New England Fishery Management Council
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John F. Quinn, J.D., Ph.D., *Chairman* | Thomas A. Nies, *Executive Director*

August 15, 2017

Ms. Kelly Hammerle
National Program Manager, BOEM
45600 Woodland Road, Mailstop VAM-LD
Sterling, VA 20166

Dear Ms. Hammerle:

Please accept these comments from the New England Fishery Management Council (Council) regarding the preparation of a new five-year National Outer Continental Shelf Oil and Gas Leasing Program for 2019-2024.

On June 29, in the context of the near-term potential for seismic exploration in the Mid- and South Atlantic regions, we sent a letter[1] to Secretary Zinke expressing our concerns regarding the potential ecological impacts of such surveys, and urging further study of potential impacts before such surveys are allowed. As we mentioned in our letter, commercial and recreational fisheries are important economic drivers in the North, Mid-, and South Atlantic, and the three Atlantic coast regions are highly interconnected in terms of commercial fisheries and fisheries management structures. The Council has management jurisdiction over 28 marine fishery species[2], and we are very concerned that oil and gas exploration and extraction activities may harm these resources and the communities that depend on them. Many of these species and their associated fisheries extend beyond New England, often into the Mid-Atlantic, and in some cases, into the South Atlantic. New England Council-managed fisheries overlap the North and Mid-Atlantic Planning Areas.

While we recognize the importance of domestic energy development and energy security to the U.S. economy, we urge caution as the agency considers whether to include planning areas in the Atlantic OCS in the 2019-2024 five-year plan. The commercial and recreational fishing industries provide significant benefits to the nation, including contributions to our nation's food security. As the world's population continues to increase, this will grow in importance. If we are to realize the benefits of these activities into the future, energy development must minimize risks to marine species and existing human uses.

Our concerns regarding oil and gas development fall into five categories. First, we are concerned about direct displacement of fishing activities due to survey or extraction activities occurring in offshore environments. Second, there are sensitive, deep-water benthic habitats in the Atlantic OCS that overlap strongly with hydrocarbon assessment units. These habitats, which are essential to many deep-sea species as well as some commercially-exploited stocks could be

[1] See attachment
[2] Atlantic cod, haddock, pollock, white hake, Acadian redfish, Atlantic wolffish, ocean pout, Atlantic halibut, winter flounder, American plaice, witch flounder, windowpane flounder, yellowtail flounder, monkfish, winter skate, little skate, smooth skate, thorny skate, barndoor skate, rosette skate, clearnose skate, silver hake, red hake, offshore hake, Atlantic herring, Atlantic sea scallop, Atlantic salmon, Atlantic deep-sea red crab

negatively impacted by extraction activities. Third, as mentioned in our prior letter, we are concerned that sounds produced by oil and gas surveys and drilling operations will have negative impacts on living marine resources, and that changes in distribution or abundance of these resources will in turn affect fishing operations. Fourth, infrastructure development to support an Atlantic oil and gas industry could have negative impacts on nearshore fish habitats which must be fully considered. Finally, there is a risk of leaks and spills associated with oil and gas extraction and transport. Such spills would have negative impacts on marine ecosystems, and cascading effects on human activities.

Survey and extraction activities could directly displace fishing vessels. We have reviewed the Inventory of Technically and Economically Recoverable Hydrocarbon Resources of the Atlantic Outer Continental Shelf as of January 1, 2014 (BOEM 2016). Some of the North and Mid-Atlantic Assessment Units (AU) have a strong spatial overlap with important fishing grounds, and others lie just offshore of these grounds (Figure 1). The Triassic-Jurassic Rift Basin AU and Cretaceous & Jurassic Hydrothermal Dolomite AU encompass much of the U.S. portion of Georges Bank. Georges Bank is a shallow submarine plateau that interacts with regional ocean currents to generate strong areas of upwelling, which leads to the high primary production that supports the food chain of the bank, and in turn, commercial fisheries. Eastern Georges Bank is an important fishing area for groundfish, scallops, and lobster. The Atlantic Sea Scallop fishery has revenues of nearly half a billion dollars per year, and eastern Georges Bank is a core fishing ground for this fleet. Some fishing operations might not be economically viable if forced to move to less productive or more distant fishing grounds.

Along the continental shelf break, the Jurassic Shelf Stratigraphic AU and Late Jurassic-Early Cretaceous Carbonate Margin AU overlap fishing grounds for whiting, squid, red crab, lobster, Jonah crab, monkfish, butterfish, and tilefish. We manage some of these fisheries, and others are managed by our partners, the Mid-Atlantic Fishery Management Council and the Atlantic States Marine Fisheries Commission. Highly migratory fishes and marine mammals are also abundant along the shelf break. Surveys or drilling activities in these AUs could directly displace fishing activities. If the five-year plan authorizes leasing in any portions of the Atlantic OCS, it is imperative that BOEM become familiar with the seasonal movements of marine resources and their target fisheries in our region, so that survey and construction activities can be conducted in ways that minimize interactions. We have found through our own work that it is critical to review fisheries data for multi-year periods, as management changes and natural inter-annual fluctuations in stock conditions lead to different levels of activity between years.

We are also concerned about the effects of extraction activities on fish habitats. The above-mentioned AUs along the shelf break, in addition to the Cretaceous and Jurassic Interior Shelf Structure AU and the Cenozoic-Cretaceous & Jurassic Paleo-Slope Siliclastic Core AU, overlap deep-sea coral habitat that occur in both the canyons and on the open slope. Deep-sea corals are fragile and very slow growing, such that recovery from anthropogenic impacts, whether due to fishing, oil and gas exploration, or another activity, will likely be extremely slow. These corals, in combination with other benthic animals such as sponges, provide habitats for fishes and marine invertebrates, with some very specific interactions between species. In addition to these deep sea habitats, the shallower AUs on the bank overlap the northern edge, which is an area of concern for juvenile Atlantic cod (shaded blue in Figure 2).

While we still have much to learn about deep-sea coral ecology, recent (2013-present) NOAA studies have thoroughly documented coral occurrence within all surveyed canyons, many intercanyon slope areas, and at a range of depths, from the edge of the EEZ near Heezen Canyon south to Norfolk Canyon. Corals also occur on the New England seamounts, of which Bear and

Physalia Seamounts overlap the deepest hydrocarbon assessment units (Cenozoic-Cretaceous & Jurassic Paleo Slope Siliclastic AU and Cenozoic-Cretaceous & Jurassic Paleo Slope Siliclastic Extension AU).

All three Atlantic coast regional fishery management councils have designated areas to highlight important coral habitats and restrict fishing from these areas to protect them from damage. The Council is in the process of finalizing a plan to restrict certain types of bottom-contact fishing from the shelf break out to the EEZ boundary (NEFMC 2017, some of these areas are shown in red on Figure 2). In addition, through our Omnibus Essential Fish Habitat Amendment (NEFMC 2015, currently under NMFS review), we have designated Habitat Areas of Particular Concern in 11 canyons and canyon complexes from Heezen to Norfolk (blue shaded areas in Figure 2). Although there are no fishing restrictions associated with the Habitat Areas of Particular Concern, the designations highlight the ecological importance of these canyons, and serve as a starting point for further consideration of fishery management measures, and as a focus for the evaluation of non-fishing activities. In light of the sensitive habitat types present in the canyons along the Atlantic continental margin, we agree that the previous administration's withdrawal of the major canyons from oil and gas exploration and development was an appropriate, precautionary choice, and we would hope to see these withdrawals reinstated, if leasing is permitted in the North and Mid-Atlantic Planning Areas under the 2019-2024 plan.

We are concerned that sounds produced by oil and gas surveys and drilling operations will have negative impacts on living marine resources. Human-generated, low-frequency noise in the marine environment has doubled every decade for the period 1950 to 2000 (Hildebrand 2009), a substantial change has occurred within the lifetimes of some longer-lived species. Oil and gas extraction activities generate various types of sounds, including explosions, vessel noise, survey air gun blasts, and pile driving during construction of nearshore and offshore facilities (Hawkins et al. 2015). As BOEM is aware, the science on the effects of these sounds on living marine resources is not conclusive, and there are many gaps in our collective knowledge (Hawkins et al. 2015, which builds on a 2012 BOEM workshop summarized by Normandeau 2012). However, scientific uncertainty in the magnitude of and biological mechanisms behind these impacts should not be used as a rationale for downplaying this issue in either impacts assessment or decision making.

Impacts of sound on marine fishes are difficult to assess, in part due to the logistics of conducting such studies, but also because effects vary according to both the species and the characteristics of the sound, which may in turn vary according to environmental characteristics such as temperature (Popper and Hastings 2009). Further limiting our ability to generalize about effects across different fishes and types of noise, in some studies (e.g. Popper et al. 2007, Wysocki et al. 2007), different cohorts of the same species exhibit varying responses to sound exposure, perhaps due to developmental history or genetic differences (Popper and Hastings 2009). These challenges in assessment extend to marine mammals and invertebrates as well. Because it is difficult to extrapolate the results of existing studies to species and sound types not specifically examined (Popper and Hastings 2009, Hawkins et al. 2015), BOEM should be very precautionary when authorizing sound generating activities, and should encourage additional research that is regionally-specific.

It is easy to appreciate the logistical difficulties of tracking the long-term effects of sound exposure on specific populations of animals in the field, but such challenges should not preclude a rigorous attempt to estimate long-term and cumulative effects. The research we have reviewed has generally focused on assessing individuals or populations shortly before, during, and after exposure to sounds from air guns or pile driving, and we understand that these types of studies

are most typical. Ideally, it would be possible to expand upon the results of such studies to determine the population-level effects of exposure on fisheries stocks, protected and endangered species, and ecosystem component species. Although such assessments may not be possible in the short term, we encourage BOEM to consider the potential cumulative and long-term effects of sound exposure at population levels when drafting the five-year plan, even if such an assessment is largely qualitative.

Even if population-level effects of sound cannot be estimated, either for fishery resources or for other species they depend on for food, localized movement of fish within the water column or out of the immediate area may still affect commercial fleets targeting those resources. A variety of studies have documented localized movement of fisheries stocks following sound exposure (e.g. Fewtrell and McCauley 2012, Paxton et al. 2017). Localized declines in abundance or availability of fish could negatively affect fishing fleets in the absence of a population-level or long-term effect on the resource.

Our concerns about negative effects on fish habitats are not limited to offshore areas. While the harvest of federally-managed fishes and invertebrates generally occurs outside the coastal zone, many of the species we manage begin their lives in nearshore habitats. Although the hydrocarbon assessment units occur offshore, oil and gas resources extracted from the seabed will need to come onshore for refining and distribution. If new onshore or nearshore infrastructure is needed to support oil and gas development of the Atlantic OCS, construction activities could impact nearshore habitats. NMFS Office of Habitat Conservation has substantial expertise in mitigating these types of impacts. The new five-year plan should explore the extent to which infrastructure development might be necessary for Atlantic oil and gas development, and consider the cumulative effects of such construction on managed species and their habitats. We encourage BOEM to work closely with NMFS to evaluate and mitigate, when necessary, impacts of development on both nearshore and offshore marine habitats.

Finally, an attendant risk with hydrocarbon development, unlike with renewable energy development, is the possibility of a spill or blowout. The extensive body of scientific literature resulting from the work done after the 2010 Deepwater Horizon spill documents a broad range of impacts on the species and associated human communities of the Gulf of Mexico (see Murawski et al. 2016 for summary). While we acknowledge such events are rare, they are possible, and should be evaluated in the new five-year plan as a potential impact of oil and gas development. Weather conditions in the northwestern Atlantic can be extreme in terms of both wind speeds and waves. Such conditions would increase the risk of spills during oil transport and drilling as compared to some other regions of the United States.

Given the above concerns, we believe that hydrocarbon development in the Atlantic OCS inappropriately risks living marine resources and associated human communities, and we recommend that BOEM exclude the Atlantic planning areas from the 2019-2024 plan. We think that renewable energy development is a better focus area for the Atlantic coast at this time. While wind and other renewable projects may still have impacts on fisheries, the risks appear to be fewer. The Gulf of Maine is one of the fastest warming bodies of water on the planet, and we are already seeing evidence of changes in the Northeast Shelf Ecosystem[3]. Actions to prioritize renewable energy and decrease reliance on non-renewable resources will reduce the risk of negative ecological impacts on our ocean resources, and thereby support the human communities that depend on them.

[3] See https://www.nefsc.noaa.gov/ecosys/current-conditions/ for a detailed condition report for the Northeast Shelf Ecosystem.

We look forward to working with the Department of the Interior and its Bureau of Ocean Energy management to ensure responsible development of domestic energy resources on the Atlantic OCS.

Sincerely,

Dr. John Quinn
Chairman

cc: Robert Beal, ASMFC
Dr. Chris Moore, MAFMC
Lou Chiarella, GARFO Habitat Conservation

Attachment – June 29, 2017 Letter from NEFMC to Ryan Zinke

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Figure 1 – Fishery revenues, Planning Areas and Assessment Units, and Past and Current Withdraw Areas

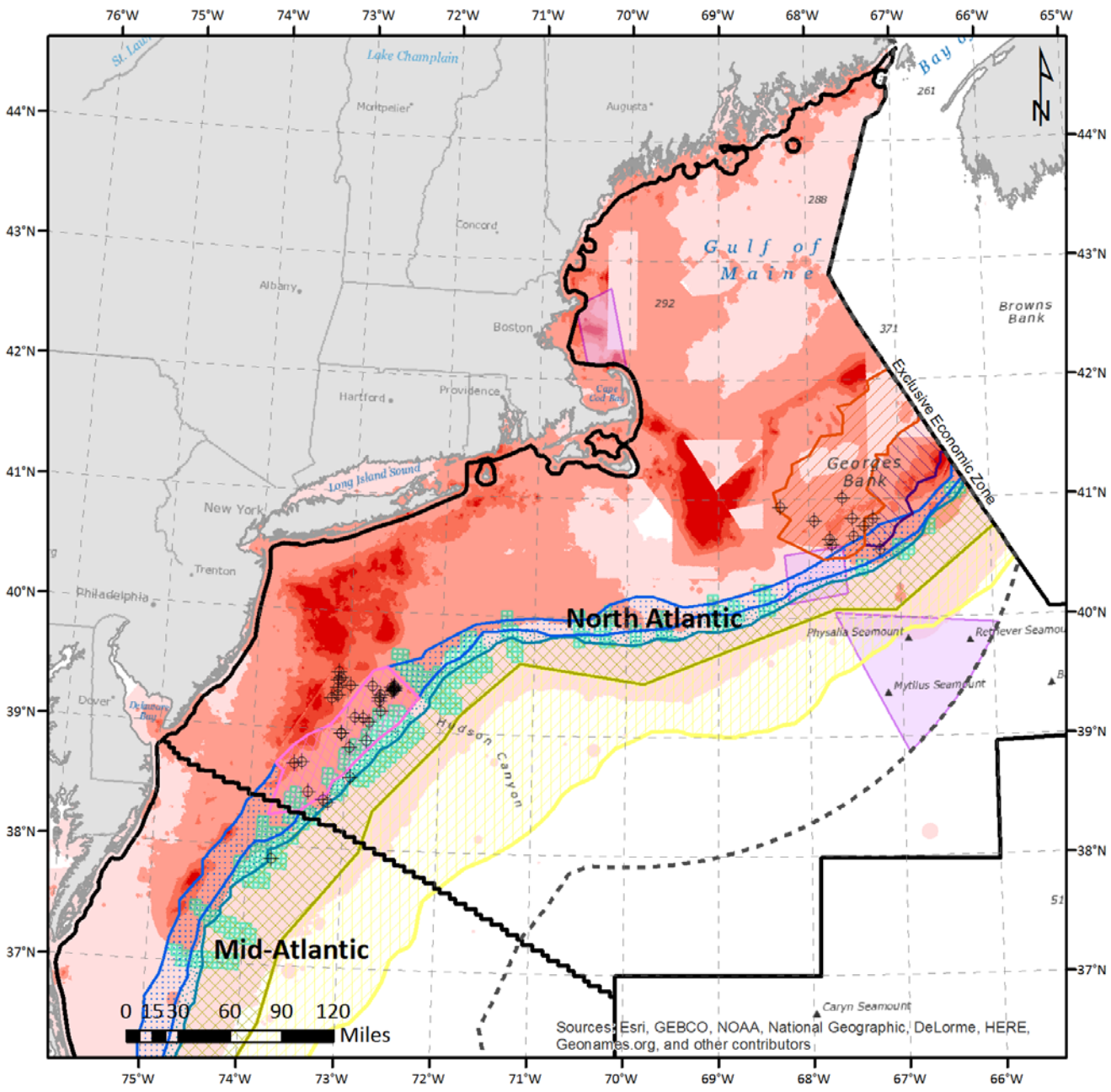
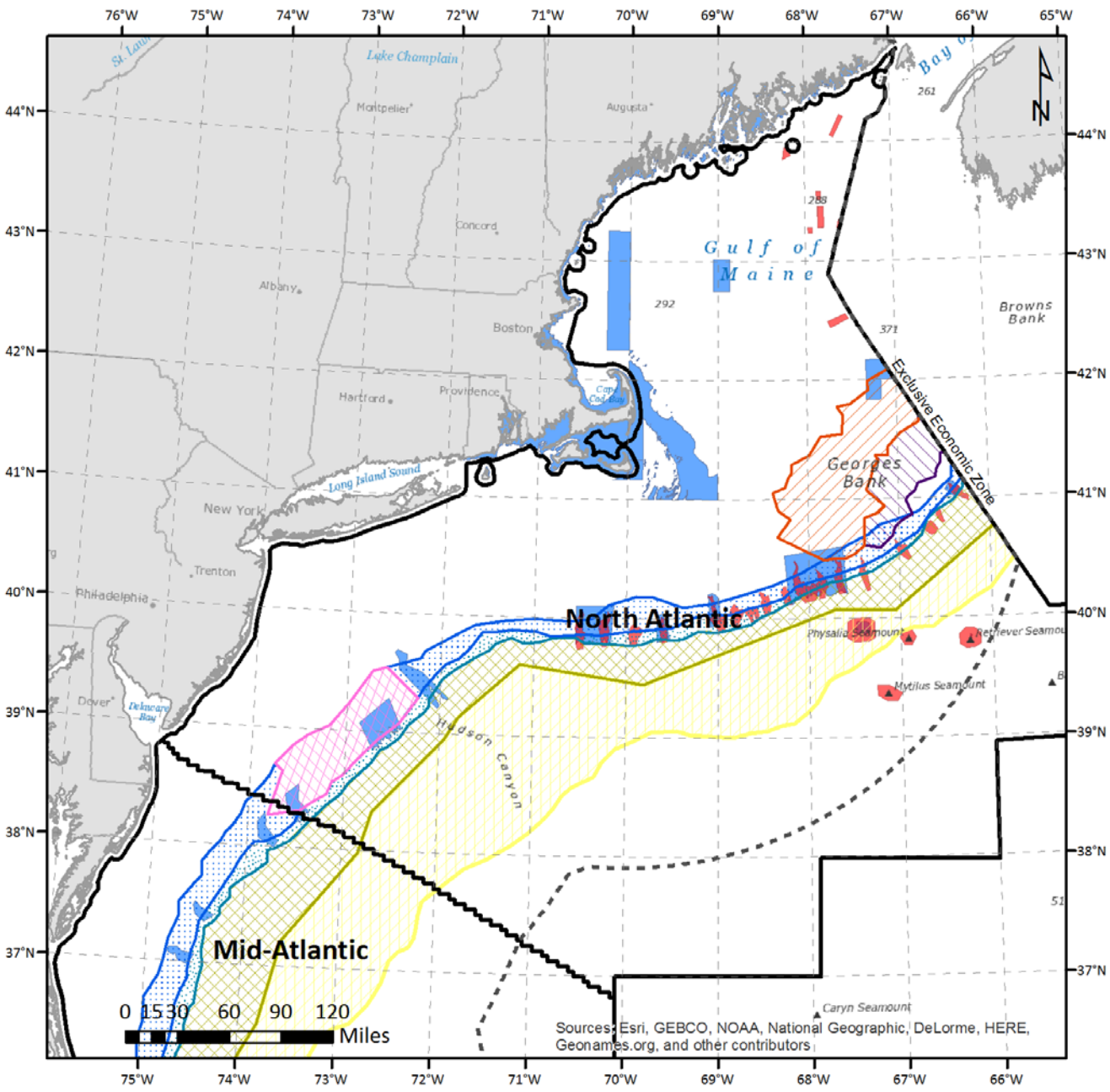


Figure 2 – Habitat Areas of Particular Concern, Discrete Deep-Sea Coral Zones, Assessment Units, and Planning Areas



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June 29, 2017

The Honorable Ryan Zinke
Secretary
Department of the Interior
1849 C Street, N.W.
Washington, DC 20240

Dear Secretary Zinke:

Please accept these comments from the New England Fishery Management Council (Council) regarding the potential environmental effects of offshore oil development on the Atlantic Outer Continental Shelf.

The Council has management jurisdiction over 28 marine fishery species that are harvested in federal waters of the New England region. The distributions of many of these species and their associated fisheries extend beyond New England, often to Cape Hatteras, NC, and in some cases, into the South Atlantic.

The New England and Mid-Atlantic regions are highly interconnected in terms of fisheries operations and management. For example sea scallops are harvested from Maine to North Carolina and are landed in ports up and down the east coast. Squid are managed by the Mid-Atlantic Fishery Management Council but are harvested in New England as well, and are a key species for Rhode Island ports. The marine fisheries of both regions are economically and socially important to commercial and recreational fishermen and the coastal communities they support.

The National Marine Fisheries Service (NMFS) summarizes the economic impact of both commercial and recreational fisheries on an annual basis, by region.[1] In 2015, landings revenue from commercial fishing totaled $1.2 billion in New England and $512 million in the Mid-Atlantic. The impact on regional economies is of course much larger, through sales of harvested products, personal and proprietor income associated with fishing businesses, and value-added (contribution to regional gross domestic product). NMFS estimates that, excluding the import sector, the New England fisheries economy supports 97,558 jobs, with over $4.8 billion in sales, $1.7 billion in income, and $2.4 billion in value-added. Excluding imports, Mid-Atlantic commercial fisheries support nearly 27,000 jobs, $1.6 billion in sales, $601 million in income, and

[1] National Marine Fisheries Service. 2017. Fisheries Economics of the United States, 2015. U.S. DOC, NOAA Tech. Memo. NMFS-F/SPO-170, 247p. http://www.st.nmfs.noaa.gov/Assets/economics/publications/FEUS/FEUS-2015/Report-Chapters/FEUS%202015-AllChapters_Final.pdf

$821 million in value-added. While many other sectors contribute to the economy in both regions, some port communities are particularly dependent on fisheries.[2]

Recreational fisheries are also economically significant during 2015. In New England, the recreational fisheries sector supported over 17,000 jobs, and resulted in sales, income and value-added estimates of $1.8 billion, $801 million, and $1.9 billion, respectively. Recreational fisheries in the Mid-Atlantic are worth nearly twice those in New England, supporting over 37,000 jobs, sales over $4 billion, income of $1.7 billion, and value-added of nearly $2.7 billion. The number of recreational trips taken during 2015 was estimated at 17 million; 5 million in New England and 12 million in the Mid-Atlantic.

The New England Council is a steward of many of the species that support these fisheries, and is very concerned that oil and gas exploration and extraction activities may harm these resources and the communities that depend on them. In the near term, we are very concerned that noise generated by seismic surveys will negatively impact not only fishery resources but other animals that are part of the marine ecosystem, including large whales. Aquatic animals used sound to "select mates, find food, maintain group structure and relationships, avoid predators, navigate, and perform other critical life functions"[3]. Paxton et al. (2017)[4] estimated fish abundance at a rocky, shallow reef off the North Carolina coast, prior to and during a seismic survey. Received noise intensities at the reef, which was 7.9 km from the closest approach of the seismic survey vessel, were estimated to be in the range of 181-220 dB re 1µ Pa, above the 207 dB re 1µ Pa threshold estimated to cause recoverable and potentially lethal injuries[5]. In contrast to the three days prior to the seismic survey, heavy evening usage of the reef during the survey was significantly reduced. At the bottom of the marine food chain, there is new evidence that zooplankton, including krill, an important prey species, can suffer significant mortality associated with airgun use. McCauley et al. (2017) [6] observed reduced abundance of zooplankton 1.0-1.2 km from an experimental seismic transect. Extrapolating from these findings, the authors suggested that "significant depletion or modification of plankton community structure" could result from commercial seismic operations, given the much broader spatial and temporal scale of such surveys.

While we recognize the importance of domestic energy development and energy security to the U.S. economy, such development must be done in a way that minimizes risks to marine species. At present, there is insufficient information about how ocean noise may affect fish, marine mammals, benthic communities, and ecosystem structure and function. There are just a few in situ field studies of fish or zooplankton responses to these types of noise from which to estimate the potential ecosystem effects of seismic surveys. Given the existing value of living marine resources and fisheries along the coast, it is critical to fund additional research into the environmental

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[2] NMFS Social Indicators website: http://www.st.nmfs.noaa.gov/humandimensions/social-indicators/

[3] Gedamke, J., et al. 2016. National Oceanic and Atmospheric Administration's Ocean Noise Strategy Roadmap. http://cetsound.noaa.gov/road-map

[4] Paxton, A.B., et al. 2017. Seismic survey noise disrupted fish use of a temperate reef. Marine Policy 78: 68-73.

[5] Popper, A.N., et al. 2014. Sound exposure guidelines for fishes and sea turtles: A technical report prepared by ANSI-accredited Standards Committee S3/SC1 and registered with ANSI. Springer Briefs in Oceanography, ASA Press and Springer. 60pp/

[6] McCauley, R.D., et al. 2017. Widely used marine seismic survey air gun operations negatively impact zooplankton. Nature Ecology & Evolution 1, 0195. 8pp.

consequences of these activities, before they are permitted. We look forward to working with the Department of the Interior and its Bureau of Ocean Energy management to ensure responsible development of domestic energy resources in the Atlantic.

Sincerely,

Dr. John Quinn
Council Chairman

cc: Wilbur Ross, Secretary, Department of Commerce
Chris Oliver, Assistant Administrator for NOAA Fisheries
Donna Wieting, Director, NOAA Office of Protected Resources
Patricia Montanio, Director, NOAA Office of Habitat Conservation
Walter Cruikshank, Acting Director of BOEM
Timothy Williams, Office of External and Intergovernmental Affairs, Department of Interior