the VECs.

Table 33. Impacts of Past (P), Present (Pr), and Reasonably Foreseeable Future (RFF) Actions on the five VECs (not including those actions considered in this specifications document).

Action	Description	Impacts on Managed Resource	Impacts on Non-target Species	Impacts on Habitat and EFH	Impacts on Protected Species	Impacts on Human Communities
^{P, Pr} Original FMP and subsequent Amendments and Frameworks to the FMP	Established commercial and recreational management measures	Indirect Positive Regulatory tool available to rebuild and manage stocks	Indirect Positive Reduced fishing effort	Indirect Positive Reduced fishing effort	Indirect Positive Reduced fishing effort	Indirect Positive Benefited domestic businesses
^{P, Pr, RFF} Summer Flounder, Scup, and Black Sea Bass Specifications	Establish quotas, RHLs, other fishery regulations (commercial and recreational)	Indirect Positive Regulatory tool to specify catch limits, and other regulation; allows response to annual stock updates	Indirect Positive Reduced effort levels and gear requirements	Indirect Positive Reduced effort levels and gear requirements	Indirect Positive Reduced effort levels and gear requirements	Indirect Positive Benefited domestic businesses
^{P, Pr, RFF} Developed, Applied, and Redo of Standardized Bycatch Reporting Methodology	Established acceptable level of precision and accuracy for monitoring of bycatch in fisheries	Neutral May improve data quality for monitoring total removals of managed resource	Neutral May improve data quality for monitoring removals of non-target species	Neutral Will not affect distribution of effort	Neutral May increase observer coverage and will not affect distribution of effort	Potentially Indirect Negative May impose an inconvenience on vessel operations
^{P, Pr, RFF} Omnibus Amendment ACLs/AMs Implemented	Establish and apply ACLs and AMs for all three plan species	Potentially Indirect Positive Pending full analysis	Potentially Indirect Positive Pending full analysis	Potentially Indirect Positive Pending full analysis	Potentially Indirect Positive Pending full analysis	Potentially Indirect Positive Pending full analysis
^{P, Pr, RFF} Agricultural runoff	Nutrients applied to agricultural land are introduced into aquatic systems	Indirect Negative Reduced habitat quality	Indirect Negative Reduced habitat quality	Direct Negative Reduced habitat quality	Indirect Negative Reduced habitat quality	Indirect Negative Reduced habitat quality negatively affects resource
^{P, Pr, RFF} Port maintenance	Dredging of coastal, port and harbor areas for port maintenance	Uncertain – Likely Indirect Negative Dependent on mitigation effects	Uncertain – Likely Indirect Negative Dependent on mitigation effects	Uncertain – Likely Direct Negative Dependent on mitigation effects	Uncertain – Likely Indirect Negative Dependent on mitigation effects	Uncertain – Likely Mixed Dependent on mitigation effects

Table 33 (Continued). Impacts of Past (P), Present (Pr), and Reasonably Foreseeable Future (RFF) Actions on the five VECs (not including those actions considered in this specifications document).

Action	Description	Impacts on Managed Resource	Impacts on Non-target Species	Impacts on Habitat and EFH	Impacts on Protected Species	Impacts on Human Communities
P, Pr, RFF Offshore disposal of dredged materials	Disposal of dredged materials	Indirect Negative Reduced habitat quality	Indirect Negative Reduced habitat quality	Direct Negative Reduced habitat quality	Indirect Negative Reduced habitat quality	Indirect Negative Reduced habitat quality negatively affects resource viability
P, Pr, RFF Beach nourishment	Offshore mining of sand for beaches	Indirect Negative Localized decreases in habitat quality	Indirect Negative Localized decreases in habitat quality	Direct Negative Reduced habitat quality	Indirect Negative Localized decreases in habitat quality	Mixed Positive for mining companies, possibly negative for fishing industry
	Placement of sand to nourish beach shorelines	Indirect Negative Localized decreases in habitat quality	Indirect Negative Localized decreases in habitat quality	Direct Negative Reduced habitat quality	Indirect Negative Localized decreases in habitat quality	Positive Beachgoers like sand; positive for tourism
P, Pr, RFF Marine transportation	Expansion of port facilities, vessel operations and recreational marinas	Indirect Negative Localized decreases in habitat quality	Indirect Negative Localized decreases in habitat quality	Direct Negative Reduced habitat quality	Indirect Negative Localized decreases in habitat quality	Mixed Positive for some interests, potential displacement for others
P, Pr, RFF Installation of pipelines, utility lines and cables	Transportation of oil, gas and energy through pipelines, utility lines and cables	Uncertain – Likely Indirect Negative Dependent on mitigation effects	Uncertain – Likely Indirect Negative Dependent on mitigation effects	Uncertain – Likely Direct Negative Reduced habitat quality	Potentially Direct Negative Dependent on mitigation effects	Uncertain – Likely Mixed Dependent on mitigation effects
P, Pr, RFFA Ocean acidification and warming	The acidification and warming of the Earth’s oceans due to rising levels of carbon dioxide	Likely Indirect Negative Changes in food webs may occur but are not well understood	Likely Indirect Negative- Changes in food webs may occur but are not well understood	Likely Indirect Negative- Coral are particularly sensitive to increasing acidity	Likely Indirect Negative- Changes in food webs may occur but are not well understood	Likely Indirect Negative- if loss of fishing opportunities occur

Table 33 (Continued). Impacts of Past (P), Present (Pr), and Reasonably Foreseeable Future (RFF) Actions on the five VECs (not including those actions considered in this specifications document).

Action	Description	Impacts on Managed Resource	Impacts on Non-target Species	Impacts on Habitat and EFH	Impacts on Protected Species	Impacts on Human Communities
^{RFF} Offshore Wind Energy Facilities (within 3 years)	Construction of wind turbines to harness electrical power	Uncertain – Likely Indirect Negative Dependent on mitigation effects	Uncertain – Likely Indirect Negative Dependent on mitigation effects	Potentially Direct Negative Localized decreases in habitat quality possible	Uncertain – Likely Indirect Negative Dependent on mitigation effects	Uncertain – Likely Mixed Dependent on mitigation effects
^{Pr, RFF} Liquefied Natural Gas (LNG) terminals (within 3 years)	Transport natural gas via tanker to terminals offshore and onshore	Uncertain – Likely Indirect Negative Dependent on mitigation effects	Uncertain – Likely Indirect Negative Dependent on mitigation effects	Potentially Direct Negative Localized decreases in habitat quality possible	Uncertain – Likely Indirect Negative Dependent on mitigation effects	Uncertain – Likely Mixed Dependent on mitigation effects
^{RFF} Convening of Gear Take Reduction Teams (within next 3 years)	Recommend measures to reduce mortality and injury to marine mammals	Indirect Positive Will improve data quality for monitoring total removals	Indirect Positive Reducing availability of gear could reduce bycatch	Indirect Positive Reducing availability of gear could reduce gear impacts	Indirect Positive Reducing availability of gear could reduce encounters	Indirect Negative Reducing availability of gear could reduce revenues
^{RFF} Strategy for Sea Turtle Conservation for the Atlantic Ocean and the Gulf of Mexico Fisheries (w/in next 3 years)	May recommend strategies to prevent the bycatch of sea turtles in commercial fisheries operations	Indirect Positive Will improve data quality for monitoring total removals	Indirect Positive Reducing availability of gear could reduce bycatch	Indirect Positive Reducing availability of gear could reduce gear impacts	Indirect Positive Reducing availability of gear could reduce encounters	Indirect Negative Reducing availability of gear could reduce revenues

5.2.5.1 Managed Resources (Target Species)

Those past, present, and reasonably foreseeable future actions, whose effects may impact the managed resources and the direction of those potential impacts, are summarized in Table 33. The indirectly negative actions described in Table 34 are localized in nearshore areas and marine project areas where they occur. Therefore, the magnitude of those impacts on the managed resources is expected to be limited due to a lack of exposure to the population at large. Agricultural runoff may be much broader in scope, and the impacts of nutrient inputs to the coastal system may be of a larger magnitude, although the impact on productivity of the managed resources is unquantifiable. As previously described, NMFS has several means under which it can review non-fishing actions of other federal or state agencies that may impact NMFS' managed resources prior to permitting or implementation of those projects. This serves to minimize the extent and magnitude of indirect negative impacts those actions could have on resources under NMFS' jurisdiction. Additionally, there are some actions, which are beyond the scope of NMFS and Council management such as coastal population growth and climate changes, which may indirectly impact the managed resources.

Past fishery management actions taken through the FMP and annual specification process have had a positive cumulative effect on the managed resources. It is anticipated that the future management actions, described in Table 33, will result in additional indirect positive effects on the managed resources through actions which reduce and monitor bycatch, protect habitat, and protect ecosystem services on which summer flounder, scup, and black sea bass productivity depends. The 2012 fishing year was the first year of implementation for an Amendment which requires specification of ACLs/AMs and catch accountability and this process has been carried forward into the 2013 and 2014 proposed measures. This represents a major change to the current management program and is expected to lead to improvements in resource sustainability over the long-term. These impacts could be broad in scope. Overall, the past, present, and reasonably foreseeable future actions that are truly meaningful to summer flounder, scup, and black sea bass have had a positive cumulative effect.

Catch limits, commercial quotas and recreational harvest limits for each of the managed resources have been specified to ensure these rebuilt stocks are managed in a sustainable manner, and measures are consistent with the objectives of the FMP under the guidance of the MSA. The impacts from annual specification of management measures established in previous years on the managed resources are largely dependent on how effective those measures were in meeting their intended objectives (i.e., preventing overfishing, achieve OY) and the extent to which mitigating measures were effective. The proposed action in this document would have negligible impacts on target species overall. Therefore, the proposed action would not have any significant effect on the managed resources individually or in conjunction with other anthropogenic activities (see Table 34).

Table 34. Summary of the effects of past, present, and reasonably foreseeable future actions on the managed resource.

Action	Past to the Present	Reasonably Foreseeable Future
Original FMP and subsequent Amendments and Frameworks to the FMP	Indirect Positive	
Summer Flounder, Scup and Black Sea Bass Specifications	Indirect Positive	
Developed, Apply, and Redo Standardized Bycatch Reporting Methodology	Neutral	
Amendment to address ACLs/AMs implemented		Potentially Indirect Positive
Agricultural runoff	Indirect Negative	
Port maintenance	Uncertain – Likely Indirect Negative	
Offshore disposal of dredged materials	Indirect Negative	
Beach nourishment – Offshore mining	Indirect Negative	
Beach nourishment – Sand placement	Indirect Negative	
Marine transportation	Indirect Negative	
Installation of pipelines, utility lines and cables	Uncertain – Likely Indirect Negative	
Offshore Wind Energy Facilities (within 3 years)		Uncertain – Likely Indirect Negative
Liquefied Natural Gas (LNG) terminals (within 3 years)		Uncertain – Likely Indirect Negative
Convening Gear Take Reduction Teams (within 3 years)		Indirect Positive
Strategy for Sea Turtle Conservation for the Atlantic Ocean and the Gulf of Mexico Fisheries (within next 3 years)		Indirect Positive
Summary of past, present, and future actions excluding those proposed in this document	Overall, actions have had, or will have, positive impacts on the managed resources * See section 5.2.5.1 for explanation.	

5.2.5.2 Non-Target Species and Bycatch

Those past, present, and reasonably foreseeable future actions, whose effects may impact non-target species and the direction of those potential impacts, are summarized in Table 33. The effects of indirectly negative actions described in Table 35 are localized in nearshore areas and marine project areas where they occur. Therefore, the magnitude of those impacts on non-target species is expected to be limited due to a lack of exposure to the population at large. Agricultural runoff may be much broader in scope, and the impacts of nutrient inputs to the coastal system may be of a larger magnitude, although the impact on productivity of non-target resources and the oceanic ecosystem is unquantifiable. As previously described, NMFS has several means under which it can review non-fishing actions of other federal or state agencies that may impact NMFS' managed resources prior to permitting or implementation of those projects. At this time, NMFS can consider impacts to non-target species (federally-managed or otherwise) and comment on potential impacts. This serves to minimize the extent and magnitude of indirect negative impacts those actions could have on resources within NMFS' jurisdiction. Additionally, there are some actions, which are beyond the scope of NMFS and Council management such as coastal population growth and climate changes, which may indirectly impact non-target species and bycatch.

Past fishery management actions taken through the FMP and annual specification process have had a positive cumulative effect on non-target species. Implementation and application of a standardized bycatch reporting methodology (SBRM) would have a particular impact on non-target species by improving the methods which can be used to assess the magnitude and extent of a potential bycatch problem. The redevelopment of the SBRM will result in better assessment of potential bycatch issues and allow more effective and specific management measures to be developed to address a bycatch problem. It is anticipated that future management actions, described in Table 35, will result in additional indirect positive effects on non-target species through actions which reduce and monitor bycatch, protect habitat, and protect ecosystem services on which the productivity of many of these non-target resources depend. The impacts of these future actions could be broad in scope, and it should be noted the managed resource and non-target species are often coupled in that they utilize similar habitat areas and ecosystem resources on which they depend. Overall, the past, present, and reasonably foreseeable future actions that are truly meaningful have had a positive cumulative effect on non-target species.

Catch limits, commercial quotas and recreational harvest limits for each of the managed resources have been specified to ensure these rebuilt stocks are managed in a sustainable manner, and measures are consistent with the objectives of the FMP under the guidance of the MSA. The proposed action in this document would have negligible impacts on non-target species, and would not change the past and anticipated positive cumulative effects on non-target species. Thus, the proposed action would not have any significant effect on these species individually or in conjunction with other anthropogenic activities (Table 35).

Table 35. Summary of the effects of past, present, and reasonably foreseeable future actions on the non-target species.

Action	Past to the Present	Reasonably Foreseeable Future
Original FMP and subsequent Amendments and Frameworks to the FMP	Indirect Positive	
Summer Flounder, Scup and Black Sea Bass Specifications	Indirect Positive	
Developed, Apply, and Redo Standardized Bycatch Reporting Methodology	Neutral	
Amendment to address ACLs/AMs implemented		Potentially Indirect Positive
Agricultural runoff	Indirect Negative	
Port maintenance	Uncertain – Likely Indirect Negative	
Offshore disposal of dredged materials	Indirect Negative	
Beach nourishment – Offshore mining	Indirect Negative	
Beach nourishment – Sand placement	Indirect Negative	
Marine transportation	Indirect Negative	
Installation of pipelines, utility lines and cables	Uncertain – Likely Indirect Negative	
Offshore Wind Energy Facilities (within 3 years)		Uncertain – Likely Indirect Negative
Liquefied Natural Gas (LNG) terminals (within 3 years)		Uncertain – Likely Indirect Negative
Convening Gear Take Reduction Teams (within 3 years)		Indirect Positive
Strategy for Sea Turtle Conservation for the Atlantic Ocean and the Gulf of Mexico Fisheries (within next 3 years)		Indirect Positive
Summary of past, present, and future actions excluding those proposed in this document	Overall, actions have had, or will have, positive impacts on the non-target species * See section 5.2.5.2 for explanation.	

5.2.5.3 Habitat (Including EFH)

Those past, present, and reasonably foreseeable future actions, whose effects may impact habitat (including EFH) and the direction of those potential impacts, are summarized in Table 33. The direct and indirect negative actions described in Table 36 are localized in nearshore areas and marine project areas where they occur. Therefore, the magnitude of those impacts on habitat is expected to be limited due to a lack of exposure to habitat at large. Agricultural runoff may be much broader in scope, and the impacts of nutrient inputs to the coastal system may be of a larger magnitude, although the impact on habitat and EFH is unquantifiable. As previously described, NMFS has several means under which it can review non-fishing actions of other federal or state agencies that may impact NMFS' managed resources and the habitat on which they rely prior to permitting or implementation of those projects. This serves to minimize the extent and magnitude of direct and indirect negative impacts those actions could have on habitat utilized by resources under NMFS' jurisdiction.

Past fishery management actions taken through the FMP and annual specification process have had a positive cumulative effect on habitat and EFH. The actions have constrained fishing effort at a large scale and locally, and have implemented gear requirements, which may reduce habitat impacts. As required under these FMP actions, EFH and HAPCs were designated for the managed resources. It is anticipated that the future management actions, described in Table 36, will result in additional direct or indirect positive effects on habitat through actions which protect EFH for federally-managed species and protect ecosystem services on which these species' productivity depends. These impacts could be broad in scope. All of the VECs are interrelated; therefore, the linkages among habitat quality and EFH, managed resources and non-target species productivity, and associated fishery yields should be considered. For habitat and EFH, there are direct and indirect negative effects from actions which may be localized or broad in scope; however, positive actions that have broad implications have been, and it is anticipated will continue to be, taken to improve the condition of habitat. There are some actions, which are beyond the scope of NMFS and Council management such as coastal population growth and climate changes, which may indirectly impact habitat and ecosystem productivity. Overall, the past, present, and reasonably foreseeable future actions that are truly meaningful to habitat have had a neutral to positive cumulative effect.

Catch limits, commercial quotas and recreational harvest limits for each of the managed resources have been specified to ensure these rebuilt stocks are managed in a sustainable manner, and measures are consistent with the objectives of the FMP under the guidance of the MSA. The proposed action in this document would have negligible impacts on habitat overall. It would not change the past and anticipated cumulative effects on habitat and thus, would not have any significant effect on habitat individually or in conjunction with other anthropogenic activities (Table 36).

Table 36. Summary of the effects of past, present, and reasonably foreseeable future actions on the habitat.

Action	Past to the Present	Reasonably Foreseeable Future
Original FMP and subsequent Amendments and Frameworks to the FMP	Indirect Positive	
Summer Flounder, Scup and Black Sea Bass Specifications	Indirect Positive	
Developed, Apply, and Redo Standardized Bycatch Reporting Methodology	Neutral	
Amendment to address ACLs/AMs implemented		Potentially Indirect Positive
Agricultural runoff	Direct Negative	
Port maintenance	Uncertain – Likely Direct Negative	
Offshore disposal of dredged materials	Direct Negative	
Beach nourishment – Offshore mining	Direct Negative	
Beach nourishment – Sand placement	Direct Negative	
Marine transportation	Direct Negative	
Installation of pipelines, utility lines and cables	Uncertain – Likely Direct Negative	
Offshore Wind Energy Facilities (within 3 years)		Potentially Direct Negative
Liquefied Natural Gas (LNG) terminals (within 3 years)		Potentially Direct Negative
Convening Gear Take Reduction Teams (within 3 years)		Indirect Positive
Strategy for Sea Turtle Conservation for the Atlantic Ocean and the Gulf of Mexico Fisheries (within next 3 years)		Indirect Positive
Summary of past, present, and future actions excluding those proposed in this document	Overall, actions have had, or will have, neutral to positive impacts on habitat, including EFH * See section 5.2.5.3 for explanation.	

5.2.5.4 Protected Resources

Those past, present, and reasonably foreseeable future actions, whose effects may impact the protected resources and the direction of those potential impacts, are summarized in Table 33. The indirectly negative actions described in Table 37 are localized in nearshore areas and marine project areas where they occur. Therefore, the magnitude of those impacts on protected resources, relative to the range of many of the protected resources, is expected to be limited due to a lack of exposure to the population at large. Agricultural runoff may be much broader in scope, and the impacts of nutrient inputs to the coastal system may be of a larger magnitude, although the impact on protected resources either directly or indirectly is unquantifiable. As previously described, NMFS has several means, including ESA, under which it can review non-fishing actions of other federal or state agencies that may impact NMFS' protected resources prior to permitting or implementation of those projects. This serves to minimize the extent and magnitude of indirect negative impacts those actions could have on protected resources under NMFS' jurisdiction. Additionally, there are some actions, which are beyond the scope of NMFS and Council management such as coastal population growth and climate changes, which may indirectly impact protected resources.

Past fishery management actions taken through the FMP and annual specification process have had a positive cumulative effect on ESA-listed and MMPA protected species through the reduction of fishing effort (potential interactions) and implementation of gear requirements. It is anticipated that the future management actions, specifically those recommended by the ALWTRT and the development of strategies for sea turtle conservation described in Table 37, will result in additional indirect positive effects on the protected resources. These impacts could be broad in scope. Overall, the past, present, and reasonably foreseeable future actions that are truly meaningful to protected resources have had a positive cumulative effect.

Catch limits, commercial quotas and recreational harvest limits for each of the managed resources have been specified to ensure these rebuilt stocks are managed in a sustainable manner, and measures are consistent with the objectives of the FMP under the guidance of the MSA. The proposed action in this document would have negligible impacts on protected resources. It would not change the past and anticipated cumulative effects on ESA-listed and MMPA protected species and thus, would not have any significant effect on protected resources individually or in conjunction with other anthropogenic activities (Table 37).

Table 37. Summary of the effects of past, present, and reasonably foreseeable future actions on the protected resources.

Action	Past to the Present	Reasonably Foreseeable Future
Original FMP and subsequent Amendments and Frameworks to the FMP	Indirect Positive	
Summer Flounder, Scup and Black Sea Bass Specifications	Indirect Positive	
Developed, Apply, and Redo Standardized Bycatch Reporting Methodology	Neutral	
Amendment to address ACLs/AMs implemented		Potentially Indirect Positive
Agricultural runoff	Indirect Negative	
Port maintenance	Uncertain – Likely Indirect Negative	
Offshore disposal of dredged materials	Indirect Negative	
Beach nourishment – Offshore mining	Indirect Negative	
Beach nourishment – Sand placement	Indirect Negative	
Marine transportation	Indirect Negative	
Installation of pipelines, utility lines and cables	Potentially Direct Negative	
Offshore Wind Energy Facilities (within 3 years)		Uncertain – Likely Indirect Negative
Liquefied Natural Gas (LNG) terminals (within 3 years)		Uncertain – Likely Indirect Negative
Convening Gear Take Reduction Teams (within 3 years)		Indirect Positive
Strategy for Sea Turtle Conservation for the Atlantic Ocean and the Gulf of Mexico Fisheries (within next 3 years)		Indirect Positive
Summary of past, present, and future actions excluding those proposed in this document	Overall, actions have had, or will have, positive impacts on protected resources * See section 5.2.5.4 for explanation.	

5.2.5.5 Human Communities

Those past, present, and reasonably foreseeable future actions, whose effects may impact human communities and the direction of those potential impacts, are summarized in Table 33. The indirectly negative actions described in Table 38 are localized in nearshore areas and marine project areas where they occur. Therefore, the magnitude of those impacts on human communities is expected to be limited in scope. It may, however, displace fishermen from project areas. Agricultural runoff may be much broader in scope, and the impacts of nutrient inputs to the coastal system may be of a larger magnitude. This may result in indirect negative impacts on human communities by reducing resource availability; however, this effect is unquantifiable. As previously described, NMFS has several means under which it can review non-fishing actions of other federal or state agencies prior to permitting or implementation of those projects. This serves to minimize the extent and magnitude of indirect negative impacts those actions could have on human communities. Additionally, there are some actions, which are beyond the scope of NMFS and Council management such as coastal population growth and climate changes, which may indirectly impact human communities.

Past fishery management actions taken through the FMP and annual specification process have had both positive and negative cumulative effects by benefiting domestic fisheries through sustainable fishery management practices, while at the same time potentially reducing the availability of the resource to all participants. Sustainable management practices are, however, expected to yield broad positive impacts to fishermen, their communities, businesses, and the nation as a whole. It is anticipated that the future management actions, described in Table 38, will result in positive effects for human communities due to sustainable management practices, although additional indirect negative effects on the human communities could occur through management actions that may implement gear requirements or area closures and thus, reduce revenues. Overall, the past, present, and reasonably foreseeable future actions that are truly meaningful to human communities have had an overall positive cumulative effect.

Catch limits, commercial quotas and recreational harvest limits for each of the managed resources have been specified to ensure these rebuilt stocks are managed in a sustainable manner, and measures are consistent with the objectives of the FMP under the guidance of the MSA. The impacts from annual specification measures established in previous years on the managed resources are largely dependent on how effective those measures were in meeting their intended objectives and the extent to which mitigating measures were effective. Overages may alter the timing of commercial fishery revenues (revenues realized a year earlier), and there may be impacts on some fishermen caused by unexpected reductions in their opportunities to earn revenues in the commercial fisheries in the year during which the overages are deducted. Similarly recreational fisheries may have decreased harvest opportunities due to reduced harvest limits as a result of overages, or more restrictive recreational management measures that must be implemented (i.e., minimum fish size, possession limits, fishing seasons).

Despite the potential for negative short-term effects on human communities, the expectation is that there would be a positive long-term effect on human communities due to the long-term sustainability of summer flounder, scup, and black sea bass. Overall, the proposed actions in this document would have negligible to low negative impacts on the commercial fleet and low

positive impacts on the recreational fleet. It would not change the past and anticipated cumulative effects on human communities and thus, would not have any significant effect on human communities individually, or in conjunction with other anthropogenic activities (Table 38).

Table 38. Summary of the effects of past, present, and reasonably foreseeable future actions on human communities.

Action	Past to the Present	Reasonably Foreseeable Future
Original FMP and subsequent Amendments and Frameworks to the FMP	Indirect Positive	
Summer Flounder, Scup and Black Sea Bass Specifications	Indirect Positive	
Developed, Apply, and Redo Standardized Bycatch Reporting Methodology	Potentially Indirect Negative	
Amendment to address ACL/AMs implemented		Potentially Indirect Positive
Agricultural runoff	Indirect Negative	
Port maintenance	Uncertain – Likely Mixed	
Offshore disposal of dredged materials	Indirect Negative	
Beach nourishment – Offshore mining	Mixed	
Beach nourishment – Sand placement	Positive	
Marine transportation	Mixed	
Installation of pipelines, utility lines and cables	Uncertain – Likely Mixed	
Offshore Wind Energy Facilities (within 3 years)		Uncertain – Likely Mixed
Liquefied Natural Gas (LNG) terminals (within 3 years)		Uncertain – Likely Mixed
Convening Gear Take Reduction Teams (within 3 years)		Indirect Negative
Strategy for Sea Turtle Conservation for the Atlantic Ocean and the Gulf of Mexico Fisheries (within next 3 years)		Indirect Negative
Summary of past, present, and future actions excluding those proposed in this document	Overall, actions have had, or will have, positive impacts on human communities * See section 5.2.5.5 for explanation.	

5.2.6 Preferred Action on all the VECs

The Council has identified its preferred action alternatives in Section 5.0. The cumulative effects of the range of actions considered in this document can be considered to make a determination if significant cumulative effects are anticipated from the preferred action. The direct and indirect impacts of the proposed action on the VECs are described in Section 5.1. The magnitude and significance of the cumulative effects, which include the additive and synergistic effects of the proposed action, as well as past, present, and future actions, have been taken into account throughout this section 5.2. The action proposed in this annual specifications document builds off action taken in the original FMP and subsequent amendments and framework documents. When this action is considered in conjunction with all the other pressures placed on fisheries by past, present, and reasonably foreseeable future actions, it is not expected to result in any significant impacts, positive or negative. Based on the information and analyses presented in these past FMP documents and this document, there are no significant cumulative effects associated with the action proposed in this document (Table 39).

Table 39. Magnitude and significance of the cumulative effects; the additive and synergistic effects of the preferred action, as well as past, present, and future actions.

VEC	Status in 2013	Net Impact of P, Pr, and RFF Actions	Impact of the Preferred Action for 2013 and 2014	Significant Cumulative Effects
Managed Resource	Complex and variable (Section 5.1.1)	Positive (Sections 5.2.4 and 5.2.5.1)	Negligible overall; Localized low positive on artificial reefs (Section 5.1)	None
Non-target Species	Complex and variable (Section 5.1.2)	Positive (Sections 5.2.4 and 5.2.5.2)	Negligible overall; Localized low positive on artificial reefs (Section 5.1)	None
Habitat	Complex and variable (Section 5.1.3)	Neutral to positive (Sections 5.2.4 and 5.2.5.3)	Negligible overall; Localized low positive on artificial reefs (Section 5.1)	None
Protected Resources	Complex and variable (Section 5.1.4)	Positive (Sections 5.2.4 and 5.2.5.4)	Negligible (Section 5.1)	None
Human Communities	Complex and variable (Section 5.1.5)	Positive (Sections 5.2.4 and 5.2.5.5)	Low positive on recreational fleet; negligible to low negative impacts on commercial fleet (Section 5.1)	None

6.0 APPLICABLE LAWS

6.1 *Magnuson-Stevens Fishery Conservation and Management Act (MSA)*

6.1.1 National Standards

Section 301 of the MSA requires that FMPs contain conservation and management measures that are consistent with the ten National Standards. This SMZ action is proposed under the Black Sea Bass Provisions of the Summer Flounder, Scup and Black Sea Bass FMP. The most recent amendments to the Summer Flounder, Scup and Black Sea Bass FMP address how the management actions implemented comply with the National Standards. First and foremost, the obligations of National Standard 1 are met by adopting and implementing conservation and management measures under the FMP that will continue to prevent overfishing, while achieving, on a continuing basis, the optimum yield (OY) for summer flounder, scup, and black sea bass and the U.S. fishing industry. Controlling overfishing is carried out through the annual specification process for the FMP. To achieve OY, both scientific and management uncertainty need to be addressed when establishing catch limits that are less than the OFL. Controlling overfishing is carried out through the annual specification process for the FMP, and the annual specifications do not exceed the ABC recommendations of the council's SSC which have been developed to explicitly address scientific uncertainty. In addition, relevant sources of management uncertainty and other social, economic, and ecological factors, have been considered which resulted in recommendations for annual catch targets for all three managed resources. The implementation of the SMZs does not alter the OFLs. Therefore, they have no positive or negative effects on ability to manage to National Standard 1 requirements. The best scientific information available was used (National Standard 2) and the FMP manages all three species throughout their range (National Standard 3). These management measures do not discriminate among residents of different states (National Standard 4), they do not have economic allocation as their sole purpose (National Standard 5), the measures account for variations in these fisheries (National Standard 6), they avoid unnecessary duplication (National Standard 7), they take into account the fishing communities (National Standard 8) and they promote safety at sea (National Standard 10). Finally, actions taken are consistent with National Standard 9, which addresses bycatch in fisheries. Through the FMP many regulations have been implemented by NMFS that have indirectly acted to reduce fishing gear impacts on EFH. By continuing to meet the National Standards requirements of the MSA through future FMP amendments, framework actions, and the annual specification setting process, NMFS will insure that cumulative impacts of these actions will remain positive overall for the ports and communities that depend on these fisheries, the Nation as a whole, and certainly for the resources.

6.2 NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) – Finding of no Significant Impact

NOAA Administrative Order 216-6 (May 20, 1999) contains criteria for determining the significance of the impacts of a proposed action. In addition, the CEQ regulations at 40 C.F.R. 1508.27 states that the significance of an action should be analyzed both in terms of “context” and “intensity.” The proposed action in this EA is the designation of 4 artificial reefs off of Delaware as SMZs. Each criterion listed below is relevant in making a finding of no significant impact (FONSI) and has been considered individually, as well as in combination with the others. The significance of this action is analyzed based on the NOAA Administrative Order criteria and CEQ’s context and intensity criteria. These include:

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

Response: The proposed action would not jeopardize the sustainability of any of the target species identified in Section 4.1, because the proposed action would not affect any annual catch limits (ACLs) so there would be no direct biological effects on the overall target species populations. While there may be some indirect low positive impacts associated with a more orderly managed fishery, the area designated for the four artificial reef sites is a very small area (totaling about 4.08 square nautical miles) compared to where the fisheries take place for the target species found on or near the reef site. Therefore, the impact of the proposed action on the overall target species population would be negligible. The biological impacts of the proposed action on the target species are analyzed in Section 5.1.1.

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

Response: The proposed action is not expected to jeopardize the sustainability of any non-target species identified in Section 4.2. The proposed action would not affect any ACLs so there would be no direct biological effects on the overall non-target and bycatch species populations assuming there is a relatively constant ratio of non-target species and bycatch to target species. While there may be some indirect low positive impacts associated with a more orderly managed fishery, the area designated for the four artificial reef sites is a very small area (about 4.08 square nautical miles) compared to where the fisheries take place for the major non-target species found on or near the reef site. Therefore, the impact of the proposed action on the overall non-target species population would be negligible. The biological impacts of the proposed action on the target species are analyzed in Section 5.1.2.

3. Can the proposed action reasonably be expected to cause substantial damage to the ocean and coastal habitats and/or essential fish habitat as defined under the Magnuson-Stevens Act and identified in FMPs?

Response: 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

proposed action may have some minor benefits for habitat at the to the SMZ reef sites due to restrictions on damaging commercial gear. However, these restrictions only cover a very small portion (about 4.08 nautical square miles) of the greater habitat in the region and commercial fishing effort would likely still occur adjacent to the SMZ or other areas. Therefore, as discussed in Section 5.1.3 the proposed action would negligible impacts on habitat.

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

Response: The proposed action is not expected to have a substantial adverse impact on public health and safety. The proposed action would likely improve safety at sea by reducing gear conflicts between recreational and commercial vessels.

5. Can the proposed action reasonably be expected to adversely affect endangered or threatened species, marine mammals, or critical habitat of these species?

Response: The proposed action is not expected to have an adverse impact on endangered or threatened species, marine mammals, or critical habitat of these species. Under the proposed action a small amount of commercial fishing would shift from the SMZs to areas near the artificial reef sites or move to other open areas. Minor shifts in placement of commercial gears should not increase or decrease interactions with protected resources. Therefore, as discussed in Section 5.1.4 the proposed action would have negligible impacts on protected resources.

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

Response: The proposed action is not expected to have a substantial impact on biodiversity and ecosystem function within the affected area. Minor shifts in placement of commercial gear out of the relatively small SMZ areas (about 4.08 nautical square miles) could occur under the proposed action. However, this would not increase fishing effort or substantially change the spatial and/or temporal distribution of current fishing effort.

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

Response: There are no significant social and economic impacts of the proposed action that are interrelated with natural or physical environmental effects. As discussed in Section 5.1.5, the proposed action would have in low positive economic impacts to recreational fleet and likely have low negative to negligible economic effects on the commercial fleet. The proposed action would not increase fishing effort or substantially change the spatial and/or temporal distribution of current fishing effort. Therefore, the social and economic impacts of the proposed action are not interrelated with significant natural or physical environmental effects.

8. *Are the effects on the quality of the human environment likely to be highly controversial?*

Response: The effects of the proposed action on the quality of human environment are not expected to be highly controversial. The impacts of the proposed measures on the human environment are described in Section 5.0 of the EA. This action merely designates four artificial reefs as SMZs. The proposed action is based on provisions contained in the FMP. Thus, the measures contained in this action are not expected to be highly controversial.

9. *Can the proposed action reasonably be expected to result in substantial impacts to unique areas, such as historic or cultural resources, parkland, prime farmlands, wetlands, wild and scenic rivers or ecologically critical areas?*

Response: Historic or cultural resources such as shipwrecks are present in the area where the summer flounder, scup, and black sea bass fisheries are prosecuted. However, vessels try to avoid fishing too close to wrecks due to the possible loss or entanglement of fishing gear. Therefore, it is not likely that the proposed action would result in substantial impacts to unique areas.

10. *Are the effects on the human environment likely to be highly uncertain or involve unique or unknown risks?*

Response: The impacts of the proposed measures on the human environment are described in Section 5.0 of the EA. This action merely designates four artificial reefs as SMZs. The proposed action is based on provisions contained in the FMP. Therefore, the effects of the proposed action on the human environment are not expected to be highly uncertain or involve unique or unknown risks.

11. *Is the proposed action, related to other actions with individually insignificant, but cumulatively significant impacts?*

Response: The CEA presented in Section 5.2 of this document considers the impacts of the proposed action in combination with relevant past, present, and reasonably foreseeable future actions and concludes that no significant cumulative impacts are expected from the implementation of the proposed action. Further, the proposed action would not have any significant impacts when considered individually or in conjunction with any of the other actions presented in Section 5.2 (fishing related and non-fishing related).

12. *Is the proposed action likely to adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural or historical resources?*

Response: Although there are shipwrecks present in areas where summer flounder, scup, and black sea bass fishing occurs, including some registered on the National Register of Historic Places, vessels try to avoid fishing too close to wrecks due to the possible loss or entanglement of fishing gear. Therefore, it is not likely that the proposed action would adversely affect the historic resources.

13. *Can the proposed action reasonably be expected to result in the introduction or spread of a non-indigenous species?*

Response: The proposed action would not increase fishing effort or substantially change the spatial and/or temporal distribution of current fishing effort. Therefore, it is highly unlikely that the proposed action would be expected to result in the introduction or spread of a non-indigenous species.

14. *Is the proposed action likely to establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration?*

Response: The proposed action was initiated in response to requests by recreational fishermen and the Council to limit gear conflicts on the Delaware artificial reef sites. This action does not effect the current status or future status of any other artificial reef site in the region. Therefore, the proposed action is not likely to establish a precedent for future actions with significant effects or represent a decision in principle about a future consideration.

15. *Can the proposed action reasonably be expected to threaten a violation of federal, state, or local law or requirements imposed for the protection of the environment?*

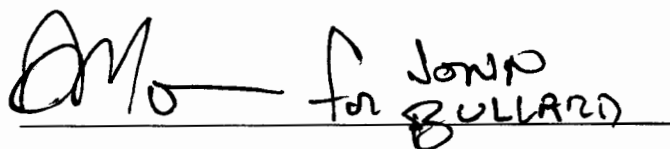
Response: The proposed action is not expected to alter fishing methods or activities such that they threaten a violation of federal, State, or local law or requirements imposed for the protection of the environment. In fact, the proposed measures have been found to be consistent with other applicable laws (see below).

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

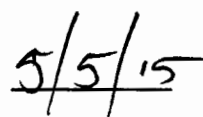
Response: The proposed action is not expected to result in cumulative adverse effects that could have a substantial effect on target or non-target species. As stated in Section 5.1, and 5.2, the impact on these resources is expected to be minimal.

DETERMINATION

In view of the information presented in this document and the analysis contained in the supporting EA prepared for the designation of four artificial reef sites off of Delaware as Special Management Zones (SMZs), it is hereby determined that the approval the proposed action, will not significantly impact the quality of the human environment as described above and in the supporting EA. In addition, all beneficial and adverse impacts of the proposed action have been addressed to reach the conclusion of no significant impacts. Accordingly, preparation of an EIS for this action is not necessary.

 for John BULLARD

Regional Administrator, Greater Atlantic Region, NMFS



Date

6.3 *Endangered Species Act*

Sections 6.3 and 7.0 should be referenced for an assessment of the impacts of the proposed action on endangered species and protected resources. None of the proposed measures in this document are expected to significantly alter fishing methods or activities. Therefore, this action is not expected to affect endangered or threatened species or critical habitat in any manner not considered in previous consultations on the fisheries.

6.4 *Marine Mammal Protection Act*

Sections 6.3 and 7.0 should be referenced for an assessment of the impacts of the proposed action on marine mammals. None of the proposed measures in this document are expected to significantly alter fishing methods or activities. Therefore, this action is not expected to affect marine mammals or critical habitat in any manner not considered in previous consultations on the fisheries.

6.5 *Coastal Zone Management Act*

The Coastal Zone Management Act (CZMA) of 1972, as amended, provides measures for ensuring stability of productive fishery habitat while striving to balance development pressures with social, economic, cultural, and other impacts on the coastal zone. It is recognized that responsible management of both coastal zones and fish stocks must involve mutually supportive goals. NMFS has developed this document and must determine whether this action is consistent to the maximum extent practicable with the CZM programs for each state (Maine through North Carolina).

6.6 *National Fisheries Enhancement Act of 1984*

Purpose of the National Fisheries Enhancement Act of 1984 is to promote and facilitate responsible and effective efforts to establish artificial reefs. It established permitting and material standards for artificial reefs. It directs the Secretary of Commerce, in consultation with the Secretary of the Interior, the Secretary of Defense, the Administrator of the Environmental Protection Agency, the Secretary of the Department in which the Coast Guard is operating, the Regional Fishery Management Councils, interested states, interstate fisheries commissions, and representatives of the private sector shall develop and publish a long term plan for artificial reefs. The plan must include measures to insure that artificial reefs should be based on the best scientific information, be constructed and monitored and managed to: (1) Enhance fisheries resources to the maximum extent practicable; (2) facilitate access and utilization by United States recreational and commercial fishermen; (3) minimize conflicts of competing uses; (4) minimize environmental risk and risk to personal health and property; and, (5) be consistent with generally acceptable principles of international law and shall not create any unreasonable obstruction to navigation. On behalf of the Secretary of Commerce, NMFS published a

National Artificial Reef Plan in 1985, and updated the plan in in 2007. The 2007 update included recognition that SMZ designation as an alternative for maintaining compatibility of reef development with fisheries management objectives. It offered guidance that artificial reefs designated as SMZs provide reef mangers much more flexibility to effectively utilize reefs as fishery management tools by providing a degree of regulatory control that otherwise would not exist, and allow artificial reefs to be used as non-traditional fishery management tools. This action establishes four artificial reef SMZs to reduce user gear conflicts on the artificial reefs and allow for the reefs intended use to enhance recreational fisheries.

6.7 Federal Aid in Sport Fish Restoration Act

Commonly called the Dingell-Johnson Act or Wallop-Breaux Act it provides Federal aid to the States for management and restoration of fish having "material value in connection with sport or recreation in the marine and/or fresh waters of the United States." Funds distributed to states for the various programs funded in the Act are collected in an account known as the Sport Fish Restoration Account, Funds are derived from a 10-percent excise tax on certain items of sport fishing tackle (Internal Revenue Code of 1954, sec. 4161), a 3-percent excise tax on fish finders and electric trolling motors, import duties on fishing tackle, yachts and pleasure craft, interest on the account, and a portion of motorboat fuel tax revenues and small engine fuel taxes.

The four artificial reefs proposed for SMZ status were built and are currently maintained through Sport Fish Restoration Account funds. The proposed action would allow continued funding and maintenance of the artificial reefs in that it resolves gear conflicts on the artificial reefs that would limit recreational fishing access to the reef and thus jeopardize the basis for the reefs to receive continued Sportfish Restoration Account funding.

6.8 Clean Water Act

Placement of fill material or structures, such as those used to create artificial reefs, is subject to Corps permitting authority under Section 404 of the Clean Water Act (CWA). CWA Section 404 applies to "waters of the United States," which as a general matter include most inland waterbodies as well as the territorial seas (which for CWA purposes extend three miles from the baseline). In issuing CWA Section 404 permits, the Army Corps of Engineers (Corps) applies the Section 404(b)(1) guidelines, which were developed by the Environmental Protection Agency (EPA) in conjunction with the Corps. The guidelines prohibit issuance of 404 permits that would cause or contribute to violations of applicable water quality standards and also generally preclude discharges that would cause or contribute to significant degradation of waters of the United States. In addition, CWA Section 404(c) authorizes EPA to prohibit, withdraw, or restrict the use of defined areas as a dredged or fill material disposal site in any waters of the U.S., including the Territorial Sea, if EPA determines that the discharge will have unacceptable adverse effects. This action merely prohibits the use of most types of commercial fishing gears on four comparatively small artificial reef SMZs. It should have no effect on water quality.

6.9 Administrative Procedure Act

Sections 551-553 of the Federal Administrative Procedure Act establish procedural requirements applicable to informal rulemaking by federal agencies. The purpose is to ensure public access to the federal rulemaking process and to give the public notice and opportunity to comment before the agency promulgates new regulations.

The Administrative Procedure Act requires solicitation and review of public comments on actions taken in the development of an FMP and subsequent amendments and framework adjustments. Development of the Council's SMZ Monitoring Committee report provided the majority of information for this EA and the basis for much of the opportunities for public review, input, and access to the rulemaking process. This action was developed through a multi-stage process that was open to review by affected members of the public. The public had the opportunity to review and comment on management measures during the Council's meetings held October, 15-18 2012, held in Long Branch New Jersey, December 10-13 in Baltimore, Maryland and February 12-13, 2013 in Hampton Virginia, and three Council public hearings on the proposed SMZs (Ocean City Maryland January 15, 2013, Lewes Delaware, January 16, 2013, and Toms River, New Jersey January 17, 2013). In addition, the public will have further opportunity to comment on this document once NMFS publishes a request for comments notice in the Federal Register (FR).

6.10 Section 515 (Data Quality Act)

Utility of Information Product

This action proposes SMZs with gear restrictions around four artificial reefs. This document includes: A description of the alternatives considered, the preferred action and rationale for selection, and any changes to the implementing regulations of the FMP. As such, this document enables the implementing agency (NMFS) to make a decision on implementation of annual specifications (i.e., management measures) and this document serves as a supporting document for the proposed rule.

The action contained within this document was developed to be consistent with the FMP, MSA, and other applicable laws, through a multi-stage process that was open to review by affected members of the public. The public had the opportunity to review and comment on management measures during two public meetings (see section 8.6). In addition, the public will have further opportunity to comment on this specifications document once NMFS publishes a request for comments notice in the FR.

Integrity of Information Product

The information product meets the standards for integrity under the following types of documents: Other/Discussion (e.g., Confidentiality of Statistics of the MSA; NOAA

Administrative Order 216-100, Protection of Confidential Fisheries Statistics; 50 CFR 229.11, Confidentiality of information collected under the Marine Mammal Protection Act).

Objectivity of Information Product

The category of information product that applies here is “Natural Resource Plans.” This section (section 8.0) describes how this document was developed to be consistent with any applicable laws, including MSA with any of the applicable National Standards. The analyses used to develop the alternatives (i.e., policy choices) are based upon the best scientific information available and the most up to date information is used to develop the EA which evaluates the impacts of those alternatives (see Section 5.1 of this document for additional details). The specialists who worked with these core data sets and population assessment models are familiar with the most recent analytical techniques and are familiar with the available data and information relevant to the summer flounder, scup, and black sea bass fisheries.

The review process for this document involves MAFMC, NEFSC, NERO, and NMFS headquarters. The NEFSC technical review is conducted by senior level scientists with specialties in fisheries ecology, population dynamics and biology, as well as economics and social anthropology. The MAFMC review process involves public meetings at which affected stakeholders have the opportunity to comments on proposed management measures. Review by NERO is conducted by those with expertise in fisheries management and policy, habitat conservation, protected resources, and compliance with the applicable law. Final approval of the document and clearance of the rule is conducted by staff at NOAA Fisheries Headquarters, the Department of Commerce, and the U.S. Office of Management and Budget.

6.11 Paperwork Reduction Act

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 businesses, state and local governments, and other persons as well as to maximize the usefulness of information collected by the Federal government. There are no changes to the existing reporting requirements previously approved under this FMP for vessel permits, dealer reporting, or vessel logbooks. This action does not contain a collection-of-information requirement for purposes of the PRA.

6.12 Impacts of the Plan Relative to Federalism/Executive Order 13132

This specifications document does not contain policies with federalism implications sufficient to warrant preparation of a federalism assessment under Executive Order (EO) 13132.

6.13 Regulatory Impact Review

6.13.1 Introduction

The National Marine Fisheries Service (NMFS) prepares a Regulatory Impact Review (RIR) to ensure that the regulatory agency systematically and comprehensively considers all available alternatives so that the public welfare can be enhanced in the most efficient and cost-effective way. The RIR includes an analysis of the economic effects of the preferred and alternative actions, in contrast to taking “no action.”

6.13.2 Description of the Management Objectives

A complete description of the purpose and objectives of this action is presented in section’s 1.0 and 2.0.

6.13.3 Description of the Fishery

A description of affected fisheries and protected resources is presented in section 4.0. Section’s 4.1 through 4.4 describe recreational fisheries interactions, commercial fisheries interactions, and marine mammal interactions. A description of ports and human communities is shown in Section 4.5. An analysis of permit data is found in section 4.5.4. The estimated number of angler trips, recreational private boat trips, and recreational for-hire boat trips at each of the five artificial reefs is shown in section 4.5.5. Angler expenditures associated with each of the five reef sites is presented in section 4.5.5.7 and recreational for-hire revenue earned by for-hire businesses is shown in section 4.5.5.8. Commercial fishing trips and comparisons of ex-vessel revenue earned at the reef sites to total ex-vessel revenue earned from all fishing activity is provided in section 4.5.6. Identification of the number of commercial fishing vessels with recent activity at the five reef sites, by gear type, and homeport is also shown in section 4.5.6.

6.13.4 A Statement of the Problem

A statement of the problem for resolution is presented in section 1.0.

6.13.5 A Description of Each Alternative

A full description of the alternatives analyzed in this RIR is presented in section 3.0.

6.13.6 RIR Impacts

6.13.6.1 Evaluation of Executive Order 12866 Significance

The purpose of Executive Order (E.O.) 12866 is to enhance planning and coordination with respect to new and existing regulations. This E.O. requires the Office of Management and Budget (OMB) to review regulatory programs that are considered to be “significant.” This section of the document includes an analysis of the costs and benefits of the proposed action in accordance with the guidelines established by E.O. 12866. E.O. 12866 requires a review of proposed regulations to determine whether or not the expected effects would be significant, where a significant action is any regulatory action that may:

- Have an annual effect on the economy of \$100 million or more, or adversely affect in a material way the economy, a sector of the economy, productivity, jobs, the environment, public health or safety, or State, local, or tribal governments or communities;
- Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;
- Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or
- Raise novel legal or policy issues arising out of legal mandates, the President’s priorities, or the principles set forth in the Executive Order.

The analysis shows that this action is not a “significant regulatory action” because it will not affect in a material way the economy or a sector of the economy. Further, the action does not overlap or conflict with other Federal rules, materially alter the budgetary impact of entitlements, or raise novel legal or policy issues. The measures considered in this regulatory action will not affect gross revenues or indirect and induced effects generated by the commercial, party/charter, private/rental, or other sectors offering goods and services to anglers or commercial fishing businesses to the extent that an annual \$100 million economic impact will occur in the economy.

6.13.6.1.1 Recreational Fishery

Anglers spent an estimated \$1.57 million to fish at the five artificial reefs in 2011 (see section 4.5.5.8 and Table 19) and for-hire vessels obtained \$670.5 thousand in revenue from passenger fees on trips to the reefs (see section 4.5.5.9). If designation of the artificial reefs as SMZs reduces gear conflicts, some level of positive social and economic benefits would likely accrue to recreational fishermen. Lost recreational fishing gear due to interactions with commercial gear in the water would be eliminated, saving anglers’ and for-hire businesses money and lost time, and could actually result in higher catches per angler. Anglers may even take more trips to these areas raising angler expenditures and for-hire revenues. Although sufficient data to evaluate these potential changes in social and economic benefits to anglers is unavailable, designation of the artificial reefs as SMZs would likely result in positive benefits to both anglers and for-hire fishing businesses fishing at the reef sites relative to taking no action.

6.13.6.1.2 Commercial Fishery

If the artificial reefs are designated as SMZs through this action, it's likely that commercial fishing effort in the SMZs would shift to other open areas mitigating potential revenue losses. An important point to consider though is that fixed gear vessels likely fish at the reef sites because catch rates are higher and because conflicts with mobile gear vessels are reduced. Forcing fixed gear vessels out of these sites may increase the likelihood of conflicts with vessels in other areas, and expose them to additional costs if their gear is dragged through by vessels fishing mobile gear. In addition, vessels that drag mobile gear through the proposed 0.25 and 0.5 nautical mile closure around the reef sites will also have to shift to other areas that are potentially less productive.

For purposes of this analysis, maximum ex-vessel revenue losses associated with SMZ designation of the reef sites is assumed to equal the value of landings at those sites in recent years. Gross fishing revenue earned within 0.5 nautical miles from the five reef sites was \$36.8 thousand in 2008, \$735.0 thousand in 2009, and \$115.1 thousand in 2010 (see section 4.5.6 and Table 21). These values are assumed to represent maximum ex-vessel revenue losses under the most restrictive combination of alternatives proposed in this EA (all five reef sites are designated as SMZs, fishing activities in all designated SMZ sites are restricted to hook & line and spear fishing gear only, SMZs are designated year round, and a 0.5 nautical mile buffer is imposed around all five artificial reefs). Maximum ex-vessel revenue losses under all other potential combinations of alternatives would be lower, including all combinations of the preferred alternatives. Maximum losses under all of the preferred alternatives (reef sites 9, 10, 11, and 13 are designated as SMZs, fishing activities in all designated SMZ sites are restricted to hook & line and spear fishing gear only, and SMZs are designated year round without a buffer zone) are estimated at \$2.4 thousand in 2008, \$4.0 thousand in 2009, and \$282 in 2010 (see section 4.5.6 and Table 23).

In the absence of a regional input-output model, the multiplier effects of reduced ex-vessel revenues on sales to indirectly affected businesses are assumed to be in the range of 2.0 to 3.0.¹ That is, each foregone dollar of ex-vessel revenue results in additional losses of \$1.0 to \$2.0 dollars in sales to businesses that supply goods and services either directly or indirectly to commercial fishermen. This multiplier also includes upstream losses to seafood dealers and processors and the foregone sales from lower personal consumption expenditures by employees of the directly and indirectly affected businesses. Applying the 2.0 to 3.0 sales multiplier to the revenue earned by commercial fishermen within 0.5 nautical miles of the five reef sites in 2008, 2009, and 2010, results in total potential losses of \$73.6 to \$110.4 thousand in 2008, \$1.5 to \$2.2 million in 2009, and \$230.2 to \$345.3 thousand in 2010.

Considering that maximum potential losses to the economy from reduced commercial fishing activity range up to \$2.2 million under the most restrictive combinations of alternatives proposed in the EA relative to the no action alternative, and that recreational for-hire business revenue may

¹ The sales multiplier values of 2.0 to 3.0 are derived from Steinback, Scott R. and Eric M. Thunberg. (2006). Northeast Region Commercial Fishing Input-Output Model. NOAA Technical Memorandum NMFS-NE-188.

increase as a result of SMZ designation, this action is not considered significant under E.O. 12866.

6.14 Initial Regulatory Flexibility Analysis (IRFA)

Also included is an Initial Regulatory Flexibility Analysis (IRFA) to evaluate the economic impacts of the alternatives on small business entities. This analysis is necessary to satisfy the requirements of the Regulatory Flexibility Act and provides decision-makers and the public with reasonable estimates of the economic impacts of proposed actions and of their alternatives

The Regulatory Flexibility Act (RFA) requires the Federal rule maker 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: (A) certify that the rule will not, if promulgated, have a significant economic impact on a substantial number of small entities; or (B) prepare an IRFA.

6.14.1 Description of the Reasons Why Action by the Agency is being Considered

A complete description of the purpose and need for this action is presented in section's 1.0 and 2.0.

6.14.2 The Objectives and Legal Basis of the Proposed Rule

A complete description of the objectives of this proposed rule is found under section's 1.0 and 2.0. This action is taken under the authority of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) and regulations at 50 CFR part 648.

6.14.3 Estimate of the Number of Small Entities

The Small Business Administration (SBA) defines a small commercial fishing business as a firm with annual receipts (gross revenues) of up to \$20.5 million. A small commercial shellfishing business is a firm with annual receipts of up to \$5.5 million and small for-hire recreational fishing businesses are defined as firms with receipts of up to \$7.5 million.

Having different size standards for different types of fishing activities creates difficulties in categorizing businesses that participate in multiple fishing related activities. For purposes of this assessment business entities have been classified into the SBA-defined categories based on which activity produced the highest percentage of average annual gross revenues from 2010 - 2012. This classification is now possible because vessel ownership data has been added to Northeast permit database. The ownership data identifies all individuals who own fishing vessels. Using this information, vessels can be grouped together according to common owners.

The resulting groupings were treated as a fishing business for purposes of this analysis. Revenues summed across all vessels in a group and the activities that generate those revenues form the basis for determining whether the entity is a large or small business. Depending upon which alternatives are selected, this rule could apply to all federal permit holders except recreational for-hire permit holders. Thus, the affected business entities of concern are businesses that hold commercial federal fishing permits. While all business entities that hold commercial federal fishing permits could be directly affected by these regulations, not all business entities that hold federal fishing permits fish in the areas identified as potential SMZs. Those who actively participate, i.e., land fish, in the areas identified as potential SMZs would be the group of business entities that are directly impacted by the regulations.

The affected entities are described in detail in section 4.5.6. Commercial fishing trips and comparisons of ex-vessel revenue earned at the reef sites to total ex-vessel revenue earned from all fishing activity is shown in section 4.5.6., as well as an enumeration of the number of commercial fishing vessels with recent activity at the five reef sites, by gear type, and homeport. Two SMZ buffer zones around the five artificial reefs are being considered under this action (0.25 nautical miles and 0.50 nautical miles) so assessments of commercial fishing activity within each buffer zone are included in section 4.5.6 and in this IRFA. In summary, section 4.5.6 shows that during 2008, 2009, and 2010 no vessels reported landings at the reef sites in all three of those years, one vessel reported landings in two of the three years, and seven vessels reported landings in only one of the three years. A total of 8 unique commercial vessels reported landings within the coordinates of the reef sites from 2008 – 2010. Adding a buffer around the reef sites of 0.25 nautical miles resulted in two commercial vessels reporting landings within 0.25 nautical miles of the reef sites in all three years, one vessel reported landings in two of the three years, and 12 vessels reported landings in only one of the three years. This implies a total of 15 unique commercial vessels reported landings within 0.25 nautical miles of the reef sites from 2008 – 2010. Increasing the buffer around the reef sites from 0.25 nautical miles to 0.50 nautical miles resulted in 3 vessels reporting landings at the reef sites in all 3 years and 21 vessels reporting landings in only one of the three years. This implies that a total of 24 unique vessels reported landings within 0.50 nautical miles of the reef sites from 2008 – 2010.

Based on the ownership data classification process described above, all of the directly affected participating commercial fishing vessels were found to be unique fishing business entities. The ownership data indicated that no two affected vessels were owned by the same business entity. Total revenue earned by these business was derived from both shellfishing and finfishing, but the highest percentage of average annual revenue for the majority of the businesses was from shellfishing. Of the 8 unique fishing business entities potentially estimated to be affected by SMZ designation, 4 entities earned the majority of their total revenue (i.e., from all species and areas fished) from landings of shellfish, and 4 entities earned the majority of their total revenues from landings of finfish. Thus, 4 of the potentially affected businesses are classified as shellfishing business entities and 4 as finfishing business entities. Of the 15 unique fishing business entities potentially estimated to be affected by implementation of a 0.25 nautical mile buffer around the 5 reef sites, 9 entities earned the majority of their total revenues (i.e., from all species and areas fished) from landings of shellfish, and 6 entities earned the majority of their total revenues from landings of finfish. Thus, under the 0.25 nautical mile buffer alternative , 9

of the potentially affected businesses are classified as shellfishing business entities and 6 as finfishing business entities. Under the 0.50 nautical mile buffer alternative (most restrictive), 15 of the 24 potentially affected business entities are classified as shellfishing business entities and 9 as finfishing business entities.

According to the SBA size standards small shellfishing businesses are defined as firms with annual receipts of up to \$5.5 million, and small finfishing businesses as firms with annual receipts of up to \$20.5 million. Average annual gross revenue estimates calculated from 2010-2012 Northeast regional dealer data (2010-2012) indicate that only one of the potentially affected shellfishing business entities under the preferred no buffer alternative would be considered large according to the SBA size standards. In other words, one business, classified as a shellfishing business, averaged more than \$5.5 million annually in gross revenues from all of its fishing activities during 2010 – 2012. Therefore, under the preferred no buffer alternative, 7 of the 8 potentially affected business entities are considered small (3 shellfish and 4 finfish) and 1 business entity is considered large (shellfish).

Under the more restrictive 0.25 nautical mile buffer alternative, 14 of the 15 potentially affected business entities are classified as small (8 shellfish and 6 finfish) and 1 business entity is considered large (shellfish). Under the most restrictive 0.50 nautical mile buffer alternative, twenty-two of the potentially affected businesses are classified as small (13 shellfish and 9 finfish) and 2 as large shellfish businesses.

Table 40 shows the number of potentially affected business entities by percent of total average annual gross revenue landed within the actual latitude and longitude coordinates of the reef sites. Of the three shellfishing businesses categorized as small in this assessment, all three obtained less than 5% of their total average annual gross revenues from landings within the coordinates of the reef sites. The only business entity defined as large (shellfish) in this assessment, under the preferred no buffer alternative, earned less than 5% of its total average annual gross revenues from landings at the reef sites. Of the 4 businesses classified as small finfish businesses, two earned less than 5% of their total average annual gross revenues from landings within the coordinates of the reef sites, and two earned between 5-9%.

Table 40. Number of Potential Business Entities Affected by Percent of Total Average Annual Gross Revenue Landed within the Coordinates of the Reef Sites

Business Entity	Percent of Total Average Annual Gross Revenue (2010-2012)			
	<5%	5-9%	10-19%	20-29%
Shellfish (Small)	3	0	0	0
Shellfish (Large)	1	0	0	0
Finfish (Small)	2	2	0	0

Table 41 shows the number of potentially affected business entities by percent of total average annual gross revenue landed within 0.25 nautical miles of the reef sites. Of the 8 shellfishing businesses categorized as small in this assessment, 6 obtained less than 5% of their total average

annual gross revenues from landings within 0.25 nautical miles of the reef sites, 1 obtained between 5-9%, and 1 between 10-19%. The only business entity defined as large (shellfish) in this assessment, under the preferred 0.25 nautical mile buffer, earned less than 5% of its total average annual gross revenues from landings at the reef sites. Finally, of the 6 business entities defined as small finfishing businesses, under the preferred 0.25 nautical mile buffer, 3 obtained less than 5% of their total average annual gross revenues from landings at the reef sites, 1 obtained between 5-9%, 1 obtained between 10-19%, and 1 between 20-29%.

Table 41. Number of Potential Business Entities Affected by Percent of Total Average Annual Gross Revenue Landed within 0.25 Nautical Miles of the Reef Sites

Business Entity	Percent of Total Average Annual Gross Revenue (2010-2012)			
	<5%	5-9%	10-19%	20-29%
Shellfish (Small)	6	1	1	0
Shellfish (Large)	1	0	0	0
Finfish (Small)	3	1	1	1

Table 42 shows the number of potentially affected business entities by percent of total average annual gross revenue landed within 0.50 nautical miles of the reef sites. Of the 13 shellfishing businesses categorized as small in this assessment, 10 obtained less than 5% of their total average annual gross revenues from landings within 0.50 nautical miles of the reef sites, 1 obtained between 5-9%, 1 between 10-19%, and 1 between 20-29%. Two business entities were defined as large (shellfish) in this assessment, under the preferred 0.25 nautical mile buffer, and both large entities earned less than 5% of their total average annual gross revenues from landings at the reef sites. Lastly, of the 9 business entities defined as small finfishing businesses, under the preferred 0.25 nautical mile buffer, 6 obtained less than 5% of their total average annual gross revenues from landings at the reef sites, 1 obtained between 5-9%, 1 obtained between 10-19%, and 1 between 20-29%.

Table 42. Number of Potential Business Entities Affected by Percent of Total Average Annual Gross Revenue Landed within 0.50 Nautical Miles of the Reef Sites

Business Entity	Percent of Total Average Annual Gross Revenue (2010-2012)			
	<5%	5-9%	10-19%	20-29%
Shellfish (Small)	10	1	1	1
Shellfish (Large)	2	0	0	0
Finfish (Small)	6	1	1	1

An assessment of potential impacts by gear type was also examined to investigate whether business entities might be disproportionately impacted according to the type of fishing gear employed by the business. If the artificial reefs are designated as SMZs through this action, commercial fishing effort in the SMZs would likely shift to other open areas mitigating potential revenue losses, but fishing businesses that employ fixed gear likely fish at the reef sites because catch rates are higher and because conflicts with mobile gear vessels are reduced. Forcing fixed

gear vessels out of the SMZ sites may increase the likelihood of conflicts with vessels in other areas, and expose them to additional costs if their gear is dragged through by vessels fishing mobile gear. Nonetheless, vessels that drag mobile gear through the proposed 0.25 and 0.5 nautical mile closure around the reef sites will also have to shift to other areas that are potentially less productive so it is difficult to ascertain with certainty whether disproportionate impacts will occur according to the type of fishing gear employed.

There were two business entities that employed pot/trap gear within the actual coordinates of the reef sites in at least one the three years included in this assessment (2008-2010). Both business entities were determine to be “small” according to the SBA size standards. One of the business entities obtained less than 5% of the total average annual gross revenues from landings at the reef sites and one obtained between 5-9%. Thus, there will likely be adverse economic consequences for at least two small business entities that employ pot/trap gear in the areas under consideration for SMZ designation. The economic losses suffered by the two small business entities displaced from the SMZs, however, will likely be mitigated to some degree by redirection of fishing effort to other areas. The combined areas under consideration for SMZ designation represent only 5.422 square miles of the total available fishing area over the continental shelf off Delaware so alternative fishing areas are prevalent. A quantitative assessment of these changes on revenues for the two small business entities under SMZ designation is not possible to a lack of sufficient data. Additionally, there were no small business entities that reported pot/trap landings within the actual coordinates of the reef sites in any given year.

There were 4 business entities that employed pot/trap gear within 0.25 nautical miles in at least one the three years included in this assessment (2008-2010). All four businesses entities were determined to be “small” according to the SBA size standards. Two of the 4 business entities obtained less than 5% of their total average annual gross revenues from landings at the reef sites, 1 obtained between 5-9%, and 1 between 10-19%. Thus, there will likely be adverse economic consequences for at least four small business entities that employ pot/trap gear in the areas under consideration for SMZ designation if a 0.25 nautical mile buffer is implemented. The economic losses suffered by the four small business entities displaced from the SMZs, however, will likely be mitigated to some degree by redirection of fishing effort to other areas. The combined areas under consideration for SMZ designation represent only 5.422 square miles of the total available fishing area over the continental shelf off Delaware so alternative fishing areas are prevalent. A quantitative assessment of these changes on revenues for the four small business entities under SMZ designation is not possible to a lack of sufficient data. Additionally, there were no small business entities that reported pot/trap landings at more than one of the reef sites in any given year. The assessment also shows that the same four small business entities that employ pot/trap gear would be impacted in an identical manner under the 0.50 nautical mile buffer zone alternative. In addition to the 4 small fixed gear pot/trap businesses though, 1 small business that employed fixed gillnet gear reported a single trip in 2010 within 0.50 nautical miles of reef site 9. Thus, at least 5 small businesses that employ fixed gear may be impacted if the buffer zones are expanded from 0.25 nautical miles to 0.5 nautical miles.

It is important to point out though that the combined ex-vessel value of fixed gear landings (i.e., pots/traps) within 0.50 miles of the reef sites totaled less than \$37 thousand annually in 2008,

2009, and 2010 (see section 4.6). This represents less than 0.6% of the total annual ex-vessel value landed by pot/trap gear (excluding crab trap gear and inshore lobster trap gear) in New Jersey, Delaware, and Maryland during 2008 (\$6.4 million), 2009 (5.4 million), and 2010 (\$5.9 million).

Business entities that use mobile gear (dredge and trawl) also reported trips within 0.25 nautical miles of reef site 14 on their VTRs. There were no reported trips at the other reef sites, except for one trip within 0.25 nautical miles of reef site 10 in 2010. There were 11 business entities that employed mobile gear within 0.25 nautical miles during the three years included in this assessment (2008-2010). However, none of the businesses demonstrated a consistent pattern of annual landings since all 11 reported trips in only one of the 3 years. Ten of the businesses were determined to be “small” according to the SBA size standards and one was categorized as “large.” Six of the 11 business entities obtained less than 5% of their total average annual gross revenues from landings at the reef sites, 2 obtained between 5-9%, and 1 between 10-19%, and 1 between 20-29%. Sea scallops comprised 99% of the total value on those mobile gear trips occurring within 0.25 nautical miles of reef site 14. This action would preclude the 11 mobile gear vessels from fishing within 0.25 nautical miles of reef site 14 or any of the other reef sites. As previously mentioned though, commercial fishermen are only required to report location information once on their VTRs when fishing within a single NMFS statistical area, even when using mobile gear that can be towed over the bottom for hours covering many miles. In fact, according to VTR data in 2010, the average limited access sea scallop dredge trip covered approximately 5 nautical miles per haul and consisted of 66 hauls per trip. This means that the average limited access dredge vessel covered approximately 345 total nautical miles per trip in 2010. The area under consideration surrounding reef site 14 is only approximately 1 square nautical mile so the majority of the scallop landings on those trips in 2010 likely occurred in areas that will remain open under this action. Therefore, given that all but one mobile gear trip was reported in only one year within 0.25 nautical miles of reef 14 during 2004-2010 (see Table 21), the impacts of the proposed action on earnings by mobile gear vessels is likely to be minimal under the proposed buffer zone of 0.25 nautical miles.

There were 8 additional business entities that reported mobile gear trips on their VTRs within 0.25 to 0.50 nautical miles of 2 of the reef sites. Thus, if the more restrictive 0.50 nautical mile buffer zone alternative is implemented, at least 8 additional business entities that use mobile gear could potentially be impacted. Of the 8 additional entities, 6 reported trips within 0.25 to 0.50 nautical miles of reef site 14 and 2 reported trips within 0.25 to 0.50 nautical miles of reef site 10. Similar to those businesses that employed mobile gear within 0.25 nautical miles of the reef site, none of the 8 additional businesses demonstrated a consistent pattern of annual landings since all 8 reported trips in only one of the 3 years. Seven of the businesses were determined to be “small” according to the SBA size standards and one was categorized as “large.” All of the businesses except for one obtained less than 5% of their total average annual gross revenues from landings at the reef sites. One business entity classified as a small shellfishing business obtained between 10-19% of their total average annual gross revenues from landings at reef site 14 in 2009.

In total, there were 19 business entities that employed mobile gear within 0.50 nautical miles during the three years included in this assessment (2008-2010). If the non-preferred 0.50 nautical mile buffer alternative is chosen, this action would preclude these 19 business entities from fishing within 0.50 nautical miles of the reef sites again. As mentioned above though, commercial fishermen are only required to report location information once on their VTRs when fishing within a single NMFS statistical area, even when using mobile gear that can be towed over the bottom for hours covering many miles. VTR data from 2010 indicate that the average limited access sea scallop dredge trip covered approximately 5 nautical miles per haul and consisted of 66 hauls per trip. This means that the average limited access dredge vessel covered approximately 345 total nautical miles per trip in 2010. The areas under consideration surrounding reef site's 10 and 14 are only approximately 1 square nautical mile each so the majority of the scallop landings on trips that passed through the 0.50 nautical mile buffer zone will remain open under this action. In addition, given that no identified fishing business that employed mobile gear within 0.50 nautical miles of the reef sites reported landings in more than one of the three years examined, the impacts of the proposed action on revenues by mobile gear vessels is likely to be minimal under the non-preferred buffer zone of 0.50 nautical miles.

6.14.4 Recordkeeping and Reporting

This proposed action does not propose new reporting or recordkeeping measures. There are no changes to existing reporting requirements. Currently, 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.

6.14.5 Conflict with Other Federal Rules

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

7.0 ESSENTIAL FISH HABITAT ASSESSMENT

A description of the habitat associated with the summer flounder, scup, and black sea bass fisheries is presented in section 3.2 of Amendment 13 to the FMP (MAFMC 2002), and a brief summary of that information is given here. The impact of fishing on summer flounder, scup, and black sea bass on habitat (and EFH) and the impact of the summer flounder, scup, and black sea bass fisheries on other species' habitat and EFH can be found in Amendment 13 to the FMP (section 3.2; MAFMC 2002). Potential impacts associated with the measures proposed in this specifications document on habitat (including EFH) are discussed in section 5.1.3.

7.1 *Physical Environment*

Detailed information on the affected physical and biological environments inhabited by the managed resources is available in Stevenson et al. (2004). The managed resources inhabit the

Northeast U.S. Shelf Ecosystem, which has been described as including the area from the Gulf of Maine south to Cape Hatteras, extending from the coast seaward to the edge of the continental shelf, including the slope sea offshore to the Gulf Stream. The continental slope includes the area east of the shelf, out to a depth of 2000 m. Four distinct sub-regions comprise the NOAA Fisheries Northeast Region: the Gulf of Maine, Georges Bank, the Mid-Atlantic Bight, and the continental slope. The Gulf of Maine is an enclosed coastal sea, characterized by relatively cold waters and deep basins, with a patchwork of various sediment types. Georges Bank is a relatively shallow coastal plateau that slopes gently from north to south and has steep submarine canyons on its eastern and southeastern edge. It is characterized by highly productive, well-mixed waters and strong currents. The Mid-Atlantic Bight is comprised of the sandy, relatively flat, gently sloping continental shelf from southern New England to Cape Hatteras, NC. The continental slope begins at the continental shelf break and continues eastward with increasing depth until it becomes the continental rise. It is fairly homogenous, with exceptions at the shelf break, some of the canyons, the Hudson Shelf Valley, and in areas of glacially rafted hard bottom.

The environment that could potentially be affected by the proposed action is in the Mid-Atlantic Bight in the immediate area of the five artificial reefs, including their 500 yard buffer zone (figure 1), which overlaps with EFH for the managed resources. The following sections describe where to find detailed information on EFH and any past actions taken in the FMPs to minimize adverse EFH effects to the extent practicable.

7.2 Essential Fish Habitat (EFH)

Information on summer flounder, scup, and black sea bass habitat requirements can be found in the documents titled, "Essential Fish Habitat Source Document: Summer Flounder, *Paralichthys dentatus*, Life History and Habitat Characteristics" (Packer et al. 1999), "Essential Fish Habitat Source Document: Scup, *Stenotomus chrysops*, Life History and Habitat Characteristics" (Steimle et al. 1999a), "Essential Fish Habitat Source Document: Black Sea Bass, *Centropristis striata*, Life History and Habitat Characteristics" (Steimle et al. 1999b) and an update of that document, "Essential Fish Habitat Source Document: Black Sea Bass, *Centropristis striata*, Life History and Habitat Characteristics" (Drohan et al. 2007). Electronic versions of these source documents are available at the following website: <http://www.nefsc.noaa.gov/nefsc/habitat/efh/>. The current designations of EFH by life history stage for summer flounder, scup, and black sea bass are provided in Table 1 in Appendix A, and are also available at the following website: <http://www.nero.noaa.gov/hcd/list.htm>. A summary description of EFH for summer flounder, scup, and black sea bass is provided here.

Summer flounder spawn during the fall and winter over the open ocean areas of the continental shelf. Planktonic larvae are often found in the northern part of the Middle Atlantic Bight from September to February and in the southern part from November to May. From October to May, larvae and postlarvae migrate inshore, entering coastal and estuarine nursery areas. Juveniles are distributed inshore and in many estuaries throughout the range of the species during spring, summer, and fall. Summer flounder exhibit strong seasonal inshore-offshore movements. Adult flounder normally inhabit shallow coastal and estuarine waters during the warmer months of the year and remain offshore during the colder months. EFH includes pelagic waters, demersal waters, saltmarsh creeks, seagrass beds, mudflats, and open bay areas, from the Gulf of Maine through North Carolina.

Scup spawn once annually, over weedy or sand-covered areas in the spring. Scup eggs and newly hatched larvae are found in open water in bays and sounds of Southern New England during the spring-summer. Juvenile and adult scup are demersal using inshore waters in the spring and moving offshore in the winter. EFH includes demersal waters, sands, mud, mussel and seagrass beds, from the Gulf of Maine through Cape Hatteras, North Carolina.

The northern population of black sea bass spawns in the Middle Atlantic Bight continental shelf during the spring through fall, primarily between Virginia and Cape Cod, Massachusetts. Spawning begins in the spring in the southern portion of the population range, i.e., off North Carolina and Virginia, and progresses north into southern New England waters in the summer-fall; these pelagic eggs are closely associated with spawning. Collections of ripe fish and egg distributions indicate that the species spawns primarily on the inner continental shelf between Cape Hatteras, North Carolina and Cape Cod, Massachusetts. The duration of larval stage and habitat-related settlement cues are unknown; therefore, distribution and habitat use of this pelagic stage may only partially overlap with that of the egg stage. Adult black sea bass are also very structure oriented (and are commonly found on artificial reefs), especially during their summer coastal residency. Unlike juveniles, they tend to enter only larger estuaries and are most abundant along the coast. Larger fish tend to be found in deeper water than smaller fish. A variety of coastal structures are known to be attractive, and these include shipwrecks, rocky and artificial reefs, mussel beds and any other object or source of shelter on the bottom. In the warmer months, inshore, resident adult black sea bass are usually found associated with structured habitats. During the winter months black sea bass are commonly found around deeper water natural and artificial structure. EFH for black sea bass is pelagic waters, structured habitat (e.g., sponge beds), rough bottom shellfish, sand and shell, from the Gulf of Maine through Cape Hatteras, North Carolina.

There are other lifestages of federally-managed species that have designated EFH that may be susceptible to adverse impacts from bottom-tending mobile gear; descriptions of these are given in Appendix C (from Stevenson et al. 2004).

7.3 Fishery Impact Considerations

Any actions implemented in the FMP that affect species with overlapping EFH were considered in the EFH assessment for Amendment 13 to the Summer Flounder, Scup, and Black Sea Bass FMP (MAFMC 2002). In the commercial fisheries for these managed resources, summer flounder are primarily landed by bottom otter trawls, scup are primarily landed by fish pots/traps, bottom and midwater trawls, and lines, and black sea bass are primarily landed by fish pots/traps, bottom and midwater trawls, and lines. Amendment 13 included alternatives to minimize the adverse impacts of fishing gear on EFH (as required pursuant to section 303(a)(7) of the MSA). As stated in section 3.2 of Amendment 13, the Council determined that both mobile bottom tending and stationary gear have a potential to adversely impact EFH. The analysis in that document also indicated that no management measures were needed, because in Federal waters the fishery is conducted primarily in high energy mobile sand and bottom habitat, where gear impacts are minimal and/or temporary in nature. On that basis, the Council selected the no action alternative, from among the suite of alternatives to minimize fishing gear impacts on EFH in Amendment 13 to the FMP. There have been no significant changes to the manner in which the summer flounder, scup, and black sea bass fishery is prosecuted, and none of the alternatives being considered in this document would adversely affect EFH (see section 5.3.1); therefore, the

effects of fishing on EFH have not been re-evaluated since Amendment 13 to the FMP, and no alternatives to minimize adverse effects on EFH are presented in this document. The FMP limits recreational specifications for summer flounder, scup, and black sea bass to minimum fish size requirements, possession limits, and restrictions on the open fishing season. The principal gears used in the recreational fishery for summer flounder are rod and reel and handline. The potential adverse impacts of these gears on EFH for any of the federally-managed species in the region are minimal (Stevenson et al. 2004). Beyond the actions already taken and analyzed in the FMP, the proposed action would restrict most commercial gear use (including mobile gear such as dredges and trawls) on the artificial reefs, and thus result in more protection for the highly productive artificial reef habitat.

8.0 LIST OF PREPARERS AND POINTS OF CONTACT

The following staff members of the National Marine Fisheries Service (NMFS) Greater Atlantic Regional Fisheries Office and the Northeast Fisheries Science Center collaborated on the preparation of this document:

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9.0 LIST OF AGENCIES AND PERSONS CONSULTED

Staff members of NMFS Greater Atlantic Regional Fisheries Office and Northeast Fisheries Science Center were also consulted in preparing this EA. Additionally, Jeffery Tinsman of Delaware Division of Fish & Wildlife's Artificial Reef Program was consulted.

10.0 LITERATURE CITED

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APPENDIX A
Correspondence Referenced in EA



STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES & ENVIRONMENTAL CONTROL
DIVISION OF FISH & WILDLIFE
FISHERIES BUILDING
3002 Bayside Drive - Dover, DE 19901
P.O. Box 390 - Little Creek, DE 19981
(302) 739-2904

April 19, 2011

Dr. Christopher M. Moore, Executive Director
Mid-Atlantic Fishery Management Council
Suite 201
800 N. State St
Dover, Delaware 19901

Dear Chris,

I am writing to request time on the June 14-16, 2011 MAFMC meeting agenda to present Delaware's request for Special Management Zone (SMZ) status for our five permitted artificial reef sites in the EEZ. As you know, Amendment #9 to the Summer Flounder Management Plan (1995), which is essentially the Black Sea Bass Management Plan, contains a provision under section 9.1.2.7 (pages 51-52) by which a holder of a USACOE permit for an artificial reef site in the EEZ may request SMZ status for the area within the permitted site in order to regulate fishing on the site by limiting fishing gear types. This provision is modeled after similar language in the SAFMC Snapper-Grouper Plan. Although SMZ status has never been requested under the Black Sea Bass Plan, this provision has been used routinely under the Snapper-Grouper Plan. Delaware has been considering making this request for some time but recent developments have added additional urgency to this request.

To offer a brief history of this subject, the Delaware Division of Fish and Wildlife has been receiving complaints from hook and line anglers regarding fouling of fishing gear in commercial pots and lines on ocean reef sites for more than 10 years. In 2007, we attended several MAFMC meetings and made presentations to the Ecosystem Committee regarding this conflict. At that time the Committee took no official position and we were referred to the Demersal Committee. No SMZ request was made at that time. More recently, the USFWS Sportfish Restoration Program Office in Hadley, MA, has begun receiving complaints from fishing groups and individuals from the mid-Atlantic region. Wallop-Breaux funding is an important federal funding source for many state reef programs. In March, 2011, USFWS personnel attended the ASMFC/GSMFC Reef Committee meeting in St. Petersburg, FL and informed state reef coordinators that when gear conflicts occur, pot fishing on reef sites is not consistent with the intent of their Sportfish Restoration Program. State reef programs must be able to limit gear conflicts by regulations in state waters or by way of SMZ's for sites in the EEZ in order to comply with the goals of the Sportfish Restoration Program. If states do not comply, the SFR Program may respond in several ways. In April, 2011, the SFR Program exercised one of these options. The New Jersey Reef Program was informed that their Sportfish Restoration Program funds for reef development had been terminated, effective immediately, until the reef permit holder addressed these gear conflicts (enclosure).

Delaware's Good Nature depends on You!

If a spot can be found on the agenda for this issue, I would envision making a short presentation, including our formal SMZ request, Bill Figley, from Reef Rescue (NJ) would make a short presentation and Vaughn Douglas of the Sportfish Restoration Program would present his agency's position. Should other states within the region join me in this effort, they would present their requests as well.

I have spoken with Tom Hoff and Jessica Coakley about this issue and have been advised to address this request to you, I will leave it to your discretion as to whether the presentation would best be made to the Demersal Committee or to all voting members of the Council. I appreciate your consideration of this issue and if you have any questions, please contact me at your convenience.

Sincerely,



Jeff C. Winslow
Delaware Reef Program Coordinator

cc: Tom Hoff, MAFMC staff
Jessica Coakley, MAFMC staff
Dave Savekts, Director, DFW
Craig Shirey, Fisheries Administrator
Richard W. Cole, proxy for Dave Savekts

Delaware's Good Nature depends on You!



United States Department of the Interior

FISH AND WILDLIFE SERVICE
300 Westgate Center Drive
Hadley, MA 01035-9589



In Reply Refer To:
FWS/Region 5/MBSP-WSFR

APR 12 2011

WSFR - New Jersey

Bob Martin, Commissioner
Department of Environmental Protection
401 E. State Street, 7th Floor, East Wing
P.O. Box 402
Trenton, New Jersey 08625-0402

Dear Mr. Martin:

I am writing to you regarding conflicts involving fishing gear used on artificial reefs constructed and maintained with Dingell-Johnson Sport Fish Restoration (SFR) funds in New Jersey. Over the past several months, I have been contacted by phone, mail, and personal visits by a variety of New Jersey recreational anglers who have claimed that proliferation of lobster pots and fish traps for commercial purposes interferes with hook and line and spear recreational fishing. My staff has investigated the allegations and confirmed that the use of pots and traps is interfering with the purposes for which the reefs were constructed.

The SFR Act (16 U.S.C. 777) states that "fish restoration and management projects" shall be construed to mean projects designed for the restoration and management of all species of fish that have material value in connection with *sport or recreation* in the marine and/or fresh waters of the United States. Sport fish are limited to aquatic, gill-breathing, vertebrate animals, bearing paired fins, and *having material value for sport or recreation*. Eligible projects are those having as their purpose the restoration, conservation, management, and enhancement of sport fish, and *the provision for public use and benefits from these resources*.

Federal regulations implementing the SFR Act (50 CFR Part 80) mandate the following:

- States must apply SFR funds only to activities or purposes approved by the Regional Director. If otherwise applied, such funds must be replaced or the State becomes ineligible to participate.
- When property is used for purposes that interfere with the accomplishment of approved purposes, the violating activities must cease, and any adverse effects resulting must be remedied.
- The State is responsible for the accountability and control of all assets to assure that they serve the purpose for which acquired throughout their useful life.

Bob Martin, Commissioner

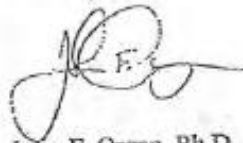
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- The Secretary of the Interior may terminate or suspend those projects in noncompliance, or may declare the State ineligible for further participation in program benefits until compliance is achieved.

Because of the aforementioned conflicts that clearly violate provisions of the SFR Act and its implementing regulations, I am terminating all further SFR funding for the artificial reef program in New Jersey, effective the date of this letter. Funding can be restored when appropriate action is taken to eliminate the conflicts that currently interfere with recreational fishing on these reefs.

If you have any questions or require further information regarding this matter, please contact me at 413-253-8501 or via email at john_organ@fws.gov.

Sincerely,



John F. Organ, Ph.D.
Chief, Division of Wildlife
and Sport Fish Restoration

cc: David Chanda



Mid-Atlantic Fishery Management Council

800 North State Street, Suite 201, Dover, DE 19901

Phone: 302-674-2331 | Toll Free: 877-446-2362 | FAX: 302-674-5399 | www.mafmc.org

Richard B. Robins, Jr., Chairman | Lee G. Anderson, Vice Chairman
Christopher M. Moore, Ph.D., Executive Director

February 27, 2013

Mr. John Bullard
Northeast Regional Administrator
National Marine Fisheries Service
55 Great Republic Drive
Gloucester, MA 01930-2276

Dear Mr. Bullard: *John*:

As you are aware, in June 2011, the Delaware Division of Fish and Wildlife (DFW) petitioned the Mid-Atlantic Council to designate five artificial reef sites as Special Management Zones (SMZs) in the Exclusive Economic Zone (EEZ) under provisions of Amendment 9 to the Summer Flounder, Scup and Black Sea Bass Fishery Management Plan (FMP). The justification for this request was based on the need to ameliorate gear conflicts between hook and line fishermen and fixed pot/trap gear at those sites. In addition, the DFW faced termination of funding for its artificial reef program in the EEZ under the US Fish and Wildlife Service Sport Fish Restoration (SFR) Program (which is effectively the DFW's sole source of funding for its reef program) if this gear conflict issue was not resolved.

The Council followed the procedures outlined in Section 9.1.2.7 of the FMP that allow for the designation of artificial reefs in the EEZ as SMZs to address Delaware's SMZ request. Specifically, a Monitoring Team was formed to evaluate the DFW request relative to the following factors: (1) fairness and equity; (2) promotion of conservation; (3) avoidance of excessive shares; (4) consistency with the objectives of Amendment 9 to the Summer Flounder, Scup, and Black Sea Bass Fishery Management Plan, the Magnuson-Stevens Act, and other applicable law; (5) the natural bottom in and surrounding potential SMZs; and (6) impacts on historical uses. The report of the team (attached) contains an analysis of these factors and recommendations relative to the DFW request. Based on that analysis, the SMZ Monitoring Team recommended that Delaware's request for SMZ status for the five artificial reefs be considered by Council. The Council subsequently developed a list of options to address Delaware's SMZ request after receiving input from its industry advisory panel. Finally, the Council solicited public comment on the impacts of a number of SMZ options at public hearings held in Maryland, Delaware and New Jersey.

After careful consideration of public comment received as well as the information and analyses provided by the SMZ Monitoring Team, the Council passed the following motion at its February 2013 meeting in Hampton, VA: "I move that the Council recommend to the Regional Administrator with respect to the Special Management Zone designation proposal that he approve option 2a (all five sites), 3b (hook, line and spear fishing only to include taking by hand), 4b (all year round), and a 500 yard buffer."

Please consider this letter to be the Council's official request to designate all five of the reef sites in the EEZ as Special Management Zones. As reflected in the motion above, the SMZ designation would limit fishing gear on all five reef sites in question to only hook and line and spear fishing gear and would apply year round. The SMZ designation would apply to the areas designated in Delaware's Army Corps



of Engineer's permits for these reef sites plus a 500 yard buffer for enforcement purposes.

Attached to this letter please find documentation of the public record pertaining to the Council's deliberations in consideration of Delaware's SMZ request. Please call me or Rich Seagraves of my staff if you have any questions relative to this Council action.

Sincerely,

Christopher M. Moore, PhD.
Executive Director, Mid-Atlantic Council

cc: Robins, Anderson

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New England Fishery Management Council

50 WATER STREET | NEWBURYPORT, MASSACHUSETTS 01950 | PHONE 978 465 0492 | FAX 978 465 3116
E.F. "Terry" Stockwell III, *Chairman* | Thomas A. Nies, *Executive Director*

July 30, 2014

Mr. John Bullard
Regional Administrator
NMFS, Greater Atlantic Regional Fisheries Office
55 Great Republic Drive
Gloucester, MA 01930

RE: Request for comments on proposed rule to implement special management zones (SMZs) for five Delaware Artificial Reefs

Dear John:

The New England Fishery Management Council (NEFMC) staff has reviewed the proposed rule and Draft Environmental Assessment (EA) prepared for measures to implement special management zones for five Delaware artificial reefs under the Black Sea Bass Fishery Management Plan. We have several concerns about this potential action and process.

First, the NEFMC has a clear interest in this proposed action. While these areas are in the Mid-Atlantic off the coast of Delaware, Area 14 is almost 60 miles offshore and overlaps with fishing grounds used by the sea scallop, skate and monkfish fisheries, which are managed by the NEFMC. Area 14 is located at a depth of about 60 meters and is within the Elephant Trunk scallop rotational area, an area that has had special management status in the Scallop FMP since 2004 when it was first closed to protect juvenile scallops. Since that time this area has become one of the more productive and valuable scallop access areas in the entire region.

Second, the analyses of potential fishery impacts in the Draft Environmental Assessment are incomplete. The EA includes some analysis of the potential impacts on the sea scallop fishery, but potential impacts on the monkfish and skate fisheries are not addressed. There is no map in the EA that overlays other fishery management areas with the artificial reef sites/SMZs, so it is difficult to evaluate the effects of the SMZs at a glance. As noted above, Area 14 is within the Elephant Trunk scallop rotational area, and overlaying scallop biomass data from the Northeast Fishery Science Center dredge survey confirms that this area overlaps with high concentrations of offshore scallop beds (Figure 1).

Vessel Trip Report (VTR) fishing locations (one point per trip) are the primary data source used to evaluate the potential impacts on fisheries. The EA recognizes that using VTR data to estimate fishing activity in such small areas likely underestimates the impacts, but no attempt has been made to correct for this or to consider other data sources that are available such as vessel monitoring system data (VMS). Council staff has plotted similar VTR data with updated years (2008-2012) for the scallop fishery to highlight this concern (Figure 2). Only three reported locations fall within the boundaries of the Area 14 SMZ, and all scallop catch and revenue from these trips was about 192,000 pounds and \$1.2 million dollars. However, if VTR fishing locations reported within two

nautical miles (or 0.05 decimal degrees) of Area 14 are considered as well, the catch and revenue estimates are much higher; over 3 million pounds and over \$20 million dollars (Figure 3). This is a very simplistic method to expand VTR data to describe potential fishery impacts. If possible, the final EA should consider more sophisticated geoprocessing methods, or use Vessel Monitoring System (VMS) data to better quantify overlaps with fishing effort. For example, the Northeast Fishery Science Center developed a method to analyze VTR data which infers fishing effort in circular bands around a single VTR points. This approach is currently being used to evaluate impacts in the New England Council's Omnibus Essential Fish Habitat Amendment 2 and could be used in this EA.

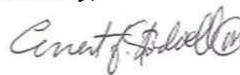
In addition, the EA should acknowledge that scallop fishing effort in Area 14 shows substantial inter-annual variation due to its status as a scallop rotational access area, and a complete lack of scallop fishing during a particular year may be due to a rotational area closure. During other years there has been controlled access but relatively high levels of fishing, and at times the area has reverted to an open area and was fished more sporadically. This cycle of closures and opening is expected to continue in the future if this area continues to be a productive area. Most recently, Elephant Trunk was closed to the scallop fishery on December 12, 2012. The area will remain closed for over two years and is scheduled to reopen to limited fishing in 2015 through either 2017 or 2018.

Finally, the EA concludes overall that designating SMZs with gear restrictions for all five reefs would have, "negligible impacts on trawl or scallop fishing because it would not alter their fishing activities" and "vessels using dredges or trawls would avoid the rough bottom of the small artificial reef areas". These conclusions may be valid for the other four areas that already have artificial reefs, but there is currently no artificial reef in Area 14. Therefore, implementing an SMZ for Area 14 would essentially close an area that is actively fished, does not have rough bottom and that does not currently have an artificial reef, at a potential scallop revenue loss of between \$1 million to \$20 million.

While the full Council has not had an opportunity to discuss this proposal, I urge NMFS not to implement an SMZ to address gear conflicts in Area 14 until an artificial reef is actually placed there, or to consider exempting mobile bottom tending gears from the Area 14 SMZ. As there is currently no artificial reef in Area 14, implementing a SMZ at this time would create adverse impacts on fisheries active in that area with no associated benefits.

Please contact me if you have any questions.

Sincerely,



Terry Stockwell
NEFMC Chairman

cc: Christopher Moore, MAFMC
Robert Beale, ASMFC
Enclosure

Figure 1 – Estimated exploitable biomass in kg from all NEFSC scallop dredge survey tows (1979-2005)

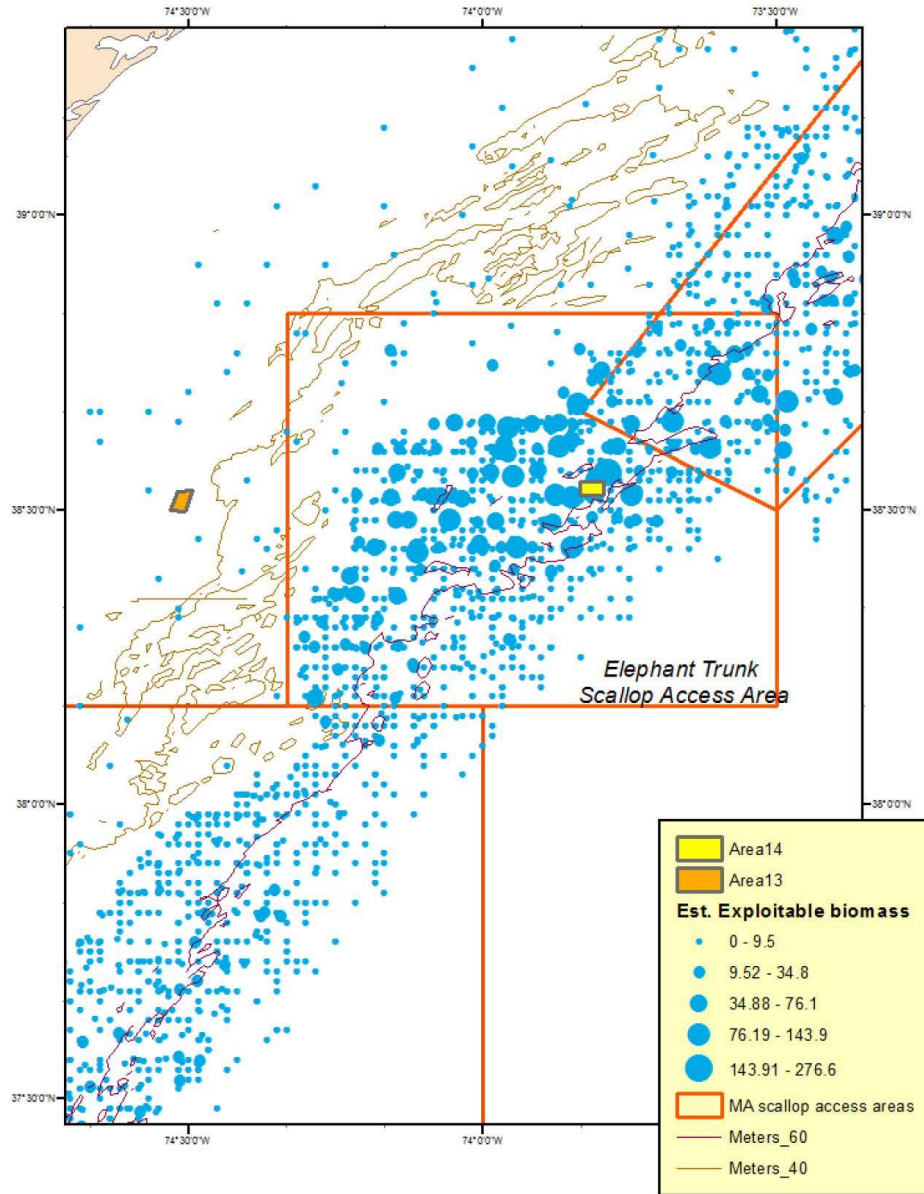


Figure 2 – Fishing location data for trips with scallops as primary species landed (VTR data 2008-2012)

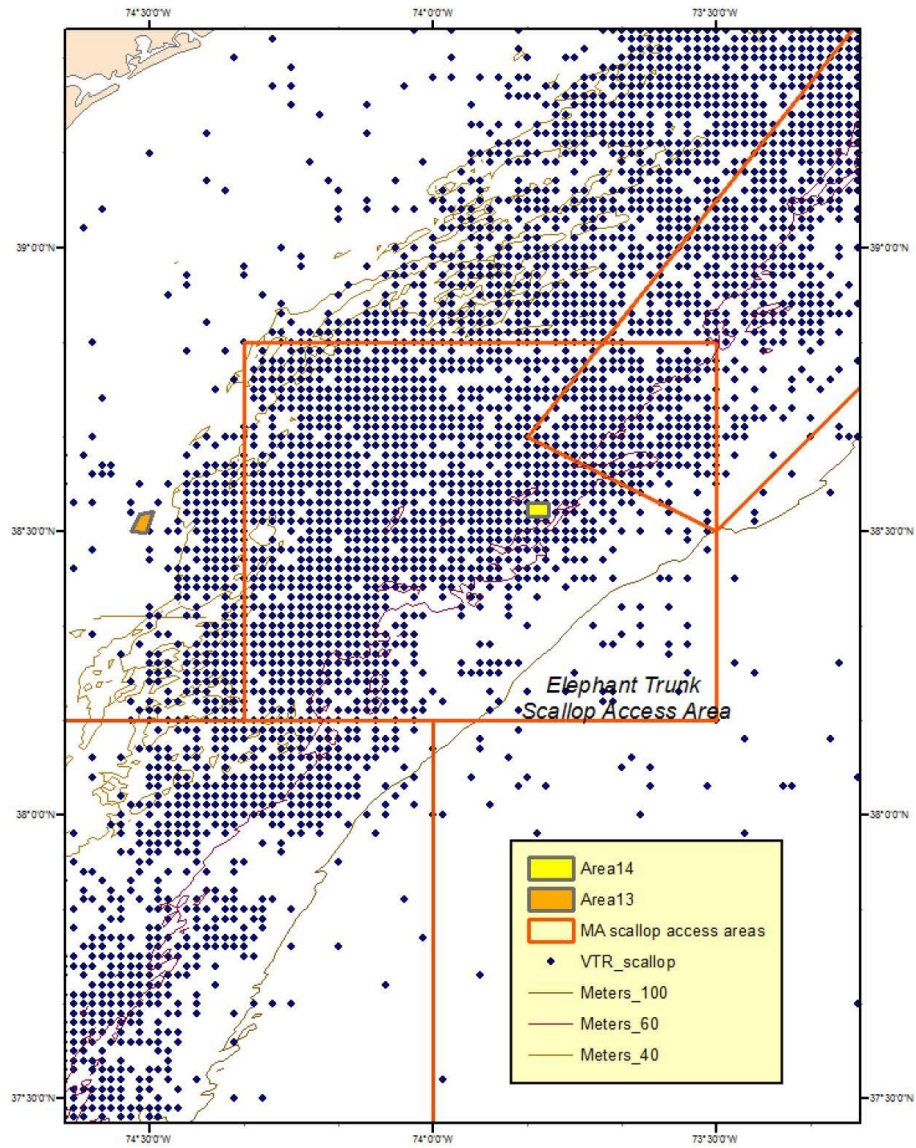
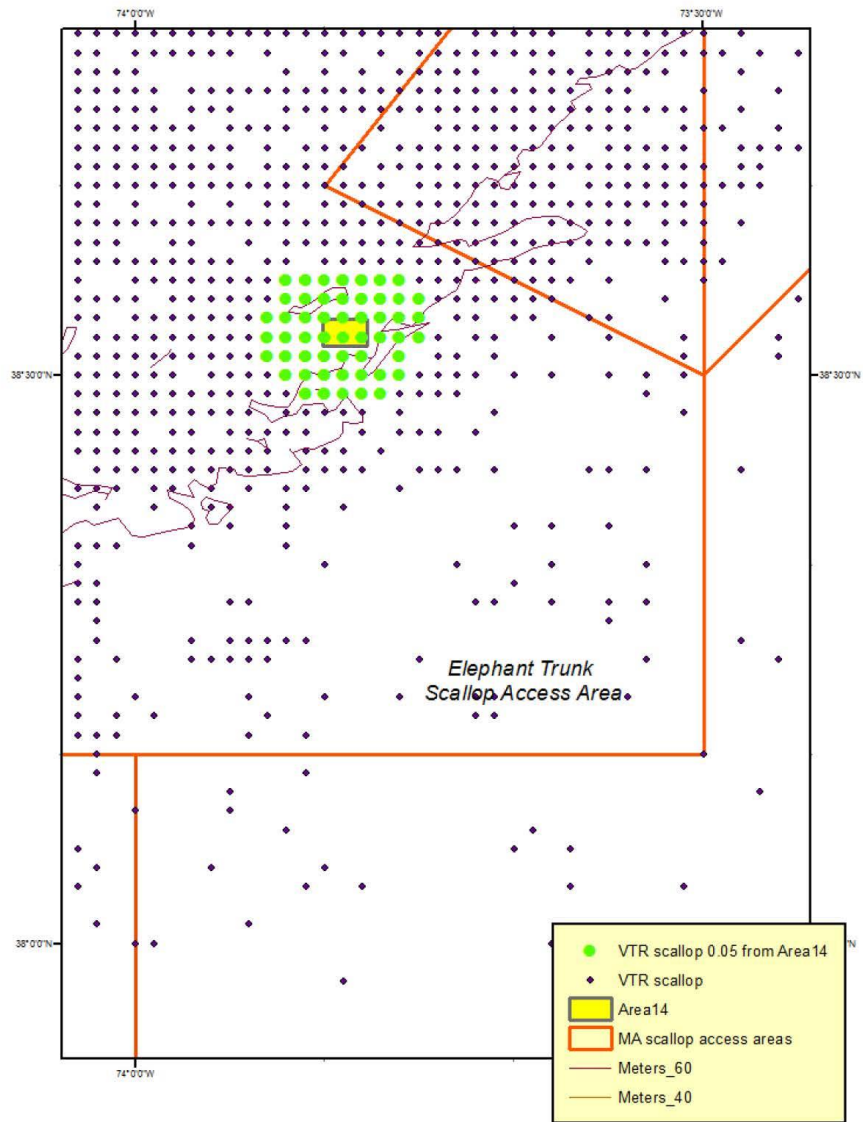


Figure 3 – VTR locations for trips with scallops as primary species landed within 2 nautical miles of Area 14





Atlantic States Marine Fisheries Commission

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Dr. Louis B. Daniel, III, (NC), Chair Douglas E. Grout (NH), Vice-Chair Robert E. Beal, Executive Director

Vision: Sustainably Managing Atlantic Coastal Fisheries

August 14, 2014

John Bullard
Regional Administrator, NOAA Fisheries
GARFO
55 Great Republic Drive
Gloucester, Massachusetts 01930

Dear Mr. ^{John}Bullard,

On behalf of the Atlantic States Marine Fisheries Commission (Commission), I am submitting comments for the proposed rule on Special Management Zones (SMZs) for five Delaware artificial reefs in federal waters. The rule proposes establishing SMZ status for reef sites 9, 10, 11, 13, and 14 with a 0.46 km buffer under the black sea bass provisions of the Summer Flounder, Scup, and Black Sea Bass Fishery Management Plan.

The Commission recommends NOAA Fisheries establish SMZ declarations to sites 9, 10, 11, and 13 without buffers. In their May 20 comments, Delaware's Coastal Management Program noted SMZs without buffers would not present enforcement problems for Delaware enforcement agents. The Commission agrees. In addition, eliminating the proposed buffers would be consistent with state SMZ regulations.

The Commission does not support establishing site 14 as an SMZ. The Commission's concerns are based on significant impacts to the scallop fishery, which were presented by the New England Fishery Management Council in their letter to NOAA Fisheries on July 30, 2014. The proposed rule concludes SMZs would have negligible impacts on trawl and scallop fishing. NOAA Fisheries states vessels using those gear types will avoid Area 14 due to its rough bottom. While mobile gear fishermen may avoid Areas 9, 10, 11, and 13 that already have artificial reefs, Area 14 currently has no artificial reef. Therefore, implementing an SMZ for Area 14 would essentially close an area that is actively fished, does not have rough bottom, and does not currently have an artificial reef. Site 14 is within the highly productive and valuable Elephant Trunk scallop rotation area, and closing this area would also close the scallop commercial fishery within the area.

Thank you for the opportunity to comment.

Sincerely,

A handwritten signature in blue ink that reads "ROBE" followed by a stylized flourish.

Robert E. Beal

cc: ISFMP Policy Board

L14-74

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STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES
& ENVIRONMENTAL CONTROL
DIVISION OF FISH & WILDLIFE
89 Kings Highway
Dover, Delaware 19901

OFFICE OF THE
DIRECTOR

Phone: (302) 739-9910
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August 18, 2014

John K. Bullard, Regional Administrator, NMFS
Greater Atlantic Regional Fisheries Office
55 Great Republic Drive
Gloucester, MA 01930

Dear Mr. Bullard:

This letter provides comment on behalf of the Delaware Division of Fish and Wildlife (Division) related to **Proposed Rule NOAA-NMFS-2014-0060 Special Management Zones for Five Delaware Artificial Reefs**. As you are aware, this matter was most recently discussed at the August 2014 meetings of the Atlantic States Marine Fisheries Commission (ASMFC) and the Mid Atlantic Fisheries Management Council (MAFMC). As indicated during deliberations at those meetings, Delaware continues to support year round Special Management Zone (SMZ) designation allowing only the use of hook-and-line or spear within the boundaries of four of Delaware's five permitted artificial reef sites in the Exclusive Economic Zone (i.e., sites 9, 10, 11 and 13). We request excluding the undeveloped artificial reef site 14 from SMZ designation. The Division also requests the removal of the proposed 500-yard enforcement buffer around each of the permitted artificial reef sites.

Although artificial reef site 14 only occupies about 0.1% of the over 1,000 square nautical mile Elephant Trunk Access Area, we have no objection to the removal of this site from our proposed sites for SMZ designation if the area is considered crucial by the commercial fishing sector. Site 14 is one of Delaware's permitted artificial reef sites, but no materials have been placed at the site and, therefore, there is not a direct nexus to the Sport Fish Restoration (SFR) Program. Eliminating site 14 from SMZ designation will likely prevent Delaware from using SFR monies to develop the site in the future; however, due to competing funding priorities, reduced availability of vessels for reefing, reduced appropriations and the low number of anglers that would be served by developing such a distant site, Delaware has no plans to develop this site in the foreseeable future.

The Division considers the proposed rule's 500-yard enforcement buffers overly restrictive. Delaware's ocean reef sites average approximately one square nautical mile, so a 500-yard buffer around the perimeter would greatly expand the area impacted by the rule. In addition, Delaware purposefully located reef sites on open bottom in close proximity to existing wrecks. These


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existing wrecks were historically fished using pot gears and it is likely that a 500-yard enforcement buffer would remove access to these locally important traditional fishing areas. In contemplating the inclusion of enforcement buffers around the artificial reef sites, further consideration of the gears typically fished in these structurally complex areas is warranted. Mobile gear fisheries tend to avoid areas with significant structure and fixed gears are easier to locate and enforce. Modern navigation instruments are much more precise than when buffers were established for SMZs in the South Atlantic, with improved electronics making positioning by fishermen and enforcement officials much more certain. When considered in total, confining the SMZ protections to the existing boundaries of the permitted reef sites will provide adequate relief from gear conflicts.

Thank you for providing the opportunity to provide input. As the reef permit holder and applicant for SMZ status, the Delaware Division of Fish and Wildlife sincerely appreciates the efforts of the GARFO, the ASMFC and the MAFMC for their serious consideration of this important issue.

Sincerely,

A handwritten signature in black ink, appearing to read 'D. Saveikis', with a large, sweeping flourish at the end.

David E. Saveikis
Director



Mid-Atlantic Fishery Management Council

800 North State Street, Suite 201, Dover, DE 19901

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Richard B. Robins, Jr., Chairman | Lee G. Anderson, Vice Chairman
Christopher M. Moore, Ph.D., Executive Director

August 19, 2014

Mr. John Bullard
Regional Administrator
GARFO
55 Republic Drive
Gloucester, MA 01930

Dear John:

Please accept these comments from the Mid-Atlantic Fishery Management Council (Council) regarding the Proposed Rule which would designate five artificial reefs permitted to the State of Delaware in the EEZ as Special Management Zones (SMZs). At its August meeting, the Council voted to recommend removing the inclusion of an enforcement buffer around any reef sites designated as SMZs after receiving input from the State of Delaware opposing the inclusion of a 500 yard buffer around each reef site. The inclusion of a 500 yard enforcement buffer surrounding each SMZ would roughly double the area of the SMZs relative to the current permitted reef site areas, which would be contrary to the intent of the State of Delaware when they made the SMZ designation request.

In addition, the Council reviewed comments from the New England Fishery Management Council (NEFMC) concerning the designation of Reef Site 14 as an SMZ. The NEFMC noted that significant fishing activities related to the Atlantic sea scallop, monkfish and skate fisheries occur in or near the vicinity of Site 14. They also noted that significant negative economic impacts could result from an SMZ designation at Site 14 with no apparent benefit since, to date, there have been no reef materials placed at that location. In response to the NEFMC concerns, the Council voted to remove Reef Site 14 from consideration as an SMZ under the proposed action.

Thank you for the opportunity to comment on the SMZ Proposed Rule. If you have any questions or require additional information, please contact me or Rich Seagraves of my staff.

Sincerely,

Christopher M. Moore, PhD.
Executive Director

cc: L. Anderson, P. Perra, R. Robins, R. Seagraves

**Appendix B-
SMZ Monitoring Team Report
Executive Summary**

**A Report to the Mid-Atlantic Fishery Management Council
on the Delaware Division of Fish and Wildlife's Request for
Special Management Zone (SMZ) Designation for Five Artificial Reef Sites in the EEZ**

August 2012

Executive Summary

The Delaware Division of Fish and Wildlife (DFW) has petitioned the Mid-Atlantic Council to designate 5 artificial reef sites as Special Management Zones (SMZs) in the EEZ under provisions of Amendment 9 to the Summer Flounder, Scup and Black Sea Bass FMP. The justification for this request was based on the need to ameliorate gear conflicts between hook and line fishermen and fixed pot/trap gear at those sites. The DFW may face termination of funding for its artificial reef program in the EEZ under the US Fish and Wildlife Service Sport Fish Restoration (SFR) Program (which is effectively the DFWs sole source of funding for its reef program) if this alleged gear conflict issue is not resolved.

A Monitoring Team was formed to evaluate the DFW request relative to the following factors: (1) fairness and equity; (2) promotion of conservation; (3) avoidance of excessive shares; (4) consistency with the objectives of Amendment 9 to the Summer Flounder, Scup, and Black Sea Bass Fishery Management Plan, the Magnuson-Stevens Act, and other applicable law; (5) the natural bottom in and surrounding potential SMZs; and (6) impacts on historical uses. This report contains an analysis of these factors and recommendations relative to the DFW request. Based on that analysis, the SMZ Monitoring Team reached the following conclusions:

1. There is no evidence of potential gear conflicts on Delaware's artificial reef sites in the EEZ based on the reported levels of fishing activity at those sites from VTR data, *except* at reef sites 11 and 13. Only limited information is available for reef site 14 relative to the levels of recreational fishing activity at that site.
2. Designation of reef sites 9, 10, 13 and 14 as SMZs would be consistent with past Council policy relative to the permitting and deployment of artificial reefs at these sites, but may not be relative to site 11 because the Council was opposed to placement of an artificial reef at this location in 1996 during the original permit application in a letter to the Army Corps of Engineers.
3. Significant precedent exists in other regions (i.e., the South Atlantic) to conclude that the designation of Delaware's five artificial reef sites in the EEZ as SMZs (which would include gear restrictions in those areas) is consistent with the Magnuson Act and other applicable law.
4. The recommendation the Council makes with respect to SMZ designation for Delaware reef sites has important implications for the 30 other permitted artificial reef sites which currently exist within the EEZ portion of black sea bass management unit. The conclusion reached in the current social and economic assessment is that designation of SMZ status for the five Delaware reef sites would not impact a significant number of entities since available evidence indicates

that a relatively small number of pot/trap fishermen utilize Delaware reefs in the EEZ. This conclusion might have been different if the Council were considering SMZ status for all 35 EEZ reef sites which are currently permitted to the states.

Based on the weight of evidence examined, the SMZ Monitoring Team recommends the following:

1. Given this decision is largely driven by policy considerations which are entirely under the purview of the Council's policy making function, the Council should convene the Demersal Committee (or if appropriate, a special working group) with industry advisors to develop a long term solution to this issue. It is imperative that this policy analysis consider all relevant factors and considerations and not be based solely on the issue of gear conflicts (as is the case here). Complaints about gear conflicts at New Jersey reef sites in the EEZ have already caused the USFWS to terminate that states SFR Program funding (NJ currently has 13 sites in the EEZ), so this issue extends well beyond the 5 reef sites considered in this analysis.

2. Until such time that the Council can develop a longer term solution to this issue based on a broader consideration of all relevant factors and issues, the SMZ Monitoring Team recommends that the Council consider designating all five of Delaware's artificial reefs located in the EEZ as SMZs during time periods when the recreational season for black sea bass is open. The SMZs would prohibit the use of fixed pot/trap gear within 1000 yards of the five artificial reef sites during the time period when the recreational season for black sea bass is open to ameliorate any real or potential gear conflicts at those sites (1000 yard buffer based on input from USCG and NMFS law enforcement personnel).

3. The Council would reserve the right to change or revise these SMZs, including any gear restrictions imposed as a result of such designations, if future analyses cause the Council to alter its policy with respect to SMZs during a broader consideration of this issue.

4. The Council should review the 2007 National Artificial Reef Plan and modify (if necessary) and implement the artificial reef policy it adopted in 1995.

Appendix C-
Essential Fish Habitat descriptions for federally-managed species/life stages in
the U.S. Northeast Shelf Ecosystem that are vulnerable to bottom tending fishing
gear

Species	Life Stage	Geographic Area of EFH	Depth (meters)	Bottom Type
American plaice	juvenile	GOM, including estuaries from Passamaquoddy Bay to Saco Bay, ME and from Massachusetts Bay to Cape Cod Bay	45 - 150	Fine grained sediments, sand, or gravel
American plaice	adult	GOM, including estuaries from Passamaquoddy Bay to Saco Bay, ME and from Massachusetts Bay to Cape Cod Bay	45 - 175	Fine grained sediments, sand, or gravel
Atlantic cod	juvenile	GOM, GB, eastern portion of continental shelf off SNE, these estuaries: Passamaquoddy Bay to Saco Bay, Massachusetts Bay, Boston Harbor, Cape Cod Bay, Buzzards Bay	25 - 75	Cobble or gravel
Atlantic cod	adult	GOM, GB, eastern portion of continental shelf off SNE, these estuaries: Passamaquoddy Bay to Saco Bay, Massachusetts Bay, Boston Harbor, Cape Cod Bay, Buzzards Bay	10 - 150	Rocks, pebbles, or gravel
Atl halibut	juvenile	GOM and GB	20 - 60	Sand, gravel, or clay
Atl halibut	adult	GOM and GB	100 - 700	Sand, gravel, or clay
Barndoor skate	juvenile/ adult	Eastern GOM, GB, SNE, Mid-Atlantic Bight to Hudson Canyon	10-750, most < 150	Mud, gravel, and sand
Black sea bass	juvenile	GOM to Cape Hatteras, NC, including estuaries from Buzzards Bay to Long Island Sound, Gardiners Bay, Barnegat Bay to Chesapeake Bay, Tangier/ Pocomoke Sound, and James River	1 - 38	Rough bottom, shellfish/ eelgrass beds, manmade structures, offshore clam beds, and shell patches
Black sea bass	adult	GOM to Cape Hatteras, NC, including Buzzards Bay, Narragansett Bay, Gardiners Bay, Great South Bay, Barnegat Bay to Chesapeake Bay, and James River	20 - 50	Structured habitats (natural and manmade), sand and shell substrates preferred
Clearnose skate	juvenile/ adult	GOM, along continental shelf to Cape Hatteras, NC, including the estuaries from Hudson River/Raritan Bay south to the Chesapeake Bay mainstem	0 – 500, most < 111	Soft bottom and rocky or gravelly bottom
Haddock	juvenile	GB, GOM, and Mid-Atlantic south to Delaware Bay	35 - 100	Pebble and gravel
Haddock	adult	GB, eastern side of Nantucket Shoals, and throughout GOM	40 - 150	Broken ground, pebbles, smooth hard sand, and smooth areas between rocky patches
Little skate	juvenile/ adult	GB through Mid-Atlantic Bight to Cape Hatteras, NC; includes estuaries from Buzzards Bay south to mainstem Chesapeake Bay	0-137, most 73 - 91	Sandy or gravelly substrate or mud
Ocean pout	eggs	GOM, GB, SNE, and Mid-Atlantic south to Delaware Bay, including the following estuaries: Passamaquoddy Bay to Saco Bay, Massachusetts Bay and Cape Cod Bay	<50	Generally sheltered nests in hard bottom in holes or crevices
Ocean pout	juvenile	GOM, GB, SNE, Mid-Atlantic south to Delaware Bay and the following estuaries: Passamaquoddy Bay to Saco Bay, Massachusetts Bay, and Cape Cod Bay	< 50	Close proximity to hard bottom nesting areas
Ocean pout	adult	GOM, GB, SNE, Mid-Atlantic south to Delaware Bay and the following estuaries: Passamaquoddy Bay to Saco Bay, MA Bay, Boston Harbor, and Cape Cod Bay	< 80	Smooth bottom near rocks or algae

Species	Life Stage	Geographic Area of EFH	Depth (meters)	Bottom Type
Pollock	adult	GOME, GB, SNE, and Mid-Atlantic south to New Jersey and the following estuaries: Passamaquoddy Bay, Damariscotta R., MA Bay, Cape Cod Bay, Long Island Sound	15 – 365	Hard bottom habitats including artificial reefs
Red hake	juvenile	GOM, GB, continental shelf off SNE, and Mid-Atlantic south to Cape Hatteras, including the following estuaries: Passamaquoddy Bay to Saco Bay, Great Bay, MA Bay to Cape Cod Bay; Buzzards Bay to CT River, Hudson River, Raritan Bay, and Chesapeake Bay	< 100	Shell fragments, including areas with an abundance of live scallops
Red hake	adult	GOM, GB, continental shelf off SNE, Mid-Atlantic south to Cape Hatteras, these estuaries: Passamaquoddy Bay to Saco Bay, Great Bay, MA Bay to Cape Cod Bay; Buzzards Bay to CT River, Hudson River, Raritan Bay, Delaware Bay, and Chesapeake Bay	10 - 130	In sand and mud, in depressions
Redfish	juvenile	GOM, southern edge of GB	25 - 400	Silt, mud, or hard bottom
Redfish	adult	GOM, southern edge of GB	50 - 350	Silt, mud, or hard bottom
Rosette skate	juvenile/ adult	Nantucket shoals and southern edge of GB to Cape Hatteras, NC	33-530, most 74-274	Soft substrate, including sand/mud bottoms
Scup	juvenile/ adult	GOM to Cape Hatteras, NC, including the following estuaries: MA Bay, Cape Cod Bay to Long Island Sound, Gardiners Bay to Delaware inland bays, and Chesapeake Bay	0-38 for juv 2-185 for adult	Demersal waters north of Cape Hatteras and inshore estuaries (various substrate types)
Silver hake	juvenile	GOM, GB, continental shelf off SNE, Mid-Atlantic south to Cape Hatteras and the following estuaries: Passamaquoddy Bay to Casco Bay, ME, MA Bay to Cape Cod Bay	20 – 270	All substrate types
Summer Flounder	juvenile/ adult	GOM to Florida – estuarine and over continental shelf to shelf break	0-250	Demersal/estuarine waters, varied substrates. Mostly inshore in summer and offshore in winter.
Smooth skate	juvenile/ adult	Offshore banks of GOM	31–874, most 110-457	Soft mud (silt and clay), sand, broken shells, gravel and pebbles
Thorny skate	juvenile/ adult	GOM and GB	18-2000, most 111-366	Sand, gravel, broken shell, pebbles, and soft mud
Tilefish	juvenile/ adult	Outer continental shelf and slope from the U.S./Canadian boundary to the Virginia/North Carolina boundary	100 - 300	Burrows in clay (some may be semi-hardened into rock)
White hake	juvenile	GOM, southern edge of GB, SNE to Mid-Atlantic and the following estuaries: Passamaquoddy Bay, ME to Great Bay, NH, Massachusetts Bay to Cape Cod Bay	5 - 225	Seagrass beds, mud, or fine grained sand
Winter flounder	adult	GB, inshore areas of GOM, SNE, Mid- Atlantic south to Delaware Bay and the estuaries from Passamaquoddy Bay, ME to Chincoteague Bay, VA	1 - 100	Mud, sand, and gravel
Winter skate	juvenile/ adult	Cape Cod Bay, GB, SNE shelf through Mid-Atlantic Bight to North Carolina; includes the estuaries from Buzzards Bay south to the Chesapeake Bay mainstem	0 - 371, most < 111	Sand and gravel or mud
Witch flounder	juvenile	GOM, outer continental shelf from GB south to Cape Hatteras	50 - 450 to 1500	Fine grained substrate
Witch flounder	adult	GOME, outer continental shelf from GB south to Chesapeake Bay	25 - 300	Fine grained substrate
Yellowtail flounder	adult	GB, GOM, SNE and Mid-Atlantic south to Delaware Bay and these estuaries: Sheepscot River and Casco Bay, ME, MA Bay to Cape Cod Bay	20 - 50	Sand or sand and mud