State of Rhode Island and Providence Plantations

COASTAL RESOURCES MANAGEMENT COUNCIL
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TECHNICAL CHANGES MEMO

September 29, 2010

Coastal Resources Management Council
Chairman Michael M. Tikoian
Stedman Government Center- Suite 3
4808 Tower Hill Road
Wakefield, RI 02879-1900

Dear Chairman Tikoian:

Below please find a detailed summary of all technical changes to date for the Ocean Special Area Management Plan. **Please note that this memo proposed new changes, in addition to those detailed in the September 14th, 2010 memo.** All proposed changes listed here are suggested in response to public comments in response to the September 9th, 2010 public comment deadline. Technical changes proposed in this memo include (1) changes in response to feedback and updated data received from URI Ocean SAMP researchers who reviewed these chapters; (2) changes requested by federal and state agencies to better reflect federal mandates; (3) changes to allow for consistency between Ocean SAMP chapters; and (4) proofreading changes. We submit these to you for your review.

Executive Summary

1. We propose the following change to Executive Summary item #2 in response to comments received from BOEMRE:

"2. ~~For thousands of years the~~The waters off Rhode Island's coasts have long served as an important and highly valuable environmental, economic and cultural hub for the people living in this region. The natural beauty of these offshore waters, along with its rich historic and cultural heritage, provides aesthetic, artistic, educational, and spiritual value and is part of the appeal that draws people to live, work, and play in Rhode Island. Rhode Island's offshore waters are an ecologically unique region and host an interesting biodiversity of fish, marine mammals, birds, and sea turtles that travel throughout this region, thriving on its rich habitats, microscopic organisms, and other natural resources."

Chapter 1, Introduction

1. The following corrections were made to correct typographic errors in response to comments from Nicole Travisono/RIDEM:

a. Section 100, #1: changed "recreational fisheries, support" to "recreational fisheries support"
b. Section 160.2, #1b: changed "resources users" to "resource users"; changed "refining and enhance" to "refining and enhancing".

2. We propose the following change to section 110, item #2, in response to comments received from BOEMRE:

"2. The Ocean Special Area Management Plan (Ocean SAMP) is the regulatory, planning and adaptive management tool that CRMC is applying to uphold these regulatory responsibilities in the Ocean SAMP study area. Using the best available science and working with well-informed and committed resource users, researchers, environmental and civic organizations, and local, state and federal government agencies, the Ocean SAMP provides a comprehensive understanding of this complex and rich ecosystem. The Ocean SAMP also documents how the people of this region have used and depended upon these offshore resources for subsistence, work, and play~~ for thousands of years~~, and how the natural wildlife such as fish, birds, marine mammals and sea turtles, feed, spawn, reproduce, and migrate throughout this region thriving on the rich habitats, microscopic organisms, and other natural resources. To fulfill the Council's mandate, the Ocean SAMP lays out enforceable policies and recommendations to guide CRMC in promoting a balanced and comprehensive ecosystem-based management approach to the development and protection of Rhode Island's ocean-based resources within the Ocean SAMP study area as defined in section 130. The Ocean SAMP successfully fulfills its original stated objectives as summarized below in Section 150."

3. We propose the following change to section 130, item #5d, in response to comments received from Nicole Travisono/RIDEM:

"d. Base all decisions on the best available science. All management and regulatory decisions will be based on the best available science and on ecosystem based management approaches. The Ocean SAMP will require that the necessary studies be performed before a future activity is approved to better understand the impact of this activity on the ecosystem. Such necessary studies might include gathering information on baseline resource conditions,[2] potential environmental and economic impacts, and potential mitigation measures."

New footnote #2:

[2] Baseline data collected and summarized as part of the Ocean SAMP are not intended to represent an idealized state or targeted abundance levels or conditions. Rather, these data are intended to provide insight into current conditions in order to inform decision-making.

4. We propose the following change to section 160, #4, in response to comments received from the RI DEM Office of Water Resources:

"4. The CRMC is the state authority for federal consistency under the CZMA (16 U.S.C. § 1456). Federal consistency requires federal agencies to alter projects to be consistent with state coastal management program policies. In addition, the statute requires non-federal applicants for federal authorizations and funding to be consistent with enforceable policies of state coastal management programs. A federal agency also has a statutory responsibility to provide neighboring or impacted states with the opportunity to review federal agency activities with coastal effects occurring wholly within the boundary of another state if that state has been approved for interstate consistency. For further information on federal consistency, see 15 CFR 930 *et. seq.*"

Chapter 2, Ecology of the SAMP Area

1. The following corrections were made to correct typographic errors:

a. Sec 200, Page 11; corrected spelling error “winder” to “winter”.
b. Sec 230, #2; deleted “water” as it was duplicated in the sentence.
c. Sec 230.4, #6; corrected typo “in” to “is”.
d. Sec 240.2, #1; corrected typo “disbursed” to “dispersed”.
e. Sec 250.1.3, #5; corrected typo “alleviated” to “alleviate”.
f. Sec 250.2, #5; corrected typo “amplescid” to “ampeliscid”.
g. Sec 250.2.1.1, #4; corrected typo “Cragon” to “Crangon” and “Dicheleopandalus” to “Dichelopandalus”.
h. Sec 250.3, #5; corrected typo “Cragon” to “Crangon”.
i. Sec 250.3, #6; deleted “an” to correct grammar in sentence.
j. Sec 250.4.2, #2; corrected typo “frequents” to “frequent”.
k. Sec 250.6, #3; corrected typo “aoppear” to “appear”.
l. Sec 260.2, #2; removed extra period (“.”) at sentence end.
m. Sec 280; citation for Ford and Gieg 1995 was deleted as it was not cited in text.
n. Sec 280; citation for Shonting et al. 1963 was deleted as it was not cited in text.
o. Sec 280; citation for Sidor et al. 2003 was deleted as it was not cited in text.

2. In response to comments from BOEMRE, Sec. 250.1.3., Table 2.4 legend amended to better define number of sample stations used in the presented data:

“Table 2.1. MARMAP Ocean SAMP area zooplankton data collected since 1978 (Kane 2007). The number of stations sampled has decreased from a high of 28 (1980) stations ~~since the mid-1980s~~to 11 stations (2007; lowest = 2 stations in 1998).”

3. In response to comments from BOEMRE, Sec. 250.1.5., Table 2.6 legend amended to better define number of sample stations used in the presented data:

“Table 2.2. MARMAP (Richardson et al. in press) ichthyoplankton data collected since 1978. The number of stations sampled has decreased from a high of 28 stations (1980) ~~since the mid-1980s~~to 11 stations (2007; lowest = 2 stations in 1998).”

4. In response to comments from RI DEM and NMFS, Section 250.4.1, #2 amended to note April 2010 right whale observations in SAMP area; Literature Cited also updated, see as follows:

“2. For baleen whales, Kenney and Vigness-Raposa (2009) report that fin, humpback and minke whales occur year round throughout continental shelf waters, but all are relatively rare in the Ocean SAMP area. Figure 2.32 shows relative abundances of various species of baleen whales in the Ocean SAMP area. Right whales, a particularly endangered species with approximately 400 individuals remaining, can be common offshore during spring and fall migration, but are not common in the Ocean SAMP area. However, in one event in April 2010, nearly 100 right whales were spotted feeding in Rhode Island sound, indicating that they do sometimes appear within the Ocean SAMP boundary area (Northeast Fisheries Science Center 2010). Waters outside of the Ocean SAMP area see greater abundances of marine mammals, with the fin whale being the most common, and with some visitation into the Ocean SAMP area during summer months with sightings primarily in deeper waters. Baleen whales appear to utilize the area to the east of Nantucket Sound/Vineyard Sound more heavily than they do the Ocean SAMP area (Figure 2.32)."

Added to Literature Cited:

Northeast Fisheries Science Center. 2010. Media Advisory: "Record Number of North Atlantic Right Whales Sighted off Rhode Island", April 23, 2010. Available online from: http://www.nefsc.noaa.gov/press_release/2010/MediaAdv/MA1004/index.html

5. **In response to comments from BOEMRE, Sec. 250.6., #7 revised to include definitions of "offshore" and "nearshore" relative to avian abundances:**

"Common eider are the most abundant user of nearshore waters (≤ 3 km), followed by the herring gull and surf scoter. Offshore waters (> 3 km) are utilized most heavily"

6. **In response to RI Dept. Environmental Management Comments, Sec 200, Page 12 revised to reflect that lobster shell disease is prevalent, not increasing, in the Ocean SAMP area:**

"While less is known about marine microbial communities and disease organisms in Ocean SAMP waters, lobster shell disease is ~~increasing in abundance~~prevalent in the area and is being tied to changing climatic conditions."

7. **In response to RI Dept. Environmental Management Comments, Sec. 250.2.1., #5 revised so as not to suggest that lobster populations are increasing in the Ocean SAMP area:**

"The American lobster (*Homarus americanus*) is a large, scavenging, benthic invertebrate living in the Ocean SAMP area, and is of great commercial importance in the region. ~~This large invertebrate is a major scavenging species, and that is noted to be increasing in abundance in the area since the early 1980s (Collie et al. 2008; see Section 250.3).~~ See Chapter 5, Fisheries, for detailed life history or the American lobster."

8. **In response to RI Dept. Environmental Management Comments, Sec. 260.3., #2 revised to note that lobster shell disease promotes increased mortality in lobster populations and to provide a link to the RI Sea Grant Baird Symposium website which provides updated information on the status and understanding of lobster shell disease:**

"While the source of shell disease remains unknown, ~~some studies point to alkylphenols, a byproduct of industrial sources such as detergents and surfactants. It~~it is almost certain that one or more environmental stressors are driving the widespread appearance of shell disease, which is causing increased mortality in lobster populations. Further details on lobster shell disease can be found at http://www.seagrant.gso.uri.edu/baird/2010_diseases.html. "

9. In response to comments from NMFS, Sec. 230.3.1., #3 changed as follows:

"3. During winter, warmest waters occur offshore in the area around Cox Ledge, with lowest temperatures found along the periphery of the sounds abutting the landmass of the coast (Codiga and Ullman 2010). During summer, the warmest waters are seen in northern and central Rhode Island Sound, while Block Island Sound, the area around Block Island and the eastern portion of Rhode Island Sound are cooler, because of the influence of Long Island Sound (Codiga and Ullman 2010). A distinct thermal front (where two water masses that differ in their physical and/or chemical attributes collide) is noted south of Block Island at the periphery of cooler waters, and this front is coincident with a salinity front derived from the input of lower salinity water from Long Island Sound (see Section 230.4.1). During autumn, central Rhode Island Sound remains slightly warmer than adjacent waters. "

10. In response to comments from NMFS, Section 230.3.3, #1 changed as follows:

"1. While winds, tides, and circulation all promote the transport and mixing of water and the constituents contained in it, water column stratification—because of differing water density regimes at surface and at depth—plays an opposing role by setting up the physical conditions that can limit or preclude vertical mixing. A stratified water column is vertically stable, and promotes an accumulation of phytoplankton, which can then grow to bloom proportions (Mann and Lazier 2006). Decomposition of plant matter in the bloom consumes oxygen, and since stratification prevents vertical mixing, hypoxic or anoxic conditions can ensue, to the detriment of marine life. Water column stratification—sometimes strong stratification—sets up in both Rhode Island Sound and Block Island Sound, and over the Offshore Ocean SAMP area as well; stratification appears to be highly seasonal. It has been suggested that Block Island Sound, due to its more vigorous circulation and mixing regimes, is less prone to stratification than Rhode Island Sound. However, observations suggest that strong stratification can occur in either sound (Codiga and Ullman 2010). The onset of stronger winds during the fall tends to break down stratification of the water column in all areas. Further work is needed on this topic to clarify the onset and persistence of stratification events, and to then begin exploration of impacts, if any, to the ecology of these ecosystems. There are however, no reports of water column anoxia or hypoxia for Ocean SAMP waters."

11. In response to comments from NMFS, Section 250.5 #3 changed as follows:

"3. Kenney and Vigness-Raposa (2009) report details for leatherback sea turtles, noting that sightings generally occurred in continental shelf waters, not in the Ocean SAMP area. Those leatherback turtles that do visit the Ocean SAMP area feed upon jellyfishes and other gelatinous prey items. The few turtles that are found offshore of the Ocean SAMP area are sighted mostly in the summer and early fall~~, except for Kemp's Ridleys which is seen mostly in winter, probably as southbound migrants~~. Figure 2.35 shows the seasonal relative abundance of leatherback turtles in the Ocean SAMP area, showing the probability for visitation in the area is highest during summer and fall months. Chapter 3, Section 330.1 provides information on possible impacts of changing climate on sea turtle's in the Ocean SAMP area."

Chapter 3, Global Climate Change:

1. **Section 300, Introduction: Section 300 paragraph 3 (p 6): response to comments submitted by Nicole Travisono (RIDEM) as follows:**

"3. Human activities since the start of the Industrial Age have caused a significant increase in greenhouse gases in the atmosphere. The most prevalent greenhouse gas in the atmosphere in terms of anthropogenic emissions, carbon dioxide, has risen from a pre-industrial level of 280 parts per million (ppm) to 385 ppm in 2008, the highest it has been in 650,000 years. There is strong scientific consensus that carbon dioxide in the atmosphere warms the air and sea surface, accelerates sea level rise, makes the ocean more acidic, ~~and~~ causes shifts in precipitation and weather patterns, and leads to more extreme weather events, among other effects (Anderegg et al. 2010; Sills 2010). These effects are already being witnessed globally and in Rhode Island and are projected to intensify in years to come."

2. **Section 310, Climate Change Observed Trends: Global, U.S. Northeast, Rhode Island: Section 310.5 paragraph 3 (p 15) changed in response to comments submitted by Nicole Travisono (RIDEM) as follows. Attempts to contact the author for reference information were unsuccessful:**

"3. In contrast to precipitation, ~~average winter and summer wind speeds over land across New England have declined by 20 percent in the last 50 years (O'Donnel, in press). Other~~ data ~~also~~ show a decline in annual mean wind speed in the northeastern U.S. (Pryor et al. 2009). For example, Figure 3.5 shows that wind speed recorded at T.F. Green Airport has significantly declined from 1964 to 2004 (Pilson 2008)."

3. **Section 320, Future Climate Change Projections: Section 320.4 paragraph 4 (p 25): changed in response to comments submitted by Patricia A. Kurkul (NMFS, Northeast Region) as follows:**

"4. A small increase in frequency of nor'easters is projected for the U.S. Northeast (Frumhoff et al. 2007). Currently approximately 12 to 15 nor'easters (extra-tropical storms) hit the U.S. Northeast from November to March (Frumhoff et al. 2007). It is estimated that under a high-emissions scenario, one additional nor'easter could affect the Northeast coast each winter by late century (Frumoff et al. 2007). Nor'easters drive destructive waves and currents, and transport sediment along the coastlines resulting in beach and bluff erosion and sediment re-suspension offshore. Movement of sediment could have adverse impacts on planktonic organisms and navigation."

4. **Section 320, Future Climate Change Projections: Section 320.5 paragraph 1 (p 25): changed in response to comments submitted by Nicole Travisono (RIDEM) as follows:**

"1. Climate change is projected to change the intensity and timing of annual precipitation in rain and snow in the U.S. Northeast, and the timing and length of seasons. By the end of the century, under either the low or high emissions scenario, annual precipitation is projected to increase approximately 10 percent (4 in/10 cm per year). Winter precipitation could increase an average of 20 to 30 percent, depending on the emission scenario, with a greater proportion falling as rain rather than snow (Figure 3.11) (NECIA 2006). Little change is expected for summer rainfall, but projections are variable (Frumhoff et al. 2007)."

5. **Section 330, Ecological Impacts of Climate Change: Section 330.1.2 paragraph 2 (p 30): changed in response to comments submitted by Nicole Travisono (RIDEM) as follows:**

"2. Warming waters due to changing climate have been reported as at least partially responsible for the increasing occurrence of harmful algal blooms (HAB) (Bricker et al. 2008). HABs are a rapid rise of phytoplankton to levels that pose threats to ecosystem and/or human health (see Chapter 2, Section 250.1.6, for a more detailed discussion). Harmful effects upon ecosystems can result from a massive die-off of phytoplankton and can lead to depleted oxygen in the water column, caused by microbes associated with the HAB, and create hypoxic (very little oxygen) or anoxic (no oxygen) conditions that can stress or kill aquatic organisms. HABs are now frequently occurring along the coast of Maine and are becoming more common in Massachusetts waters; however, HABs have not been documented in the Ocean SAMP area to date."

6. **Section 330, Ecological Impacts of Climate Change: Section 330.1.3 paragraph 10 (p 33): changed in response to comments submitted by Patricia A. Kurkul (NMFS, Northeast Region) as follows:**

"10. Although Collie et al. (2008) found increased lobster populations from 1960's to 2000's, ~~R~~rising sea water temperature is expected to adversely affect lobster populations in the Ocean SAMP region due to distributional shifts northward and potential stresses such as increased incidence of disease (see Chapter 2, Section 260.3, and this chapter, Section 330.3.1). Temperature affects lobster physiology and behavior at all life stages, including molting, the settlement of post-larval lobsters, growth rates, and movement and seasonal migration (Frumhoff et al. 2007). Currently the southern limit of lobster along the Northeast coast is located near Long Island and northern New Jersey. As waters warm, this southern limit will move northward, possibly north of Rhode Island waters, causing a severe decline in the local fishery and an increase in the northern Gulf of Maine fishery (Frumhoff et al. 2007). According to a comparison of lobster distribution between the relatively colder period from 1965 to 1969 and the warmer period from 2000 to 2004, the center of lobster geographical density has already shifted north (Frumhoff et al. 2007)."

7. **Section 330, Ecological Impacts of Climate Change: Section 330.1.4 paragraph 7 (p 35) changed in response to comments submitted by Patricia A. Kurkul (NMFS, Northeast Region) as follows:**

"7. Changing water temperature and prey availability can also impact the reproductive success of marine mammals (IPCC 2007; Whitehead 1997). For example, a decrease in North Atlantic right whale calving has been related to abundance of the principal prey species of copepod, *Calanus finmarchicus*, and oceanographic changes influenced by the NAO (See Section 310.5 for further discussion about NAO; Greene and Pershing 2004). Intervals between right whale calves lengthened from 3 to 4 years between 1987 and 1992 to 5 to 6 years between 1993 and 1998 (Kraus et al. 2007). Kenney (2007) compared North Atlantic right whale calving rates with three atmospheric indices including the NOA, and found each of these atmospheric cycles may be correlated with calving. Additionally, Learmonth~~s~~ et al. (2006) suggest a close correlation between food abundance, body fat condition, and fecundity in female fin whales that in years of food abundance at the summer feeding grounds might produce a calf in consecutive years, whereas in poor years the cycle can be extended to three years."

8. **Section 330, Ecological Impacts of Climate Change: Section 330.3.2 paragraph 1 (p 40): revised in response to comments submitted by Nicole Travisono (RIDEM) as follows:**

"1. An invasive species is an introduced, non-native species that survives when introduced to a new ecosystem and does, or is likely to, cause harm to the ecosystem. Introduced species are recognized as one of the main anthropogenic threats to biological systems (Sala et al. 2000). As local and regional waters warm, additional warm-water species that once found the colder temperature inhospitable will be able to reproduce and spread (Frumhoff et al. 2007). Sorte et al. (2010) conducted a meta-analysis of marine species experiencing range shifts and found that 75 percent of the range shifts were in the northward direction, consistent with climate change scenarios. The expansion of the northward shift of warm water species may introduce new species into the Ocean SAMP area, and warmer temperature could prolong the stay of current seasonal migrants (Oviatt et al. 2003, U.S.~~-~~EPA 2008a)."

9. **Section 340, Implications of Climate Change for Human Uses: Section 340.1.3 paragraph 4 (p 45): revised in response to comments submitted by Nicole Travisono (RIDEM) as follows:**

"4. According to Titus and Richman~~ond~~ (2001), Rhode Island has 47.1 square miles (mi^2) (122.0 square kilometers (km^2)) of land lying within 4.9 vertical feet (1.5 meters) of sea level with an additional 24 mi^2 (108.8 km^2) between 4.9 and 11.5 feet (1.5 and 3.5 meters). This 4.9-foot (1.5-meter) contour roughly represents the area that would be inundated during spring high water with a 2.3-foot (0.7 meter) rise in sea level. This sea level rise scenario is within current end-of-century projections."

10. Section 340, Implications of Climate Change for Human Uses: Sections 340.1.1 (p 44)-Sections 340.2.2 (p. 52): inconsistent use of citation for U.S.EPA 2008a and b changed to U.S.EPA 2008a and b throughout text, in response to comments submitted by Nicole Travisono (RIDEM).

11. Section 340, Implications of Climate Change for Human Uses: Sections 340.1.1 (p 44)-Sections 340.1.3 (p. 45): inconsistent use of citation for Neumann and Price 2009 changed to Neumann and Price 2009 throughout text, in response to comments submitted by Nicole Travisono (RIDEM).

12. Section 340, Implications of Climate Change for Human Uses: Sections 340 (Introduction) (p 42)-Sections 340.1.7 (p. 49): inconsistent use of citation PIANC 2009 changed to PIANC 2009 throughout text, in response to comments submitted by Nicole Travisono (RIDEM).

13. Section 340, Implications of Climate Change for Human Uses: Section 340.5.1 paragraph 3 (p 55): revised as follows in response to comments submitted by Nicole Travisono (RIDEM):

"3. An exception is the lobster fishery. Lobstermen typically fish almost exclusively for lobster. With the prediction of~~a~~ northern movement of the species with increased water temperatures (as discussed in Section 330.1.2), and increased incidence of shell disease associated with increased water temperature (see Section 330.3.1), lobster fishing is likely to decline."

14. Section 340, Implications of Climate Change for Human Uses: Section 340.5.2 paragraph 1 (p 56): revised in response to comments received by Patricia A. Kurkul (NMFS, Northeast Region) as follows:

"1. Species that are at or near the southern extent of their range in the Ocean SAMP area are likely to move north, decreasing in abundance and/or extent of time in which they can be caught by fishers in the Ocean SAMP area (Hare et al. 2010,~~;~~ Nye et al. 2009, Perry et al. 2005). In addition to latitudinal changes in distribution, Nye et al. (2009) and Perry et al. (2005) also suggest that depth distributions may change as a result of climate changes. Commercially valuable species most likely to be impacted in this way include:"

15. Section 340, Implications of Climate Change for Human Uses: Section 340.5.2 paragraph 2 (p. 56): revised in response to comments received by Patricia A. Kurkul (NMFS, Northeast Region) as follows:

"2. Species that are at or near the northern extent of their range in the Ocean SAMP area are likely to move north, increasing in abundance and/or extent of time in which they can be caught within the Ocean SAMP waters (Hare et al. 2010, Nye et al. 2009). The species most likely affected in this way include:"

16. Section 340, Implications of Climate Change for Human Uses: Section 340.5.2 paragraph 1: revised in response to comments submitted by Nicole Travisono (RIDEM) as follows: added Winter flounder (*Pseudopleuronectes americanus*) to list of commercial species that are at or near the southern extent of their range in the Ocean SAMP area and are likely to move north, decreasing in abundance and/or extent of time in which they can be caught by fishers in the Ocean SAMP area:

"a. American lobster (*Homarus americanus*)
b. Atlantic cod (*Gadus morhua*)
c. Silver hake (*Merluccius bilinearis*)
d. Winter flounder (*Pseudopleuronectes americanus*)"

17. Section 340, Implications of Climate Change for Human Uses: Section 340.5.2 paragraph 2: revised in response to comments submitted by Nicole Travisono (RIDEM) as follows: added Blue Crab (*Callinectes sapidus*) to list of commercial species that are at or near the northern extent of their range in the Ocean SAMP area and are likely to move north, increasing in abundance and/or extent of time in which they can be caught by fishers in the Ocean SAMP area:

"-Atlantic croaker (*Micropogonias undulates*) (Hare et al. 2007)
-Black sea bass (*Centropristis striata*)
-Blue crab (*Callinectes sapidus*)
-Butterfish (*Peprilus triacanthus*)
-Scup (*Stenotomus chrysops*)
-Summer flounder (*Paralichthys dentatus*)"

18. Section Literature Cited: revised in response to comments submitted by Nicole Travisono (RIDEM) as follows:

(p 69): deleted 'a' from the reference for NOAA/NOS 2008a in works cited and text since only one reference is now NOAA/NOS 2008; deleted NOAA/NOS 2008b from works cited because it is not cited in the text of the chapter
(p 72): deleted Roemmich and McGowan 1995 from work cited because it is not cited in the text of the chapter
(p 74): corrected U.S.CGRP 2009 to U.S. GCRP 2009

Chapter 4, Cultural and Historic Resources

1. **In text citations throughout the chapter were formatted to be consistent with the rest of the document, based on comments received from BOEMRE.**

2. **The chapter has been formatted to be consistent with the rest of the Ocean SAMP document.**

3. **We suggest the following revision to Section 400, Introduction, paragraph 1, based on comments received from DEM and BOEMRE:**

"In Rhode Island, ~~thousands of years of~~ historical use of the ocean and its resources have resulted in a rich and diverse array of cultural resources underwater and in the coastal zone. These resources provide cultural, educational, recreational, environmental, and economic services that humans want and need. The significance, sensitivity, and non-renewable nature of cultural and historic resources and the special services they provide make them a challenging and important aspect of the Ocean Special Area Management Plan (Ocean SAMP) process."

4. **We suggest the following revision to Section 400, Introduction, paragraph 2, based on comments received from DEM and BOEMRE:**

"~~During earlier periods characterized by lower sea levels, indigenous people inhabited, used and had an impact on the areas within the study region.~~ Through maintenance of oral traditions and unbroken cultural practices, indigenous people in Rhode Island have retained an active cultural connection to parts of the Ocean SAMP study area and adjacent coastal places for thousands of years. Located at one of the historic maritime crossroads of New England and what was becoming known as the "New World," the study area has seen five centuries of increasingly intensive uses beginning with the arrival of Europeans in North America. Today commercial fishing, recreation, and transportation are among the principal activities."

5. **We suggest the following citation be added to Section 410: Historic Contexts and Cultural Landscapes of the Ocean SAMP Area, paragraph 1, based on comments received from BOEMRE:**

"For thousands of years, people have lived along the coast of Rhode Island and ventured on its waters. From the time the shoreline as we know it today stabilized around 7,500 years ago, the ancestors of today's Narragansett Tribe established large settlements along the coastline of Narragansett Bay, around the salt ponds of the south shore of the mainland and on Block Island. Native American archaeological sites are located in the vicinity of the coast, and maritime resources played an important role in the lives of native people (RIHPHC 2002)."

6. We suggest the following reference be added to Section 410.1 Pre-Contact Geological History, paragraph 1, based on comments received from BOEMRE:

"During the last major advance of continental glaciers in North America, known as the Wisconsinan Glaciation, or Wisconsin Glacial Episode, much of northern North America was covered with ice (the Laurentide and Cordilleran ice sheets). Around 24-26,000 years ago, when the ice reached it final southward maximum, the edge of the Laurentide glacier was located about three miles south of Block Island in the Ocean SAMP area. The margin of Laurentide ice extended westward across northern Long Island to northern New Jersey and then to the Midwest. The margin extended eastward to Marthas Vineyard and Nantucket and then to Georges Bank. Because of the vast quantity of water frozen in the glacial ice, the sea level at that time was approximately 120-130 meters lower than it is at present (RIHPHC 2002)."

7. We suggest the following reference be added to Section 410.1 Pre-Contact Geological History, paragraph 2, based on comments received from BOEMRE

"A tundra landscape, cold but habitable, would have extended to approximately the edge of the Continental Shelf. As the glacier retreated, the meltwater caused sea levels to rise, inundating this formerly dry land. During the glacial melting, freshwater lakes dammed by ice and/or glacial deposits were formed, including a large lake in what is now Block Island Sound. The glacial lakes in Block Island and Rhode Island Sounds had probably drained by 15,500 years ago, and perhaps earlier, when the rebound of the land began due to the land being uplifted because of the release of the weight from the overlying glacial ice (RIHPHC 2002)."

8. We suggest the following reference be added to Section 410.1 Pre-Contact Geological History, paragraph 3, based on comments received from BOEMRE:

"It is possible that the ancestors of today's Native American tribes were living in this landscape, although no direct evidence for submerged terrestrial sites has been found in the northeast to date. The oldest known sites in North America date back to before 13,500 years ago—when the glaciers had already pulled back from what is now Rhode Island, but before sea levels had risen to their modern level. The oldest artifacts found in Rhode Island are several thousand years more recent. These sites and artifacts, however, are simply what has survived and what has been found—there may well be older sites, submerged by the glacier meltwater, located offshore (RIHPHC 2002)."

9. We suggest the following reference be added to Section 410.1 Pre-Contact Geological History, paragraph 4, based on comments received from BOEMRE:

"Reconstructing the paleo-landscape is the essential first step to predicting the locations of submerged terrestrial sites. Section 420.3 of this chapter discusses paleo-geographic landscape reconstruction in more detail. The process of inundation was not a constant, gradual influx of water. Catastrophic landscape changes probably occurred as the dams of the freshwater lakes failed, and their waters flooded out. The rate at which the sea level rose changed over time, with periods of dramatic inundation. These turbulent processes, coupled with storm activity and the normal movement of tides and currents, have probably destroyed many submerged terrestrial sites. However, under certain circumstances, such as rapid flooding of post-glacial lake shores in closed depressions, drowned terrestrial landscapes (and any archaeological deposits contained therein) may have survived. Paleosols—ancient soils preserved beneath an overburden of later sediment—have been found through coring in nearby Nantucket Sound. Where such paleosols survive, evidence for human occupation might also be found (RIHPHC 2002)."

10. We suggest the following reference be added to Section 410.1 Pre-Contact Geological History, paragraph 5, based on comments received from BOEMRE:

"Geological reconstructions allow archaeologists to identify places where submerged sites may have survived. In terrestrial archaeology, predictive models based on the locations of known sites and on patterns of land use are used to identify areas considered sensitive for archaeological resources. Such models can provide some guidance in predicting the location of submerged sites—access to freshwater resources, for instance, appears to be a constantly useful predictive factor. However, given the relative paucity of data about the early paleo-Indian use of the landscape, constructing useful models for the human choices that would have played a role in site location is still an ongoing process (RIHPHC 2002)."

11. We suggest the following revision to Section 410.3, paragraph 9, based on comments received from DEM:

"The early agricultural development of Rhode Island was critical to its survival as a colony and its rapid maritime commercial expansion. As such, it directly influenced the Ocean SAMP area and surrounding lands. While English settlers ~~bought~~ brought their own ideas about agricultural development to Rhode Island, they also copied Native Americans' cultivation practices; particularly planting corn, which could be consumed, traded and used for animal fodder. Ultimately, animal husbandry proved easier and more lucrative than crop cultivation– and within a decade or two of settlement, Rhode Islanders, particularly those on Aquidneck Island, generated surpluses in pigs, goats, neat cattle (domestic straight-backed), sheep and horses (Bridenbaugh~~, 39~~ 1974)."

12. We propose the following sentence be deleted from Section 410.4, Post-Colonial Cultural Landscape Context, paragraph 8 based on suggestions from BOEMRE:

"As access to Block Island became more readily convenient from the 1950s onward, the Island residents have responded by adopting a land and nature preservation and protection ethos. Fittingly, it was led by a veteran Merchant Marine captain, Rob Lewis, in a tradition that has been carried on by his family, along with a host of other influential Block Islanders, such as "Birdlady" Elizabeth Dickens, and David and Elise Lapham. It was Captain Lewis who, perhaps better than others, appreciated the delicate balance between land and water, and the need to constantly find a harmony among their values. Rodman's Hollow, Black Rock and their neighboring properties were at the forefront of this Block Island conservation movement when it was formed, and efforts began in the early 1970s when Islanders inspired by Captain Lewis purchased the Hollow from potential off-Island developers. It has been their work, and the effort and commitment of Islanders through the years and ongoing still, that have led to the conservation of over 2,500 acres from the signature North Light to the sprawling Southwest corner, all replete with historical and cultural emphasis. ~~Native Americans called Block Island "Manisses"—God's Little Island."~~

13. We suggest the following revisions to Section 410.5, Military Landscape Context, paragraph 1, based on comments received from BOEMRE:

"During the post-contact period, twenty or more wars and endless conflicts that took place throughout the region have resulted in a complex military cultural landscape in the Ocean SAMP area."

14. We suggest the following revision to Table 1, Warfare and the Ocean SAMP, Conflicts 1634-1975, based on comments received from BOEMRE:

Warfare and the Ocean SAMP, Conflicts 1634-1975		
Conflict	Years	~~Belligerents~~ Adversaries

15. We suggest the following revisions to Section 410.5, Military Landscape Context, paragraph 4, based on comments received from BOEMRE:

"The outbreak of the Pequot war is tied to events that occurred within the Ocean SAMP area. In 1634, John Oldham, a trader from Massachusetts, was killed during his interactions with Indians on Block Island. In response, Massachusetts attacked, conquered and settled the island."

16. We suggest the following revision to Section 410.5, Military Landscape Context, paragraph 7, based on comments received from DEM:

"In contrast with land war, Rhode Islanders enthusiastically embraced the for-profit warfare of privateering. During the many Anglo-French wars (1689-1754) Rhode Island and other colonies licensed large numbers of privateers that sailed through the waters of the Ocean SAMP area. Privateers were privately owned armed ships licensed by the government in times of conflict and granted permission to raid enemy shipping. Privateering could be highly profitable and provided some level of naval defense for the colony. In 1690, Thomas Paine, a privateer from Jamestown, helped drive off French ships that landed on Block Island (McLoughlin 1986~~52-54, 80~~)."

17. The following revisions are suggested to Section 410.5, Military Landscape Context, paragraph 9, based on comments received from DEM:

"During King George's War and the French and Indian War (1739 – 1749, 1754 – 1763), Rhode Island dispatched a large number~~s~~ of privateers during the eighteenth century wars. During King George's War (1739 – 1749) Rhode Island was home to 25 percent of all privateers in operating in America (Swanson 1991). During the French and Indian War (1754 – 1763), powerful Rhode Island merchant families such as the Browns and Bannisters dispatched fleets of privateers through the Ocean SAMP area waters."

18. We propose the following changes to Section 410.5, Military Landscape Context, Military Landscape Context, paragraph 27, based on suggestions from BOEMRE:

"The French fleet comprised 12 ship-of-the-line, 4 frigates and 2,800 marines, a force far more powerful than the British frigates and smaller vessels stationed in Rhode Island. Faced with certain capture, between July 29 and August 8, 1778 the British forces sunk, scuttled or burned all of their vessels. English losses including the sloops *Kingsfisher* and *Falcon*, the galleys *Alarm* and *Spitfire*, and the frigates *Lark*, *Cerberus*, *Orpheus*, *Juno* and *Flora* as well as 13 transport ships in Newport Harbor (Abbass 2000). Today, ~~all~~ many of these wrecks are ~~almost undoubtedly~~ likely eligible for the National Register of Historic Places."

19. The following revisions are suggested to Section 410.5, Military Landscape Context, paragraph 29, based on comments received from DEM:

"In July 1780, a French fleet under Admiral Ternay and carrying ~~carry~~ troops commanded by the comte de Rochambeau arrived in Newport. French warships stayed through the following winter. In March 1781, General Washington and Rochambeau, who would become the architects of the British defeat at Yorktown, held a series of strategic meetings at Newport. Shortly thereafter, the French evacuated Rhode Island (McLoughlin 1986~~99~~)."

20. We suggest the following revisions to Section 410.5, Military Landscape Context, paragraph 32, based on comments received from BOEMRE:

"The War of 1812 brought a mixed reaction in Rhode Island. The state government opposed the war, however, the lucrative prospects of privateering enticed many Rhode Islanders into action. One Bristol privateer, the *Yankee* captured 40 vessels worth a total of $5,000,000 (Coleman 1963). No battles took place in Rhode Island; however, the heavy presence the British Navy's off the east coast~~,~~ including in Long Island Sound and in parts of the Ocean SAMP area~~,~~ hampered Rhode Island's maritime activities."

21. We suggest the following revisions to Section 410.5, Military Landscape Context, paragraph 33, based on comments received from DEM:

“Rhode Islanders served in the early U.S. Navy with distinction. Perhaps the most important of these were members of the Perry family of South Kingstown. Christopher Perry served during the Revolution and the Quasi-War with France. His eldest son, Oliver Hazard Perry commanded the US fleet at the Battle of Lake Erie (1814) during the War of 1812. His younger son, Matthew C. Perry, commanded a famous expedition ~~to~~ that opened Japan to trade in 1853-1854 (Rhode Island Historical Society 1993).”

22. We suggest the following revisions to Section 410.5, Military Landscape Context, paragraph 35, based on comments received from DEM:

“The Civil War (1861-1865) finally renewed a relationship between Rhode Island and the U.S. Navy, a relationship that would continue for the next 150 years. At the beginning of the war, the Union government, concerned about the proximity of the Naval Academy at Annapolis in the south, relocated it to Newport. Despite~~s~~ strong efforts to keep the Academy in Rhode Island, it returned to Annapolis after the war.”

23. We suggest the following revisions to Section 410.5, Military Landscape Context, paragraph 36, based on comments received from DEM:

“Despite losing the academy, the Navy’s presence in Rhode Island increased exponentially during the last 30 years of the 19th century. In 1869, underwater mines and explosive warfare technology were in their infancy and the Navy ~~establishment of~~ established a torpedo experimentation and development facility on Goat Island. ~~.~~”

24. We suggest the following revisions to Section 410.5, Military Landscape Context, paragraph 39, based on comments received from DEM:

“The station renamed the Naval Underwater Systems Center moved to Coddington Cove in 1951. In 1992, the Coddington Cove facility became the Naval Underwater Warfare Center (Rhode Island Historical Society 1993). These research and development activities were highly important during the Cold War between the U.S. and Soviet Union.”

25. We suggest the following revisions to Section 410.5, Military Landscape Context, paragraph 40, based on comments received from DEM:

“Education has remained an important military activity in Rhode Island. In 1883, the Navy established the Naval Training Station at Coasters Harbor Island. Operations ~~at~~ on land in Newport and at sea in Narragansett Bay and Rhode Island Sound expanded during the first half of the 20th century. During World War II, over 300,000 recruits passed through the station. After the war, the Naval Training Station evolved into Officers Candidate School (Rhode Island Historical Society 1993; Schroder 1980).”

26. We suggest the following revisions to Section 410.5, Military Landscape Context, paragraph 45, based on comments received from DEM:

"In 1940, the Navy broke ground on what would become the Quonset Naval Air Station, one of two naval air stations on the east coast. Used first as a training facility it became a command center for the First Naval District. "Quonsett-based aircraft carriers and planes participated actively in antisubmarine warfare, convoy escort duties, and air and sea rescue missions, as well as in air patrol operations in coastal waters." (Schroder 1980). In 1942, the Navy built a Naval Auxiliary Air Facility in Charlestown with an on the ground deck for carrier landing practice. The skies above the Ocean SAMP area saw ~~countless~~ thousands of over-flights by military aircraft, several crashed in or near the Ocean SAMP area."

27. We suggest the following revisions to Section 410.5, Military Landscape Context, paragraph 50, based on comments received from DEM:

"Between 1952 and 1973, the Cruiser-Destroyer Force Atlantic based out of Newport. In 1973, the Navy dramatically downsized its Rhode Island presence, ~~cause~~ causing serious economic damage. The War College remained open as did the Navy Undersea Warfare Center and smaller navy unit, known as Surface Group 4, comprising mostly frigates and minesweepers (Rhode Island Historical Society 1993)."

28. We suggest the following revisions to Section 410.5, Military Landscape Context, paragraph 52, based on comments received from DEM:

"Shipwrecks and other submerged archaeological sites tied to the American Revolutionary War are central to understanding the importance of the military landscape of the Ocean SAMP area. Rhode Island's coastal waters have perhaps the largest number of known Revolutionary War shipwreck sites in the United States. The intensity of American, British and French military activity in Rhode Island from 1775-1778, makes it probable that unidentified vessel losses occurred and that yet unknown Revolutionary War shipwrecks await discovery in or near the Ocean SAMP area."

29. We suggest the following revisions to Section 410.5, Military Landscape Context, paragraph 53, based on comments received from DEM:

"Rhode Island was one of the great centers of American privateering during many of the Wars between the late 17th century and the end of the War of 1812 and ~~numbers~~ a number of related shipwrecks almost certainly occurred in the Ocean SAMP area. Two privateers are ~~know~~ known to have been lost in Rhode Island waters, one of which might be in the Ocean SAMP area. It is ~~probably the~~ probable that more await discovery."

30. We suggest the following revision to Section 410.6, Fisheries Landscape Context, paragraph 1, based on comments received from BOEMRE:

"Chapter Five of the Ocean SAMP describes commercial and recreational fishing in and around the Ocean SAMP area. It also identifies important historical elements related to the current state of fishing, target species, fishing ports and communities. ~~For thousands, of years the~~

~~Ocean SAMP area has been fished extensively.~~ This hunting and gathering of the living marine resources in the Ocean SAMP area has affected broad areas of the landscape. Sometimes these relationships and their related cultural heritage resources are obvious such as in pre-contact shell middens. Often, however, the influences and material culture of fishing and harvesting have been overlooked by archaeologists and historians."

31. We suggest the following revisions to Section 410.6, Fisheries Landscape Context, paragraph 2, based on comments received from BOEMRE:

"Studying the effects of historical fishing on marine populations and habitats is an important new area of scholarship that is adding critical baseline information about pre-commercial or pre-industrial ecosystems and the extent and potential effects of fishing. Understanding existing ecological conditions requires knowledge of the past as well as current human influences and activities. The condition of species have influenced, in important ways, human activities that extend back millennia in the Ocean SAMP area. The many known and undiscovered or unrecognized components of this landscape, such as historic fishing vessels, fish traps, working and remnant piers, and the altered habitats of historic fishing groups represent untapped opportunities to gain important knowledge about human activities and their relationships with the marine environment of the Ocean SAMP area. Many of these resources, including unique or representative fishing vessels and the archeological remains of traps and piers that are 50 years old or older ~~are likely~~ could potentially be considered as candidates for the National Register of Historic Places. Fixed on shore, the presence of historic submerged piers or fish traps are easier to determine and locate. The locations of many fishing vessels, however, are unknown—indeed, the number of vessels lost in the area prior to and since the European contact remains unknown. This is an important historical and archaeological research question and has implications for the citing of new structures in the Ocean SAMP area."

32. We suggest the following corrections to references in Section 410.6.1, Rhode Island Fisheries, paragraph 3, based on comments received from DEM:

"During the 1920s and 1930s, menhaden began to disappear off the coast of New England as stocks were overfished, and many of the menhaden plants were forced to close. Fishermen were pushed to pursue other species (~~Bort~~ Poggie and Pollnac, eds. 1981). In the 1930s, the first otter trawls were used off Rhode Island (Olsen and Stevenson 1975). Marine diesel engines were also introduced around this time, allowing fishermen to travel further offshore in pursuit of fish (~~Bort~~ Poggie and Pollnac, eds. 1981). Trawling quickly became the dominant method of fishing, and trap fishermen soon began criticizing trawlers for a decline in stocks."

33. We suggest the following correction to a reference in Section 410.6.1, Rhode Island Fisheries, paragraph 4, based on comments received from DEM:

"During the 1960s, significant stocks of lobsters which had not previously been fished were discovered offshore, providing a large boost to landings and value in the state's lobster fishery

(Sedgwick et al. 1980). Around this time, traps replaced trawling as the dominant method for catching lobsters offshore, and this also significantly boosted lobster landings and revenues (~~Bort~~ Poggie and Pollnac, eds.1981)."

34. We suggest the following revision to Section 410.6.2, Fishing and Subsistence on Block Island, paragraph 2, based on comments received from BOEMRE:

"Fish and marine vegetation directly and indirectly influenced diets and ecological conditions on Block Island, promoting ~~sufficient nutrition and~~ sustainable agriculture. Beginning in the late 18th century, possibly earlier, Block Island farmers (many of them also fishermen) used seaweed to protect crops from extreme weather and to nourish the heavily worked soil. Farmers also mixed seaweed with fish offal and soil to create compost. These marine resources and local agricultural practices maintained the soil's fertility despite centuries of intensive use. Livermore, the island's principal early historian, noted that Islanders gathered over 6,000 cords of seaweed valued at $10,000 in 1875. By that time many Islanders maintained the exclusive right to collect weed from specific areas. A large area of public beach, however, remained opened to all islanders. Such divisions are important markers on the island's historic cultural landscape (Livermore 1877)."

35. We suggest the following correction to Section 410.6.2, Fishing and Subsistence on Block Island, paragraph 4, based on comments received from DEM:

"Commercial fishing has long and important history in New England and the Ocean SAMP area. Intimately tied to early exploration and settlement in the region during the 16th century, fish enticed thousands of ships and tens of thousands of European mariners and fisherman to cross the North Atlantic to the Americas. They discovered and charted off-shore banks and interacted with native people. In terms of economic value, the fish caught and processed by the French and English fishermen outstripped the more famous New World treasures of gold and silver extracted by the Spanish Empire (Fagan 2006; Pope 2004)."

36. We suggest the following revisions to Section 410.6.3, Historic Shipwrecks of Fishing Vessels, paragraph 1, based on suggestions received from BOEMRE:

"~~The wrecking of ships~~ Shipwrecks, particularly of fishing vessels, ~~has~~ occurred throughout the centuries in Rhode Island and remain~~s~~ a common occurrence in the Ocean SAMP area during the present day. In the historical record, fishing ~~is~~ can be an elusive ~~and often confusing~~ subject. Accounts of the transporting and selling of fish are available for some places and periods. In the later 19th century, government-generated statistics become more common. However, in the distant past and in more recent times, the records of individual fishing voyages remain rare and if in existence, they often reveal little information about actual fishing activities, much less fishing life. Official documents between the 16th through the early 19th centuries seem to have rarely recorded (or at best under-recorded) the losses of early fishing vessels. Based on examinations of manuscript and federal records by Ocean SAMP investigators, this pattern seems to hold true in the late 19th and early 20th centuries, particularly when it comes to smaller fishing vessels."

37. We propose the following revisions to Section 410.6.3, Historic Shipwrecks of Fishing Vessels, paragraph 2, based on comments received from DEM and BOEMRE:

"The potential for unreported but historically significant commercial fishing vessel wrecks in the Ocean SAMP area and surrounding waters is extremely high. The most important individual wrecks would be the rare early commercial fishing vessels of 16th through the mid 19th centuries. However, when considered as part of a larger fisheries landscape in Rhode Island and in the Ocean SAMP area, fishing vessels and associated technologies from the late 19th century through the 20th century have the potential to provide an unbroken, representative, and highly illuminating archaeological record. These types of cultural heritage have extraordinary potential to add significant new knowledge in many ~~in~~ areas, particularly in terms of the environment and culture. Often overlooked because of apparent commonality and unromantic uses, it is essential to note that any commercial fishing vessel built 50 years ago or more may be eligible for the National Register of Historic Places (if the vessel meets other necessary criteria). Research is clearly needed to identify these resources and to develop standards to evaluate these wrecks for purposes of study, public use, and historic preservation."

38. We propose the following changes to Section 410.6.3, Historic Shipwrecks of Fishing Vessels, paragraph 3, based on comments received from DEM:

"Cultural heritage research relating to commercial fishing is in its early stages in neighboring Massachusetts, where archaeologists and biologists at Stellwagen Bank National Marine Sanctuary have discovered the locations of several wrecked fishing vessels. Efforts are underway to evaluate and nominate some of these wrecks to the National Register of Historic Places. Many similar wrecks exist in the Ocean SAMP area and adjacent waters. While not all of these wrecks may merit preservation, the older vessels certainly require inventory and assessment—a level of study that will generate an improved understanding of the Ocean SAMP area's cultural and natural heritage."

39. We propose the following changes to Section 410.6.3, Historic Shipwrecks of Fishing Vessels, paragraph 4, based on comments received from DEM:

"At present, ~~the~~ there is no solid estimate of the number and composition of historic shipwrecks related to commercial fishing in the Ocean SAMP area. There is also no direct historical evidence of the earliest vessels that likely passed through the Ocean SAMP during the second half of the 16th century. It is possible that one or more of these craft wrecked in the Ocean SAMP area."

40. We propose the following changes to Section 410.7, Marine Transportation and Commercial Landscape Context, paragraph 2, based on comments received from BOEMRE:

"In the 1620s, Dutch shallops (coastal vessels) from New Amsterdam (later New York) regularly transited the Ocean SAMP area and entered Narragansett Bay. In 1625, Dutch traders established a base on Dutch Island in Narragansett Bay where they conducted a lucrative trade with the ~~Indians~~ native peoples."

41. We propose the following changes to Section 410.7, Marine Transportation and Commercial Landscape Context, paragraph 3, based on comments received from BOEMRE:

"English settlers that arrived in Rhode Island in the 1630s reshaped maritime traffic in the Ocean SAMP area dispatching merchant ships both to Massachusetts and New York. In 1634, the first English cargo of maize (Indian grown) was shipped out of Rhode Island, through the Ocean SAMP area, to Boston. Although European settlers on Aquidneck Island ~~islanders~~ embraced and expanded the commercial connections with Massachusetts, they also fostered links with New Amsterdam. The latter had widespread implications, since trade with Manhattan resulted in increasing numbers of Rhode Island merchant ships in Long Island Sound, Block Island Sound and along the Connecticut shore (Bridenbaugh 1974)."

42. We propose the following changes to Section 410.7, Marine Transportation and Commercial Landscape Context, paragraph 5, based on comments received from DEM:

"The influx of Quakers into Rhode Island, which started in 1657 and accelerated after 1672, greatly affected patterns of trade and transportation in the Ocean SAMP area. Quakers ~~bought~~ brought with them extensive regional and international commercial connections and Rhode Island Sound became the thoroughfare through which they operated."

43. We propose the following changes to Section 410.7, Marine Transportation and Commercial Landscape Context, paragraph 10, based on comments received from DEM:

"The 19th century saw a pronounced decline in the volume and economic significance of Rhode Island's foreign commerce, particularly when compared to Boston and New York. Where Newport had been one of colonial North America's busiest ports, by 1832 the total tonnage of ships arriving from abroad to the Rhode Island ports of Providence, Bristol and Newport amounted to less than 30,000 tons. By contrast, Boston also recorded over 158,000 tons of arrivals from foreign ports and New York port more than 400,000 tons. Significantly, nearly all of the Rhode Island arrivals were American vessels—many of them possibly Rhode Island owned. About 13 percent of Boston's arrivals and more than 25 percent of New York's were foreign bottoms (22nd Cong. 2nd sess. S. Doc. 109). By 1849, the Rhode Island total had fallen to under 23,000 tons (with Newport only 3200 tons). That same year saw Boston's arriving foreign commerce reach 451,000 tons and New York 1,118,000 tons (27th Cong. 2nd Sess. S. Doc. 356)."

44. We propose the following changes to Section 410.7, Marine Transportation and Commercial Landscape Context, paragraph 11, based on comments received from DEM:

"Steam navigation became a component of Rhode Island's maritime sector in the early 1820s and grew in importance over the century. Rhode Island's first steamboat was reportedly the *Firefly* that operated between Newport and Providence in 1817. More significant, however, was the establishment of steam packet service between New York and New England by way of Long Island Sound. The first Long Island Sound-style steamboat, *The Fulton*, was launched in 1814 by Elihu Bunker, and by the early 1820s, all passengers traveling to or from Boston by steamboat passed through Providence (and the Ocean SAMP area). After 1847, ~~the~~ Fall River, Massachusetts replaced Providence on the New York/ Boston route, however, all of the steam traffic to continued to pass through Ocean SAMP area waters (Albion 1972)."

45. We propose the following changes to Section 410.7, Marine Transportation and Commercial Landscape Context, paragraph 18, based on comments received from DEM:

"Although statistical tracking of domestic shipping in the United States was inconsistent, it is clear that ~~that~~ overall vessel traffic levels through the Ocean SAMP area climbed exponentially during the nineteenth century, and that Rhode Island maintained a strategically important maritime sector. At the very time that Rhode Island's foreign maritime commerce was declining, growing numbers of steamboats and coastal merchant vessels transformed the Ocean SAMP area waters into a segment of a northeastern U.S. maritime highway equivalent in significance to the modern I-95 interstate."

46. We propose the following changes to Section 410.9, Energy Landscape Context, paragraph 2, based on comments received from BOEMRE:

"For more than one thousand years before the European invasion of New England, Block Island supported large Indian populations who met their energy needs by taking sustainable quantities of wood from the island's dense forests. When Europeans settled Block Island in 1662, they commenced altering an ecosystem and visual landscape created through centuries of deliberate Indian activity (Cronon 1983). The limited coverage of trees and miles of stone fences marking the island today resulted from a heedless consumption of energy that soon exhausted the Island's forests. In 1721, Simon Ray, a town elder warned that the wasteful consumption of trees could force the community to abandon the Island for lack of fuel and building material. Survival came not from rational conservation but the discovery of Block Island's vast beds of peat. Derived from wet compressed decomposed organic matter, peat is the geological ancestor of coal. Using peat for fuel required Block Islanders to engage in the time consuming and laborious process of digging, flattening, stacking, and drying. Known as "tug" on Block Island, the fuel was carefully stored in ~~purpose build~~ "tug houses", built for this purpose. Between about 1750 (possibly earlier) and 1860, peat provided the only reliable source of energy on Block Island (Livermore 1877). The work required to gather and process made peat an expensive source of energy when measured in the terms of human time and effort. In effect, Block Islanders have been paying a premium for energy for nearly three hundred years."

47. We propose the following changes to Section 410.9, Energy Landscape Context, paragraph 3, based on comments received from DEM:

"An 1846 shipwreck in Cow Cove brought some interest in the use of coal as a new fuel for Block Island. However, it took some time for coal to be accepted on the Island with the shift from native peat to imported coal coming with the 1873 completion of federal protected harbor and landing (Old Harbor). Begun in 1870, the harbor ushered in a new era on the Island. According to Reverend Samuel Livermore, a Block Island historian writing in 1877, more construction had taken place on the island in the previous five years, than in the 50 year that proceeded it. Livermore also described in the installation of the Island's first coal furnace, in the First Baptist Church in 1875. By that year, Islanders had gotten past their fears of the new energy source and had shifted to the coal for their household stoves."

48. We propose the following changes to Section 410.9, Energy Landscape Context, paragraph 4, based on comments received from DEM:

"New England's dependence on energy, delivered by sea through the Ocean SAMP area, resulted from major historical processes that transformed the United States into the world's leading industrial economy. Three processes directly associated with Rhode Island created unprecedented demands for fuel in New England: the introduction of stationary industrial steam engines and their application to textile milling, the expansion of heat intensive metal manufacturing processes, and the replacement of wood by coal for industrial energy. Just as industrialization shaped Rhode Island's historic landscapes on land, it exercised parallel effects in the Ocean SAMP area, leading or contributing substantially to hundreds of accidents and deaths through shipwrecks and to major alterations to the environment through the construction or improvement harbors, dredging of shipping channels, construction or improvements to lighthouses, docks, and lifesaving stations."

49. We propose the following changes to Section 410.9, Energy Landscape Context, paragraph 5, based on comments received from DEM:

"Although the "Ocean State", Rhode Island's history is more commonly associated with industry than the ocean. Many landmark moments in U.S. industrial history occurred in Rhode Island. In 1780, the Brown family installed the second industrial steam engine in the United States. Used to pump water, the engine kept an iron mine in service to supply a successful Brown blast furnace (Hunter 1985). Ten years later in a historic partnership, Moses Brown and the English millwright Samuel Slater constructed the first Arkwright-style textile mill in the United States

(Coleman 1963). Like other American mills of the period, the motive power came from flowing water. However, in another Rhode Island first occurring in 1827, Slater established a steam-powered textile mill at Providence. Slater's steam mill also effectively inaugurated the New England energy lifeline. The anthracite coal used to fuel the mill originated from Pennsylvania's Schuylkill region (Coleman 1963). The several hundred-mile journey from mine to mill followed a freshwater path to Philadelphia where, loaded on a ship it embarked on a sea voyage that would pass~~ed~~ through the Ocean SAMP area into Narragansett Bay and up to Providence."

50. We propose the following changes to Section 410.9, Energy Landscape Context, paragraph 7, based on comments received from DEM:

"The Corliss works was one of many energy intensive precious and base metal enterprises that transformed Rhode Island into America's most industrialized state. By 1880, Rhode Island's steam engines produced 38.1 horsepower per acre; nearly double Massachusetts (21.3), four times New Jersey (9.8), and nine times New York (4.9) (Hunter 1979). Rhode Island's concentrated style of industrialization occurred across the urban areas of southern New England. Between 1850 when Americans burned an estimated 0.36 lbs of coal per capita and 1918, coal consumption grew 77-fold nationwide. A sizable proportion of this increase occurred in New England. By 1907, Americans consumed nearly 5 tons of coal per capita annually (Schurr 1960). In the industrialized areas of New England, the per capita consumption was much higher. That year, over 10 million tons of coal arrived at New England ports, 3.5 million in Providence alone. In 1918, perhaps the peak year for the coal trade, the regional figure of coal shipped by sea reached nearly 20 million tons (Graaebner 1974; Gordon 1978; *Atlantic Deeper Waterways Commission* 1908)."

51. We propose the following changes to Section 410.9, Energy Landscape Context, paragraph 9, based on comments received from DEM and BOEMRE:

"The large quantities of coal transported by a fleet comprised of hundreds of vessels contributed to the highest levels of traffic and human activity in the recorded history of the Ocean SAMP area. During the peak decades of coal, maritime traffic dwarfed the contemporary levels described in Ocean SAMP Chapter 7, exceeding it by orders of magnitude in term of the numbers of ships and transits. In 1893, more than 60,000 vessels passed by Point Judith. Most of these (34,000) were classified as schooners. Barges accounted for an additional 9000 transits. It is difficult to estimate the proportion of these vessels engaged in the coal trade but it would include nearly all of the barges, and probably a significant majority of the schooners. (55th cong. 2d session House Document 60, *Harbors of Refuge at Point Judith, Block Island, and Great Salt Pond, etc.* 1903). Another ~~steam~~ stream of vessels passed south and east of Block Island and missed passing Point Judith. If counted they would add thousands more voyages to the 60,000 figure."

52. We propose the following changes to Section 410.9, Energy Landscape Context, paragraph 11, based on comments received from DEM:

"Current data at least suggests that the majority of shipwrecks in the Ocean SAMP area involved transportation of coal to New England during a fifty year ~~of~~ period between 1870 and 1920 when the United States developed into the world's largest industrial economy. The rapidly increasing demand for abundant AND inexpensive energy in New England led to the creation of an *ad hoc* system of transportation that relied on many low-cost and vulnerable types of vessels. Operated by poorly paid mariners, many of them black, the coal barges represented the lowest strata on the maritime social scale (*The Seaman's Bill, Hearings Held Before the Committee on Merchant Marine and Fisheries on House Bill 11372*, December 14, 1911)."

53. We propose the following changes to Section 410.9, Energy Landscape Context, paragraph 12, based on comments received from BOEMRE:

"The Ocean SAMP area's energy landscape is ~~highly significant~~ very important in the history of Rhode Island and greater New England. The coal vessels provided critical infrastructure without which the region would have languished economically after the Civil War. It has been a largely forgotten chapter in the state's maritime or industrial history. Where merchant vessels such as the famous Brown family East Indiaman *Ann and Hope* that wrecked at Block Island in 1815 were highly visible in cultural terms and associated with the wealth and social status of their owners, the coal vessels, with a few notable exceptions, rarely contributed to the social status to their owners, officers, or crew. Indeed other merchant mariners regarded the grimy armada of coaling vessels and their crews with mixture contempt and pity due to the low wages, harsh living conditions, mixed racial composition of the workforce, and the frequent accidents they endured (*The Seaman's Bill, Hearings Held Before the Committee on Merchant Marine and Fisheries on House Bill 11372*, December 14, 1911)."

54. We propose the following changes be made to Section 410.9, Energy Landscape Context, paragraph 14, based on comments from BOEMRE:

"The shipwrecks of the Ocean SAMP area's energy landscape are important heritage resources associated with the industrialization of American seafaring. While not every wreck merits preservation, they all potentially can contribute a broader understanding of human activity within the Ocean SAMP area. At the very least, many of the energy related shipwrecks ~~are almost surely~~ could possibly be eligible for the National Register of Historic Places. In addition, specific areas of the Ocean SAMP may be eligible as rural cultural landscapes. Cultural resource managers in other locations are beginning to study and preserve industrial vessels such as those found in the Ocean SAMP. At the Stellwagen Bank National Marine Sanctuary in Massachusetts, NOAA archaeologists recently documented three coal schooners, *Paul Palmer*, *Frank A. Palmer*, and *Louise B. Crary* and prepared successful nominations to the National Register of Historic Places. Archaeologists working in the Great Lakes region have documented and nominated numerous industrial era steamers, schooner, schooner-barges and related craft

(Marx and Lawrence 2006; Cooper and Jensen 1995). Determining which ~~of~~ wrecks in the Ocean SAMP area's energy landscape should be included on the National Register will require a broader scale regional study. At this point, any coal vessels built more than fifty years ago are potentially eligible (if the vessel meets other necessary criteria)."

55. We propose the following changes to Section 410.9, Energy Landscape Context, paragraph 13, based on comments received from DEM:

"The rapidly growing New England coal trade operated within a unique context of obsolescence, innovation, and forced operational economy. It resulted in a complex and historically significant cultural landscape in the Ocean SAMP area consisting of shipwrecks, harbors, canals, lifesaving stations, and aids to navigation. Among the most common wrecks are those of merchant sailing vessels built in the 1850s, 1860s, and 1870s and repurposed to carry coal~~s~~, towed in long lines behind steam tugs. As the demand for coal continued to grow and the supplies of older ships diminished, new classes of vessels evolved to fill the void, including some of the largest commercial sailing vessels ever built (Snow and Lee 1999). Shipyards also turned out specially designed schooner-barges. Less majestic and more common, these sail-equipped vessels were supposed to possess some capacity for independent navigation; however, the historical and archaeological record demonstrates that this usually was not true, especially in heavy weather. Over time, however, the relentless drive for economy led to an increasing emphasis on even cheaper and easier to construct barges. These early "box-barges" had poor seagoing capacities and many foundered in Rhode Island."

56. We propose the following changes to Section 410.9, Energy Landscape Context, paragraph 14, based on comments received from DEM:

"The shipwrecks of the Ocean SAMP area's energy landscape are important heritage resources associated with the industrialization of American seafaring. While not every wreck merits preservation, they all potentially can contribute a broader understanding of human activity within the Ocean SAMP area. At the very least, many of the energy related shipwrecks are almost surely eligible for the National Register of Historic Places. In addition, specific areas of the Ocean SAMP may be eligible as rural cultural landscapes. Cultural resource managers in other locations are beginning to study and preserve industrial vessels such as those found in the Ocean SAMP. At the Stellwagen Bank National Marine Sanctuary in Massachusetts, NOAA archaeologists recently documented three coal schooners, *Paul Palmer*, *Frank A. Palmer*, and *Louise B. Crary* and prepared successful nominations to the National Register of Historic Places. Archaeologists working in the Great Lakes region have documented and nominated numerous industrial era steamers, schooner, schooner-barges and related craft (Marx and Lawrence 2006; Cooper and Jensen 1995). Determining which ~~of~~ wrecks in the Ocean SAMP area's energy landscape should be included on the National Register will require a broader scale regional study. At this point, any coal vessels built more than fifty years ago are potentially eligible."

57. We propose the following reference change to Section 410.9, Energy Landscape Context, paragraph 18, based on comments received from BOEMRE:

"Transporting energy by sea brings risks. In 1996, the *North Cape*, a barge containing 3.9 million gallons of home heating oil, grounded at Moonstone Beach in Rhode Island. The ensuing spill of 828,000 gallons was the one of the worst environmental disasters to occur in Rhode Island's waters. In terms of human use and its' cultural and environmental impacts on the Ocean SAMP area, the *North Cape* grounding was but one of the latest in hundreds of energy related transportation accidents that have occurred over the past 170 years (USFWS n.d. ~~(http://www.fws.gov/Contaminants/restorationplans/NorthCape/NorthCape.cfm, Ocean SAMP Chapter 7~~)."

58. We propose that paragraph 21 be deleted from Section 410.9, Energy Landscape Context, based on comments from BOEMRE:

~~Contemporary plans to develop renewable offshore energy in the Ocean SAMP area can be seen as a direct continuation of three centuries of energy history. Pursuant to this view, the connection of the proposed wind turbines with Block Island's power grid would provide the community with a local source of energy that is at once reliable, renewable, and economical--the first time since Indian people last controlled the island's forest resources in the middle of the 17th century. Implemented with care, offshore wind energy should pose little overall threat to the historical significance, meaning, and preservation of the energy landscape and its individual components. Irrespective of their aesthetic effects, the proposed towers would become the latest cultural signature on the Ocean SAMP area's historic energy landscape.~~

59. We propose the following changes to Section 420: Submerged Archaeological Sites in the Ocean SAMP Area, paragraph 2, based on comments received from DEM:

"Generating an inventory and database of known and potential submerged historic sites requires an examination of published sources and existing databases, as well as historic research, digital historic cartographic research, geophysical survey and geo-spatial database construction. While investigations of post-contact submerged cultural resources usually focus on shipwrecks, other types of submerged properties, including historic submarine cables, docks, wharfs and buildings, should also be considered. In the Ocean SAMP area, at least one of these additional types of cultural resources, historic submarine cables is important to both historic preservation and development plans."

60. We propose the following changes to Section 420.1 Potential and Known Marine Archaeology Sites, paragraph 10, based on comments received from DEM:

"During the last 300 years, there have been at least 1200 maritime accidents and disasters in Rhode Island and Rhode Island Sound that probably resulted in vessel loss and/or deposition of cultural material. This number excludes many 17th and 18th century accidents that are much more difficult to track in the historical record. Of the 1200 or more vessels lost in Rhode Island waters, approximately half occurred in the Ocean SAMP area. Of these, more than half have some locational association with Block Island. Other places strongly represented are the waters off Point Judith, Watch Hill and Beavertail."

61. We propose the following changes to Section 420.2, Spatial and Temporal Distribution Patterns, paragraph 2, based on comments received from DEM:

"Block Island has been a focus of vessel loss in Rhode Island waters. Heavy levels of commercial traffic over the past three centuries combined with strong currents, storms and frequent periods of heavy fog created an environment in which shipwrecks on shore and collisions at sea were relatively common. The Ocean SAMP area shows another concentration of shipwrecks in a corridor that runs along the southern edge of the Rhode Island coast from Watch Hill to Point Judith. The lee shore and heavy levels of commercial and passenger traffic during the nineteenth century out of New York and along the southern coast of Connecticut and Rhode Island are largely responsible for this concentration. This heavier concentration of vessels along with dangers to navigation around Block Island, go a long way in explaining higher densities of shipwrecks in the northwestern part of the Ocean SAMP area. There is, however, an important caveat. The central-southern and southeastern parts of the Ocean SAMP area were further off shore and further away from land observation. Stricken vessels in these areas were less likely to be have been seen and less likely to have boasted survivors. In addition, there have been fewer modern attempts to map the ocean floor in the central and eastern parts of the Ocean SAMP area. As a result, our knowledge of these areas is less authoritative. They probably contain higher numbers of shipwrecks than are reflected current distribution patterns."

62. We propose the following changes to Section 420.2, Spatial and Temporal Distribution Patterns, paragraph 4, based on comments received from DEM:

"The graph shows a spike in the number of Rhode Island shipwrecks during the Revolutionary War and another during the first two decades of the nineteenth century. Starting in the 1860s, Rhode Island saw a sharp rise in the number of shipwrecks occurring in its waters. The numbers continued to rise, reaching their zenith during the 1880s. This certainly resulted from the rapid expansion of shipping activity across the Ocean SAMP area during America's most rapid period of industrial development. Demands for energy, particularly coal, in New England during the late 19th century caused hundreds of vessels a day to move through the Ocean SAMP area. Heavy traffic, hazardous waters and pre-electronic navigational instruments, provided a recipe for high losses of shipping and life. A decline in the number of shipwrecks per decade in the ~~in the~~ 20th century corresponded with improvements in navigational instruments and greater capitalization of US shipping."

63. We propose the following changes to Section 420.2, Spatial and Temporal Distribution Patterns, paragraph 5, based on comments received from DEM:

"Table 3. lists shipwrecks in the Ocean SAMP area for which the location ~~in~~ is known"

64. We propose the following changes to Section 420.3, Submerged Telecommunication Cables and Corridors, paragraph 1, based on comments received from DEM:

"Modern telecommunication cables and corridors are well understood in the Ocean SAMP area. The southern coast of Rhode Island has been heavily utilized for a succession of transatlantic communication cables. Cables currently "in service" include Transatlantic No. 12/13 (TAT-12/13), part of which runs from Green Hill, Rhode Island to Lands End, England; Gemini, part of which runs from Charlestown, Rhode Island to Oxwich Bay, near Swansea, Wales; and FLAG Atlantic 1 which runs from New York to the UK intersecting Long Island Sound and Block Island Sound. "Out of service" cables include Transatlantic No. 5 (TAT-5), part of which runs from Green Hill, Rhode Island to Conil, Spain; Transatlantic No. 6 (TAT-6), part of which runs from Green Hill, Rhode Island to St. Hilaire-de-Riez, France; and Transatlantic No. 10 (TAT-10), part of which runs from Green Hill, Rhode Island to Norden, Germany. The majority of these cables whether in service or not, run out of Green Hill, RI to the southeast and then south, passing between 3 and 9 nautical miles east of Block Island. The exceptions are TAT-12/13 and FLAG Atlantic 1, which run west of Block Island."

65. We propose the following changes to Section 420.4, Paleo-Geographic Landscape Reconstruction, paragraph 3, based on comments from DEM:

"The work of Peck and McMaster (1991) indicates that during inundation, a high energy surf zone environment, the shoreface, passes across the landscape, and material is actively eroded from the surface. An erosional surface covered by a later deposit of sand and gravel is indicative of the passage of the shoreface across the site. As indicated in Figure 4., the degree of erosion depends on the original topography of the site. Deep tributary valleys tend to have less erosion, whereas interfluves and trunk valleys have much more erosion. In studies of shoreline change of Rhode Island, Boothroyd indicates that preexisting sediment is removed to a depth of 1 meter below mean lower low water (MLLW) as the surf zone sweeps across the landscape (Boothroyd, personal communication 2010). This means that approximately 1-2 meters of material is removed from tributary valley settings and significantly more from interfluves and trunk valleys. The present south shore of Rhode Island provides a representative view of erosional processes and results that were active as the Sounds were flooded."

66. We propose the addition of the following General Policy to section 440, Cultural and Historic Resource Policies. This policy is included in Chapter 11, The Policies of the Ocean SAMP, and was incorrectly omitted from this section of the Cultural and Historic Chapter, and should be included in this section for consistency purposes. This change will also necessitate renumbering the remainder of the policies in this section accordingly.

New #1: "1. The Council recognizes the rich and historically significant history of human activity within and adjacent to the Ocean SAMP area. These numerous sites and properties, that are located both underwater and onshore, should be considered when evaluating future projects."

67. We propose the following revisions to Section 440: Cultural and Historic Resource Policies, paragraph 7, based on comments received from BOEMRE:

"In addition to general Area of Particular Concern buffer setback distances around shipwrecks or other submerged cultural resources, the Council reserves the right, based upon recommendations from RIHPHC, to establish protected areas around all submerged cultural resources which meet the criteria for listing on the National Register of Historic Places ~~for which an official Determination of Eligibility has been made~~."

68. We propose the following revisions to Section 440: Cultural and Historic Resource Policies, paragraph 9, based on comments received from BOEMRE:

"Guidelines for onshore archaeological assessments in the Ocean SAMP Area can be obtained through the RIHPHC in their document, "Performance Standards and Guidelines for Archaeological Projects: Standards for Archaeological Survey" (RIHPHC 2007), or the ~~lead federal agency~~ Army Corps of Engineers or other federal agencies as may be applicable in ~~responsible for~~ reviewing the proposed development."

69. The following references were deleted from the Works Cited section, as they are not cited within the document:

~~Coleman, D. F., 2003. *Archaeological Oceanography of Inundated Coastal Prehistoric Sites*. PhD Dissertation, Graduate School of Oceanography, University of Rhode Island, Narragansett, Rhode Island, U.S.A.~~

~~*Hearings before the Committee on Expenditures in the Department of Agriculture, House of Representatives*. 1907. Washington: Government Printing Office.~~

~~*Hearings before the Committee on Interstate Commerce of the House of Representatives*. 1908. Washington: Government Printing Office.~~

~~Jones, Daniel P. *The Economic and Social Transformation of Rural Rhode Island, 1780-1850*. Boston MA: Northeastern University Press.~~

~~Ocean SAMP Chapter 7. "Marine Transportation, Navigation, and Infrastructure."~~

~~Snyder. 2001. [need reference info]~~

70. The following references were corrected within the literature cited section:

Boothroyd, J. and P. August. 2008. Geologic and Contemporary Landscapes of the Narragansett Bay Ecosystem. In: *Science for Ecosystem-based Management: Narragansett Bay in the 21st Century*. Desbonnet, A. and Costa-Pierce, B., eds. Springer.

Bridenbaugh, Carl. 1974. *Fat Mutton and Liberty of Conscience, Society in Rhode Island, 1636-1690.* Providence, RI: Brown University Press.

Herndon, R.H. and Sekatau, E.W. 1997. *The Right to a name: The Narragansett people and Rhode Island officials in the revolutionary era.* Ethnohistory, 44(3), 433-462.

McLoughlin, William G. 1986. *Rhode Island, A History*. New York, NY: W. W. Norton & Co.

Peltier, W.R. and R.G. Fairbanks, 2006. Global glacial ice volume and Last Glacial Maximum duration from an extended Barbados sea level record. *Quaternary Science Reviews*, 25, 3322-3337.
~~Peltier and Fairbanks. 2006. [need reference info]~~

Personal communication, David Robinson, Fathom Research LLC, April 2010.

Sekatau, E.T. ~~(recipes)~~ 1970. *Narragansett Indian recipes: Traditional and contemporary.* Haffenreffer Museum Library.

St. Martin, K. and Hall-Arber, M. 2008. The missing layer: geo-technologies, communities, and implications for marine spatial planning . Marine PolicyVolume 32, Issue 5, September 2008, Pages 779-786. 2008.
~~St. Martin and Hall-Arber. 2008. [need reference info]~~

U.S. Fish and Wildlife Service (USFWS). N.d. *North Cape Oil Spill Restoration*. Available on line at http://www.fws.gov/Contaminants/restorationplans/NorthCape/NorthCape.cfm
Last accessed March 27, 2010.

Vickers, D. 2005. *Young Men and the Sea; Yankee Seafarers in the Age of Sail.* New Haven, CT: Yale University Press.~~Vickers. P. 14. [need reference info]~~

71. The following references used in the text were added to the Works Cited section:

Intergovernmental Policy Analysis Program, University of Rhode Island. 1989. *The Commercial Fishing Industry in Rhode Island: An Inventory, Analysis, and Assessment*. Prepared for: The Rhode Island Port Authority and Economic Development Corporation.

Mather, Rod. 2010. URI Working Rhode Island Shipwreck Database. On file at Department of History, University of Rhode Island.

Poggie, J.J., Pollnac, R.B., eds. 1981. *Small Fishing Ports in Southern New England*. NOAA/Sea Grant. University of Rhode Island: Marine Bulletin 39.

Report of Commerce and Navigation for the Fiscal Year 1869. Serial Set Vol. No. 1429, Session Vol. No.15, 41st Congress, 2nd Session. Annual report of the Deputy Special Commissioner of the Revenue in charge of the Bureau of Statistics, on the commerce and navigation of the United States, for the fiscal year ended June 30, 1869.

Rhode Island Historical Preservation and Heritage Commission (RIHPHC), 2002. *Native American Archaeology in Rhode Island.* RIHPHC, Providence, RI.
http://www.preservation.ri.gov/pdfs_zips_downloads/survey_pdfs/native_am_archaeology.pdf

Sedgwick, S., Collins, C., Olsen, S. 1980. *Commercial Fishing Facilities Needs in Rhode Island*. Coastal Resources Center, University of Rhode Island: Marine Technical Report 80.

Chapter 5, Commercial and Recreational Fisheries

1. **We propose the following change to Section 500, Introduction, paragraph 4, based on comments received from DEM:**

"4. This chapter has found that commercial and recreational fisheries are an important activity in the Ocean SAMP area. Twenty-eight finfish, shellfish, and crustacean species are of commercial and recreational fishing importance in the Ocean SAMP area. Commercial fishermen using otter trawls, scallop dredges, gillnets, and lobster pots harvest a diverse variety of species, and squid and lobster are consistently among the most valuable species landed in Rhode Island. Recreational fishermen fish in the Ocean SAMP area aboard both private boats and party and charter boats, and target a variety of species including striped bass, bluefish, summer flounder, and large pelagic fish. At the time of this writing, many of the more popular commercially and recreationally targeted species, including squid, summer flounder, scup, and striped bass, are not overfished, nor is overfishing occurring. However, other fisheries are depleted or in decline, and there is a need to rebuild the stocks of some species found in the Ocean SAMP area. There are a variety of state and federal entities and regulatory bodies currently addressing stock levels, largely through the development and implementation of Fishery Management Plans. Fisheries management efforts have had a number of successes in rebuilding previously overfished stocks. Whereas all of these species rely on habitat within the Ocean SAMP area, little fish habitat mapping has been done to date at a resolution that would highlight important habitats within the area. Available qualitative and quantitative data have been used to produce maps that show commercial and recreational fisheries activity throughout the Ocean SAMP area. These maps show that the entire Ocean SAMP area is used by commercial and recreational fishermen over the course of a year, but that these use patterns vary in space and time due to factors including seasonal species migrations, the regulatory environment, and market demand for seafood. Commercial and recreational fisheries have a longstanding history in Rhode Island and are closely tied to Rhode Island's coastal communities and economies; whereas commercial fisheries have an economic impact through the sale and processing of seafood products, recreational fisheries have an economic impact through the sale of fishing vessels and gear and the in-state spending of out-of-state visitors. All of these fisheries activities rely on fisheries resources and habitats, and whereas future uses may impact these resources, existing activities and trends, including fishing and other uses of the area, are already having an impact on fisheries resources in the Ocean SAMP area. Human activities such as fisheries that have been taking place for hundreds of years have influenced Ocean SAMP area resources, and conditions in the area will continue to change due to human uses, such as fishing, as well as longer-term trends such as global climate change."

2. **We propose the following paragraph be added to Section 500, Introduction, based on comments received from the State of Connecticut Office of Long Island Sound Programs, to address fishing in the Ocean SAMP area by vessels from other states. This addition also necessitates renumbering the subsequent paragraphs accordingly.**

New paragraph #6:
"6. While the emphasis of this chapter is on the commercial and recreational fisheries of the state of Rhode Island and their importance to the state, it is acknowledged that fish and fishing activities are not limited to state boundaries. Fishermen from other states, including Massachusetts, Connecticut, and New York, routinely transit through or fish within the Ocean SAMP boundary area. The fish species found in the Ocean SAMP area and the fishing activity that occurs here are undoubtedly of economic and cultural importance to these other states as well, and any impacts to fisheries resources and activities within the Ocean SAMP area could affect fishermen in other states. While the remainder of this chapter is primarily focused on the importance of fisheries to the state of Rhode Island, it is acknowledged that fishermen from outside of the state rely on these resources as well."

3. **We propose the following sentence be added to Section 510.1.1, Species Important to Commercial and Recreational Fisheries, paragraph 3, based on comments received from the State of Connecticut Office of Long Island Sound Programs, to address fishing in the Ocean SAMP area by vessels from other states:**

"3. Species important to recreational fisheries were identified by reviewing Rhode Island recreational harvest and release data published in *Fisheries Economics of the United States, 2006* (NMFS 2008a). This list was then compared with RI Department of Environmental Management recreational fishing regulations (RIDEM 2009), as well as information on sportfishing tournaments sponsored by the RI Saltwater Anglers Association (RISAA 2010). The resultant draft list of species was then reviewed with both recreational anglers and party and charter boat fishermen with the goal of determining which species are actually targeted within the Ocean SAMP area. This review took place during fisheries stakeholder meetings conducted through the Ocean SAMP stakeholder process. The species identified through this process are: Atlantic bonito (*Sarda sarda)*; Atlantic cod (*Gadus morhua*); Black sea bass (*Centropristis striata*); Bluefish (*Pomatomus saltatrix)*; False albacore (*Euthynnus alletteratus);* Scup (*Stenotomus chrysops)*; Sharks (unspecified); Striped bass (*Morone saxatilis*); Summer flounder (*Paralichthys dentatus)*; Tautog (*Tautoga onitis)*; Tunas (unspecified); and Winter flounder (*Pseudopleuronectes americanus).* Recreationally targeted sharks were further narrowed down to Shortfin mako (*Isurus oxyrinchus*), Blue (*Prionace glauca*), and Thresher (*Alopias vulpinus*), and recreationally targeted tunas were further narrowed down to Bluefin (*Thunnus thynnus*) and Yellowfin (*Thunnus albacares*). It should be noted that the species that appear on the list below may also be of commercial and recreational importance to fishermen from other states fishing in the Ocean SAMP area, or may migrate to other areas where these fish may be targeted by non-Rhode Island fishermen."

4. **We propose the following change to footnote #3 of Table 5.1, Commercially and Recreationally Important Species, based on comments received from NMFS:**

[3] Skates are listed as unclassified by NMFS because they are often landed as a mix of species, with Little Skate as the predominant species~~Skates are unspecified here because this is how NMFS reports skate landings~~.

5. **We propose the following change to Table 5.2, Management and Status of species/stocks in the Ocean SAMP area, to update with new stock status data based on comments received from DEM:**

"**Table 5.2.** Management and status of species/stocks in the Ocean SAMP area.

Common name	**Management entity**	**Status of stock within Ocean SAMP area as of March 2010**
American lobster	Atlantic States Marine Fisheries Commission	Depleted; overfishing not occurring
Atlantic bonito	International Commission for the Conservation of Atlantic Tunas	Not available
Atlantic cod	New England Fishery Management Council	Overfished; overfishing is occurring
Atlantic herring	Atlantic States Marine Fisheries Commission and New England Fishery Management Council	Not overfished; overfishing not occurring
Atlantic mackerel	Mid-Atlantic Fishery Management Council	Not overfished; overfishing not occurring
Atlantic sea scallop	New England Fishery Management Council	Not overfished; overfishing not occurring
Black sea bass	Atlantic States Marine Fisheries Commission and Mid-Atlantic Fishery Management Council	Not overfished; overfishing not occurring
Bluefish	Atlantic States Marine Fisheries Commission and Mid-Atlantic Fishery Management Council	Not overfished; overfishing not occurring
Butterfish	Mid-Atlantic Fishery Management Council	Pending release of 2009 NMFS stock assessment
False albacore	International Commission for the Conservation of Atlantic Tunas	Not available
Goosefish (monkfish)	New England Fishery Management Council; Mid-Atlantic Fishery Management Council	Not overfished; overfishing is occurring
Longfin (loligo) squid	Mid-Atlantic Fishery Management Council	Not overfished; overfishing not occurring
Menhaden	Atlantic States Marine Fisheries Commission	Not overfished; overfishing not occurring
Scup	Atlantic States Marine Fisheries Commission and Mid-Atlantic Fishery Management Council	Not overfished; overfishing not occurring
Shark, blue	National Marine Fisheries Service (Consolidated Atlantic Highly Migratory Species Fishery Management Plan); Atlantic States Marine Fisheries Commission (Interstate Fishery Management Plan for Atlantic Coastal Sharks)	Not available
Shark, shortfin	National Marine Fisheries Service (Consolidated Atlantic Highly Migratory Species Fishery	Not overfished; overfishing is occurring

mako	Management Plan); Atlantic States Marine Fisheries Commission (Interstate Fishery Management Plan for Atlantic Coastal Sharks)	
Shark, thresher	National Marine Fisheries Service (Consolidated Atlantic Highly Migratory Species Fishery Management Plan); Atlantic States Marine Fisheries Commission (Interstate Fishery Management Plan for Atlantic Coastal Sharks)	Not available
Silver hake	New England Fishery Management Council	Not overfished; overfishing not occurring
Skates (unclassified)	New England Fishery Management Council	Overfishing occurring on winter skate only
Spiny dogfish	Atlantic States Marine Fisheries Commission; New England Fishery Management Council; Mid-Atlantic Fishery Management Council	Not overfished; overfishing not occurring
Striped bass	Atlantic States Marine Fisheries Commission	Not overfished; overfishing not occurring
Summer flounder	Atlantic States Marine Fisheries Commission and Mid-Atlantic Fishery Management Council	Not overfished; overfishing not occurring
Tautog	Atlantic States Marine Fisheries Commission	Overfished; overfishing ~~not~~ is occurring
Tuna, bluefin	National Marine Fisheries Service (Highly Migratory Species Fishery Management Plan) and International Commission for the Conservation of Atlantic Tunas	Overfished; overfishing is occurring
Tuna, yellowfin	National Marine Fisheries Service (Highly Migratory Species Fishery Management Plan) and International Commission for the Conservation of Atlantic Tunas	Not overfished; overfishing not occurring
Winter flounder	Atlantic States Marine Fisheries Commission and New England Fishery Management Council	Overfished; overfishing is occurring
Yellowtail flounder	New England Fishery Management Council	Overfished; overfishing is occurring

6. We propose the following change to Section 510.2.7, Black Sea Bass, paragraph 2, based on comments received from BOEMRE:

"2. Black sea bass are protogynous hermaphroditic, beginning life as females and then changing to males when they reach about nine to thirteen inches (23 to 33 cm) in length. In the Mid-Atlantic, 38% of females will change sex between August and April, after most of the fish have already spawned. Most black sea bass will produce eggs when they first mature, although some are already males at this stage, and then the ovaries eventually stop functioning as sperm production begins. Most fish will reverse sex before they reach the age of six (ASMFC 2008a). In populations where the larger, older males are heavily fished, females may change sex at an earlier age than they would in populations unaffected by fishing (Ross 1991)."

7. **We propose the following change to 510.2.8. Bluefish, paragraph 5, based on comments received from DEM:**

"5. Bluefish are an important species for recreational fisheries, and are popular with anglers because of their aggressive feeding habits. Recreational harvest averages about 35 million pounds (16 million kilograms) per year. Bluefish are also targeted commercially with trawls, gillnets, haul seines, and pound nets. The species is managed jointly by the Mid-Atlantic Fishery Management Council and the Atlantic States Marine Fisheries Commission. The Atlantic States Marine Fisheries Commission and the Mid-Atlantic Fishery Management Council allocate 83 percent of the resource to recreational fisheries and 17 percent to commercial fisheries. The commercial fishery is managed through state-by-state quotas based on historic landings, and the recreational fishery is managed by a ~~ten~~ fifteen-fish bag limit. According to the Atlantic States Marine Fisheries Commission, bluefish are not overfished, nor is overfishing presently occurring. Recent data have shown a decreasing trend in fishing mortality and an increase in stock biomass and population numbers (ASMFC 2008a). Bluefish biomass in the Atlantic Ocean is estimated to be at 5% above the level needed to support maximum sustainable yield, and was estimated at 139,500 metric tons in 2006. A nine-year rebuilding plan was implemented in 2001, and the stock was declared rebuilt in 2009 (NMFS 2010b). Cycles of high and low abundance of bluefish have been observed to be the converse of striped bass abundance patterns, but no explanation for this phenomenon has been found (NEFSC 2006b)."

8. **We propose the following revisions to 510.2.13. Menhaden, paragraph 4, based on comments received from DEM:**

"4. Menhaden are managed by the Atlantic States Marine Fisheries Commission, and are managed through the use of seasonal restrictions and management areas in Rhode Island. Commercial fishing for menhaden typically includes both a bait fishery and a reduction fishery, where the fish are processed into fishmeal and oil. Rhode Island does not allow a reduction fishery to occur in state waters, but there is a bait fishery taking place here. They are of commercial importance largely because of their use as bait for the lobster fishery, though they are also used by recreational fishermen as bait in the striped bass and bluefish fisheries. Although they are typically fished from Narragansett Bay rather than from the Ocean SAMP area, menhaden pass through the Ocean SAMP area. However, due to current restrictions placed on the bait fishery in Narragansett Bay, fishing pressure may transfer in to the Ocean SAMP area in the future. Menhaden were historically a major fishery in Rhode Island (see Section 530). Some have argued that local stocks have been depleted due to fishing pressure off mid-Atlantic states, which has prevented menhaden from migrating northward (Oviatt et al. 2003). According to the Atlantic States Marine Fisheries Commission, menhaden are not overfished, and overfishing is not occurring (ASMFC 2008a)."

9. **We propose the grammatical revision to delete an extra period from Section 510.2.15, Sharks, Blue, paragraph 4, based on comments received from NMFS:**

"4. Fishing efforts for most shark species are controlled by means of possession limits. Sharks are managed jointly by NMFS, through the Consolidated Atlantic Highly Migratory Species Fishery Management Plan (NMFS 2006), and by the Atlantic States Marine Fisheries Commission, under the Interstate Fishery Management Plan for Atlantic Coastal Sharks (ASMFC 2008d). The Atlantic States Marine Fisheries Commission's plan complements federal shark management actions and places special attention on the protection of pregnant females and juveniles in inshore nursery areas.~~.~~ "

10. **We propose the following revision to Section 510.2.19, Skates, paragraph 1, based on revisions received from DEM:**

"1. Common skates to Rhode Island waters targeted in commercial fisheries are the little skate (*Leucoraja erinacea*), also known as the summer or common skate, and the winter skate (*Leucoraja ocellata*), also called the big skate. The two species are very similar in appearance, and difficult for many people to tell apart. Skates are listed and discussed here together as this is how most skate fishery landings are reported to NMFS ~~reports skate fishery landings~~ (NMFS 2009a)."

11. **We propose the following revision to Section 510.2.21, Striped Bass, paragraph 5, based on comments received from DEM:**

"5. The striped bass fishery has been one of the most important Atlantic coast fisheries for centuries and is one of the most popular recreational fisheries in the Ocean SAMP area. Recreational fishermen take striped bass with hook-and-line, whereas in commercial fisheries they are also taken with gillnets, pound nets, haul seines, and trawls. In Rhode Island, commercial fishermen also use floating fish traps to catch striped bass, but are prohibited from using gillnets for harvest in state waters. In 2006, commercial harvest accounted for 17% of fish removals, while commercial discards of dead fish accounted for 3%. Recreational harvest accounted for 45% of removals of striped bass, and recreational discards of dead fish accounted for an additional 34%. In Rhode Island, recreational vastly outweighs commercial harvest: in 2008, 732,564 pounds (332,285 kg) were harvested by recreational fishermen whereas 245,988 pounds (111,578 kg) were harvested by commercial fishermen (ASMFC 2008b). The striped bass populations declined sharply in the 1970s and 1980s, causing many states to close their striped bass fisheries. At present, the species is not overfished and overfishing is not occurring (ASMFC 2008a). The amount of female striped bass capable of reproduction, known as female spawning stock biomass, was estimated at 55 million pounds (25,000 metric tons) for 2004, which is well above the recommended biomass threshold of 30.9 million pounds (NMFS 2010b). Spawning stock biomass in 2004 was 42% greater than the target level (NEFSC 2006a). Striped bass are managed by the Atlantic States Marine Fisheries Commission through the Interstate Fishery

Management Plan for Atlantic Striped Bass. Commercial fisheries are managed through effort restrictions such as size limits and quotas, while recreational fisheries are managed through size limits, bag limits, and fishing seasons (ASMFC 2008a)."

12. We propose the following change to Section 510.2.22. Summer Flounder, paragraph 3, base on comments received from BOEMRE:

"3. Summer flounder are concentrated in bays and estuaries from late spring through early fall, when they migrate offshore to the continental shelf to waters between 120 to 600 feet (37 to 183 ~~feet~~ meters) in depth, spending their fall and winters offshore. The summer flounder found off New England spend the winters east of the Hudson Canyon off New York and New Jersey (Ross 1991). Adult summer flounder spend most of their lives near the bottom, and prefer to bury themselves in sand substrate. During the summer, they are often found on hard sand, and prefer mud during the fall. They are often found hiding motionless in eelgrass or among the pilings of docks, but swim very quickly if disturbed (Collette and Klein-MacPhee 2002)."

13. We propose the following sentence be added to Section 510.2.23, Tautog, paragraph 4, based on comments received from DEM:

"4. The fishery for tautog is primarily recreational, accounting for about 90% of the fishery, although there is also a commercial fishery for this species in Rhode Island waters and elsewhere. Slow growth and reproduction rates, along with their tendencies to be found around rock piles, make tautog susceptible to overfishing. The species is managed by the Atlantic States Marine Fisheries Commission through the Interstate Fishery Management Plan for Tautog, which employs a minimum size limit. In addition, Rhode Island employs a self-imposed commercial quota which is managed in three seasons; the recreational fishery is managed by seasons and bag limits (RIDEM 2009). According to the Atlantic States Marine Fisheries Commission, the stock is currently considered overfished, but overfishing is not occurring (ASMFC 2008a). However it should be noted that Rhode Island and Massachusetts assess tautog on a regional basis and are therefore not bound to the coastwide assessment stock status. The most recent regional stock assessment update indicates that the regional stock is overfished and overfishing is occurring in RI and MA state waters (RIDEM 2010a)."

14. We propose the following revision be made to Section 510.2.26, Winter Flounder, based on comments received from DEM:

"2. Winter flounder spawn in the winter and early spring, producing both demersal eggs and adhesive eggs (ASMFC 2008a). The eggs hatch about fifteen to eighteen days after being released (Ross 1991). Larvae will be found in the upper reaches of estuaries in early spring, and will move to the lower estuary as they grow (ASMFC 2008a). Studies of the genetic population structure of winter flounder larvae and juveniles in Narragansett Bay found that juvenile flounder tend to remain near their natal nursery grounds (Buckley et al. 2008). Winter flounder generally reach sexual maturity by age three (Ross 1991). Winter flounder depend on sight to feed, and therefore feed only during the day. At night they lie flat on the bottom and retract their eye turrets (ASMFC 2008a). They typically lie buried in the mud with only their eyes showing, but can dash quickly for a few yards when feeding. Adults are typically between twelve and fifteen inches long (30 to 38 cm), and weigh between a pound and a half and two pounds (0.6 and 0.9 kg), although fish as long as 25 inches (63 cm) have been recorded (Collette and Klein-MacPhee 2002). Winter flounder can live for about twelve years (Ross 1991)."

15. We propose the following grammatical revision to add a missing period be made to Section 510.2.27, Yellowtail Flounder, paragraph 2, based on comments received from DEM:

"2. Yellowtail flounder grow to about twenty-two inches (56 cm) and weigh up to 2.2 pounds (1 kg). Yellowtail flounder are sexually dimorphic, with females growing faster than males. Female fish reach sexual maturity at a median of 1.6 years of age off southern New England (NEFSC 1999g). Spawning occurs in spring and summer, peaking in May. Eggs are deposited on or near the bottom, and then float to the surface once fertilized. The larvae drift for about two months before settling to the bottom (NEFSC 2006a). Fish from the southern New England stock of yellowtail flounder typically remain within their fishing grounds, but migrate eastward during spring and summer, and then westward during fall and winter as water temperatures change (NEFSC 1999g)."

16. We propose the following revisions to Section 510.3.1, Georges Bank and Southward Cod, paragraph 1, based on comments received from DEM:

"1. The Georges Bank and southward stock of cod, which includes cod found in southern New England, is managed by the New England Fishery Management Council. Both the Georges Bank and Gulf of Maine stocks of cod have declined since the 1960s and are in the process of being rebuilt. Currently, the Georges Bank and southward cod stock is at 10% of the level needed to achieve maximum sustainable yield. According to the most recent stock assessment, ~~whereas~~ biomass levels for the Gulf of Maine stock have increased substantially such that this stock is no longer considered overfished, whereas biomass levels for the Georges Bank stock have not changed much since an earlier stock assessment in 2004. In 2007, spawning stock biomass was estimated at 17,672 metric tons, a relatively small increase over 2004 estimates (NEFSC 2008)."

17. We propose the following grammatical correction to Section 510.3.3. Southern New England/Mid-Atlantic Yellowtail Flounder, paragraph 1, based on comments received from DEM:

"1. The Southern New England/Mid-Atlantic stock of yellowtail flounder is managed by the New England Fishery Management Council. The spawning stock biomass of Southern New

England/Mid-Atlantic yellowtail flounder is currently at 13% of the target levels needed to support maximum sustainable yield (NMFS 2010b). The fishery for yellowtail flounder in Southern New England began in the 1930s, and landings peaked in the 1960s; by the mid-1990s the fishery had collapsed. Between 1994 and 2005, spawning stock biomass generally averaged around 1,100 metric tons, but increased to 3,500 metric tons in 2007. Landings of Southern New England yellowtail flounder reached a record low of 200 metric tons in 1995, increased to over 1,000 metric tons in 2000 and 2001, and declined again to 200 metric tons in 2006 and 2007 (NMFS 2010b)."

18. We propose the following revision to Section 510.4, Forage Fish, paragraph 1, based on comments received from DEM:

"1. Commercial and recreationally targeted species rely on the availability of forage fish to survive. The northern sand lance is an important forage fish found in Ocean SAMP waters, and serves as an important prey species in southern New England for smooth dogfish, winter skate, silver hake, Atlantic cod, summer flounder, windowpane, striped bass, and yellowtail flounder (Bowman et al. 2000), as well as silversides and smelt. Other important forage fish in the Ocean SAMP area were mentioned above in the descriptions of commercially and recreationally important species, and include Atlantic herring, squid (both long- and short-fin), and butterfish. Menhaden is another important forage fish in this area (see above), as are alewife and blueback herring (see below under "river herring"). Herring and menhaden in particular have been the subject of fisheries management debates in recent years over how to consider their importance as a source of food within the ecosystem for fish, seabird, and marine mammal species, while trying to set catch targets to permit commercial fisheries."

19. We propose the following revisions to Section 510.5. Threatened and Endangered Species and Species of Concern, paragraph 1, based on clarifying language received from NMFS:

"1. Several finfish species that may occur within the Ocean SAMP area are not targeted through commercial or recreational fisheries, but ~~are~~ may be managed by the NMFS Office of Protected Resources. The NMFS Office of Protected Resources has jurisdiction over most marine and anadromous species listed as endangered or threatened under the federal Endangered Species Act (ESA). ~~It also has jurisdiction over those species designated as "Species of Concern," which are species meriting conservation action but about which insufficient information is available to justify listing under the Endangered Species Act (NMFS 2010a).~~ In addition, NMFS has identified "Species of Concern" as species about which NMFS has some concerns regarding status and threats, but for which insufficient information is available to indicate a need to list the species under the ESA (NMFS 20l0a). However, "Species of Concern" status does not carry any procedural or substantive protections under the ESA. For further discussion of non-finfish species protected under the Endangered Species Act, see Chapter 2, Ecology of the Ocean SAMP Area."

20. We propose the following correction to Section 510.5, Threatened and Endangered Species and Species of Concern, paragraph 1, based on comments received from DEM:

"1. According to the NMFS Northeast Regional Office Protected Resources Division, based on the best available information, no finfish currently listed as threatened or endangered are likely to occur within the Ocean SAMP area (Crocker, pers. comm. a). However, according to the NMFS Northeast Regional Offices Protected Resources Division (Crocker, pers. comm., b), the following species currently listed as "Species of Concern" (NMFS 2010a) could be present in the Ocean SAMP area: Atlantic halibut (*Hippoglossus hippoglossus)*; Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*); Atlantic wolffish (*Anarhichas lupus)*; Dusky shark (*Carcharhinus obscurus)*; Porbeagle shark (*Lamna nasus)*; Rainbow smelt (*Osmerus mordax)*; River herring (which includes two species: Alewife (*Alosa pseudoharengus)* and Blueback herring (*Alosa aestivalis*)); Sand tiger shark *(Carcharias taurus)*; and Thorny skate (*Amblyraja radiate)*."

21. We propose the following grammatical correction to Section 510.5.1, Atlantic Halibut, paragraph 2, based on comments received from DEM:

"2. Halibut are large, long-lived, right-eyed flounders. Females are typically larger than males, growing to an average of 100-150 pounds (45.5-68 kg). Halibut mature at approximately 10 years yet are prolific, with females spawning several batches of eggs each year. Period of spawning varies by region, and the depth at which halibut spawn is not known. Halibut eggs drift within the water column and hatch at a very immature stage. Halibut are bottom-dwelling flat fish typically found on sand, gravel, or clay bottom. They move into shallower waters in the summer and deeper waters in the winter, and have been found in U.S. waters in trawls at temperatures ranging from 4-13°C (39-55°F). Halibut prey for the most part on other fish, but also eat shellfish, crustaceans, and even seabirds (Collette and Klein-MacPhee 2002)."

22. We propose the following revisions to Section 510.5.2 Atlantic Sturgeon, paragraph 3, based on clarifying language received from NMFS:

"59. Historically, Atlantic sturgeon were harvested commercially for a wide range of commercial uses of both the fish and its eggs. ASMFC instituted a coast-wide moratorium prohibiting the harvest and retention of Atlantic sturgeon in 1998, and NMFS followed with a moratorium in Federal waters. According to NMFS, Atlantic sturgeon were first identified as a species of concern in 1988; however, they were formally retained on the list in 1998. ~~A moratorium on the harvest of Atlantic sturgeon was implemented in 1997, although according to NMFS, Atlantic sturgeon were identified as a species of concern in 1988.~~ According to NMFS, Atlantic sturgeon numbers have declined because of fishing pressure as well as incidental mortality through bycatch, habitat degradation, and dams that have interrupted spawning behavior. ~~NMFS identifies demographic and genetic diversity concerns as the main reason for listing Atlantic sturgeon as a species of concern.~~ In October 2009, the Natural Resources Defense Council petitioned NMFS to list the Atlantic sturgeon under the Endangered Species Act. At the time of this writing, NMFS is in the process of developing a listing determination indicating whether listing Atlantic sturgeon as an endangered or threatened species is warranted (NMFS 2010c). This decision must be published in the Federal Register on or before October 6, 2010 (12 months after receipt of the NRDC petition)."

23. We propose the following revisions to Section 510.5.3 Atlantic Wolffish, paragraph 3, based on clarifying language received from NMFS:

"3. ~~There is no fishery management plan for the Atlantic wolffish.~~ Wolffish are frequently taken as ~~bycatch~~ incidental catch in otter trawl fisheries, and small quantities of wolffish have been landed by commercial fishermen since the 1970s, though catches have declined to a recent low (NEFSC 2006a). According to NMFS, the decline of the wolffish can be attributed to ~~bycatch~~ incidental catch, as well as commercial fishing, and habitat degradation caused by fishing gear. NMFS designated the Atlantic wolffish a species of concern in 2004 due to demographic and genetic diversity concerns. In 2008, NMFS was petitioned to list the Atlantic wolffish under the Endangered Species Act, and in 2009, NMFS found that listing was not warranted at that time (NMFS 2009c). In 2010, Atlantic wolffish were added to the Northeast Multispecies Fisheries Management Plan (FMP) in Amendment 16 to the plan. Inclusion of Atlantic wolffish in Amendment 16 provides for the prohibition of landing Atlantic wolffish in commercial and recreational fisheries."

24. We propose the following revisions to Section 510.5.4 Dusky Shark, paragraph 2, based on comments received from NMFS and DEM:

"2. Dusky sharks reach an average size of 11.8 feet (360 cm) long and 400 pounds (180 kg) and can live up to 40 years. Like many sharks, dusky sharks bear live young. They reproduce every three years, bearing litters ranging from 6 to 14 young, which may range in size from 33 to 39 inches (85-100 cm) (NMFS 2009d). The dusky shark is a highly migratory species, migrating north in the summer and south in the ~~summer~~ fall and winter, following warmer waters. Dusky sharks seem to avoid estuaries and other areas of lower salinity (Collette and Klein-MacPhee 2002), and may be found from the surf zone to offshore and from the surface to depths up to 1300 feet (400 m) (NMFS 2009d)."

25. We propose the following revisions to Section 510.5.4 Dusky Shark, paragraph 3, based on clarifying language received from NMFS:

"3. Dusky sharks are managed as a highly migratory species by NMFS under the Consolidated Atlantic Highly Migratory Species Fishery Management Plan and by the Atlantic States Marine Fisheries Commission under the Interstate Fishery Management Plan for Atlantic Coastal Sharks. According to NMFS, dusky sharks are currently overfished ~~and cannot currently be kept commercially or recreationally~~. They have been a popular target for recreational fishermen, though they have been harvested commercially and have also been taken as bycatch in directed fisheries. Commercial and recreational fishing for dusky sharks has been prohibited since 1998. NMFS attributes their decline to recreational fishing pressure and incidental mortality as bycatch, and listed them as a species of concern in 1997 due to a range of demographic and genetic diversity concerns (NMFS 2009d)."

26. We propose the following revisions to Section 510.5.5, Porbeagle Shark, paragraph 3, based on clarifying language received from NMFS:

"3. Porbeagle sharks were harvested commercially in the Northwest Atlantic starting in the early 19th century (Collette and Klein-MacPhee 2002). Catch records indicate that the fishery collapsed in the early 1960s and dropped off through the 1970s and 1980s, allowing the population to rebuild. In the early 1990s a new fishery developed and catch rates increased dramatically, only to drop off again. Porbeagle sharks are managed by NMFS under the Consolidated Atlantic Highly Migratory Species Fishery Management Plan and by the Atlantic States Marine Fisheries Commission under the Interstate Fishery Management Plan for Atlantic Coastal Sharks. According to NMFS, porbeagle shark are overfished, although overfishing is not currently occurring. NMFS attributes the decline of porbeagle sharks to fishing pressure, and designated them a species of concern in 2006 (NMFS 2010d). In early 2010, NMFS received two petitions to list porbeagle sharks under the ESA. After reviewing the petitions and available information, including the most recent stock assessment from the International Commission for the Conservation of Atlantic Tunas (ICCAT) and International Council for the Exploration ofthe Seas (ICES), it was determined that the petitions did not present substantial scientific information indicating that listing the species under the ESA may be warranted at this time (75 Fed. Reg. 39656, 12 July 2010). In 2010, there was a proposal to list porbeagle sharks in Appendix II of the Convention on the International Trade in Endangered Species, though this proposal did not receive the votes that are needed to be passed (CITES 2010)."

27. We suggest the following revision to 510.5.7. River Herring, paragraph 2, based on comments received from DEM:

"2. Alewife are currently distributed from Newfoundland to North Carolina, whereas blueback herring are distributed from Nova Scotia to Florida. Alewife reach lengths of between 14 and 15 inches (36-38 cm) and live up to 10 years, whereas blueback herring grow to approximately 15 inches (40 cm) and live 8 years. Both are small, anadromous fish. Alewife initiate spawning when water temperatures reach 41 to 50° F (5-10 C°), and are prolific, producing between 60,000 and 467,000 eggs each year. Blueback herring spawn in slightly warmer water and therefore follow~~s~~ alewife spawning by 3 to 4 weeks; egg production varies based on age and size. Both alewife and blueback herring feed on plankton as well as small fish while at sea. Both alewife and blueback herring are schooling fish while at sea and make seasonal migrations (Collette and Klein-MacPhee 2002)."

28. We propose the following clarifying language be added to Section 510.6, Baseline Characterization, paragraph 1, based on comments received from DEM expressing concern over the use of the last ten years as a baseline:

"1. This section presents baseline data characterizing fisheries resources within and around the Ocean SAMP area. The purpose of the baseline characterization is to provide baseline information on the current state of fisheries resources in the area based on existing survey data. It is not an assessment of individual fish stocks, nor is it an analysis of longer-term trends in Rhode Island's offshore fisheries resources. Ten years of fisheries-independent bottom trawl survey data were used in this analysis as this provides enough data to smooth out interannual variability while still allowing an assessment of the current state of Ocean SAMP area fisheries resources. In addition, a ten-year period, rather than a longer time period, was chosen for this analysis because the goal was to assess the current, baseline conditions of fishery resources within the Ocean SAMP area, not to analyze longer-term trends in abundance. This ten-year time period does not represent an idealized state or a targeted abundance level; rather it is intended to provide current abundance data in order to inform decision-making. For a more detailed discussion of data sources, methods, and data products for the baseline characterization, see Bohaboy et al. 2010, included in Appendix A. See Chapter 2, The Ecology of the Ocean SAMP Area, for discussion of the interactions of fisheries resources with other aspects of the ecosystem, and for data on longer-term trends in stock abundance."

29. We propose the following addition to Section 520.3, Essential Fish Habitat, paragraph 1, based on comments received from DEM:

"1. Under the Magnuson-Stevens Act, Essential Fish Habitat (EFH) is defined as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." EFH is designated by the respective regional fishery management councils through their fishery management plans. EFH designation requires NMFS and federal agencies to work to protect these areas from actions which may have an adverse effect on EFH (NMFS n.d.). The New England Fishery Management Council is in the process of developing an Omnibus Habitat Amendment that will address the effects of fishing on Essential Fish habitat."

30. We propose the following change to the caption of Figure 5.16 based on comments received from BOEMRE:

"Figure 5.1. Historic trawling areas of the 1970s"

31. We propose the following correction to a reference in Section 530.2.1, Point Judith/Galilee, paragraph 5, based on comments received from DEM:

"5. Point Judith did not become a significant commercial fishing port until the 1930s, so it lacks the long tradition of fishing of some other New England towns, including Newport. Many of the fishermen do not come from fishing families with a long fishing history, but became fishermen during the 1960s or 1970s as the industry was expanding. However, many of the fishermen also have last names found in the 1774 census for South Kingstown, indicating that many of the fishermen are from families who have lived in the area for generations (Poggie and Gersuny ~~1978~~ 1974). Most of the commercial fishermen who dock their vessels here live within a 20-mile radius of Point Judith, but not in the immediate vicinity of the port, because of a lack of housing around Point Judith. However, there is still a distinct community of fishermen, and culture of commercial fishing, in Point Judith (Hall-Arber et al. 2001)."

32. We propose the following footnote be added to Section 530.2.2. Newport, paragraph 6, based on comments received from BOEMRE:

"6. Recreational fishing is an important activity in Newport because of the large number of recreational boats located here[9]. The harbor's location means that recreational boats can easily access the Ocean SAMP area. There are also several charter boats located in Newport harbor."

[9] Data are not available on what percentage of the vessels in Newport harbor might engage in recreational fishing activities.

33. We propose the following changes to Section 530.4. Contemporary Commercial Mobile Gear Fisheries, paragraph 1, based on comments received from BOEMRE and from the State of Connecticut, Office of Long Island Sound Programs, to clarify that vessels from other states are fishing in the Ocean SAMP area:

"1. Commercial fishing activity in the Ocean SAMP area can mostly be divided into two categories – mobile gear and fixed gear fisheries. Mobile gear fisheries are those in which the fishing gear is being actively employed from a vessel while capturing the fish, as opposed to fixed (static) gear, which is set in one location to fish and then retrieved later (for more on fixed gear fisheries, see Section 530.5). Commercial mobile gear fishing methods employed in fisheries in the Ocean SAMP area include: bottom and mid-water trawling (also called dragging), dredging, purse seining, and rod and reel fishing. While the majority of mobile gear fishing taking place within the Ocean SAMP area is by Rhode Island-based vessels, ~~trawlers~~ fishing vessels from other states, including Massachusetts, Connecticut, and New York, will frequently transit through or fish in the federal waters of the Ocean SAMP area ~~at certain times of year~~."

34. We propose the following changes to Section 530.4. Contemporary Commercial Mobile Gear Fisheries, paragraph 3, based on comments received from DEM:

"3. Rhode Island mid-water trawlers will fish in the Ocean SAMP area for herring and mackerel in the fall and winter months; purse seine vessels are also used to target herring. Other vessels from ports including Massachusetts, Maine, New Jersey, and North Carolina come to Rhode Island Sound just for this season. When the herring are close to shore, a number of vessels will participate in this fishery. This is an important fishery for small boats in Rhode Island during the months these fish are in the area."

35. We propose the following grammatical correction to Section 530.4. Contemporary Commercial Mobile Gear Fisheries, paragraph 5, based on a comment from DEM:

"5. There is a commercial rod and reel harvest in the Ocean SAMP area for striped bass, tuna, scup, and fluke. According to the RIDEM state license reports, vessels with commercial rod and reel permits operating in statistical area 539 made 8,304 trips in 2007, 9,699 trips in 2008, and 8,882 in 2009. In all three years commercial rod and ~~reeltrips~~ reel trips represented the largest number of fishing trips made by any single gear type; see Table 5.35 (RIDEM 2010b).

36. We propose the following grammatical correction to Section 530.4.2 Mobile Gear Fisheries Activity Areas, paragraph 3, based on a comment from DEM:

"3. Figures 5.20, 5.21 and 5.22 show bottom trawling, scallop dredging, and mid-water trawling areas based on NMFS Vessel Trip Report data. As noted above, bottom trawling and scallop dredging are the two main types of mobile gear fishing in the Ocean SAMP area. As a means of monitoring fisheries activity, NMFS requires commercial fishermen with federally-permitted groundfish, scallop, and monkfish vessels to submit one Vessel Trip Report (VTR) for each fishing trip. On each report, the fisherman reports the location of that trip as one set of coordinates (latitude/longitude or Loran). These maps were created by aggregating the VTRs of all RI-based vessels using these gear types from 1998 – 2008 as a set of point data, and then creating a density plot using a 1-minute by 1-minute grid overlay to determine the relative density of fishing trips. Darker-shaded areas represent the areas with a higher density of fishing activity. Although these VTR maps are based on quantitative data, they must still be viewed with caution. VTR location information is only an approximation of fishing activity because the fisherman self-reports only one set of coordinates for the trip, despite the fact that one trip may include multiple tows that take place in many different locations across a much wider area. See Appendix B for a more detailed discussion of data sources and methodology."

37. We propose the following revision to Section 530.5. Contemporary Commercial Fixed Gear Fisheries, paragraph 1, based on comments received from DEM:

"1. Rhode Island has a number of significant fixed gear commercial fisheries. These include gillnetting as well as trap fisheries, which includes the use of lobster pots, ~~and~~ fish pots, and floating fish traps (which are used within state waters). These fisheries are primarily near shore fisheries, conducted on day trips using smaller vessels, usually with a crew of only one or two fishermen. Because these fisheries tend to occur near shore, the vast majority take place within the Ocean SAMP area. Also, because of the nearshore nature of these fisheries, the majority of fishermen and vessels participating in this fishery are based out of Rhode Island."

38. We propose revisions to the following Table and Figure headings, clarifying that not all landings are from the Ocean SAMP area, based on comments received from BOEMRE:

Figure 5.26: "Figure 5.26. Top landed species in Rhode Island by weight, 1999-2008 (includes fish caught both within and outside of the Ocean SAMP area) (ACCSP 2010)."

Figure 5.27: "Figure 5.27. Top landed species in Rhode Island by dollar value averaged for 1999-2008 (includes fish caught both within and outside of the Ocean SAMP area) (ACCSP 2010)."

Figure 5.28: "Figure 5.28. Rhode Island landings by weight, 1970-2008 (includes fish caught both within and outside of the Ocean SAMP area) (NMFS, Fisheries Statistics Division 2009a)."

Table 5.35: "Table 5.35. Average number of trips on which species were landed (state data only – includes trips both within and outside of the Ocean SAMP area), 2007-2009 (RIDEM 2010b)."

Table 5.36: "Table 5.36. Rhode Island landings by gear type, 1999-2008 (includes fish caught both within and outside of the Ocean SAMP area) (NMFS, Fisheries Statistics Division 2009a)."

Figure 5.30: "Figure 5.30. Rhode Island landings in pounds by gear type for 1999-2008 (includes fish caught both within and outside of the Ocean SAMP area). (NMFS, Fisheries Statistics Division 2009a)."

Table 5.37: "Table 5.37. Average number of trips per month by gear type, 2007-2009 (includes trips taken both within and outside of the Ocean SAMP area) (state fishing licenses only) (RIDEM 2010b)."

Table 5.40: "Table 5.40. Top landed species in Rhode Island by value averaged for 1999-2008 (includes fish caught both within and outside of the Ocean SAMP area) (ACCSP 2010)."

Figure 5.36: "Figure 5.36. Rhode Island commercial landings by value, 1999- 2008 (includes fish caught both within and outside of the Ocean SAMP area) (NMFS, Fisheries Statistics Division 2009a)."

Table 5.41: "Table 5.41. Federal vessel permits and landings value between 1997 and 2006 for Point Judith/Narragansett (includes fish caught both within and outside of the Ocean SAMP area) (Clay et al. 2008)."

Table 5.42: "Table 5.42. Dollar value of landings of federally managed groups of species for Point Judith (includes fish caught both within and outside of the Ocean SAMP area) (Clay et al. 2008)."

Table 5.43: "Table 5.43. Federal vessel permits and landings value between 1997 and 2006 for Newport (includes fish caught both within and outside of the Ocean SAMP area) (Clay et al. 2008)."

Table 5.44: "Table 5.44. Dollar value for landings of federally managed species for Newport (includes fish caught both within and outside of the Ocean SAMP area) (Clay et al. 2008)."

39. We propose the following changes to footnotes in Table 5.34, Section 530.6. Rhode Island Commercial Fisheries Effort and Landings based on comments received from BOEMRE:

"**Table 5.34.** Top landed species in Rhode Island by weight for 1999-2008.[13] (ACCSP 2010)
Note: Important species in the Ocean SAMP area are italicized. Average dollar value calculated based on each year's nominal landings value, which do not account for inflation."

Species	**Average Pounds 1999-2008**[14]	**Average Dollar Value 1999-2008**	**Number of Years Landed**
Herring, Atlantic	19,426,667	$1,637,564	10
Squid, Longfin inshore	18,426,084	$14,018,015	10
Mackerel, Atlantic	7,623,878	$1,921,248	10
Skates	6,455,051	$627,053	10
Hake, Silver	6,290,385	$2,543,255	10
Goosefish (Monkfish)	5,148,746	$4,921,970	10
Lobster, American	4,340,526	$19,113,035	10
Scup	3,131,617	$2,381,122	10
Squid, Northern shortfin	3,089,620	$882,507	6
Skate, Little	2,374,344	$196,849	6
Flounder, Summer	2,158,836	$4,660,022	10
Butterfish	1,588,842	$680,673	10
Flounder, Winter	1,173,497	$1,599,963	10
Crab, Atlantic rock	952,517	$489,484	8
Flounder, Yellowtail	941,055	$1,067,699	10
Crab, Jonah	892,223	$471,098	10

Quahog, Northern	890,965	$5,675,621	10
Hake, Red	797,796	$191,042	10
Scallop, Sea	719,914	$4,847,792	10
Crab, Red	608,303	$452,849	6
Bluefish	553,631	$185,447	10
Crabs, Brachyura	484,718	$242,149	7
Cod, Atlantic	454,363	$511,321	10
Dogfish, Spiny	409,938	$71,208	10
Haddock	336,594	$369,411	10
Menhadens	326,289	$38,916	10
Bass, Black sea	315,991	$758,978	10
Skate, Winter	217,973	$42,254	6
Bass, Striped	202,593	$540,829	10
Surfclam, Atlantic	181,261	$6,272	1
Flounder, Witch	168,881	$211,958	10
Plaice, American	119,517	$118,531	10
Clam, Soft	102,742	$711,869	10

"[13] Includes all species landed in Rhode Island for 1999-2008, both within and outside of the Ocean SAMP area, where average pounds landed over the ten year period is more than 100,000. Some species included here are primarily caught outside of the SAMP area."
"[14] Shellfish weights are expressed in meat weights"

40. We propose the following footnotes be added to the following Table and Figure headings based on comments received from DEM:

Figure 5.26: "Figure 5.26. Top landed species in Rhode Island by weight, 1999-2008 (includes fish caught both within and outside of the Ocean SAMP area) (ACCSP 2010).[15]

New footnote 15: [15]Shellfish weights are expressed in meat weights"

Table 5.40: "Table 5.40. Top landed species in Rhode Island by value averaged for 1999-2008 (includes fish caught both within and outside of the Ocean SAMP area) (ACCSP 2010)"
Note: Ocean SAMP area commercially important species highlighted. Data on landings values by port are based on the NOAA Fisheries commercial dealer weigh out data, which includes the pounds landed and sold to the dealer, and the total price paid for each species. Average dollar value was calculated using the annual nominal landings value, which does not account for inflation.

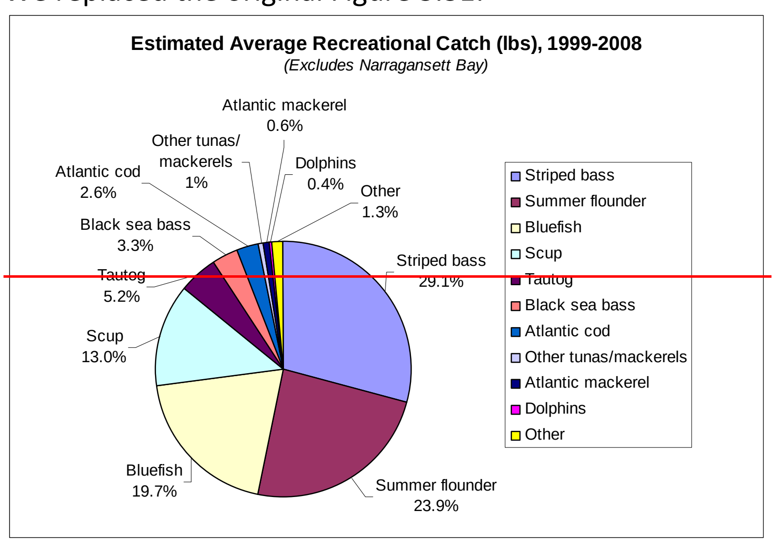
Species	**Average Pounds Landed 1999-2008[33]**	**Average Dollar Value 1999-2008**	**Average Price per Pound**
Lobster, American	4,340,526	$19,113,035	$4.40
Squid, Longfin inshore	18,426,084	$14,018,015	$0.76
Quahog, Northern	890,965	$5,675,621	$6.37
Goosefish (Monkfish)	5,148,746	$4,921,970	$0.96
Scallop, Sea	719,914	$4,847,792	$6.73
Flounder, Summer	2,158,836	$4,660,022	$2.16
Hake, Silver	6,290,385	$2,543,255	$0.40
Scup	3,131,617	$2,381,122	$0.76

Mackerel, Atlantic	7,623,878	$1,921,248	$0.25
Herring, Atlantic	19,426,667	$1,637,564	$0.08
Flounder, Winter	1,173,497	$1,599,963	$1.36
Flounder, Yellowtail	941,055	$1,067,699	$1.13
Squid, Northern shortfin	3,089,620	$882,507	$0.29
Bass, Black sea	315,991	$758,978	$2.40
Oyster, Eastern	50,676	$742,558	$14.65
Clam, Soft	102,742	$711,869	$6.93
Butterfish	1,588,842	$680,673	$0.43
Skates	6,455,051	$627,053	$0.10
Bass, Striped	202,593	$540,829	$2.67
Cod, Atlantic	454,363	$511,321	$1.13
Crab, Atlantic rock	952,517	$489,484	$0.51
Crab, Jonah	892,223	$471,098	$0.53
Crab, Red	608,303	$452,849	$0.74
Haddock	336,594	$369,411	$1.10
Crabs, Brachyura	484,718	$242,149	$0.50
Swordfish	85,632	$236,487	$2.76
Flounder, Witch	168,881	$211,958	$1.26
Skate, Little	2,374,344	$196,849	$0.08
Hake, Red	797,796	$191,042	$0.24
Bluefish	553,631	$185,447	$0.33
Plaice, American	119,517	$118,531	$0.99
Whelk, Channeled	93,273	$118,367	$1.27

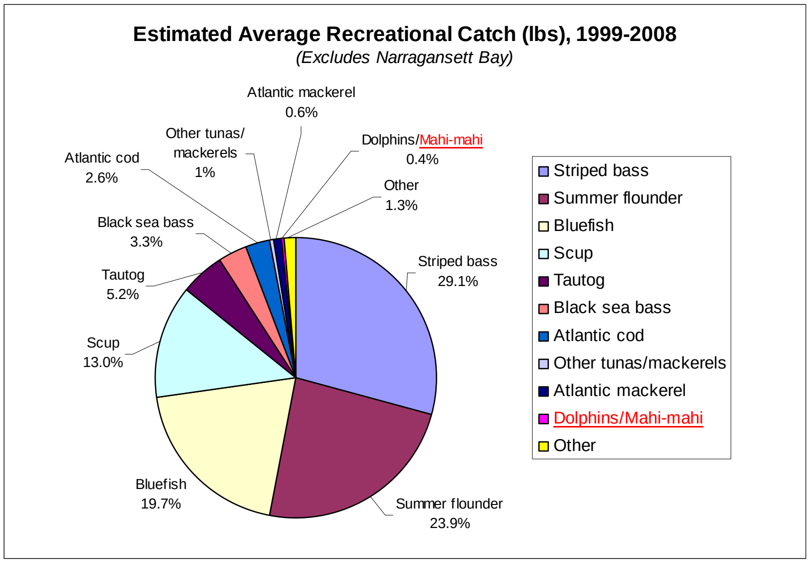
[33]Shellfish weights are expressed in meat weights

41. We propose the following change to Figure 5.31, Estimated average recreational catch, based on comments received from DEM:

We replaced the original Figure 5.31:



With this updated figure 5.31, changing "Dolphins" to "Dolphins/Mahi mahi":



42. We propose the following change to Table 5.39, Estimated average recreational catch, to include the name Mahi mahi with dolphin based on comments received from DEM:

"Table 5.39. Estimated average recreational catch, 1999-2008, based on MRFSS data. (Pers. comm., NMFS Fisheries Statistics Division, MRFSS, 2010)

Species Name	**Average catch (lbs)**
Striped bass	835,941
Summer flounder	687,416
Bluefish	566,135
Scup	374,226
Tautog	149,944
Black sea bass	94,146
Atlantic cod	74,431
Other tunas/mackerels	22,096
Atlantic mackerel	18,499
Dolphins (Mahi mahi)	12,493
Winter flounder	11,650
Little tunny/Atlantic bonito	8,573
Other sharks	4,234
Other fishes	2,612
Dogfish sharks	1,953
Weakfish	1,721
Skates/rays	1,468
Cunner	1,197
Herrings	1,085
Other cods/hakes	853
Red hake	678
Pollock	652
Triggerfishes/filefishes	574
Sea robins	345
Other jacks	266
Spanish Mackerel	130
Sculpins	29
Eels	20
King mackerel	7
Other flounders	2

43. We propose the following revisions to Section 530.7.3, Recreational and For-Hire Fishing Activity Areas, paragraph 2, based on comments received from DEM:

"2. During the late spring, Rhode Island-based party and charter boats are almost exclusively targeting cod, which have started to make a recovery to numbers suitable for recreational fishing. Most fishing for cod is done on Cox Ledge and south of Block Island. Earlier in the spring season, the majority of party and charter boats target the migratory stocks of the mid-Atlantic such as striped bass, summer flounder, and black sea bass. During the summer, most recreational fishing is focused on striped bass and bluefish, with some boats targeting fluke closer to shore. Later in the summer, some of the recreational fishing boats will move further offshore to target sharks, which are generally caught anywhere from 20 to 50 miles offshore. Sharks targeted include blue, mako, thresher, and hammerhead sharks, and most shark fishing is catch and release. Some tuna fishing also takes place within an area east of Block Island and northwest of Cox Ledge known as the Mud Hole (often called Deep Hole by commercial fishermen). Starting in September, much of the fishing switches to sea bass and scup around Block Island, or to striped bass closer to shore at that time of year."

44. We propose the following grammatical change to Section 540.1. Commercial Fisheries Landings Value and Economic Impact, paragraph 2, based on comments received from DEM:

"2. Because of the nature of fisheries activity and fisheries data, it is not possible to directly attribute a dollar amount to the contribution of fisheries in the Ocean SAMP area. Commercially harvested species that are landed in RI ports may be harvested anywhere; conversely, species harvested in the Ocean SAMP area may be landed in an out-of-state port and accounted for in that state's landings data. This section summarizes information about the value of all state landings as well as the economic impact of commercial fishing to the state. Where possible, distinctions are made to emphasize the particular value of Ocean SAMP area fishing to the state of Rhode Island."

45. We propose the following text be added to Section 550.1, Fisheries and Overfishing, to refer to Table 5.2, based on comments received from BOEMRE:

"2. At present, seven of the species of importance to commercial and recreational fisheries are either listed as overfished or overfishing is occurring on the stock (Atlantic cod, American lobster, bluefin tuna, tautog, winter flounder, winter skate, and yellowtail flounder – see Table 5.2 for a list of all species of importance and their status). Many of the other species found with in the Ocean SAMP area have been in the past or are in danger of becoming overfished. Overfishing can lead to a reduction in recruitment, or of fish growing large enough and old enough to spawn, as well as to a decline in the average size of targeted species (e.g. Collie et al. 2008; Fogarty and Murawski 1998)."

Chapter 6, Recreation and Tourism

1. The following proofreading changes were made in response to comments received from Nicole Travisono (RIDEM):

a. Changed all references to Chapter 5 to its proper title, “Chapter 5, Commercial and Recreational Fisheries,” to ensure consistency with that chapter
b. Changed all references to Chapter 4 to its proper title, “Chapter 4, Cultural and Historic Resources,” to ensure consistency with that chapter
c. Changed all references to Chapter 2 to its proper title, “Chapter 2, Ecology of the Ocean SAMP Region,” to ensure consistency with that chapter

2. The following changes to Table 6.3 (p. 22) and Section 650.2, paragraph 1 (p. 46) were made in response to comments received from BOEMRE: term “megayachts” was clarified as follows:

Section of Table 6.3:

Newport Bucket Regatta ***(Bucket Regattas/ Newport Shipyard)***	The Newport Bucket Regatta is an annual invitational regatta open to megayachts (very large yachts), largely those over 90 feet in length. The regatta is popular with classic sailing yachts, and event organizers emphasize fun and safety over competition. Vessels race a series of long-legged triangular courses south of Brenton Point (Bucket Regattas 2009a). In 2009, 19 yachts ranging in length from 68 to 147 feet participated in this event (Bucket Regattas 2009b).

Section 650.2 #1:
“1. Local economies benefit financially from recreational boating within the Ocean SAMP area through boaters’ expenditures on marina services and fuel, as well as dining and entertainment. Exact estimates of the current economic impact of recreational boating in the Ocean SAMP area are unknown. However, a state-wide study conducted by Ninigret Partners in 2006 found that the 43,000 boats registered in Rhode Island at that time generated approximately $182 million worth of spending each year (R.I. Economic Monitoring Collaborative 2008). It should be noted that this figure excludes transients, megayachts (very large yachts), and regatta participants and therefore likely underestimates the economic impact of this industry. Of the $182 million spent in 2006 by recreational boaters in the state, approximately a third (or $63 million each year) was spent on trip-related expenses, such as dining, fuel, groceries, and marina services. In contrast, this study calculated that in 2006, $118 million annually was spent on boat ownership, including repairs, dockage fees, insurance, and equipment (R.I. Economic Monitoring Collaborative 2008). These findings illustrate how spending by recreational boaters supports a variety of businesses adjacent to the Ocean SAMP area and throughout the state.”

3. **In response to comments from BOEMRE, sections 600, 640, and 650.1 were revised as follows to delete the word "significant" in sections where it could be misconstrued to imply a quantitative or statistical assessment:**

Section 600, #1:
"1. As the Ocean State, one of Rhode Island's greatest economic, environmental, and cultural assets is its connection to the water. Whether through boating, sailing, diving, wildlife viewing, or shore-based activities such as surfing or beach going, Rhode Island residents and tourists alike enjoy the natural beauty of the state and the Ocean SAMP area. Recreational fishing is also a very important recreational use of the Ocean SAMP area and is discussed separately in Chapter 5, Commercial and Recreational Fisheries Resources and Uses. These recreational uses not only provide enjoyment but also generate ~~significant~~ major economic benefits for the state of Rhode Island. The objective of this chapter is to provide information on the types, locations, and value of marine recreational and coastal tourism activities within the Ocean SAMP area. In addition, this chapter outlines policies for managing these uses."

Section 640, #1:
"1. The shores that surround the Ocean SAMP area attract millions of visitors to the state each year, while also providing invaluable recreational opportunities to residents (R.I. Department of Administration Statewide Planning Program and R.I. Department of Environmental Management 2003). Beaches, parks, open spaces, marinas, and boat ramps all facilitate the direct interaction of people with the Ocean SAMP area. The pristine beaches, parks, and recreational open spaces provide areas for the public to swim, wade, surf, fish from shore, view wildlife, enjoy the scenery, or participate in a number of other recreational activities. In addition, marinas and boat ramps in recreational ports and harbors provide boaters with access to the Ocean SAMP area. Activities taking place in connection with these facilities provide ~~significant~~ great economic benefits for Rhode Island that are discussed below in Section 650. The location of these types of shore-based facilities shapes access to the Ocean SAMP area by tourists and marine recreational users."

Section 650.1 #5:
"5. The seasonal nature of Rhode Island's coastal tourism is most pronounced on Block Island. As noted above, Block Island's population swells ~~significantly~~ markedly during the summer season. Whereas the tourism data cited above and in Tables 6.10 and 6.11 suggest that Block Island has fewer visitors and therefore a smaller economic impact than other coastal communities, such a comparison may be misleading. The Block Island data represent one destination, not an entire county; moreover, these data primarily represent the Block Island summer season, which is only 10 weeks long (mid-June through the end of August). This is because Block Island, unlike other locations like Newport, is a much more seasonal destination and relies heavily on the summer months for its tourism economy (Willi, pers. comm.)."

Chapter 7, Marine Transportation, Navigation and Infrastructure:

1. **The following proofreading changes were made in response to comments submitted by Nicole Travisono (RIDEM):**

   a. Changed all references to Chapter 5 to its proper title, "Chapter 5, Commercial and Recreational Fisheries," to ensure consistency with that chapter
   b. Changed all references to Chapter 4 to its proper title, "Chapter 4, Cultural and Historic Resources," to ensure consistency with that chapter
   c. Changed all references to Chapter 2 to its proper title, "Chapter 2, Ecology of the Ocean SAMP Region," to ensure consistency with that chapter
   d. Changed all references to Chapter 8 to its proper title, "Chapter 8, Renewable Energy and Other Offshore Development," to ensure consistency with that chapter

2. **The following change to section 720.6 is made in response to comments submitted by Poojan Tripathi (BOEMRE) regarding the proposed general anchorage; this also necessitated updating the references with an additional source as follows:**

"2. At present there are no anchorages charted within the Ocean SAMP area; all anchorages are within Narragansett Bay. However, a general anchorage is proposed for the waters south of Brenton Point in the Brenton Reef area in federal waters (see Figure 7.1). According to the U.S. Coast Guard Sector Southeastern New England, as of late 2010 this proposed anchorage is in the conceptual stage and undergoing development, and a formal proposal and public comment period is expected sometime in 2011 ~~(LeBlanc, pers. comm.)~~. For further information on the status of this proposed general anchorage, please contact the U.S. Coast Guard Sector Southeastern New England (LeBlanc, pers. comm.)."

Additional reference for Literature Cited:
LeBlanc, Edward. 2010. U.S. Coast Guard Sector Southeastern New England. Personal communication, September 15, 2010.

Chapter 8: Renewable Energy and Other Offshore Development

1. We propose the following change to Section 810.1, Increasing Energy Demands and Global Climate Change, Paragraph 1, in response to comments from BOEMRE:

“1. Demand for electricity in the region and the nation as a whole is projected to increase in the coming decades. For example, the most recent forecast by the U.S. Energy Information Administration estimates that annual electricity consumption in the United States will increase from 3,873 terawatt-hours (TWh) in 2008 to 5,021 TWh in 2035. This increase represents a 29% increase in demand, requiring an additional 1,148 TWh of production by 2035 (U.S. Energy Information Administration 2010). To help put this increased energy demand in perspective, 1,148 TWh is enough energy to power over 100 million residential homes for a year. Likewise, the Independent System Operator New England (ISO-NE) forecasts that the overall annual electricity usage of New England will increase by 10,810 GWh between 2009 and 2018, from current levels of 131,315 GWh to 142,125 GWh (see “Table 8.3~~“Table 8.3~~). Rhode Island accounts for a portion of this increase in energy within the region, as ISO-NE predicts that total electricity use will increase from 8,460 GWh in 2009 to 9,025 GWh in 2018, requiring an additional 565 GWh of energy production to meet anticipated annual electricity needs (see “Table 8.3~~“Table 8.3~~). The largest increase in peak loads is projected during the summer months, when an additional 235 MW of production capacity is expected to be required to meet the 2018 summer demand (ISO New England Inc. 2009a). Increases in energy efficiency, or efforts to decrease energy consumption may lower the amount of energy required in the future (see Section 810.2 for a discussion of Rhode Island legislation dealing with energy efficiency). However, if these projections are accurate and demand continues to rise into the future, New England will require greater generation capacity to meet the region’s need for electricity.”

2. We propose the following change to Table 8.1 based on comments from BOEMRE:

“Table 8.3. Summary of Forecasted Annual and Peak Energy Loads for New England States (ISO New England Inc. 2009a).

	Net Energy for Load* (GWh)			Summer Peak Loads (MW)			Winter Peak Loads (MW)		
	2009	2018	Difference	2009	2018	Difference	2009	2018	Difference
CT	32,710	33,850	1,140	7,500	8,105	605	5,715	5,765	50
ME	11,755	12,610	855	2,075	2,325	250	1,915	1,930	15
MA	60,420	67,095	6,675	12,925	14,455	1,530	10,030	10,505	475
NH	11,660	12,925	1,265	2,450	2,815	365	2,020	2,160	140
RI	**8,460**	**9,025**	**565**	**1,850**	**2,085**	**235**	**1,395**	**1,440**	**45**
VT	6,310	6,625	315	1,075	1,180	105	1,035	1,060	25
Total New England	131,315	142,125	10,810	27,875	30,960	3,085	22,100	22,860	760

* The Net Energy for Load shown in the table is the net generation output within an area, accounting for electric energy imports from other areas and electric energy exports to other areas.
Note: for Summer and Winter Peak Loads, the "reference" or 50/50 forecasted value was used.

3. **We propose the following change to Section 810.3.5, Renewable Energy Sources in Rhode Island, paragraph 5, based on comments from BOEMRE:**

"5. Wave energy uses energy of moving waves to generate electricity. The greatest potential for wave energy exists where the strongest winds and larger fetch are found, which in general corresponds to temperate latitudes between 40° and 60° north and south (Pelc and Fujita 2002). Furthermore, because global winds tend to move west to east across ocean basins, wave resources on the eastern boundaries of oceans also tend to be greater than those on the western edges since the fetch, or the distance a wave travels, is longer (Pelc and Fujita 2002; Musial 2008a) (see Figure 8.9). Therefore, in the U.S. the greatest potential for wave energy development occurs on the west coast as a result of the wind resources that move west to east across the Pacific Ocean (Musial 2008a; Hagerman 2001). Musial (2008a) estimates that the entire New England and Mid-Atlantic coasts have approximately only one-tenth the wave resources estimated for the southern coast of Alaska (see Figure 8.4). Further studies examining the wave energy potential off Southern New England have determined that the greatest resource potential for the area exists far offshore (beyond the Ocean SAMP area boundary) because in nearshore areas there is not adequate fetch for winds out of the west to build up large waves. Exposed waters north of Cape Cod and within the Gulf of Maine were shown to have the greatest annual average significant wave height (approximately 2.0 meters [6.6 feet])(Hagerman 2001). Asher et al. (2008) found that the significant wave height for a site in Rhode Island Sound south of Block Island measured approximately 1.2 m (3.9 feet) over 20 years, and 8.4 m (27.6 feet) in extreme wave events. Closer to shore within Rhode Island Sound, Grilli et al. 2004 determined that the significant wave height at two locations equaled 1.04 m and 1.11 m (3.4 and 3.6 feet) (see Chapter 2, Ecology of the SAMP Region for further discussion on waves in the Ocean SAMP area). A rough estimate of the average power potential from wave energy off of Block Island has been cited as 5.7 kW/m (Spaulding 2008). Researchers have suggested that because of the current state of technology, it may not be economically viable or cost-effective to try to generate energy from the present resource capacity (e.g. Hagerman 2001; Spaulding 2008; Rhode Island Office of Energy Resources 2010). However, this may change in the future with technological advancements."

4. **We propose the following revision to section 820.4, Stages of Development, in response to comments from the RIDEM Office of Water Resources. We propose deleting this table and all associated references, which also requires revising the chapter's list of tables; renumbering all subsequent tables; and deleting references to this table in section 820.4, Stages of Development, paragraph 3, as follows. PLEASE NOTE THAT REVISIONS FOR THIS ITEM HAD ALSO BEEN PROPOSED IN THE SEPTEMBER 14th MEMO, AND THAT THE BELOW CHANGES SUPERCEDE THOSE PROPOSED IN THAT MEMO:**

"3. During the pre-construction stage, project permitting on the federal, state and local levels is completed, involving substantial reviews and assessments of environmental impacts and compliance with applicable environmental legislation. ~~Table 8.8 summarizes applicable state actions relevant to offshore wind energy construction.~~ The review process of an offshore wind energy project located in state waters is led by the U.S. Army Corps of Engineers, as opposed to projects located in federal waters, whose review process is led by the U.S. Department of the Interior Bureau of Ocean Energy Management, Regulation and Enforcement (formerly Minerals Management Service; see Chapter 10, Existing Statutes, Regulations, and Policies for a description of federal versus state waters). The National Environmental Policy Act (NEPA) mandates that an environmental analysis be prepared prior to the issuance of federal action (e.g. permits or approvals) for offshore wind farms. Based on the project, the environmental review may consist of an Environmental Assessment or a more extensive review in the form of an Environmental Impact Statement. The review process includes: an analysis of alternatives, an assessment of all environmental, social, and existing use impacts (i.e. ecological, navigational, economic, community-related, etc.), a review for regulatory consistency with other applicable federal laws and the implementation of mitigation measures. Concurrent with the preparation of the final Environmental Impact Statement or other NEPA documentation, a consistency review (under the Coastal Zone Management Act) and subsequent Consistency Determination (CD) is completed relative to each affected State's federally approved coastal zone management program. Each CD includes a review of each State plan, analyzes the potential impacts of the proposed lease sale in relation to program requirements, and makes an assessment of consistency with the enforceable policies of each State's plan (MMS 2009b). ~~Moreover, the installation of a submarine cable through state waters and through and state upland areas at which point all applicable state permits and approvals would be required.~~It should be noted that even if a project is sited in federal waters, the installation of a transmission cable within state waters or upland areas will trigger all applicable state permitting requirements. See Chapter 10, Existing Statutes, Regulations, and Policies for more information on state and federal reviews and regulations relevant to offshore wind energy development."

~~**Table 8.8.** Potential State Actions Required to Construct an Offshore Wind Energy Facility in the Ocean SAMP area.~~

~~**Permitting Agency**~~	~~**Applicable Permit or Approval**~~	~~**Statutory/Regulatory Authorities Establishing Scope of Jurisdiction**~~	~~**Projects Applicable to this Permit/Approval**~~
~~Rhode Island Coastal Resources Management Council (CRMC)~~	~~State Assent~~	~~R.I. Gen. Laws § 46-23 et seq.~~	~~Facilities located in state waters~~ ~~Transmission Cables sited in state waters~~
	~~Lease/ License of Offshore Land~~	~~CRMC Enabling Legislation, R.I. Gen. Laws § 46-23-6(4)(iii) (authorizing CRMC to "[g]rant licenses, permits and easements for the use of coastal resources... and impose fees for the private use of these resources.")~~	
	~~Coastal Wetlands Permit and Freshwater Wetlands Permit~~	~~CRMC Coastal Resources Management Program, CRIR 04-000-010 (2009); Rules and Regulations Governing the Protection and Management of Freshwater Wetlands in the Vicinity of the Coast CRIC 04-000-017 (2009).~~	
	~~Permit for Marine Dredging and Associated Activities~~	~~R.I. Gen. Laws § 46-6; 1 Marine Infrastructure Maintenance Act of 1996 and the Marine Waterways and Boating Facilities Act of 2001~~	
~~CRMC~~	~~Coastal Consistency Determination~~	~~Coastal Zone Management Act 16 U.S.C. § 1451 (as amended through Pub. L. No. 109-58, the Energy Policy Act of 2005) CRMC Enabling Legislation, R.I. Gen. Laws §§46-23-1 et seq.; CRMC Coastal Resources Management Program CRIR 04-000-010 (2009)~~	~~Facilities located in federal waters~~
~~Rhode Island Department of Environmental Management (RIDEM)~~	~~Freshwater Wetlands Permit (not in the vicinity of coast)~~	~~RI Freshwater Wetlands Act, R.I. Gen. Laws §§2-1-18 through 2-1-24; Administration and Enforcement of the Freshwater Wetlands Act, CRIR 12-190-025 (2009)~~	~~Onshore connection of Transmission Cable~~
	~~401 Water Quality Certification and/or State Water Quality Certification~~	~~Clean Water Act § 401(a)(1), 33 U.S.C. § 1342(a)(1); 40 C.F.R. § 121.1(g); RI Water Pollution Act, R.I. Gen. Laws §§ 46-12-1 et seq.; Water Quality Regulations, CRIR 12-190-001 (2009)~~	~~Facilities located in state waters~~ ~~Transmission Cables sited in state waters~~
	~~Rhode Island Pollutant Discharge Elimination System Permit~~	~~R.I. Gen. Laws §§ 46-12,42-17.1 & 42-35, as amended~~	~~Facilities located in state waters~~

~~Rhode Island Energy Facilities Siting Board~~	~~Energy Facility License~~	~~Energy Facility Siting Act, R.I. Gen. Law § 42-98.~~	~~Facilities located in state waters~~
~~Rhode Island Historical Preservation and Heritage Commission (RIHPHC)~~	~~Consultation Under the National Historic Preservation Act, Section 106; Consultation and Determination Under the Abandoned Shipwreck Act~~	~~National Historic Preservation Act, 16 U.S.C. 470; Abandoned Shipwreck Act, 43 U.S.C. 2101 et seq.~~	~~Facilities located in state waters~~ ~~Transmission Cables sited in state waters~~

5. **We propose the following change to Section 820.4, Stages of Development, paragraph 7, based on comments from Terry Walsh at DEM:**

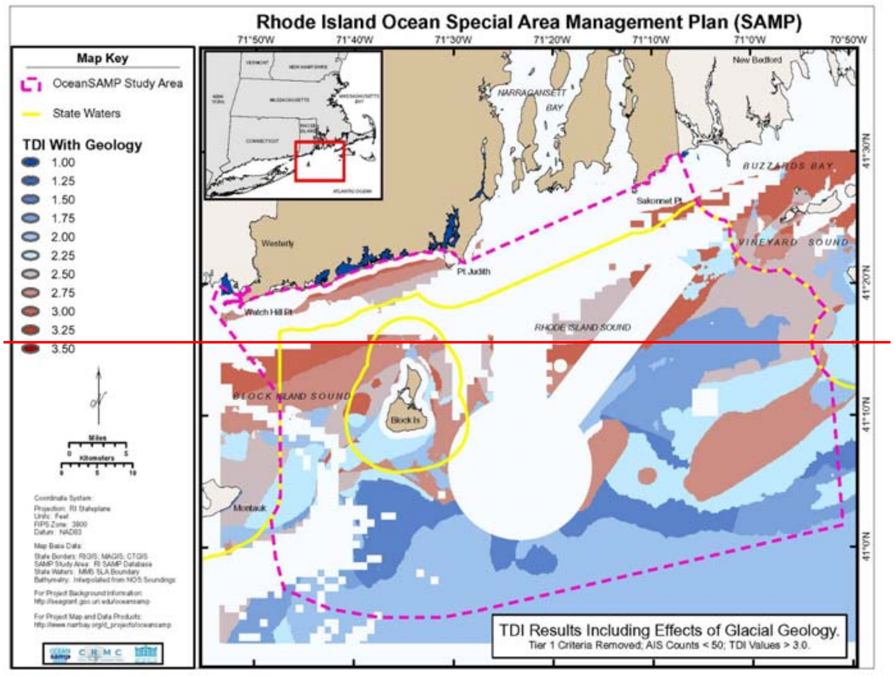
"7. The construction stage of development is the period in which the turbines, substructures and foundations, cables and offshore substations are installed at the project site. For each of these installations various construction vessels, barges and equipment are required, some of which are specialized for the construction of offshore wind farm. Transport barges are used to carry towers, blades, nacelles, scour protection and foundation structures from the onshore staging areas to the project site. In some cases, certain assemblies may occur onshore to reduce installation time offshore. For example, the developer of the Beatrice Wind Farm Demonstration Project (a jacketed offshore wind project) transported the turbine fully assembled to the project site. The tower and rotor had been assembled onshore, transported via barge and lifted onto the jacketed substructure by crane (Talisman Energy et al. 2007) (see Section 840.1 for further discussion). Foundations, substructures, towers and rotors are installed using a jack-up barge outfitted with a crane which lifts and positions structures into place. To stabilize the position of the jack-up barge, four to six legs may be deployed. These legs allow the barge to be raised up to a suitable working elevation (MMS 2009a). Vessels equipped with pile driving rams or vibratory hammers embed the foundation piles to specified depths. Alternatively, in areas where pile driving is not possible, drilling techniques such as augering may also be used to create holes within the seabed for the piles to be placed."

6. **We propose the following change to Section 820.4, Stages of Development, paragraph 8, based on comments from BOEMRE:**

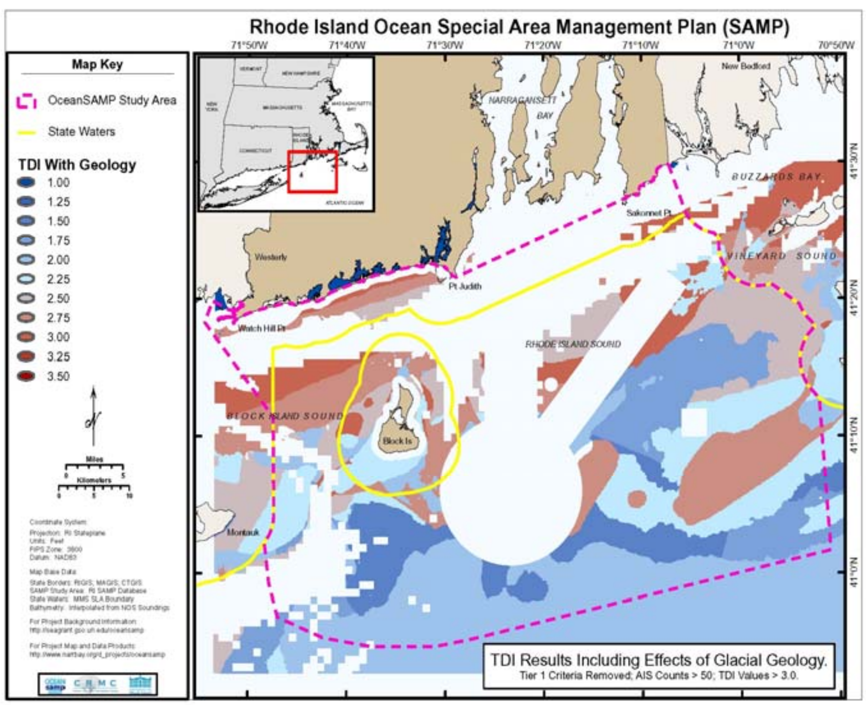
"8. Cable laying activities are performed by vessels towing a jet-plowing device which uses pressurized sea water to carve a trench in the sediments. The jet-plow creates the trench and lays the cable within the trench allowing the disturbed sediments to settle atop the cable. This technique is used for both the inner-array of cables that connect the turbines to the offshore substation and the longer transmission cables that connect the entire facility to the shore side utility grid. The transmission cables connecting the offshore wind facility to shore may be embedded from three to ten feet below the seafloor surface (MMS 2007a). Once the transmission cable reaches the shore, it is run through a buried conduit installed to protect the cable in the coastal zone. In addition, to the vessels directly involved in laying the cables, multiple small auxiliary vessels may be present to provide support and assistance. Cable laying activities may occur continuously, on a 24 hour basis (MMS 2009a)."

7. **We propose replacing Figure 8.28 with a corrected map, based on comments from BOEMRE:**

The original Figure 8.28:



Replaced with the following figure:



8. We propose the following changes to Section 850.1, Avoided Air Emissions, paragraph 4, based on comments from BOEMRE:

"4. When considering the benefits of wind power displacing electricity generated from fossil fuels, the carbon dioxide (CO_2) emissions of manufacturing wind turbines and building wind plants need to be taken into account as well. White and Kulsinski (1998) found that when these emissions are analyzed on a life-cycle basis, wind energy's CO_2 emissions are extremely low—about 1% of those from coal and 2% of those from natural gas, per unit of electricity generated. The American Wind Energy Association has calculated that a single 1 MW wind turbine (operating at full capacity for one year) has the potential to displace up to 1,800 tons (1633 MT) of CO_2 per year compared with the current U.S. average utility fuel mix (made up of oil, gas, and coal) burned to produce the same amount of energy (AWEA 2009). The generation of renewable wind energy will result in avoided future emissions of CO_2 and will allow Rhode Island to meet targets set by the Regional Greenhouse Gas Initiative (RGGI) (See Section 810.1)."

9. We propose the following change to Section 850.2., Physical Processes and Oceanography, paragraph 3, based on comments from BOEMRE:

"3. One predicted potential effect of wind turbines has been changes to the wave field from diffraction caused by the monopiles, and resulting changes to longshore sediment transport (CEFAS 2005). A study of the wave effects at Scroby Bank, located in the North Sea off the U.K., found no significant effects to the wave regime (CEFAS 2005). Modeling of the effects of wind farms on waves found a reduction in wave height on average of 1.5% in the region, and maximum localized amplification of wave heights at the site of the wind farm of about 0.0158 m (0.6 inches). As the modeled wind farm was moved further from shore, the wave height amplification decreased (ABP Marine Environmental Research Ltd 2002). Modeling for the Cape Wind project found that the largest wave diffraction occurred for small waves with low bottom velocities that did not cause significant sediment transport; larger waves were not affected by the presence of the turbines. Overall, the models found that the presence of turbines would have a negligible impact on wave conditions in the area (MMS 2009a). Because there are no significant changes predicted for tides and waves, there are not expected to be significant effects to sediment movement or deposition along the coastline (ABP Marine Environmental Research Ltd 2002)."

10. We propose the following changes to Section 850.2, Physical Processes and Oceanography, paragraph 7, based on comments received from NMFS:

"7. The placement of submarine cables will have limited and localized effects on ~~the sea bed and on~~ seafloor sediments. Jet plowing, the method most likely to be used in the Ocean SAMP area, will likely result in the resuspension of bottom sediments into the water column. Heavier particles will settle in the immediate area of the activity, but finer particles are likely to travel from the disturbed area. These effects will be relatively small and short-term, however. Modeling of sedimentation during the cable laying process for the Cape Wind project found that sediment would settle within a few hundred yards of the cable route (MMS 2009a). In some cases, where suspended sediment levels are already high in the vicinity because of storms, areas of mobile surface sediment, or fishing activities such as trawling, the additional increase in sediments from cable-laying will probably not be significant. Once it is buried, the cable will not likely have any significant effect on sediments as long as it remains buried ~~or the sea bed~~ (ABP Marine Environmental Research Ltd 2002). If the cable becomes exposed, increased flow could occur above the cable, resulting in localized sediment scour (MMS 2009a)."

11. We propose the following change to Section 850.3.1, Benthic Habitat Disturbance, paragraph 2, based on comments received from NMFS:

"2. Sediment disturbance caused by the installation of foundations or underwater transmission cables may result in the smothering of some benthic organisms as suspended sediments resettle onto the seafloor (MMS 2007a). Smothering would primarily affect benthic invertebrates as most finfish and mobile shellfish would move to nearby areas to avoid the construction site (MMS 2007a). The eggs and larvae of fish and other species may be particularly susceptible to burying (Gill 2005). Smaller organisms are more likely to be affected than larger ones, as larger organisms can extend feeding and respiratory organs above the sediment (BERR 2008). Sediment also has the potential to affect the filtering mechanisms of certain species through clogging of gills or damaging feeding structures; however, most species in the marine environment likely have some degree of tolerance to sediment and this effect is likely to be minimal (BERR 2008). In the Ocean SAMP area, species that may be impacted by the settling of sediments include eastern oysters (*Crassostrea virginica*) and northern quahogs (*Mercenaria mercenaria*), among others, resulting in mortality or impacts to reproduction and growth (MMS 2009a)."

12. We propose the following revision to Section 850.3.1, Benthic Habitat Disturbance, paragraph 9, in order to resolve conflicting information, based on comments received from Terry Walsh at DEM:

"9. The recovery period, or the time required for an area disturbed by construction related activities to return to its pre-construction state, will vary between sites. For example, research on the effects of trawling on the seabed have found that benthic communities in habitats already subject to high levels of natural disturbance will be less affected by trawling disturbance than more stable communities (Hiddink et al. 2006). Typically, habitats such as coarse sands are in general more dynamic in nature and therefore recover more rapidly after disturbance than more stable habitat types ~~such as mud and muddy sand,~~ where physical and biological recovery is slow (Dernie et al. 2003). Disturbance from the construction of wind turbine towers and laying cable is likely to produce similar results. A few studies of dredging found that recovery times are roughly six to eight months for estuarine muds, two to three years for sand and gravel bottoms, and up to five to ten years for coarser substrates (e.g. Newell et al. 1998)."

13. We propose the following table be added to Section 850.4 Birds, to describe the exact numbers and locations of piping plover nesting sites in the Ocean SAMP area in 2009, based on a request for this data in comments received from BOEMRE:

"Table 8.4. 2009 Piping Plover Nesting Sites (USFWS 2010)"

Beach	**Nesting Pairs**	**Chick Total**
Block Island	2	0
Charlestown Beach	0	0
East Beach Watch Hill	22	53
East Matunuck	1	2
Green Hill	1	2
Napatree	10	16
Narragansett Town Beach	0	0
Narrow River	2	4
Ninigret Conservation Area	4	5
Ninigret NWR and Arnolda	2	2
Norman Bird Sanctuary	0	0
Sachuest Point National Wildlife Refuge	1	0
Sandy Point	2	4
Third Beach	1	0
Trustom Pond National Wildlife Refuge	12	9
Quonochontaug	9	8
Total	**69**	**105**

14. We propose the following changes to Table 8.16, Summary of European Monitoring of Avian Species, to clarify data from the report cited, based on comments received from BOEMRE:

"Table 8.5. Summary of European Monitoring of Avian Species.

Offshore Wind Energy Facility	Survey Years	Summary of Findings	Citation

Tuno Knob, Denmark: 10 turbines; online since 1995	1994-1997 1998-1999	Displacement/Changes in Distribution: • Common Eiders declined by 75% and Black Scoters* by more than 90% during post-construction Flight Activity/Avoidance: • Nocturnal flight activity of eiders and scoters occurred within and near the project site • Nocturnal flight activity was 3-6 times greater on moonlit nights compared to dark nights • Flight activity inside and in the vicinity the facility was lower than outside the facility	Guillemette et al. 1998, 1999 Tulp et al. 1999
Nysted, Denmark: 72 turbines; online since 2004	1999-2005	Displacement/Changes in Distribution: • Significant reduction in long-tailed duck staging in the project area post-construction • Gulls and cormorants demonstrated attraction behavior to the structures within the facility Flight Activity/Avoidance: • 91-92% of all birds recorded avoided the offshore wind energy facility • Lateral deflection averaged .5 km (0.3 miles) at night and 1.5 km (0.9 miles) or greater during the day • Moderate reactions in flight routes were observed 10-15 km (6.2-9.3 miles) outside the facility • For eiders, minor flight adjustments were made at 3 km (1.9 miles)and marked changes to orientation within 1 km of the facility Collision Risk • One collision was recorded using a Thermal Animal Detection System	Dong Energy and Vattenfall 2006
Horns Rev, Denmark: 80 turbines; online since 2002	1999-2005	Displacement/Changes in Distribution: • Loons and alcids avoided foraging and staging in the facility during construction • Gulls demonstrated attraction behavior to the structures within the facility Flight Activity/Avoidance: • Several species of ~~loons, scoters, and~~ seabirds showed avoidance of the facility and adjacent areas (2-4 km [1.2-2.5 miles]) post-construction, though this was not significantly different** • There was a significant decrease in the percentage of loons using the area in the vicinity of the wind farm post-construction • The number of scoters increased in the area near the wind farm post-construction; however, the distribution of scoters indicated they were avoiding the wind farm area, and were observed to avoid flying between the turbines Collision Risk: • No collisions were observed	Dong Energy and Vattenfall 2006

Utgrunden and Yttre Stengrund, Kalmar Sound, Sweden: 12 turbines total; online since 2001	1999-2003	Displacement/Changes in Distribution: • Staging waterfowl declined throughout the study period Flight Activity/Avoidance: • Eider spring migration paths were altered through the project area post-construction • Lateral deflection occurred 1-2 km (0.6-1.2 miles) away from the facility (in good visibility) • 15% of the autumn flocks and 30% of the spring flocks altered flight paths around facility Collision Risk: • Out of the 1.5 million waterfowl observed migrating through Kalmar Sound, no collisions were observed	Pettersson 2005
North Hoyle, U.K.: 30 turbines; online since 2003	2001-2004	Displacement/Changes in Distribution: • Red-throated loon and cormorant shifted their distribution toward the wind park during construction • Cormorant avoided the wind park during and after construction • No significant change in distribution was observed in the common scoter, terns, guillemots, auks***	National Wind Power 2003
Blyth, U.K.: 2 turbines offshore, 9 turbines on the breakwater; offshore online since 2000; onshore online since 1993	1991-2001	Displacement/Changes in Distribution: • No evidence of significant long-term displacement of birds from their habitats (either feeding areas or flight routes). • Temporary displacement of cormorants was observed. Flight Activity/Avoidance: • Approximately 80% of observed flight activity was below rotor height • Gulls were the primary species flying at rotor height and feeding between turbines Collision Risk: • Overall collision rate from 1991-2001 was 3% • Eider collision rates declined over the monitoring period, suggesting adaptive behavior	U.K. Department of Trade and Industry 2006
Kentish Flats, U.K. 30 turbines; online since 2005	2001-2005	Displacement/Changes in Distribution: • No significant changes in abundance of bird population were observed between pre- and post-construction periods • Though not statistically significant, observational data suggested that red-throated loons and great and lesser black-backed gulls decreased in abundance, and herring gulls increased in abundance at the study site Flight Activity/Avoidance: • Observational data showed fewer common terns were observed flying through the facility (though not statistically significant)	Gill, Sales, and Beasley, 2006
* Guillemette et al. 1998 and 1999 also found decreased scoter abundance in the control site. ** Authors stated that low overall bird numbers at the Horns Rev site, high variability between surveys and limited observations during poor visibility conditions prevented sufficient observance to assess avoidance. *** Authors stated that low overall bird numbers at North Hoyle made detecting changes in abundance difficult.			

15. We propose the following change to Section 850.4.4, Collision with Structures, paragraph 4, to clarify a reference in the text based on comments received from BOEMRE:

"4. The collision rate at Blyth Offshore Wind Energy Facility was more accurately measured since nine of the turbines are located on a breakwater and the entire facility is relatively close to shore and therefore more easily accessible. From 1991 to 1996, the collision rate was calculated to equal less than 0.01 percent. During 10 years of monitoring (1991 to 2001), only three percent of the 3,074 bird carcasses ~~were~~ collected~~; however, only 3 percent~~ were directly attributed to collisions with turbines (Still et al. 1996 as cited in Michele et al. 2007; ~~U.K. Department of Trade and Industry 2006~~). Researchers suggested that mortality events may have correlated with reduced visibility or poor weather conditions. Eider collision rates declined during the monitoring period, possibly because of adaptive behavior. Approximately 80 percent of observed flight activity was below rotor height; gulls were the primary species flying at rotor height and feeding between turbines."

16. We propose the following addition to Section 850.5, Marine Mammals, paragraph 2, based on comments received from BOEMRE:

"2. Understanding the responses of marine mammals to offshore renewable energy facilities requires sufficient data on the abundance, distribution, and behavior of marine mammals, which are difficult to observe because they spend most of their time below the sea surface (Perrin et al. 2002). Data on abundance in particular are difficult to come by; there is a lack of baseline data for many species, and some of the baseline data in use may be outdated. In order to understand the context in which a specific development site is being used by target species (e.g., for feeding, breeding or migration) baseline data should be collected before any human activity has started (OSPAR 2008). A desk-based study conducted by Kenney and Vigness-Raposa (2009) for the Ocean SAMP, has synthesized all available information on marine mammal occurrence, distribution and usage of this area, providing valuable background of the importance of this area to marine mammal species. This report also ranks marine mammal species found within the Ocean SAMP area according to conservation priority, taking into account such factors as overall abundance of the population, the likelihood of occurrence in the Ocean SAMP area, endangered or threatened status, sensitivity to specific anthropogenic activities, and the existence of other known threats to the population (Kenney and Vigness-Raposa 2009)."

17. We propose the following addition to Section 850.5, Marine Mammals, paragraph 3, to address recent sightings of right whales within the Ocean SAMP area based on comments received from DEM and NMFS:

"3. Marine mammal species in the Ocean SAMP area are either whales (cetaceans), a scientific order which includes dolphins and porpoises, or seals (pinnipeds). Marine mammals are highly mobile animals, and for most of the species, especially the migratory baleen whales, the Ocean

SAMP area is used temporarily as a stopover point during their seasonal movements north or south between important feeding and breeding grounds. The Ocean SAMP area overlaps with the Right Whale Seasonal Management Area, although the typical migratory routes for right whales and other baleen whales lie further offshore and outside of the Ocean SAMP area (Kenney and Vigness-Raposa 2009; see Chapter 7, Marine Transportation, Navigation and Infrastructure). However, in one event in April 2010, nearly 100 right whales were spotted feeding in Rhode Island sound, indicating that they do sometimes appear within the Ocean SAMP boundary area (NEFSC 2010). Right whales and other baleen whales have the potential to occur in the SAMP area in any season, but would be most likely during the spring, when they are migrating northward and secondarily in the fall during the southbound migration. In most years, the whales would be expected to transit through the Ocean SAMP area or pass by just offshore of the area."

18. We propose the following clarification to Table 8.17, Marine Mammal Species Most Commonly Occurring in the Ocean SAMP Area, based on comments received from NMFS:

"**Table 8.6.** Marine Mammal Species Most Commonly Occurring in the Ocean SAMP Area (Kenney and Vigness-Raposa 2009)

	Season Most Abundant in Ocean SAMP Area[†]	**Comments on Distribution or Activity in the Ocean SAMP Area**
North Atlantic Right Whale (*E*)	Spring & Fall	Mostly transits through outer regions of the Ocean SAMP area as individuals migrate south in the fall and north in the spring; occasionally individuals will linger for days or weeks to feed in Ocean SAMP area
Humpback Whale (*E*)	Spring & Summer	Abundance varies year to year in response to prey distribution
Fin Whale (*E*)	Summer	More abundant outside the Ocean SAMP boundary
Sperm Whale (*E*)	Summer	More abundant outside the Ocean SAMP boundary, primarily in deeper water.
Harbor Porpoise	Spring	Can occur in the Ocean SAMP area during all seasons, but are most abundant in the spring when they are moving inshore and northeastward toward feeding grounds. They are among the most abundant marine mammal species within the Ocean SAMP area.
Atlantic White-Sided Dolphin	All seasons	Most abundant outside Ocean SAMP boundary
Short-beaked Common Dolphin	All seasons	Likely to occur frequently in the Ocean SAMP area.
Harbor Seal	Fall, Winter and Spring	Regular haul-out sites along the periphery of Block Island (October through early May). These haul-out sites are thought to be used primarily by younger animals that are foraging in the area prior to migrating further north.
Sei Whale (*E*)	Spring	Irregular abundance in Ocean SAMP area

Common Minke Whale	Spring and Summer	More abundant outside the Ocean SAMP boundary
Long-Finned Pilot Whale	Spring	More abundant outside the Ocean SAMP boundary
Risso's Dolphin	Spring and Summer	More abundant outside the Ocean SAMP boundary
Bottlenose Dolphin	Summer	Likely only to be seen in outer part of Ocean SAMP area
† In many cases marine mammal species may be present in all seasons. Seasons listed are those with the greatest probability of occurrence. Seasons are defined as: Winter (December, January, February); Spring (March, April, May); Summer (June, July, August); Fall (September, October, November) **(*E)* Marine Mammal is listed as Endangered under the Endangered Species Act**		

19. We propose the following addition to Section 850.5.1, Marine Mammals: Noise, paragraph 2, based on comments received from BOEMRE:

"In principle, marine mammals can be expected to be most sensitive to sounds within the frequency range of their vocalizations (Richardson et al. 1995). For example, baleen whales produce low frequency sounds (~10Hz to 10 kHz), that travel long distances under water, and therefore, it is expected that these whales would also be most acoustically sensitive at lower frequencies (Richardson et al. 1995). However, there is no data on hearing sensitivities in any baleen whale species to date, making assessments on noise effects quite difficult. It is known that smaller toothed whales can hear frequencies over a range of 12 octaves, with a hearing range that overlaps the frequency content of their echolocation clicks and their vocalizations used for communication (Hansen et al. 2008; Au 1993; Richardson et al. 1995; Southall et al. 2007). In addition, as with any mammal, hearing sensitivity varies between individuals within a species (Houser and Finneran, 2006). Consequently, as a result of the incomplete data on marine mammal hearing, it can be difficult to predict the potential impact of noise from offshore renewable energy facilities on marine mammal species. There have been a number of studies conducted in Europe on the effects of pile driving as well as the effects of noise from operating wind farms on marine mammals. However, Europe has very few species of marine mammals, and only rare occurrences of baleen whales in the wind farm areas, leaving significant data gaps in the noise effects of offshore wind energy on marine mammals."

20. We propose the following change to a reference in Section 850.5.1, Marine Mammals: Noise, paragraph 12, based on comments received from BOEMRE:

"In addition to surveying and pile-driving activities, noise associated with ships engaged in construction, operations and maintenance activities may potentially impact marine mammals in the project area (Köller et al. 2006; OSPAR 2009a) (see **Error! Reference source not found.**~~Table 8.18~~). Overall, the ambient noise created by marine transportation, including ships associated with the wind farms as well as other ship traffic in the area, will be of a higher intensity than what would likely be created by wind turbines (OSPAR 2009a). Shipping noise should be taken into account when considering the overall levels of ambient noise underwater where wind turbines are in place. The use of ships in servicing the turbines and other activities should be accounted for when predicting the overall noise levels from the wind farms (Wahlberg and Westerberg 2005). Shipping noise is likely to be significantly higher during the construction phase (BMT Cordah Limited 2003). It is estimated that each turbine will require one to two days of maintenance each year; depending on the size of a wind farm, ship noise could be present in the vicinity of the turbines often (Thomsen et al. 2006). However, given the existing levels of shipping in the Ocean SAMP area and resulting background noise (see Chapter 7, Marine Transportation, Navigation and Infrastructure), the added noise from maintenance vessels is likely to be negligible. Observed reactions of marine mammals to vessel noise have included apparent indifference, attraction (e.g. dolphins' attraction to moving vessels), cessation of vocalizations or feeding activity, and vessel avoidance (Richardson et al 1995; Nowacek and Wells 2001). Noise may also be caused by transit of helicopters used to support offshore renewable energy facilities far offshore (MMS 2007a). Marine mammal behavior would likely return to normal following the passage of the vessel (~~MMS 2007a~~ Richardson et al. 1995). Edren et al. (2004) conducted video monitoring during the construction of the Nysted offshore wind farm and found no discernible changes in harbor seal behavior as a result of the increased ship traffic, although ship movements were controlled to avoid the seal sanctuary. In the Ocean SAMP area, the most heavily used seal haul out site on Block Island is located within a protected cove (see Figure 8.42) and therefore would not be affected by the noise from construction traffic. However, the other haul out sites surrounding Block Island may be affected if vessel routes pass in their vicinity or during winter seasons when these sites are most frequently used (Kenney and Vigness-Raposa 2009). Prior to construction, all potential impacts (including noise impacts) to marine mammals by a proposed offshore renewable energy facility in the Ocean SAMP area will be reviewed under the MMPA to determine if incidental take or harassment authorization, or specific mitigation measures are required."

21. We propose the following changes to Table 8.20, Abundance and Conservation Status of Ocean SAMP Area Sea Turtles, Section 850.6, to clarify information on sea turtle presence and abundance based on comments received from NMFS:

"**Table 8.7.** Abundance and Conservation Status of Ocean SAMP Area Sea Turtles *(*Kenney and Vigness-Raposa 2009)

Turtle	*Status*	*Abundance*
Leatherback Sea Turtle (*Dermochelys coriacea*)	Endangered	The sea turtle most likely to be found in Ocean SAMP area, found in Ocean SAMP area in summer and early fall when water is warmest. Dispersed; higher abundance outside Ocean SAMP area
Loggerhead Sea Turtle (*Caretta caretta*)	Threatened	More abundant in the Northeast than Leatherbacks, but less likely to be found in the Ocean SAMP area – not often seen in cool or nearshore waters. May be seen occasionally in summer or fall
Kemp's Ridley Sea Turtle (*Lepidochelys kempii*)	Endangered	~~Sighted off southern New England only a few times; s~~Small juveniles known to use habitats around Long

		Island and Cape Cod, and may pass through Ocean SAMP area but are not detected in surveys
Green Sea Turtle (*Chelonia mydas*)	Threatened	~~Only one recent sighting in southern New England; s~~Small juveniles known to use habitats around Long Island and Cape Cod, and may pass through Ocean SAMP area but are not detected in surveys

22. We propose the following addition to Section 850.6, Sea Turtles, paragraph 4, to clarify information on sea turtle presence and abundance based on comments received from NMFS. PLEASE NOTE THAT REVISIONS FOR THIS ITEM HAD ALSO BEEN PROPOSED IN THE SEPTEMBER 14th MEMO, AND THAT THE BELOW CHANGES SUPERCEDE THOSE PROPOSED IN THAT MEMO::

"4. Additionally, any of these turtle species may migrate through the Ocean SAMP area as part of their northward or southward migration in spring and fall, respectively (NOAA National Marine Fisheries 2009). While sightings of most of these species are infrequent, sea turtles, particularly juveniles, are not routinely detected during surveys, meaning they may be more common in the Ocean SAMP area than survey data would suggest. All of species of sea turtles noted in the table are likely to be present in the Ocean SAMP area from late spring/early summer through late fall."

23. We propose the following change to Section 850.6.1, Sea Turtles: Noise, paragraph 1, to clarify information on turtle hearing based on comments received from BOEMRE:

"1. Little is known about the hearing capabilities of sea turtles. Existing data estimate the hearing bandwidth of the four species of turtles found within the Ocean SAMP area at between 50 and 1,000 Hz, with a maximum sensitivity around 200 Hz. They are thought to have very high hearing thresholds, at around 130 dB re 1 μPa (MMS 2009a). It is believed that pile driving and vessel noises are within the range of hearing of turtles, although they may have a limited capacity to detect sound underwater. Observed reactions from sea turtles exposed to high intensity sounds include startle responses such as head retraction and swimming towards the surface, as well as avoidance behavior (MMS 2007a). For more detailed information on the effects of noise within the SAMP area, see the Effects of Noise on Marine Mammals, Section 850.51."

24. We propose the following change to Section 850.6.1, Sea Turtles: Noise, paragraph 2, to clarify noise effect on sea turtles in response to comments received from BOEMRE and from NMFS:

"2. The Cape Wind FEIS (MMS 2009a) predicts that no injury during the pile driving process is likely to occur to sea turtles, even if the turtle were as close as 30 m (98.4 feet) from the source. This prediction is based on noise estimates created assuming the use of monopiles, and based on the particular sound characteristics of the proposed location for the Cape Wind project; estimates for the Ocean SAMP area would differ. The noise generated by pile driving is likely to cause avoidance behavior in sea turtles, which may move to other areas. ~~However, only leatherback turtles are likely to be foraging in the area of the construction activity, as the other species seek out prey available at shallower depths, and their preferred prey items are located throughout the Ocean SAMP area.~~ Sea turtles migrating through the area may also be affected, as they may avoid the construction area. The Cape Wind FEIS predicted these effects ~~are expected~~ to be short-term and minor (MMS 2009a). The noise created during construction, and thus the effects of noise on sea turtles, may vary depending on the size of the piles and the characteristics of the particular site."

25. We propose the following change to Section 850.6.1, Sea Turtles: Noise, paragraph 4, to clarify references to the effects of noise on sea turtles based on comments received from BOEMRE:

"4. The Cape Wind EIS predicted that levels of noise generated by construction and maintenance vessels are expected to be below the levels that would cause any behavioral reaction in sea turtles except at very short distances. Likewise, the Cape Wind EIS predicted that sound generated by wind turbines during operation is not expected to affect the behavior or abundance of sea turtles in the area (MMS 2009a)."

26. We propose the following change to Section 850.6.2, Sea Turtles: Habitat Disturbance, paragraph 1, to clarify potential effects on sea turtles in response to comments received from BOEMRE:

"1. Cable-laying activities may cause sea turtles to temporarily change swimming direction, ~~but are not likely to have a significant~~ and may disturb sea turtles as they typically like to rest on the bottom. ~~effect.~~ The increased turbidity as a result of cable-laying and construction, however, may interfere with the ability of sea turtles to forage by obscuring or dispersing prey (MMS 2009a)."

27. We propose the following changes to references in Section 850.6.4, Sea Turtles: Reef Effects, paragraph 1, in response to comments from BOEMRE:

"1. The potential reef effects of the turbines, attracting finfish and benthic organisms to the structures, could affect sea turtles by changing prey distribution or abundance in the Ocean SAMP area. Sea turtles that eat benthic invertebrates, particularly loggerhead and Kemp's ridley turtles, which consume crustaceans and mollusks, may be attracted to the structures as an additional food source. Sea turtles may also be attracted to wind turbine structures for shelter; loggerheads in particular have been observed using oil rig platforms for this purpose (NRC 1996 in MMS 2009a). Loggerheads are the species most likely to be attracted to the wind turbines for both food and shelter, and they are frequently observed around wrecks and underwater structures (NRC 1996 in MMS 2009a). For more on reef effects, see Section 850.3.2, Reef Effects and Benthic Ecology."

28. We propose the following addition to Section 850.7, Fisheries Resources and Habitat, paragraph 1, in response to comments from BOEMRE:

"1. Offshore renewable energy development may have several potential effects on fisheries resources and habitat. Generally, the effects of offshore renewable energy projects on fisheries resources are difficult to interpret given the lack of scientific knowledge and consensus in several relevant subject areas. Given the information available, potential effects to fisheries resources and habitat are discussed below in general terms, but it is important to note that site-specific impacts of an offshore renewable energy project in the Ocean SAMP area will require separate, in-depth evaluation as part of the permitting process. It also must be noted that if threatened or endangered species are found in the project area, additional consultation with relevant federal agencies in accordance with the Endangered Species Act would be necessary to evaluate any potential impacts to these species (MMS 2007a). For areas where Essential Fish Habitat has been designated, the Magnuson-Stevens Fishery Conservation and Management Act requires federal agencies to consult with the National Marine Fisheries Service (MMS 2007a). See Chapter 5, Fisheries Resources and Uses for more information on endangered or threatened fish species and on Essential Fish Habitat. See also Chapter 10, Existing Statutes, Regulations and Policies for more information on the ESA as well as the Magnuson-Stevens Fishery Conservation and Management Act."

29. We propose the following clarification to Section 850.7.1, Fish: Underwater Sound, paragraph 4, based on comments from BOEMRE:

"4. As noted in Section 850.5.1, activities in the pre-construction phase generating underwater noise may include side-scan sonar and air guns ~~for~~ used in seismic surveying. Studies on fish exposed to air gun blasts have found damage to sensory cells in the ear. While air guns are not likely to be used in the construction or operation of wind farms, they may be used in pre-construction seismic surveys for determining geological hazards and soil conditions in siting a wind farm (MMS 2007a). Side-scan sonar is likely to have little impact on fish, as it is unlikely to cause hearing impairment or physical injury (MMS 2007a)."

30. We propose the following change to Section 850.7.1, Underwater Sound, paragraph 5, to clarify effects of pile driving on fish based on comments received from NMFS:

"5. The construction phase is most likely to produce levels of sound that could generate temporary and permanent hearing loss for fish near the source. Injuries of tissues or auditory organs can also occur at close range. Pile driving creates an impulsive sound when the driving hammer strikes the pile, resulting in a rapid release of energy (Hastings and Popper 2005). Peak sound levels produced by pile driving have been measured at anywhere from 228 dB re-1 μPa to 257 dB re-1 μPa, at frequency levels ranging from 20 to more than 20,000 Hz; peak sound levels will vary depending on pile size, material, and equipment used (see Table 8.17). Only a handful of studies have been conducted on fish in the vicinity of pile driving, and while some have found evidence of injury or mortality in the fish near the source of the sound, others have found no mortality or injury. One study of pile driving found fish of several different species were killed within at least 50 m [164 feet] of the pile driving activity; it also found an increase in the number of gulls in the area, indicating additional fish mortality (Caltrans 2001). Another study found that the noise levels produced by pile driving during wind tower construction and cable-laying could damage the hearing of species within 100m [328 feet] of the source (Nedwell et al. 2003)."

31. We propose the following changes to Section 850.7.1, Underwater Sound, paragraph 9, based on comments received from NMFS:

"9. The noise created during the construction and decommissioning processes may cause some fish species to leave the area. This could cause a disruption in feeding, breeding, or other essential activities, and may have significant impacts if fish are removed from a spawning area. Less mobile species are likely to be more susceptible (Gill and Kimber 2005). The effect on fish populations would be greater if they are dispersed during the times of year when they would be naturally congregating for spawning or other purposes (Gill and Kimber 2005). Thus, effects will be determined in part by the timing of the project, such as the time of year when the noise disturbance occurs and for how long it occurs. Some studies have found that fish displaced from an area by noise during construction processes are likely to return following construction activity (Hvidt et al. 2006 referenced in MMS 2007a). This may be dependent upon duration of the construction project; if construction occurs over a prolonged period, some fish species may not return. The length of time will in turn be dictated by a number of factors including the number of turbines, the availability of vessels, and access to the site as a result of weather conditions. The cumulative effects are likely to be more significant for a larger wind farm where more turbines would be constructed and the period of construction is longer. Miller et al. (2010) predicted that pile driving activity within the Ocean SAMP area could have observable behavioral effects on fish within 4000 m (2.5 miles) of the pile driving activity. As described in Section 850.5.1, this analysis was calculated for a 1.7 m [5.5 foot] diameter pile (similar to those used in lattice jacket structures) driven into the bottom with an impact hammer. If explosives were used in the decommissioning process, the noise produced could have a serious impact on any marine life within 500 m (0.3 miles) of the activity (Miller et al. 2010) (see Section 850.5 for more information)."

32. We propose the following change to Section 850.9, Cultural and Historic Resources, paragraph 3 based on comments received from BOEMRE:

"3. For offshore development proposals, an Area of Potential Effect (APE) is defined to include both offshore submerged areas and onshore land-based sites where physical disturbance would be required for construction, operation, maintenance, and decommissioning. The APE for submerged areas includes footprints of proposed structures to be secured on the ocean floor and related work area as well as all related bottom-disturbing activities, including, but not limited to, barges, anchorages, appurtenances, and ~~or~~ cable routes where ocean sediments and sub-bottom may be disturbed. (MMS 2010). For onshore sites, the APE would include any soil disturbance required for cables or connections to onshore electric transmission cable systems, or visual impacts specifically related to National Historic Landmarks, properties listed or eligible for listing on the National Register of Historic Places, or Traditional Cultural Properties (MMS 2010)."

33. We propose the following correction be made to Section 850.9, Cultural and Historic Resources, paragraph 4, based on comments from BOEMRE:

"4. The construction of offshore renewable energy facilities may result in direct disturbance of offshore submerged archaeological resources, including shipwreck sites and potential settlements that may have existed on what is now the ocean floor. The maps presented in Section ~~420.3~~ 420.4 illustrate a paleo-geographic landscape reconstruction that suggests much of the area that is now Block Island and Rhode Island Sound was dry land over 12,500 years Before Present (yBP), and that human settlement in these areas was possible. Any disturbance of the bottom could potentially affect any cultural resources present, including early settlement sites; the level of impact may depend on the number and importance of cultural resources in that location, and any seabed disturbance that has occurred previously in the location (MMS 2007a). The BOE requires if any unanticipated cultural resources are encountered during a project, all activities within the area must be stopped and the BOE be consulted (MMS 2007a)."

34. We propose the following clarifications be made to Section 850.2, Coastal Processes and Physical Oceanography, paragraph 7, based on comments received from NMFS:

"7. The placement of submarine cables will have limited and localized effects on ~~the sea bed and on~~ seafloor sediments. Jet plowing, the method most likely to be used in the Ocean SAMP area, will likely result in the resuspension of bottom sediments into the water column. Heavier particles will settle in the immediate area of the activity, but finer particles are likely to travel from the disturbed area. These effects will be relatively small and short-term, however. Modeling of sedimentation during the cable laying process for the Cape Wind project found that sediment would settle within a few hundred yards of the cable route (MMS 2009a). In some cases, where suspended sediment levels are already high in the vicinity because of storms, areas of mobile surface sediment, or fishing activities such as trawling, the additional increase in sediments from cable-laying will probably not be significant. Once it is buried, the cable will not likely have any significant effect on sediments ~~or the sea bed~~ (ABP Marine

Environmental Research Ltd 2002). If the cable becomes exposed, increased flow could occur above the cable, resulting in localized sediment scour (MMS 2009a)."

35. We propose the following change to Section 850.7.1, Underwater Sound, paragraph 9, based on comments received from NMFS:

"9. The noise created during the construction and decommissioning processes may cause some fish species to leave the area. This could cause a disruption in feeding, breeding, or other essential activities, and may have significant impacts if fish are removed from a spawning area. Less mobile species are likely to be more susceptible (Gill and Kimber 2005). The effect on fish populations would be greater if they are dispersed during the times of year when they would be naturally congregating for spawning or other purposes (Gill and Kimber 2005). Thus, effects will be determined in part by the timing of the project, such as the time of year when the noise disturbance occurs and for how long it occurs. Some studies have found that fish displaced from an area by noise during construction processes are likely to return following construction activity (Hvidt et al. 2006 referenced in MMS 2007a). This may be dependent upon duration of the construction project; if construction occurs over a prolonged period, some fish species may not return. The length of time will in turn be dictated by a number of factors including the number of turbines, the availability of vessels, and access to the site as a result of weather conditions. The cumulative effects are likely to be more significant for a larger wind farm where more turbines would be constructed and the period of construction is longer. Miller et al. (2010) predicted that pile driving activity within the Ocean SAMP area could have observable behavioral effects on fish within 4000 m (2.5 miles) of the pile driving activity. If explosives were used in the decommissioning process, the noise produced could have a serious impact on any marine life within 500 m (0.3 miles) of the activity (Miller et al. 2010) (see Section 850.5 for more information)."

36. We propose adding the following sources to the Works Cited:

Hvidt, C.B., et al., 2006, *Hydroacoustic Monitoring of Fish Communities at Offshore Wind Farms*, 2005 Annual Report, Horns Rev Offshore Wind Farm, Vattenfall A/S.

National Research Council. 1996. An assessment of techniques for removing offshore structures: committee on techniques for removing fixed offshore structures. Marine Board Commission on Engineering and Technical Systems. Washington, D.C.: National Academy Press.

NOAA National Marine Fisheries Service. 2010. Listing Threatened and Endangered Wildlife and Plants; 90-Day Finding on Petitions to List Porbeagle Shark under the Endangered Species Act. *Federal Register* 75: 39656, 12 July 2010

Northeast Fisheries Science Center. 2010. Media Advisory: "Record Number of North Atlantic Right Whales Sighted off Rhode Island", April 23, 2010. Available online from: http://www.nefsc.noaa.gov/press_release/2010/MediaAdv/MA1004/index.html

37. We propose the addition of the following to section 860.2.1, Regulatory Standards. The following standards are included in Chapter 4, Cultural and Historic Resources; we propose copying the same language into this chapter for consistency and completion:

New #13:

"13. The potential impacts of a proposed project on cultural and historic resources will be evaluated in accordance with the National Historic Preservation Act and Antiquities Act, and the Rhode Island Historical Preservation Act and Antiquities Act as applicable. Depending on the project and the lead federal agency, the projects that may impact marine historical or archaeological resources identified through the joint agency review process shall require a Marine Archaeology Assessment that documents actual or potential impacts the completed project will have on submerged cultural and historic resources."

New #14:

"14. Guidelines for Marine Archaeology Assessment in the Ocean SAMP Area can be obtained through the RIHPHC in their document, "Performance Standards and Guidelines for Archaeological Projects: Standards for Archaeological Survey" (RIHPHC 2007), or the lead federal agency responsible for reviewing the proposed development."

New #15:

"15. The potential non-physical impacts of a proposed project on cultural and historic resources shall be evaluated in accordance with 36 CFR 800.5, *Assessment of Adverse Effects, (v) Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features.* Depending on the project and the lead federal agency, the Ocean SAMP Interagency Working Group may require that a project undergo a Visual Impact Assessment that evaluates the visual impact a completed project will have on onshore cultural and historic resources."

New #16:

"16. A Visual Impact Assessment may require the development of detailed visual simulations illustrating the completed project's visual relationship to onshore properties that are designated National Historic Landmarks, listed on the National Register of Historic Places, or determined to be eligible for listing on the National Register of Historic Places. Assessment of impacts to specific views from selected properties of interest may be required by relevant state and federal agencies to properly evaluate the impacts and determination of adverse effect of the project on onshore cultural or historical resources."

New #17:

"17. A Visual Impact Assessment may require description and images illustrating the potential impacts of the proposed project."

New #18:

"18. Guidelines for Landscape and Visual Impact Assessment in the Ocean SAMP Area can be obtained through the lead federal agency responsible for reviewing the proposed development."

38. If the Council approves this change, this same language will need to be copied into Chapter 11, The Policies of the Ocean SAMP, section 1160.1, Regulatory Standards, as follows:

New #13:

"13. The potential impacts of a proposed project on cultural and historic resources will be evaluated in accordance with the National Historic Preservation Act and Antiquities Act, and the Rhode Island Historical Preservation Act and Antiquities Act as applicable. Depending on the project and the lead federal agency, the projects that may impact marine historical or archaeological resources identified through the joint agency review process shall require a Marine Archaeology Assessment that documents actual or potential impacts the completed project will have on submerged cultural and historic resources."

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"14. Guidelines for Marine Archaeology Assessment in the Ocean SAMP Area can be obtained through the RIHPHC in their document, "Performance Standards and Guidelines for Archaeological Projects: Standards for Archaeological Survey" (RIHPHC 2007), or the lead federal agency responsible for reviewing the proposed development."

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"15. The potential non-physical impacts of a proposed project on cultural and historic resources shall be evaluated in accordance with 36 CFR 800.5, *Assessment of Adverse Effects, (v) Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features.* Depending on the project and the lead federal agency, the Ocean SAMP Interagency Working Group may require that a project undergo a Visual Impact Assessment that evaluates the visual impact a completed project will have on onshore cultural and historic resources."

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New #17:
"17. A Visual Impact Assessment may require description and images illustrating the potential impacts of the proposed project."

New #18:
"18. Guidelines for Landscape and Visual Impact Assessment in the Ocean SAMP Area can be obtained through the lead federal agency responsible for reviewing the proposed development."

39. Page numbers and Table and Figure numbers have been changed to reflect recent revisions.

Chapter 9, Other Future Uses:

1. **We propose the following change to Table 9.1 in the Introduction to address comments received from the RIDEM Office of Water Resources:**

Table 1. Possible Benefits and Management Issues that Need to Be Considered for Possible Future Uses of the SAMP Region As Reviewed in this Chapter

Future Uses	**Potential Benefits**	**Management Considerations**
Use for Mining	Local sources for aggregates, decreased mining and transportation costs	Economic viability vs. future alternatives questionable; Environmental conflicts due to habitat destruction
Use for LNG	Favorable economics; Well developed infrastructure in place; Offshore development viewed as safer	Environmental, safety & regulatory concerns; Increased ship traffic; increased underwater sound affecting marine mammals and fisheries; Conflicts with increased recreational uses; Increased security risks; Increased ecological risks from the spread of invasive species
Short Sea Shipping	Favorable economics & more efficient than land-based; Avoids land-based gridlock; New investments for R.I. ports	Increased sea vessel traffic; Increased underwater sound affecting marine mammals and fisheries; Conflicts with increased recreational uses; Increased security risks; Increased ecological risks from the spread of invasive species
Marine Reserves for Conservation	Ecosystem restoration; Enhanced biodiversity; Enhanced recreational opportunities; Increased education/research values	Space removed from extractive uses; Conflicts with fisheries interests
Marine Reserves for Fisheries Enhancement	Fisheries restoration & localized biodiversity increases; Enhanced recreational & education/research values	Space removed from extractive uses; Conflicts with fisheries interests
Placement of Artificial Reefs for Fisheries Enhancement	Localized biodiversity increases; Can create upwellings and possible fisheries enhancement; Increased education/research values	Controversy over values to fisheries; Replacement costs high; New permitting & regulatory issues; Use conflicts
Shellfish Biofouling Control	Removes drag on offshore structures/towers; New sources of local seafood production; New marine economic development	Safety concerns due to the use of divers; Seafood safety & regulatory issues; Additional vessels present use conflicts
Submerged Shellfish Aquaculture	Local seafood production; Ecosystem benefits from improved habitats and	Conflicts with industrial use of alternative energy structures; New lease and regulatory issues arise in

	water quality; Most economically viable form of aquaculture in R.I.; Replaces Canadian imports; New marine economic development	offshore areas; Regulatory changes needed due to scale of developments; Increased use conflicts, esp. vessel traffic
Submerged Finfish Aquaculture	Local seafood production; New marine economic development	Future competition with restored marine fisheries products; Regulatory changes needed; No finfish aquaculture infrastructure in R.I. or Southern New England; Concerns regarding environmental impacts; Use conflicts
Submerged Algae Aquaculture	Local seafood production; New developments of biotechnologies and bioactive compounds production; New marine economic development	Existing technologies untested; Ocean environment may be unsuitable; Economics unfavorable; New regulatory regime needs to be put into place
Enhanced Ecotourism	Recreation economy enhanced	Increased vessel traffic; Conflicts with commercial uses
Burials and Cemeteries	Land saved; New economic/tourism development	Displacement of benthic habitats; Space removed from extractive uses; New regulations & changes to existing regulations needed; Use conflicts
Desalinization	Buffer droughts; Conserve surface waters	Currently only economically feasible in desert areas; Discharges could impact marine ecosystems
Research and Education Center	Builds the innovation & knowledge-based economy; Attracts international/national cooperation & funding	Space removed from commercial uses; Sustainability of funding questionable; New institutional cooperation, coordination, logistics needed

2. In response to comments from NMFS, revised section 910, Use for Mining, items #1 and 4, and the chapter's Literature Cited; see as follows:

"1. Demands for sand and gravels for beach nourishment and construction (concrete) are increasing, especially from marine resources on the continental shelf as traditional, land-based sources of these materials have been reduced. This shift to the use of offshore resources will expand, especially in marine areas having large concentrations of glacial deposits (~~NOAA, 2009~~Johnson et al., 2008)."

"4. Potential impacts from offshore mineral mining include removal of substrates that serve as essential habitats for fish and invertebrates, creation of less productive marine benthic sites due to anoxia, release of harmful or toxic materials associated directly or indirectly with the mining process, burial of productive habitats during beach nourishment or other shoreline stabilization activities, and creation of harmful suspended sediment levels upon mineral extraction that can potentially have secondary and indirect adverse effects on fishery habitats at the mining sites and surrounding areas ~~(NOAA, 2009~~Johnson et al., 2008).”

Revision to Literature Cited:

~~NOAA (National Oceanographic Atmospheric Administration). 2009. NOAA Technical Memorandum NMFS: Impacts to Marine Fisheries from Nonfishing Activities in the Northeastern United States. 163-164 p. http://www.nefsc.noaa.gov/publications/tm/tm209/ch6.pdf~~

Johnson, M.R., Boelke, C., Chiarella, L.A., Colosi, P.D., Greene, K., Lellis-Dibble, K., Ludemann, H., Ludwig, M., McDermott, S., Ortiz, J., Rusanowsky, D., Scott, M., Smith, J. 2008. *Impacts to Marine Fisheries Habitat from Nonfishing Activities in the Northeastern United States*. NOAA Technical Memorandum NMFS-NE-209.

3. In response to comments received from NMFS, revised section 940, #1, as follows:

“1. The SAMP region could, as a whole, or in part, contain designated areas for single use, multiple uses, or the entire area could be designated as a closed, no use area, or any number of mixtures of these options. **Figure 3** shows the wide range of options available reviewed here. The SAMP region could as a whole, or in part, be allocated into a range of completely no take areas (~~Marine Protected Areas or MPAs~~marine reserves), an area of completely open access, or a mixture of these two with and without placement of additional structures (artificial reefs) which could have benefits for both marine conservation and marine fisheries. Reserves have also been used in combination with artificial reefs in a designed approach to enhance both marine ecosystems and fisheries.**”**

4. In response to comments received from BOEMRE, revised section 960.2, #1, as follows:

“1. Rhode Island has large seafood markets, both for local sales and for export ~~locally and for exports fresh fish~~. The largest distributor of frozen fish on the U.S. East Coast that supplies a national and global market is Seafreeze (Seafreeze, Ltd. 2009). Frozen fish are imported and exported from the Port of Davisville where Seafreeze is located. Seafreeze also supplies bait to both domestic and international longline fishing fleets.”

Chapter 11, The Policies of the Ocean SAMP:

1. **We propose the following change to Section 1100, item #2, in response to comments from BOEMRE:**

"2.The Ocean Special Area Management Plan (Ocean SAMP) is the regulatory, planning and adaptive management tool that CRMC is applying to uphold these regulatory responsibilities in the Ocean SAMP area. Using the best available science and working with well-informed and committed resource users, researchers, environmental and civic organizations, and local, state and federal government agencies, the Ocean SAMP provides a comprehensive understanding of this complex and rich ecosystem. The Ocean SAMP also documents how the people of this region have used and depended upon these offshore resources for subsistence, work and play ~~for thousands of years~~, and how the natural wildlife such as fish, birds, marine mammals and sea turtles, feed, spawn, reproduce, and migrate throughout this region thriving on the rich habitats, microscopic organisms, and other natural resources. To fulfill the Council's mandate the Ocean SAMP lays out enforceable policies and recommendations to guide CRMC in promoting a balanced and comprehensive ecosystem-based management approach to the development and protection of Rhode Island's ocean-based resources."

2. **We propose the following changes to Section 1150.3, Cultural and Historic Resources. The following policies are included in Chapter 4, Cultural and Historic Resources; we propose copying the same language into this chapter for consistency and completion:**

New # 4:
"4. Project reviews will follow the policies outlined in "Section 220: Areas of Historic and Archaeological Significance" and in "Section 330: Guidelines for the Protection and Enhancement of the Scenic Value of the Coastal Region" of the State of Rhode Island Coastal Resources Management Program, As Amended ("Red Book"). The standards for the identification of cultural resources and the assessment of potential effects on cultural resources will be in accordance with the National Historic Preservation Act Section 106 regulations, 36 CFR Part 800, *Protection of Historic Properties*. "

New #5:
*"*Historic shipwrecks, archeological or historical sites located within Rhode Island's coastal zone are Areas of Particular Concern (APCs) for the Rhode Island coastal management program. Direct and indirect impacts to these resources must be avoided to the greatest extent possible. Other areas, not noted as APCs, may also have significant archeological sites that could be identified through the permit process. For example, the area at the south end of Block Island waters within the 30 foot depth contour is known to have significant archeological resources. As a result, projects conducted in the Ocean SAMP area may have impacts to Rhode Island's underwater archaeological and historic resources."

New #6:

“Archaeological surveys shall be required as part of the permitting process for projects which may pose a threat to Rhode Island’s archaeological and historic resources. During the filing phase for state assent, projects needing archaeological surveys will be identified through the joint review process The survey requirements will be coordinated with the SHPO and, if tribal resources are involved, with the Narragansett THPO.”

New #7:

“APCs may require a buffer or setback distance to ensure that development projects avoid or minimize impacts to known or potential historic or archaeological sites. The buffer or setback distance during the permitting process will be determined by the SHPO and if tribal resources are involved, the Narragansett THPO.”

New #8:

“Based upon recommendations from RIHPHC, the Council reserves the right to establish protected areas around shipwrecks or other submerged cultural resources for which an official Determination of Eligibility for listing on the National Register of Historic Places has been made.”

New #9:

“9. Projects conducted in the Ocean SAMP area may have impacts that could potentially affect onshore archaeological, historic, or cultural resources. Archaeological and historical surveys may be required of projects which are reviewed by the joint agency review process. During the filing phase for state assent, projects needing such surveys will be identified and the survey requirement will be coordinated with the SHPO and if tribal resources are involved, with the Narragansett THPO.”

New #10:

“10. Guidelines for onshore archaeological assessments in the Ocean SAMP Area can be obtained through the RIHPHC in their document, “Performance Standards and Guidelines for Archaeological Projects: Standards for Archaeological Survey” (RIHPHC 2007), or the lead federal agency responsible for reviewing the proposed development.”

Thank you for your consideration.

Sincerely,

Grover J Fugate

Grover Fugate