UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
GREATER ATLANTIC REGIONAL FISHERIES OFFICE
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June 7, 2018

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RE: Docket BOEM-2018-0004
Commercial Leasing for Wind Power on the Outer Continental Shelf in the New York Bight – Call for Information and Nominations

Dear Mr. Feinberg:

We have reviewed the April 11, 2018, *Federal Register* (FR) Notice, inviting the submission of information and nominations for commercial wind leases on the Outer Continental Shelf (OCS) in the New York Bight that would allow a lessee to propose the construction of a wind energy project and develop one or more projects, if approved, after further environmental review. While this is not a leasing announcement, the areas described in the FR Notice may lead to the identification of wind energy areas to be available for future leasing. The Call for Information and Nomination Areas (Call Areas) described in the FR Notice are delineated into four areas titled Fairways North (250 square nautical miles (nmi^2)), Fairways South (126.4 nmi^2), Hudson North (696.9 nmi^2) and Hudson South (974 nmi^2). These areas include 222 whole OCS blocks and 172 partial blocks in total, and comprise approximately 2,047 nmi^2 or approximately 1.7 million acres (702,192 hectares). The development of approximately 14% of the proposed Call Areas would be needed to meet New York's goal of procuring 2.4 gigawatts (GW) of offshore wind energy by 2030. The development of approximately 18% of the Call Areas would be needed to meet New York State's recommendation that BOEM designate four 800 megawatt (MW) lease areas.

The announcement requests comments and information from interested and affected parties about the site conditions, resources, and multiple uses in close proximity to, or within, the Call Areas. In the FR Notice, you specifically request information on resources within our jurisdiction, including information on commercial and recreational fishing, fisheries resources and sensitive habitats, marine protected species and biologically important areas.

As the agency responsible for the stewardship of the nation's ocean resources and their habitat, our core goals include using science-based decision making to 1) maximize fishing opportunities

while ensuring sustainability of fisheries and fishing communities and 2) to recover and conserve protected species. To help achieve our goals, we have responsibilities in this matter pursuant to:

- The Fish and Wildlife Coordination Act (16 U.S.C. § § 661 et seq.), which requires that the Federal action agency give full consideration of recommendations provided by Federal resource agencies;
- The Magnuson-Stevens Fishery Conservation and Management Act (Public Law 94-265), which requires consultation between the Federal action agency and us for projects that have the potential to affect Essential Fish Habitat (EFH);
- The Endangered Species Act (ESA) of 1973 as amended (16 U.S.C. § 1531 et seq.), which requires Federal agencies to ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat; and
- The Marine Mammal Protection Act (MMPA) of 1972 (50 CFR 216), which provides protection to all marine mammals regardless of their listing status under the ESA.

We appreciate the opportunity to provide input and information for your consideration as you begin the process to identify potential wind energy areas (WEA) in the New York Bight. We offer the following information and comments related to resources within our jurisdiction.

General Comments

The proposed Call Areas encompass a large portion of the New York Bight, covering more than 1.7 million acres. According to the FR Notice, you will identify potential WEAs for future leasing based on information and commercial interest you receive through this announcement. Given the large size of the Call Area and the importance of the New York Bight for marine resources and commerce, we recommend you develop a broad stakeholder engagement process with multiple opportunities for public input. We recommend identifying specific WEAs for leasing in two phases, with an initial reduction in areas considered based on comments received on this notice, and further refinement based on a second comment period and stakeholder feedback process. We recommend that you hold public meetings across the region to gather additional information on these areas and identify potential use conflicts. This will ensure that resulting WEAs achieve the stated energy generation objectives, while minimizing conflicts with existing uses and impacts to marine resources.

Under the FR Notice, you are specifically requesting information on how you should determine the appropriate size and number of wind energy areas to offer for leasing. You have indicated that the energy capacity requests from New York will be a factor, but you are also requesting information on what additional factors should be considered. In addition to the information provided in this letter related to commercial and recreational fisheries, habitat, and protected species should be considered in identifying appropriate locations for development and a broad cumulative analysis is needed.

In order to sufficiently identify the appropriate scale of leasing in the New York Bight or elsewhere, you should conduct a cumulative analysis to inform the planning process. Currently, cumulative impacts are evaluated on a project-by-project basis with very limited assessment at

the leasing stage. This is not sufficient given the scale and speed of proposed development on the OCS. The construction of wind farms is a reasonably foreseeable action in the leasing process that should be assessed for its cumulative effects on marine resources, habitat, commercial and recreational fisheries, and associated communities that may be affected by the development of offshore energy leases in one or more areas within the New York Bight. Given the number of wind energy areas proposed along the East Coast, we recommend you consider cumulative impacts to marine resources and the fishing community when identifying the size and scale of potential WEAs in the New York Bight. While additional information and factors may be needed to inform such an evaluation, we consider this to be necessary to understand the appropriate size and scale of development.

In addition to addressing capacity and cumulative effects questions, we recommend that prior to any leasing in the New York Bight, you focus on establishing regional research and monitoring frameworks. This should include a process to use that data for planning and management to help assess the appropriate size and number of potential wind energy areas in the New York Bight. Ecosystem-scale monitoring conducted at the appropriate temporal and spatial scales is important to track both natural and human features of the ecosystem that overlap multiple planning areas and leases. Coordinated and strategic landscape scale data collection and monitoring approaches would generate data sufficient to track changes due to wind farms or other factors and would also help address significant stakeholder concerns of potential impacts from individual and cumulative offshore wind development. The compilation of existing data and identification of information and monitoring needs should be a priority to inform this process. This would be important to not only assess the cumulative impacts of multiple projects, but also to help inform the appropriate size and scale of future development. We encourage you to work closely with our agency in the development of any monitoring program for resources under our jurisdiction.

Fisheries Management Comments

Regulated and unregulated marine species may seasonally concentrate in high numbers throughout the proposed Call Areas for migratory, spawning, or foraging purposes. For sessile species such as scallops and ocean quahogs, portions of the Call Areas are important year-round. The spatial and temporal distribution of marine species must be considered in relation to any potential offshore wind development. Such information is readily available in stock assessment reports on the Northeast Fisheries Science Center (NEFSC) website at https://www.nefsc.noaa.gov/saw. In addition, fishery performance reports and National Environmental Policy Act (NEPA) documents associated with recent management actions in affected fisheries often depict both resource and fishery distribution patterns based on available Federal and state marine resource surveys, observer data, and fishery-dependent data. These documents are available on the websites of the New England and Mid-Atlantic Fishery Management Councils at https://www.nefmc.org and http://www.mafmc.org. Many of these reports, particularly stock assessments, also identify key research needs for each managed species. There are also a number of economically important species within and inshore of the Call Areas that are managed through the Atlantic States Marine Fisheries Commission (ASMFC), such as lobster, striped bass, and menhaden. You should be aware that information on ASMFC managed species in Federal waters can be limited. Stock assessments, available

information, and research needs can be found on the ASMFC website at http://www.asmfc.org. You should consider all of these available resources when determining the scale and, location of potential Call Areas and when identifying research that should be conducted to inform future evaluations of impacts from potential project development.

Species availability within the Call Areas is affected by the presence of suitable habitat, and for migratory species, the connectivity of habitat along migration routes. For migratory species, such as Atlantic mackerel, that prefer a narrow temperature range, habitat connectivity along the winter migration route is an important determinant of dynamic patterns of habitat occupancy and winter fishery catch, as fish are not caught in preferred thermal habitat unless it has been connected to suitable habitat along the winter migration route. To assess the availability of suitable thermal habitat within the Call Areas, staff from the NEFSC used bottom temperature output from the Numerical Ocean Model Expresso ROMS (www.myroms.org/espresso) to approximate the cumulative proportion of available mackerel overwintering habitat falling within, and in deeper waters adjacent to, the proposed Call Areas (Figure 1). This work suggests that 5-10 % of the available thermal habitat for mackerel occurred within the Call Areas, with preferred thermal habitat present about 50% of the time in the vicinity of these areas during the winter of 2016-2017. However, this likely underestimates the importance of the Call Areas with respect to thermal habitat and importance to fisheries targeting similar pelagic species because it does not integrate circulation patterns we hypothesize to be a critical determinant of southwestward extent of migration. Although overwintering habitat was much less persistent in the area during the winter of 2017-2018, nearly all of the mackerel fishing effort and associated landings (about 18 million pounds) from mid-January through mid-March 2018 came from within the Call Area (Figures 2a and 2b). This suggests that other factors beyond thermal habitat may be affecting resource availability within the Call Areas.

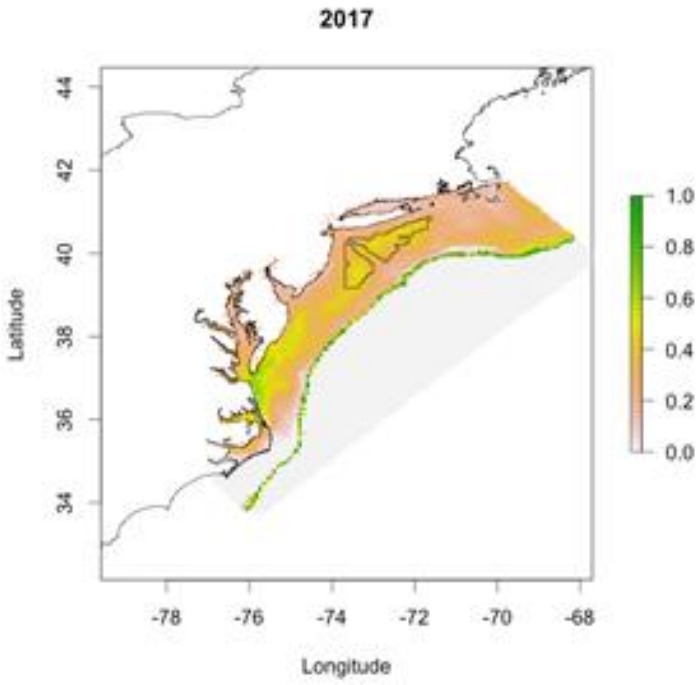


Figure 1: Proportion of available Atlantic mackerel thermal habitat within the Call Areas during

2017 (Note: Call Areas are slightly different based on cell size used within the model).

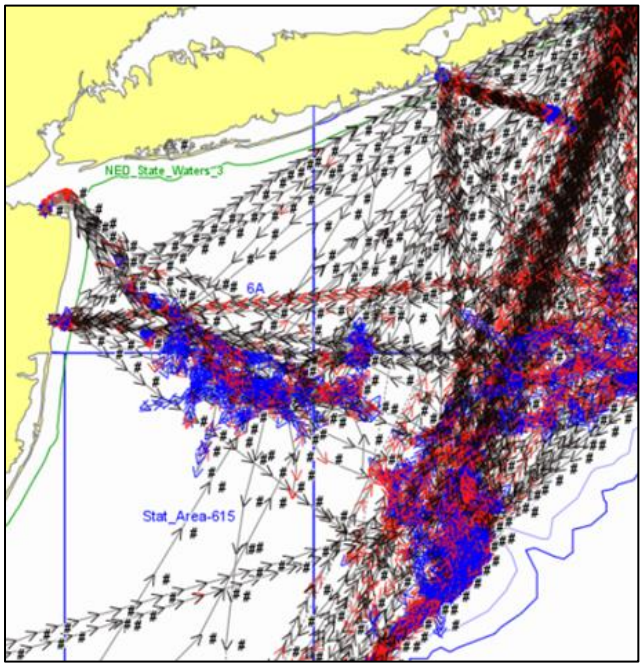


Figure 2a: Vessel Monitoring System (VMS) tracks of federally permitted vessels intending to catch Atlantic mackerel and squid during February 2018 (black icons reflect speeds >6 knots, red icons reflect speeds of 3-6 knots, and blue icons indicate speeds <3 knots).

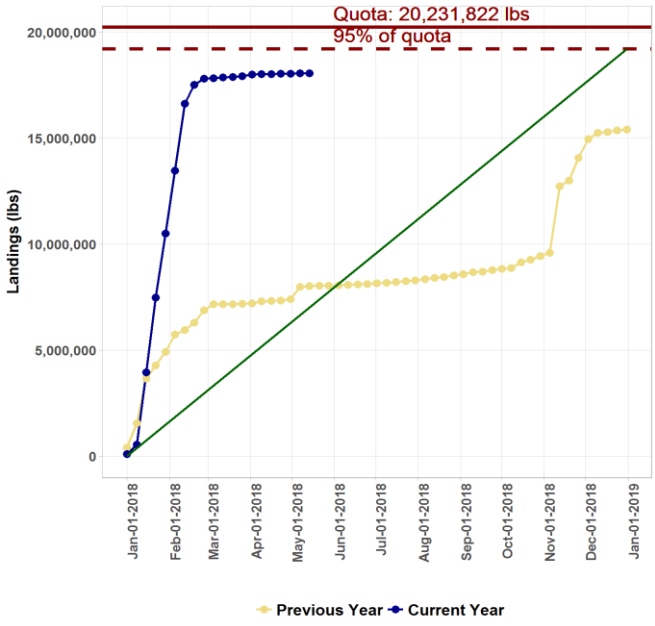


Figure 2b: Catch of Atlantic mackerel during 2018 (blue line), most of which came from operations within the Call Areas. Most of the catch during 2017 (yellow line) came from operations east of Cape Cod.

The waters within the proposed Call Areas are important to many commercial and recreational fisheries within the Greater Atlantic Region, not only Atlantic mackerel. Publicly available information clearly documents that commercial vessels from many states operate as part of various fisheries within the proposed Call Areas, especially the butterfish; Atlantic herring; Atlantic mackerel; Atlantic sea scallop; Atlantic surfclam and ocean quahog; longfin and *Illex* squid; monkfish; Northeast multispecies; whiting; and summer flounder, scup, and black sea bass fisheries. The Call Areas also specifically overlap with prime fishing areas identified under New Jersey's Coastal Zone Management Program (http://www.nj.gov/dep/rules/rules/njac7_7.pdf).

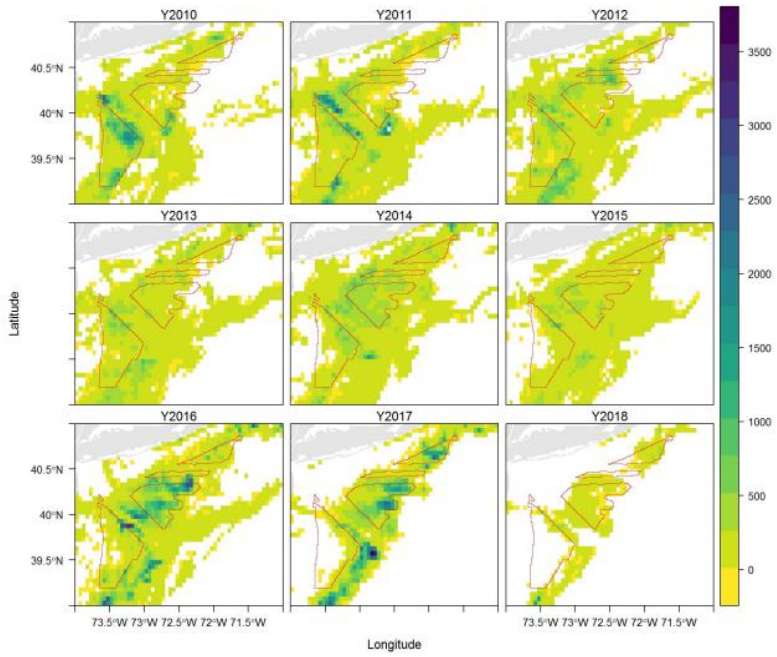
The data used in assessing potential impacts to fisheries resources should be considered over multiple years, as available, rather than a snapshot of one year or season. As discussed further below, resource availability and harvest rates vary throughout the year, and from year-to-year. Data on operational patterns in various fisheries are available on the Northeast and Mid-Atlantic Ocean Data Portals, with recently published maps depicting fishing effort in 2015 and 2016. Additional documentation of fishing effort concentrations in these fisheries are available in NEPA documents associated with recent management actions that are available on the websites of both fishery management councils. Stock Assessment and Fishery Evaluation (SAFE) reports and fishery information documents prepared by the fishery management councils for many fishery management plans (FMP) also describe recent trends in species availability and fishing effort. See, for example, the fishery information document prepared for the Atlantic Mackerel, Squid, and Butterfish FMP available at https://static1.squarespace.com/static/511cdc7fe4b00307a2628ac6/t/5907231d9de4bb35a6d1c9ab/1493639966952/MSB_APInfo-2017.pdf. Additional resources are available on the New England Fishery Management Council and Mid-Atlantic Fishery Management Council websites and on our website at http://noaa.maps.arcgis.com/apps/webappviewer/index.html?id=5d3a684fe2844eedb6beacf1169ca854.

The degree and the timing of the overlap between fishing operations and the proposed Call Areas is difficult to predict on a yearly basis. Considering these temporal variations in the use of the Call Areas as well as historic fishing distribution from a variety of sources will fully inform site suitability rather than relying solely on one data source. You should also consider operational factors and data limitations when evaluating fisheries data for the Call Areas (Appendix A).

Although vessel monitoring system (VMS) data only cover a subset of the fisheries operating within the New York Bight (Appendix A), such data provide the most spatially accurate assessment of fishing activity within the Call Areas for the fisheries using VMS. According to VMS data from 2010-2018 (Appendix B), the Atlantic sea scallop and ocean quahog fisheries were the most active VMS fisheries operating within the Call Areas during 2010-2018[1]. Figures 3 and 4 show likely fishing locations based on the assumption that fishing is occurring when the vessel is moving at a speed of less than 5 knots. Scallop fishing occurs in all four proposed Call

[1] The scallop and ocean quahog fisheries have required VMS before 2010, indicating that VMS data accurately represent fishing activity in these fisheries for the entire time series evaluated. In contrast, other fisheries such as the squid and mackerel fisheries have only required the use of VMS in recent years, indicating that historical operations within the Call Areas are underrepresented by VMS data

Areas, with the highest fishing concentrations occurring within and around the Hudson South, Hudson North, and Fairways North Call Areas. Similarly, ocean quahog fishing occurs in all four proposed Call Areas, although effort is most often concentrated in the Hudson North and Fairways South Call Areas and western portions of the Hudson South Call Area. Follow-up work to evaluate fishing patterns in other fisheries, even if only partially covered by VMS, could provide additional insight into fishery operations and transit patterns within the proposed Call Areas. Due to the overlap between the herring and mackerel fisheries, the higher speeds towed by vessels when targeting mackerel, and concerns about the compliance with mackerel VMS declaration requirements, we would consider the mackerel information provided in Appendix B (see Figure 3 Squid, Mack, Butterfish (hours/cell) in Appendix B) to likely underestimate the degree of mackerel effort within the Call Areas and the importance of these areas to the mackerel fishery when mackerel are present within the area. Although only a snapshot of one month of fishery operations in one fishery, Figure 2a (above) offers a glimpse of potential transit patterns within the proposed Call Areas, even if fishing activities occur outside of the Call Areas. We are working on analyzing more VMS data to provide additional maps depicting fishing vessel transit patterns within the Call Areas. We will provide you with that information as it is developed.



Figures 3: VMS position data indicating the number of hours fished at a speed of < 5 knots within each cell (5 nmi^2) within the Call Areas by year in the Atlantic scallop fishery, 2010-2018.

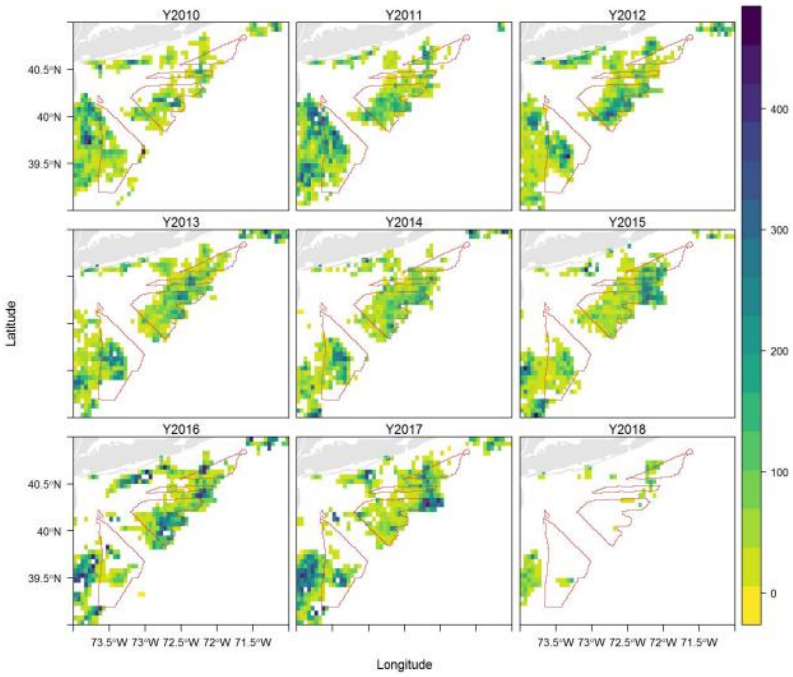


Figure 4: VMS position data indicating the number of hours fished at a speed of < 5 knots within each cell (5 nmi^2) within the Call Areas by year in the ocean quahog fishery, 2010-2018.

Nearly all fisheries within the Greater Atlantic Region are subject to vessel trip report (VTR) and observer requirements, therefore, a more comprehensive evaluation of fishing activity within the proposed Call Areas entails analyzing fishing location derived from such data. We have worked in coordination with our NEFSC and Fishery Management Council staff to provide additional data products using VTR information to help inform potential offshore wind development (Appendix C), and are currently in the process of making this data available to the public on the Council website.

As described in Appendix C, a model was developed that utilizes VTR and observer data to depict likely fishing concentrations, which were then linked with dealer-derived revenue data to estimate fishery landings and value within the proposed Call Areas during 2012-2016. This analysis breaks down landings and revenue by FMP and specific species within an FMP, by individual Call Area, and by gear type. Overall, fishing within the proposed Call Areas landed over 62.6 million pounds (lb), valued at over $344.8 million during 2012-2016. Landings from bottom tending mobile gear (dredge and trawl gear) represented 70 percent of the landings from the proposed Call Areas and 96 % of the revenue generated from such landings during 2012-2016.

Using VTR data, we estimate that the primary FMPs operating within the Call Areas (Atlantic Scallop; Summer Flounder, Scup, and Black Sea Bass; Surfclam and Ocean Quahog; Atlantic Mackerel, Squid, and Butterfish; and no Federal FMP[2]) landed over 45 million lbs. valued at over $335 million fishing within the Call Areas (Appendix C). Atlantic sea scallops constituted

[2] No Federal FMP includes species such as lobster, Jonah crab, and whelk.

the highest landings volume (23.4 million lb) and fishery revenue ($268.2 million) within all Call Areas during this period, followed by ocean quahog (6.2 million lb valued at $47.7 million). For these five FMPs, fishing within Hudson North and Hudson South resulted in the highest landings and revenue (83% of landings and 84% of revenue), with nearly 23 million lb valued at $166.5 million landed from Hudson North and 14.7 million lb valued at $115 million landed from Hudson South during 2012-2016. While these FMPs comprise the majority of the landings and revenue derived from fishing within the Call Areas, revenue from these fisheries, particularly the scallop fishery, may mask the importance of fishing in these areas to other fisheries and associated communities. For instance, although revenue from landing mackerel and squid is relatively low compared to high value scallop revenue, ports like Pt. Judith, RI are heavily dependent upon these higher volume, lower value fisheries. Additional analysis is necessary to illustrate the dependence of communities upon fishing within these Call Areas. This would help you evaluate the potential social and economic impacts of any potential WEAs that may be identified within these Call Areas.

Outside the top five FMPs, other FMPs land substantial amounts from within the Call Areas, including the Atlantic Herring and Monkfish FMPs. Herring was the dominant catch from all Call Areas (10.8 million lb valued at $1.3 million), with monkfish (3.3 million lb) and skate (1.7 million lb) following, but monkfish was most important in terms of revenue generated ($6.2 million) of these other FMPs. Different areas are important to different fisheries in different years, underscoring the dynamic nature of species availability, commercial fishery operations, and revenue within the proposed Call Areas. For example, of the individual species examined, Atlantic mackerel landings were highest from Hudson South in 2012 and 2016, but longfin squid and summer flounder were the species with highest landings from this area in the other years. Similar patterns are evident in the revenue streams from this area, with summer flounder representing the highest value in 2014-2016, and with lobster valued higher in 2012-2013.

Most FMPs include multiple different species, so in some cases individual species were broken out in the analysis to better show trends (see Table 3.9 of Appendix C). Of the species listed in Table 3.9, ocean quahogs had the highest landings from all areas (5.3 million lb), followed by longfin squid (3.0 million lb), scup (2.8 million lb), and summer flounder (1.9 million lb). Ocean quahog also was the highest valued species with $37.9 million landed from all areas, followed by summer flounder ($5.2 million), longfin squid ($3.3 million), and scup ($1.9 million). Hudson North generated the most landings and revenue.

In addition to commercial activity, there are numerous recreational fisheries that operate within the proposed Call Areas, including recreational tuna and marlin tournaments. You can find a list of registered tournaments on our website at http://www.nmfs.noaa.gov/sfa/hms/compliance/tournaments/main/PDFs/2017_registered_hms_tournaments.pdf. While discrete areas important to these tournaments specifically, and to recreational fisheries in general, have not been identified for all waters off New York, it is likely that operations in these fisheries and tournaments overlap with the proposed Call Areas. Additional information on the recreational fishing tournaments in New York and New Jersey can be found in Appendix D, including catch of important recreational species during these tournaments.

Management plan adjustments developed by both Fishery Management Councils and the ASMFC may increase or decrease fishing effort or shift effort into other fishing grounds within the proposed Call Areas. For example, although the Atlantic sea scallop access area adjacent to the Hudson South Call Area has been opened recently, if it closes again, scallop fishing operations will increase outside of this area and will likely shift effort into both the Hudson South and North Call Areas. This can be observed in the maps of VMS scallop effort concentrations in 2010-2012 and 2014 (Figure 3 above) when the area was previously closed (2010 and 2014) or restricted to a very small number of trips (one trip/vessel in 2011 and 1.5 trips/vessel in 2012). Similar spatial/temporal closures or effort controls (possession limits, permit restrictions, etc.) in other fisheries may affect fishing operations in such a way that past operations are not reflective of future operations. In addition, construction of offshore energy projects south of Nantucket and Martha's Vineyard will likely affect fishing operations in the longfin squid, ocean quahog, scup, summer flounder, and whiting fisheries. The longfin squid, herring, mackerel, ocean quahog, and scallop fisheries are also expected to be impacted by the Empire Wind project within the Statoil lease area. These other initiatives are important to consider when evaluating potential user conflicts within the proposed Call Areas, as the cumulative effects of fishery management and offshore wind development projects will likely affect the distribution of fishery effort throughout the New York Bight. It will be important for you to fully evaluate established and evolving patterns of fishing effort before deciding upon final areas to designate as WEAs.

As discussed above, the surfclam and ocean quahog fishery operate within the proposed Call Areas. Vessels associated with this fishery have been shifting effort north as resource abundance, particularly for ocean quahogs, becomes more widely available in northern grounds. Despite this shift northward for ocean quahogs, surfclams are increasing in abundance in southern fishing areas. This has resulted in occasional landings in Ocean City, MD, as well as Cape May and Wildwood, NJ, with these ports becoming less vital to the support of these fisheries than they were historically. Most of the fleet is increasingly based out of more northerly ports such as Pt. Pleasant and Atlantic City, NJ; Oceanview, NY; Hyannis, MA (surfclams only); and New Bedford, MA. However, access to fishing grounds within the proposed Call Areas remains critical to the viability of the fishery and associated communities. You can access the fishery performance report at https://static1.squarespace.com/static/511cdc7fe4b00307a2628ac6/t/5937ffa5f5e231d26daeedd4/1496842149723/4_SCOQ_FPR_for2017.pdf. Given this shift in population, you should carefully consider the impacts to the surfclam and ocean quahog fisheries as well as mid-Atlantic shore side support businesses, such as processors, when evaluating potential call areas.

Regional fishing communities use the proposed Call Areas for their livelihood. Communities that access this area extend beyond New York and New Jersey and include Connecticut, Rhode Island, and southern Massachusetts, as well as Virginia and North Carolina. The communities that support the commercial fishing industry are composed of fishermen, processors, distributors, fuel and ice suppliers, and provisions suppliers. Impacts to shore-side support should also be considered when developing potential wind energy areas. The social science branch at our NEFSC conducts applied economic and sociocultural research on the use and management of commercial and recreational fisheries, protected species resources, and marine ecosystems. Their website features a tool that provides snap shots of the communities that will use the

propose Call Areas. You can access this on the NEFSC website at: https://www.nefsc.noaa.gov/read/socialsci/communitySnapshots.php.

As documented in Appendix C and summarized above, most of the fisheries that operate within the proposed Call Areas use bottom tending mobile fishing gear such as bottom trawls and dredges. This type of gear can have a scope up to 0.3 miles from the vessel, making it more difficult and dangerous to navigate within a wind farm and avoid wind turbine structures, particularly during rough weather conditions. When gear is deployed in the water it does not always fall directly behind the vessel. Tides, current, benthic surface, and wind strength and direction all influence where the gear lands behind the vessel. This can be particularly difficult and dangerous when there are multiple vessels with gear deployed within proximity of each other, which is a characteristic of these fisheries. Vessels using these gears operate with a limited turning radius and often follow depth contours when fishing for particular species. Due to the proximity of the Call Areas to vessel traffic lanes, vessels will often transit or tow perpendicular to these lanes to minimize interfering with passing vessels and avoid collisions. Some vessel tracks showing these use patterns are available via VMS and AIS, but not all vessels are required to use these tracking technologies. Because fishing vessels from many ports within the Greater Atlantic Region fish within and transit the Call Areas (see Figure 2a for a snapshot for just one month in one fishery), consultation with fishery interests and communities is needed to better characterize fishing vessel transit patterns. In addition to turbine orientation and spacing, the location of proposed WEAs and proximity to vessel traffic lanes are important factors to consider for any offshore wind development in the Mid-Atlantic Bight region.

As you know, fisheries management under the Magnuson-Stevens Act is a participatory process in which the fishing industry actively contributes toward the development of conservation and management measures. Industry participants expect to be consulted, and to have their input considered and integrated into management decisions. These expectations are also being applied in the offshore wind development process. We recommend you make engagement with the fishing industry a priority in this process and ensure that decisions are explained in relation to input offered. Eliminating areas that pose a high fishing conflict early in the process will better serve the process and ensure productive participation by stakeholders as you move toward additional leasing and eventual possible construction of wind farms in the New York Bight.

The information provided in this comment letter was compiled under the original 45-day comment period timeline set forth in the FR Notice. With the extension of time for comments, issued on May 22, 2018, we can conduct additional analysis that would enhance the information needed to evaluate future offshore energy development. Any additional analysis will be provided as a supplemental document ahead of the revised July 30, 2018 deadline. We believe this information would be important for your decision-making process.

Essential Fish Habitat Comments

As you are aware, under the Magnuson-Stevens Act you are responsible for consultation with our agency on projects that may adversely impact essential fish habitat (EFH). The Call Areas provide EFH for 36 species of fish and shellfish. Twenty-three of them are species of commercial and recreational importance that are managed by the two regional fishery management councils, and 13 are highly migratory tunas and sharks managed by NOAA

Fisheries (Appendix E). EFH for many of these species is designated for more than one life stage. Of the 23 council-managed species, there is a high degree of spatial overlap for 39 life stages (17 juveniles, 14 adults, 3 eggs, and 5 larvae), and a low to moderate degree of overlap for another 19 life stages. Thirteen of these species occupy mostly mud and sand habitats and five occupy mixed bottom habitats that include gravel, cobble, and boulders (if present). Five species (including multiple life stages) are pelagic, inhabiting the water column. Six of the bottom-dwelling species with EFH in the Call Areas are currently overfished, as are three of the highly-migratory species. Of the 13 HMS species, sandbar shark, dusky shark, and smooth dogfish are the most likely to occupy bottom habitats.

It is important to protect essential habitats for managed species that are more sensitive to any adverse impacts resulting from wind energy construction and operation activities, as well as habitats that are vital to the growth, survival, and reproduction of any species that is currently overfished. The nine overfished EFH species in the Call Areas are: Atlantic cod; winter flounder; yellowtail flounder; windowpane flounder; ocean pout; red hake; dusky shark; sandbar shark; and shortfin mako shark. A tenth species, summer flounder, is currently experiencing overfishing, but has not yet been depleted enough to be classified as overfished.

Several species that support commercial and recreational fisheries spawn within the Call Areas. These include four species of flounder (summer, windowpane, winter, and yellowtail), three shellfish species (surfclams, ocean quahogs, and sea scallops), as well as mackerel, black sea bass, bluefish, longfin inshore squid, ocean pout and scup. Most of these species produce eggs that are broadcast into the water column and become planktonic. However, three species (winter flounder, longfin inshore squid, and ocean pout) are demersal spawners and deposit their eggs on the bottom, where they are highly vulnerable to impacts to benthic habitat. Available information indicates that winter flounder and longfin inshore squid spawn in shallower water closer to shore, and therefore, could be impacted by construction of transmission infrastructure associated with any proposed development in the Call Areas. Ocean pout spawns from coastal waters to approximately 100 m on rocky hard bottom, and therefore could be impacted by all wind energy activities disturbing such habitat, either directly, if impacts occur during the spawning season, or indirectly, if habitat is degraded or destroyed at other times of the year. Moderate to high concentrations of neonates and juveniles of dusky shark and sandbar shark also occur in the Call Areas. Information summarizing current knowledge on the times of year for spawning activity for some federally managed species in southern New England and the upper Mid-Atlantic Bight is provided in Table 3 in Appendix E.

Gravel and other hard-bottom rocky habitats that are important to species such as cod, black sea bass, haddock, ocean pout, and scup are generally more vulnerable to habitat disturbance than mud and sand habitats. Black sea bass congregate over low profile reefs in the spring and summer, the juveniles to feed and shelter from predators, and the adults to spawn. Black sea bass have strong associations with structured habitats and high fidelity for their "home" reefs, with some males exhibiting territorial behavior and site fidelity during the spawning season (Fabrizio *et al*. 2013 and 2014; Moser and Shepherd 2009). Ocean pout deposit and guard demersal eggs in sheltered hard bottom habitat such as rocky crevices, and larvae/early juveniles remain associated with the bottom. This species is especially vulnerable to benthic impacts during spawning and early development (Steimle *et al*. 1999). Hard bottom habitats are rare in the Call

Areas and should be protected from any adverse impacts associated with construction activities.

Much of the New York Bight offshore area is composed of sandy sediments with sporadic sand and gravel ridges (Poti *et al*. 2012). However, additional sensitive habitats that may occur in the Call Areas include sand ridges, sand waves, cobble/gravel, and other unique bathymetric features. This heterogeneous bathymetry is a result of a variety of processes, including prevailing hydrodynamic conditions and relict glacial activity. Features such as shoreface sand ridges can provide vertical relief up to 10 meters (McBride and Moslow 1991). These sand ridges provide important habitat for economically important fish species, supporting higher species abundance and richness compared to surrounding areas (Vasslides and Able 2008). Bathymetric features also exhibit variability on scales from a meter to multiple kilometers. For example, subtle, kilometer-scale ridge and depression topography is apparent in the Hudson West Call Area. Maps illustrating bathymetric features of the Call Areas and adjacent sites are found in Appendix F.

As mentioned above, the Call Areas also overlap with prime fishing areas identified under New Jersey's Coastal Zone Management Program. These areas may include features such as rock outcroppings, sand ridges or lumps, rough bottoms, aggregates such as cobblestones, coral, shell, tubeworms, and slough areas.

When evaluating the location and scale of potential WEA, you should also consider how potential development in these areas would impact pelagic habitat. Persistent hydrographic fronts exist off the coast of Long Island, and such fronts are often associated with areas of high biological activity. You can access more information on the NEFSC website at https://www.nefsc.noaa.gov/ecosys/ecosystem-ecology/oceanography.html. Seasonal changes to pelagic habitats in the New York Bight, including, but not limited to, thermal habitat and food availability, will influence species presence and habitat uses in the region.

As mentioned in our fisheries comments, the potential Call Areas overlap with high populations of surfclam, ocean quahog, and scallops. Impacts to these resources must be considered when evaluating the potential Call Areas, as sessile species with limited mobility are more susceptible to impacts from construction. Furthermore shellfish provide an important food source for other federally managed species (Steimle *et al*. 2000). Specifically, impacts of any construction on spawning and settlement of these resources need to be fully considered to ensure the fishery resources that exist in this region can coexist with any future development.

There are several factors related to habitat that you should consider when identifying potential WEAs in the New York Bight. First, it will be necessary to conduct further site-specific and finer scale evaluations to determine potential locations of sensitive habitats or high spawning or pupping activity that would not be suitable for development. You should also consider important habitat features adjacent to the Call Areas that could be impacted from construction of the project or displacement of other activities resulting from project operation. As part of your evaluation to determine the potential size and scale of any potential WEAs, it will be important to consider how the addition of substantial amounts of structure within vast sandy areas of the New York Bight may modify both benthic and pelagic habitat in the region. Existing infrastructure, and current and historical uses should also be considered, including existing

submarine cables, pipelines, and historical waste disposal sites that overlap with the Call Areas. Construction within these sites may exacerbate benthic and pelagic impacts, through additional scour protection or elevated levels of contamination.

You will be required to conduct an EFH consultation with our agency on potential impacts associated with issuing a lease within any designated WEAs. The most up-to-date EFH and Habitat Area of Particular Concern (HAPC) designations should be used in your evaluation. The NEFMC Omnibus EFH Amendment 2 was approved on January 3, 2018, and implemented April 9, 2018. EFH and HAPC for 28 species managed by the NEFMC have been modified under the Omnibus Amendment. While spatial data for these species are not yet available for viewing or location queries under the EFH Mapper, the New England EFH designation maps can be downloaded from our habitat website at https://www.habitat.noaa.gov/protection/efh/newInv/index.html and text descriptions and HAPC designations can also be accessed on our habitat website at https://www.habitat.noaa.gov/protection/efh/efhmapper/oa2_efh_hapc.pdf. The EFH mapper can be used to query and view and spatial data for the species managed under the Mid-Atlantic Council and for Highly Migratory Species. The EFH mapper can be accessed from our habitat website at https://www.habitat.noaa.gov/protection/efh/efhmapper/.

You should also be aware that the Amendment 10 to the 2006 Consolidated Atlantic Highly Migratory Species FMP went into effect on September 1, 2017. This amendment ontains several changes to the EFH designations for sharks and other highly migratory species. More information can be found on our website at https://www.fisheries.noaa.gov/action/amendment-10-2006-consolidated-hms-fishery-management-plan-essential-fish-habitat.

Protected Resources Comments

Endangered Species Act

The following listed species may be found in the New York Bight Call Areas:
North Atlantic right (*Eubalaena glacialis*); blue (*Balaenoptera musculus*); fin (*Balaenoptera physalus*); humpback (*Megaptera novaengliae*); sei (*Balaenoptera borealis*); and sperm (*Physeter macrocephalus*) whales; and green (*Chelonia mydas*); hawksbill (*Eretmochelys imbricata*), Kemp's ridley (*Lepidochelys kempii*), leatherback (*Dermochelys coriacea*), and loggerhead (*Caretta caretta*) sea turtles. Endangered fish occurring in the program areas include Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) and shortnose sturgeon (*Acipenser brevirostrum*). All ESA listed marine mammals are also protected by the Marine Mammal Protection Act (see below). There is no critical habitat designated by us under the ESA that occurs in the Call Areas. More information on ESA listed species, including their seasonal distribution, is available on our webpage at https://www.fisheries.noaa.gov/species-directory/threatened-endangered. Sightings information for right whales in the Call Areas can be found at https://www.nefsc.noaa.gov/psb/surveys/.

Consideration of Potential Impacts to ESA Listed Species

Under Section 7(a)(2) of the ESA, each Federal agency is required to insure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of any endangered or threatened species. Consultation is necessary for any permits, authorizations, leases,

easements, or right of ways issued by your agency that may affect a listed species. It is our understanding that you will be the lead Federal agency for any section 7 consultations regarding any wind energy facility proposed in the Call area and that section 7 consultation will be completed prior to the issuance of any authorization or approval of the Site Assessment Plan or Construction and Operations Plan. We expect that any environmental documentation regarding a proposed wind facility in the Call area will fully examine all potential impacts to listed species under our jurisdiction including: acoustic impacts of construction and operation; any pre-construction geophysical and/or geotechnical surveys; effects on prey; effects to migratory behavior; potential entanglement; vessel traffic; benthic impacts; and impacts to water quality. More information on the section 7 process is available on our webpage: https://www.greateratlantic.fisheries.noaa.gov/protected/section7/index.html. We would like to note that, as you are aware, the right whale population is very small (fewer than 500 whales), declining, and may be particularly vulnerable to threats to individuals and their ecosystems. We therefore, encourage you to carefully consider the effects of any proposal in the Call Area on right whales.

Marine Mammal Protection Act

Several species of marine mammals are common residents or occasional visitors to the waters identified in the Call Areas. All marine mammals receive protection under the Marine Mammal Protection Act (MMPA) of 1972, as amended. The MMPA prohibits, with certain exceptions, the take of marine mammals in U.S. waters and by U.S. citizens on the high seas, and the importation of marine mammals and marine mammal products into the U.S. We may issue permits under MMPA Section 104 (16 U.S.C. 1374) that authorize the taking or importing of specific species of marine mammals.

As noted above regarding listed species, any environmental documentation should fully examine all potential impacts to species protected under the MMPA including: effects on prey; effects to migratory behavior; potential entanglement; vessel traffic; benthic impacts; and impacts to water quality. We recommend that any project developer discuss permitting needs with our Office of Protected Resources Permits, Conservation, & Education Division (301-713-2289). Information on the MMPA permitting process is online at http://www.nmfs.noaa.gov/pr/permits/mmpa_permits.htm.

We encourage you and any potential developer to continue to work with us as project plans become more developed to identify and evaluate the potential for impacts to the species under our jurisdiction. These informal discussions can greatly facilitate consultation.

Conclusion

We appreciate the opportunity to provide information and comments on New York Bight Call Areas. We will continue to support the Administration's efforts to advance offshore renewable energy through our participation in the offshore wind development regulatory and planning processes. As we engage in this processes, we are committed to implementing our national strategic goals to maximize fishing opportunities while ensuring the sustainability of fisheries and fishing communities, and to recover and conserve protected species while supporting responsible fishing and resource development. We are committed to working with you to

provide the necessary expertise and advice to avoid areas of important fishing activity, sensitive habitats, and to minimize impacts to fisheries and protected species.

Should you have any questions regarding these comments, please contact Sue Tuxbury in our Habitat Conservation Division (978-281-9176 or susan.tuxbury@noaa.gov). For questions regarding ESA, please contact Julie Crocker in our Protected Resources Division (978-282-8480 or Julie.Crocker@noaa.gov).

Sincerely,

for Michael Pentony
Regional Administrator

Attachments:

Appendix A - Fishery Operational Factors and Fishery Dependent Data Limitations
Appendix B - Hotspots and permit exposure in the NY Call Area for 2010-Present as Determined by VMS poll data
Appendix C - Descriptions of Selected Fishery Landings and Estimates of Vessel Revenue from the New York Bight Call Areas: A Planning Level Assessment
Appendix D - Recreational Fishing Tournament Information for New York and New Jersey from 1980-2017
Appendix E - Essential Fish Habitat Information for the New York Bight Call Areas
Appendix F - Bathymetry Maps for the New York Bight BOEM Call Area and NYSERDA Areas of Consideration

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APPENDIX A

Fishery Operational Factors and Fishery Dependent Data Limitations

Fishery Operational Factors and Fishery Dependent Data Limitations

- **Dynamic factors affecting fishing operations (area, timing, targeted species, and intensity):**
  - Management:
    - Annual quotas for target and bycatch species (individual or fishery)
    - Effort controls and access area trip allocations (scallop, groundfish)
    - Fishery closures (spawning, habitat, triggered - sector quota or bycatch cap)
    - Gear restricted areas (to avoid gear conflicts - scup and lobster GRAs) and exemption areas (to reduce bycatch - groundfish)
    - Permits
  - Biological:
    - Species availability and distribution (targeted, bycatch, prey)
    - Temperature changes and weather patterns
  - Economic:
    - Domestic and foreign market price
    - Market supply
    - Fuel costs
    - Monitoring costs to fish in certain areas or with certain gears (closed areas or IFM amendment)
    - Quota (or permit) lease price

- **Fishery dependent data limitations:**
  - VTR
    - Limited area precision (stat area and one position/trip)
    - Total catch data is limited due to concerns about discard accuracy
    - Not timely (most FMPs are weekly, but some are still monthly)
    - Self-reported
    - Trip and sub-trip level catch instead of tow or haul level
    - Concerns about accuracy of gear amount and set/soak time
  - VMS
    - Coverage is not universal for all fisheries, with some fisheries (summer flounder, scup, black sea bass, bluefish, American lobster, spiny dogfish, skate, whiting, and tilefish) not covered at all by VMS
      - If a vessel is issued a permit in another fishery that requires VMS, trips taken in one of the above non-VMS fisheries is represented by a "DOF-COM" VMS "trip" code.
      - Analysts cannot differentiate a trip in a particular non-VMS fishery based on the "DOF-COM" VMS code alone, and any trip under that VMS code could represent activities in several non-VMS fisheries.
    - Limited historical coverage for most fisheries
      - Monkfish is optional and elective on a yearly basis
      - 2005 (or earlier for herring)
      - 2006 for groundfish and scallops

        - 2008 for surfclams/ocean quahogs
        - 2014 for mackerel
        - 2016 for longfin squid/butterfish
        - 2017 for *Illex* squid
    - Trip declaration does not necessarily correspond to actual operation
        - Declared intent may not represent landings
        - Declaration may mask specific fishery operations (fluke could be declared as DOF-CML and whiting as a squid trip)
    - Hourly position pings limits area resolution based on speed
    - Fishing time/location can be mis-estimated by operational assumptions (speed and direction) that are affected by externalities (weather, sea state, mechanical issues)
    - Catch data limited
        - No information on catch rates
        - Retained catch composition limited to target and some bycatch species, and not universal
        - Catch information is for the full trip, not sub-trips
    - Not all information is collected from all fisheries (gear type)
- Dealer
    - Does not include fundamental data relating to operations (gear used, area fished, discards, time-in-area or effort)
- Observer
    - Sub-sample of the entire fleet
    - Coverage rates vary by year based on bycatch rates
    - Until recently, only limited coverage of the lobster fishery
    - Potential operational observer biases in some fisheries
- Study fleet:
    - Partial fishery, fleet, and area coverage
    - Not all participants are collecting data at the same level (sub-trip vs. haul)
    - Unclear timeliness of data

APPENDIX B

Hotspots and Permit Exposure in the New York Bight Call Area for 2010-Present as Determined by VMS poll data

Hotspots and permit exposure in the NY Call Area for 2010-Present as determined by VMS poll data

Benjamin Galuardi NOAA/NMFS/GARFO/APSD

May 2018

Vessel monitoring system (VMS) data was used to identify hotspots and permit exposure within the four NY Call Areas (Fairways North/South and Hudson North/South). Here, a 5 nautical mile grid size was used to bin VMS polls. A crude speed filter, 0-5 knots, was used for all fisheries to indicate probable fishing activity. The duration between polls was then summed for the filtered poll data, yielding a metric of total hourly effort in each grid cell.

Fisheries included in this summary are: Herring (HER), Squid/Mackerel/Butterfish (SMB), Surfclam/Ocean Quahog (SCO), Groundfish (NMS), and Scallop (SES). Grid cells with less than three unique permits are masked.

Spatial binning of points is a more direct metric than methods that use interpolation (*e.g.* kernel density) Binning of poll time keeps the spatial boundaries within the confines of where the data originated, and allows easy identification (and masking) of confidential information.

Tables indicate number of permits exposed within the NY Call areas, and total days fished (according to the speed filter). Figures indicate the hours fished per cell, according to the speed filter.

The tabular and graphic summaries highlight different aspects of spatial use of the NY Call areas.

Table 1: Fairways North: Total permits exposed for fisheries with at least one day (total) with VMS polls 0-5 kts

HER	HMS	NMS	SCO	SES	SMB
3	<3	<3	9	72	28
7	<3	3	7	76	30
4	<3	3	7	82	37
7	<3	3	9	98	37
<3	<3	4	6	149	38
6	<3	4	10	97	42
10	<3	16	9	135	51
5	<3	18	11	202	33
<3	<3	6	5	48	21

Table 2: Fairways South: Total permits exposed for fisheries with at least one day (total) with VMS polls 0-5 kts

HER	HMS	NMS	SCO	SES	SMB
3	<3	<3	7	79	10
<3	<3	<3	8	77	10
6	<3	<3	11	120	19
8	<3	<3	11	92	21
<3	<3	<3	11	179	18
<3	<3	<3	11	102	31
9	<3	4	11	184	42
6	<3	<3	13	176	14
<3	<3	<3	5	37	6

Table 3: Hudson North: Total permits exposed for fisheries with at least one day (total) with VMS pings 0-5 kts

HER	HMS	NMS	SCO	SES	SMB
9	<3	<3	12	170	20
9	<3	<3	9	170	16
8	<3	<3	11	164	20
7	<3	<3	10	129	36
<3	<3	<3	10	244	35
5	<3	<3	12	170	32
8	<3	5	10	287	73
11	<3	<3	15	298	33
9	<3	<3	6	69	10

Table 4: Hudson South: Total permits exposed for fisheries with at least one day (total) with VMS pings 0-5 kts

HER	HMS	NMS	SCO	SES	SMB
12	<3	<3	18	251	9
10	<3	<3	20	203	8
6	<3	<3	22	178	7
<3	<3	<3	20	135	9
3	<3	<3	20	197	17
3	<3	<3	19	138	12
3	<3	<3	18	211	13
10	<3	<3	19	156	21
12	<3	<3	10	60	11

Table 5: Effort in combined NY Call Areas as a percentage (%) of the total effort in the fishery

	HER	NMS	SMB	SES	SCO	HMS
Y2010	0.01	0.00	0.60	11.26	14.17	0
Y2011	0.13	0.00	0.38	5.08	21.72	0
Y2012	0.89	0.00	1.14	9.35	20.71	0
Y2013	1.38	0.00	1.10	9.35	20.79	0
Y2014	0.00	0.00	1.31	15.37	20.43	0
Y2015	0.42	0.00	1.36	8.18	15.20	NaN
Y2016	1.22	0.01	2.02	13.95	12.51	0
Y2017	0.52	0.12	0.58	17.48	12.57	0
Y2018	15.94	0.02	0.18	12.52	8.55	NaN

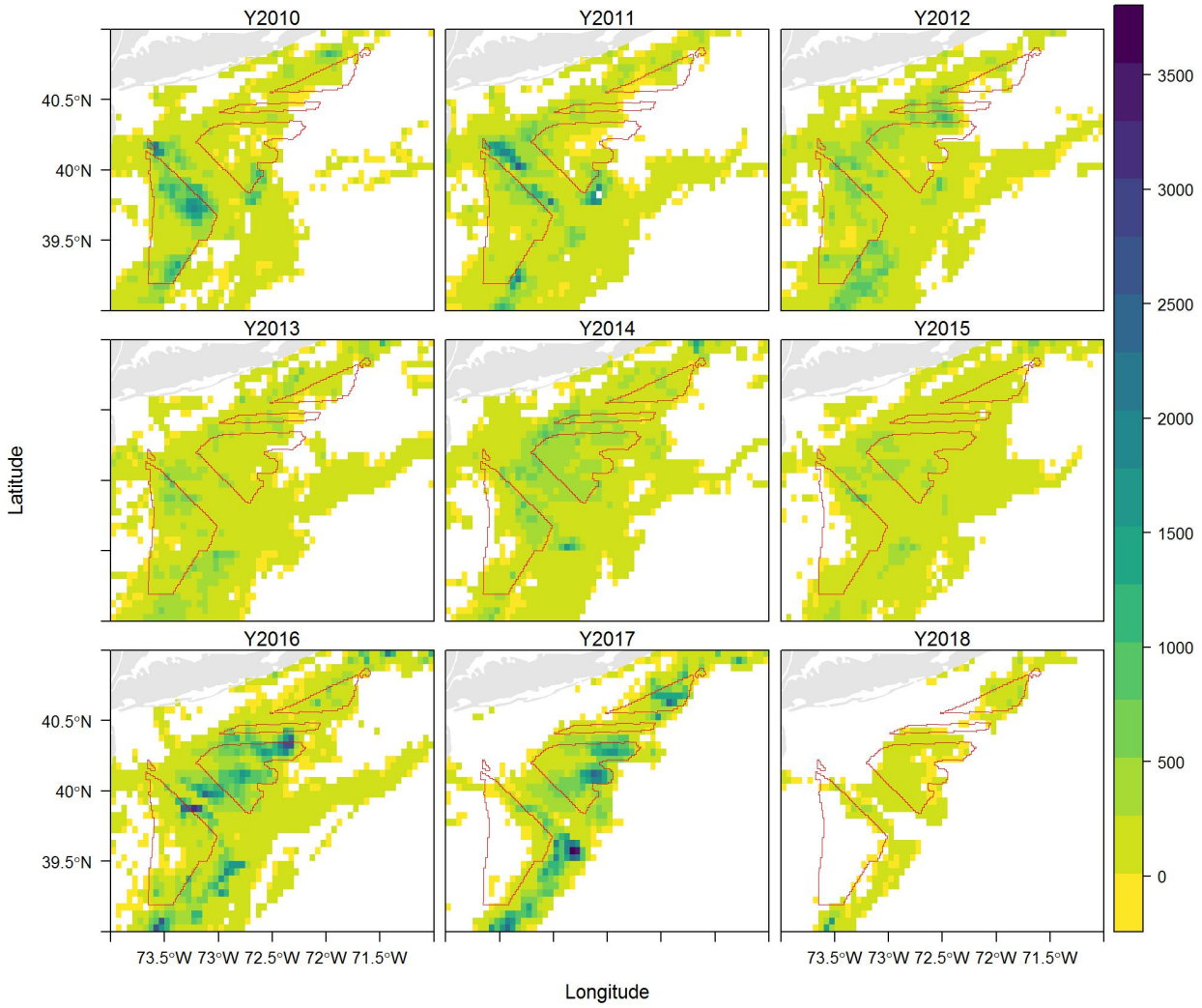


Figure 1: Scallop (hours/cell)

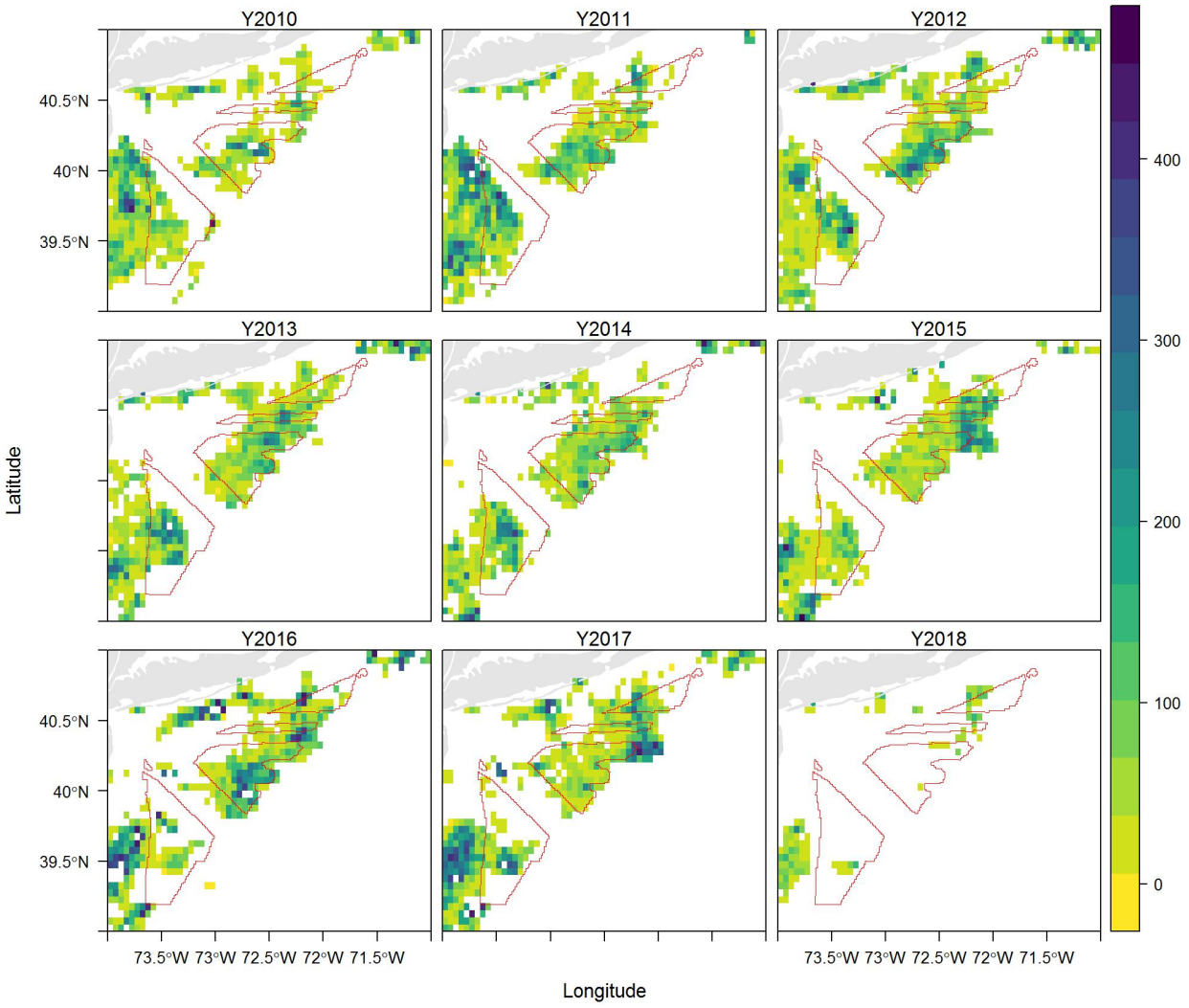


Figure 2: Surfclam Ocean Quahog (hours/cell)

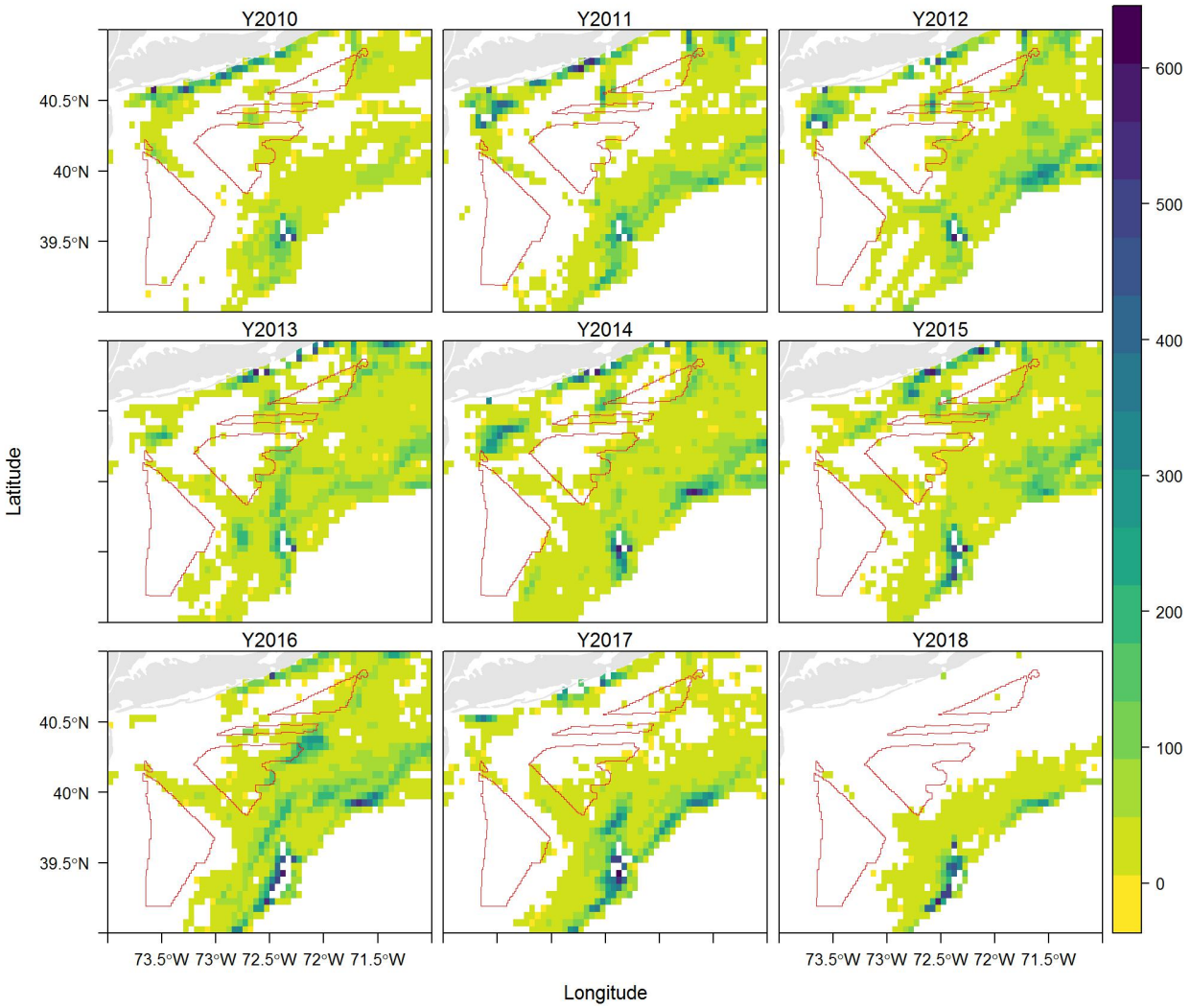


Figure 3: Squid Mack Butterfish (hours/cell)

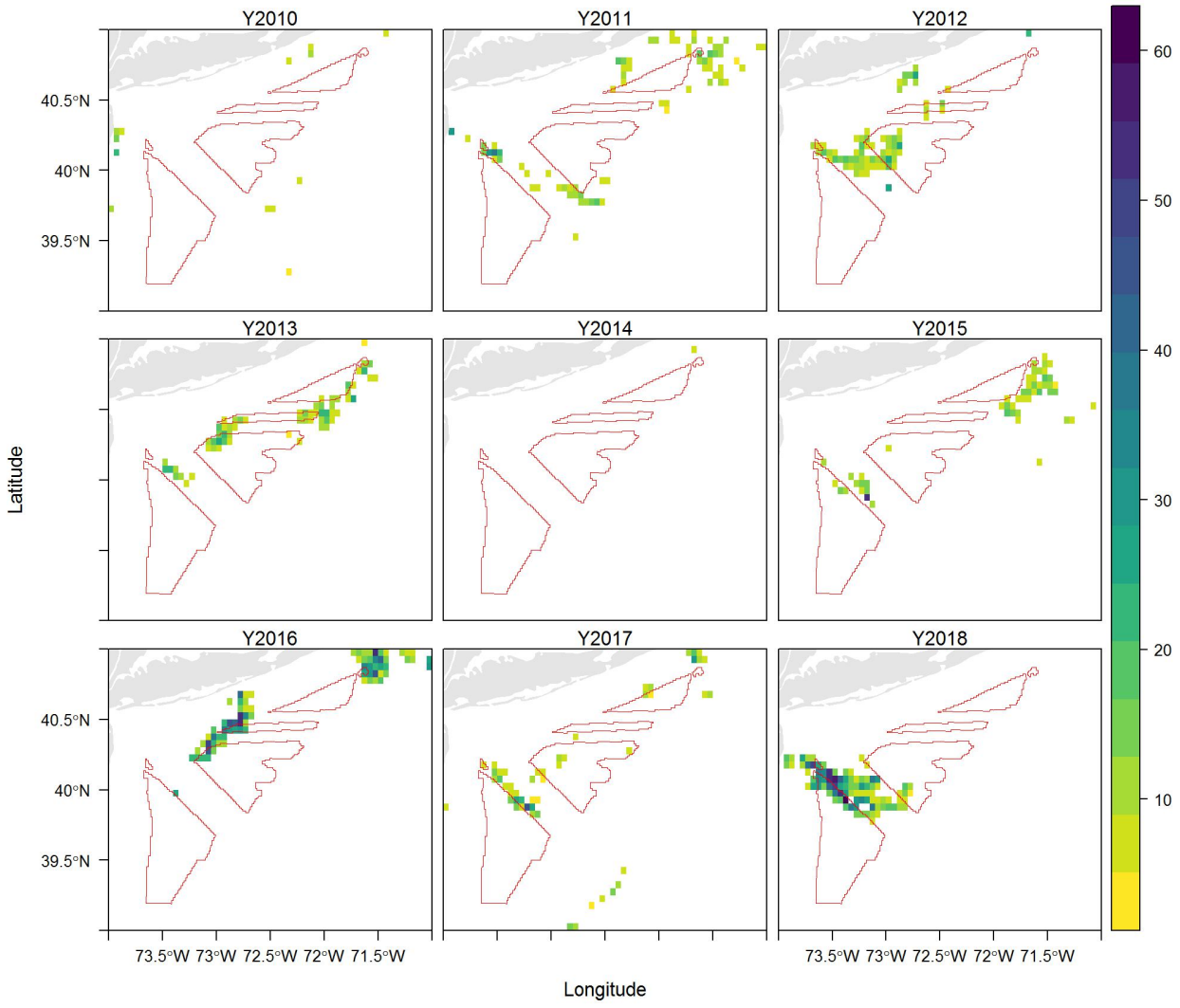


Figure 4: Herring (hours/cell)

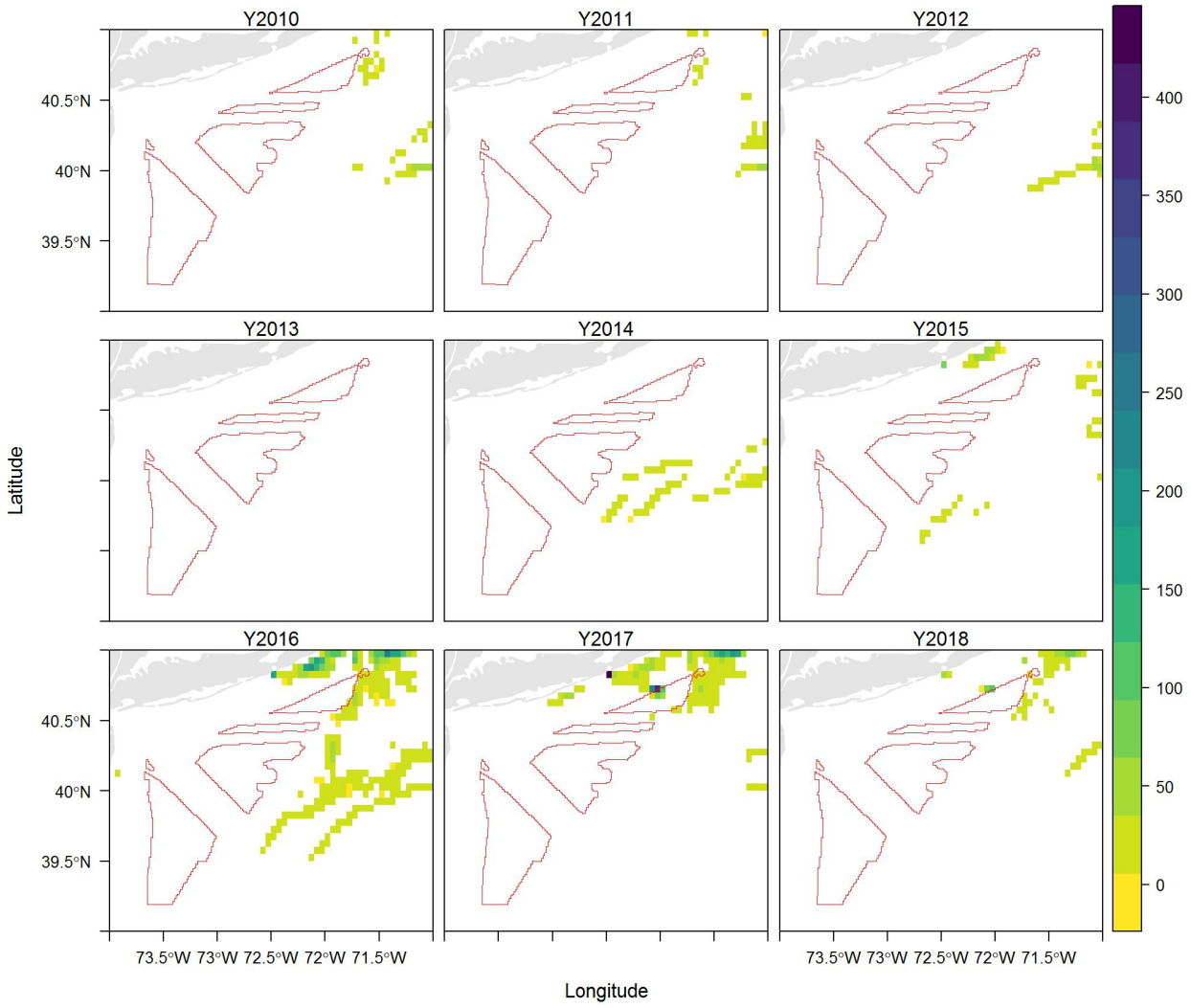


Figure 5: Groundfish (hours/cell)

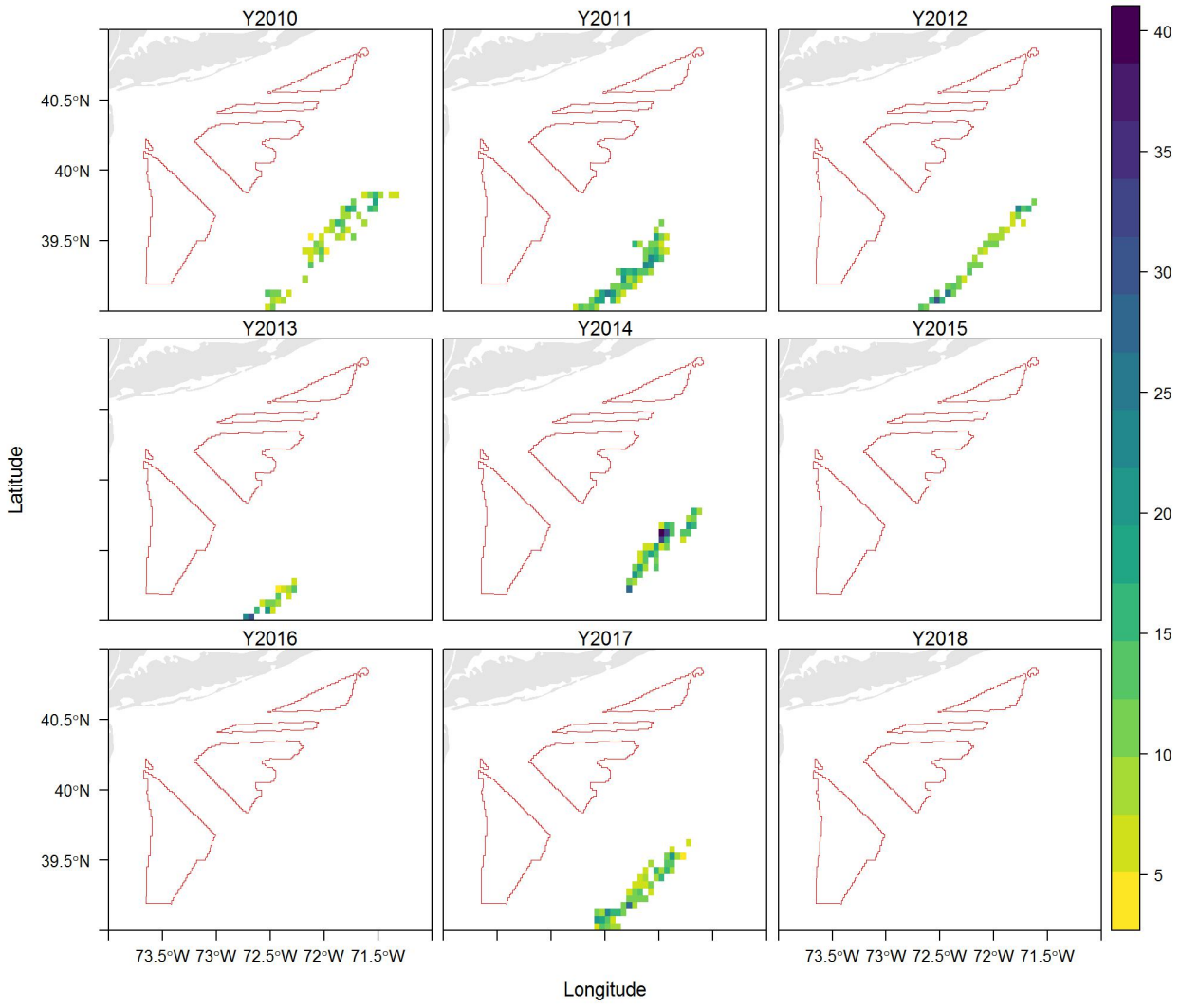


Figure 6: Highly Migratory Species (hours/cell)

APPENDIX C

Descriptions of Selected Fishery Landings and Estimates of Vessel Revenue from the New York Bight Call Areas: A Planning Level Assessment

Descriptions of Selected Fishery Landings and Estimates of Vessel Revenue from the New York Bight Call Areas: A Planning-level Assessment

May 2018

Prepared by:
Mid-Atlantic Fishery Management Council

New England Fishery Management Council

National Marine Fisheries Service

Contents

Tables, Figures, and Maps

Purpose of this Document

The purpose of this analysis is to describe estimated landings and revenue (defined in the following section) for selected fisheries that may be affected by the New York Bight Call Areas. This document does not serve as a comprehensive assessment of fisheries impacts and should only be used as a planning level view of possible interactions.

Data Methods/Background

Vessel trip reports (VTR) are a primary source of data used here to understand fishing location, revenue, days absent, and number of vessels that might be affected by the development of wind farms in a particular section of the NY Bight Call Areas. VTRs are required for all vessels fishing with a federal permit, unless the only federal permit held is lobster. Surfclam and ocean quahog vessels submit logbooks, which are very similar, and are used in this analysis. For a trip where a VTR is required, the vessel must submit a VTR for each gear type used and/or statistical area fished, including a single point location where fishing occurred relative to that VTR. Previous studies indicate that this self-reporting underreports changing between gear type or statistical area (Palmer and Wigley 2007, 2009). Furthermore, and perhaps more importantly, given that commercial fishing trips can be quite long, a single spatial point is unlikely to adequately represent the actual footprint of fishing. Because of this, a statistical approach was used, referred in this action as the "VTR analysis," to better represent the footprint of fishing (DePiper 2014).

A model was developed that compares the single, self-reported, VTR point locations, with more detailed haul-by-haul position data on the subset of VTR trips that were observed (DePiper 2014). On trips that carry an at-sea observer, the true spatial extent of fishing activity can be determined from haul-by haul data. With this model, trip attributes (e.g. revenue, days absent, etc.) can be distributed in concentric rings around the VTR point, proportional to the modeled probability of fishing. The sizes of the rings vary with trip characteristics such as gear type and number of days absent. For example, week-long trips have a larger footprint than day trips. Once every trip in the VTR database is spatially assigned using this approach, the resulting dataset can be queried and presented according to year, gear type, species caught, or a particular geographic area. Since VTRs do not include fish prices or revenue, the landed values associated with particular trips were estimated using average monthly prices for the species from the dealer database, and all values are adjusted to January 2014 dollars for comparability across years. Clam logbook data include the revenue from each trip and these values were used directly instead of estimating value from average monthly prices.

For this analysis, the data are reported by calendar year (2012-2016), fishery management plan, and call area. Revenue and landings for mobile bottom-tending gears and select species are broken out separately. Data are summarized by gear type to help analyze gear-specific measures.

The estimates of revenue, effort, or landings attributed to a particular wind area are not exact. Despite the following reasons for discrepancy, VTR data are the most comprehensive data from which to assess fishing location and can be informative about the importance of specific areas in terms of revenue generated, species targeted, and number of fishery participants. The VTR

analysis maps included at the conclusion of this document are helpful for understanding the spatial uncertainties associated with VTR data.

1. For some fishing modes (e.g. lobster trap, hydraulic clam dredge), there are limited haul-by-haul location data to develop a reliable effort/revenue distribution model. Since lobster and bottom trawl trips were statistically indistinguishable, in terms of the distance between VTR points and observed hauls the same statistical approach is used for these gear types to estimate fishing location around a particular VTR point. Clam dredge gear uses the scallop dredge model.
2. Even for fisheries with relatively high observer coverage, the spatial imprecision of VTR points can lead to the assignment of revenue in unlikely locations. For example, because scallops command a high price per pound relative to other species, revenue from just a handful of trips with erroneous point locations may result in high revenue values inferred to a particular management area, relative to other species. The statistical model employed, though imperfect, looks to account for this imprecision.
3. Some types of fishing are known to occur within a particular depth range, and fishing often occurs along depth contours, so modelling a circular distribution of fishing effort around a VTR point can attribute fishing to unlikely locations. Prior work suggests that these issues are more problematic where depth or other ocean conditions change rapidly, which is not a major issue in the call areas.
4. VTRs are required for all vessels fishing under a federal permit, unless the only federal permit is lobster. Thus, only a portion of the lobster fishery is captured in the VTR data, and VTR data underrepresent lobster revenue/effort. In Lobster Management Area 3 the VTR data accounts for approximately 76% of lobster landings. It is important to note from this example that other similar management measures can mask the potential importance of these areas for fisheries.

Further, VTR data do not explain the dynamic factors that influence landings and revenue. While these effects may be captured in the resulting reported revenues and landings, the data do not explain why catch may be low or high at any point in time. It would be incorrect to assume from the data that low catch means a low abundance of species. Management forces include (among others): annual quotas for target and bycatch species, fisheries closures, and area restrictions. Economic influences include domestic and foreign market prices, market supply, fuel costs, monitoring costs, quota and permit lease prices.

Redistribution of effort into other locations may result in other effects, but alternative fishing choices are difficult to predict. Relocation may be challenging if other locations are already crowded with gear (e.g. the lobster pot fishery, which can be territorial in nature), or if it is difficult to catch the target species in alternate locations. If effort can be redistributed outside the call areas, net losses to displaced fishermen will be dependent on changes in efficiency and costs of fishing in alternate fishing grounds. The full impacts of any reductions in effort and landings would ripple through the economy (e.g, fuel, bait, ice suppliers). After the first point of sale, a host of other related industries, including seafood retailers, restaurants, transportation firms, all of their suppliers, and ultimately the consumers that frequent these establishments are also impacted by changes in the magnitude of landings, or the ports in which seafood is landed and

processed. Because the primary focus here is on landings and ex-vessel revenues, the information provided should be considered a partial analysis; optimally, broader societal impacts would need to be determined.

In order to provide more informative descriptions of potential affected fisheries by area, we analyzed the data in four groups- most impacted FMPs (fishery management plans) according to revenue, all other affected FMPs, select species, and landings and revenue by bottom tending gear. The results are presented below in both gross landings and gross revenues, separated by call areas.

Further research should be done on the impact to communities and specific fisheries as a result of the reduction in fishing area due to call areas. The data presented below does not capture what proportion of any fishery's revenue results from landings within the NY Bight Call Areas. While scallops are the most landed specie within the call areas and represent the most revenue, these numbers may obscure the economic importance of these fishing areas to relatively smaller fisheries. Again, further research must be done to determine a percentage or proportional impact to fisheries and permit holders. This analysis provides a snap shot of possible interactions with selected fishing interests which operated within these call areas in the past. This analytical approach was not developed (designed, nor reviewed) in conjunction with fishing industry interests. As such, future efforts to better understand possible impacts to fisheries should be scoped, designed, executed, and results reviewed with the various socio-economic components of the fishing industry.

Most Impacted FMPs

We define "most impacted" as the FMPs deriving the most revenue from the call areas over the five year analysis period of 2012 to 2016, indicating the highest potential for impact to industry from a reduction in fishing area. All call areas had the same top five most impacted FMPs: Sea Scallop, New England (NE); Summer Flounder, Scup, Black Sea Bass, Mid-Atlantic; Surfclam, Ocean Quahog, Mid-Atlantic; Mackerel, Squid, Butterfish, Mid-Atlantic; and "No Federal FMP." The category "No Federal FMP" contains a variety of species that are not federally regulated, such as: lobster, Jonah crab, smooth and chain dogfish, whelk, and menhaden, (there are close to 80 species without federal FMPs caught in the NY Bight area). Specific figures on these FMPs within each call area follow.

Fairways North

In the Fairways North call area Sea Scallop is the most impacted FMP with an estimated 1,423,000 pounds of scallops landed. Scallops fluctuated between a low of 110,000 pounds landed in 2015 and a high of 551,000 pounds landed in 2014. Figure 1.1 displays the annual landings of each FMP, and Table 1.1 displays the five year totals.

Similarly, the Sea Scallop FMP derived the most revenue from the Fairways North call area, totaling $16.862 million over five years. The Sea Scallop FMP total revenue was the highest in 2014 with $6.759 million and lowest in 2015 with $1.358. Figure 1.2 displays the annual revenue from Fairways North for each FMP, and Table 1.2 displays the five year totals.

Figure 1.1 Landings-Most Impacted FMPs, Fairways North

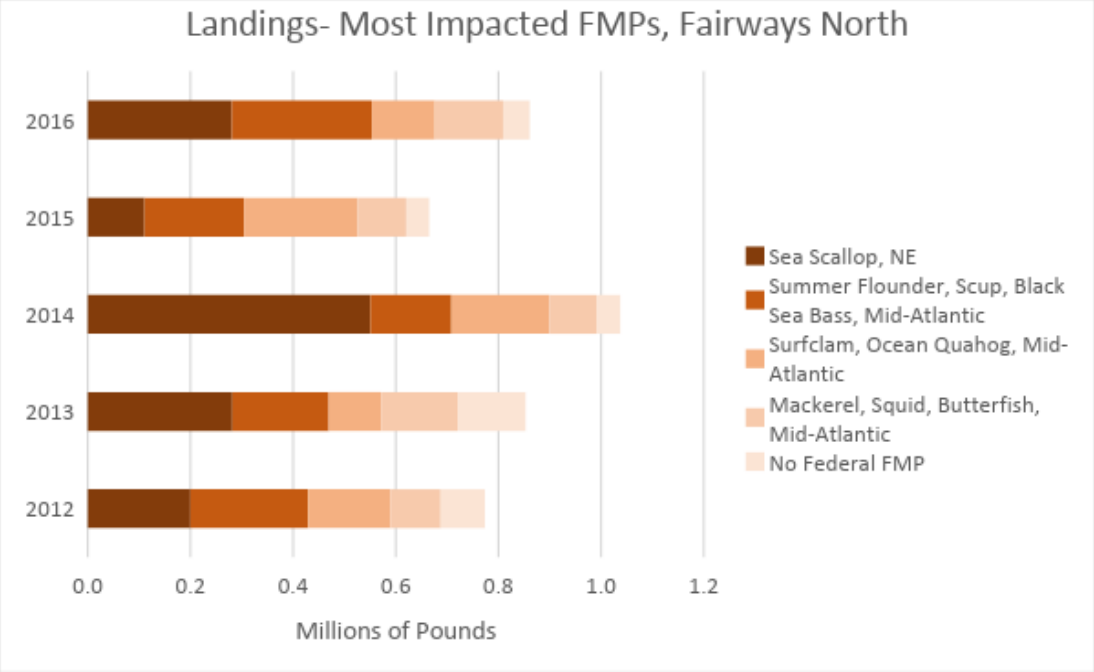


Table 1.1 Five Year Total Landings, Most Impacted FMPs, Fairways North

FMP	Five Year Total
Sea Scallop, New-England	1,423,000
Summer Flounder, Scup, Black Sea Bass, Mid-Atlantic	1,041,000
Surfclam, Ocean Quahog, Mid-Atlantic	798,000
Mackerel, Squid, Butterfish, Mid-Atlantic	565,000
No Federal FMP	362,000
Total (Pounds)	**4,189,000**

Figure 1.2 Revenue from Most Impacted FMPs, Fairways North

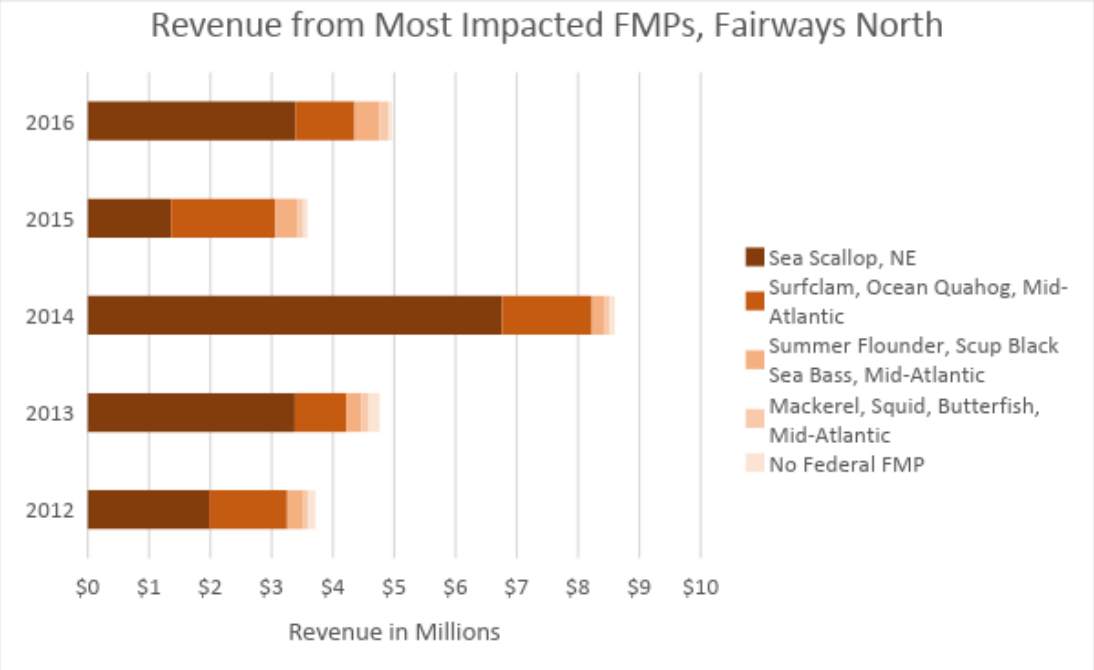


Table 1.2 Five Year Total Revenue for Most Impacted FMPs, Fairways North

FMP	Five Year Revenue
Sea Scallop, NE	$16,862,000
Surfclam, Ocean Quahog, Mid-Atlantic	$6,251,000
Summer Flounder, Scup Black Sea Bass, Mid-Atlantic	$1,471,000
Mackerel, Squid, Butterfish, Mid-Atlantic	$535,000
No Federal FMP	$506,000
Total	$25,624,000

Fairways South

In Fairways South, the Sea Scallop FMP had the largest five year landings, pulling in an estimated 1.854 million pounds over five years. The Sea Scallop FMP displayed the most inter annual variability within the assessed group with a high of 780,000 pounds in 2012 and a low of 106,000 in 2015. Figure 1.3 displays the annual landings from Fairways South for each FMP, and Table 1.3 displays the five year totals.

The Sea Scallop FMP had the largest five year revenue from landings inside Fairways South, totaling an estimated $20.809 million. The total of species in "No Federal FMP" had the greatest inter annual variability with a high of $92,000 in 2013 and a low of $15,000 in 2016. Figure 1.4 displays the annual revenue from landings within Fairways South for each FMP, and Table 1.4 displays the five year totals.

Figure 1.3 Landings-Most Impacted FMPs, Fairways South

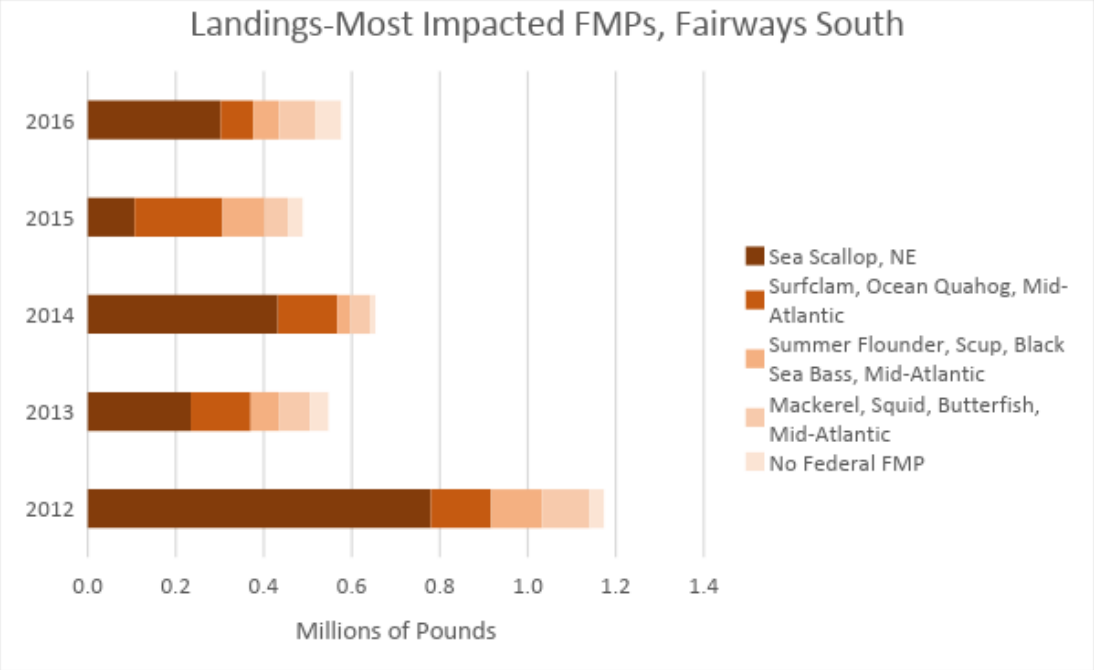


Table 1.3 Five Year Total Landings, Most Impacted FMPs, Fairways South

FMP	Five Year Landings
Sea Scallop, NE	1,854,000
Surfclam, Ocean Quahog, Mid-Atlantic	682,000
Summer Flounder, Scup, Black Sea Bass, Mid-Atlantic	366,000
Mackerel, Squid, Butterfish, Mid-Atlantic	356,000
No Federal FMP	180,000
Total (Pounds)	**3,438,000**

Figure 1.4 Revenue from Most Impacted FMPs, Fairways South

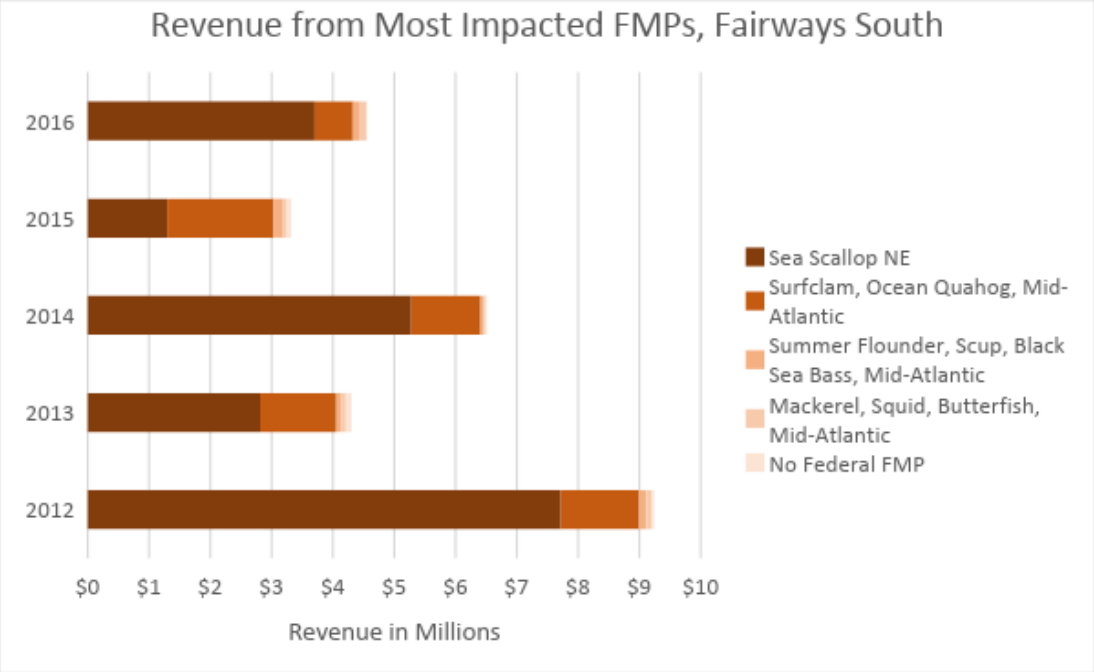


Table 1.4 Five Year Total Revenue for Most Impacted FMPs, Fairways South

FMP	Five Year Revenue
Sea Scallop NE	$20,809,000
Surfclam, Ocean Quahog, Mid-Atlantic	$6,006,000
Summer Flounder, Scup, Black Sea Bass, Mid-Atlantic	$525,000
Mackerel, Squid, Butterfish, Mid-Atlantic	$347,000
No Federal FMP	$244,000
Total	**$27,931,000**

Hudson North

The Sea Scallop FMP had the greatest five year landings within Hudson North, totaling 11.399 million pounds. The total of species in "No Federal FMP" had the greatest inter annual variability with a high of 1.241 million pounds in 2013 and a low of 66,000 pounds in 2015. The Mackerel, Squid, and Butterfish FMP had considerable variability in the five year period as well- with a high of 2.390 million pounds in 2012 and a low of 323,000 in 2015, confirming that landings can vary considerably within short period of time. Figure 1.5 displays the annual landings within Hudson North for each FMP, and Table 1.5 displays the five year totals.

The Sea Scallop FMP had the greatest five year revenue from landings within Hudson North, totaling $132.095 million. The total of species in "No Federal FMP" had the greatest inter annual variability with a high of $2.276 million in 2013 and a low of $72,000 in 2016. The Mackerel, Squid, and Butterfish FMP also had considerable variability in the five year period with a high of

$931,000 in 2012 and a low of $221,000 in 2015. Figure 1.6 displays the annual revenue from landings within Hudson North for each FMP, and Table 1.6 displays the five year totals.

Figure 1.5 Landings-Most Impacted FMPs, Hudson North

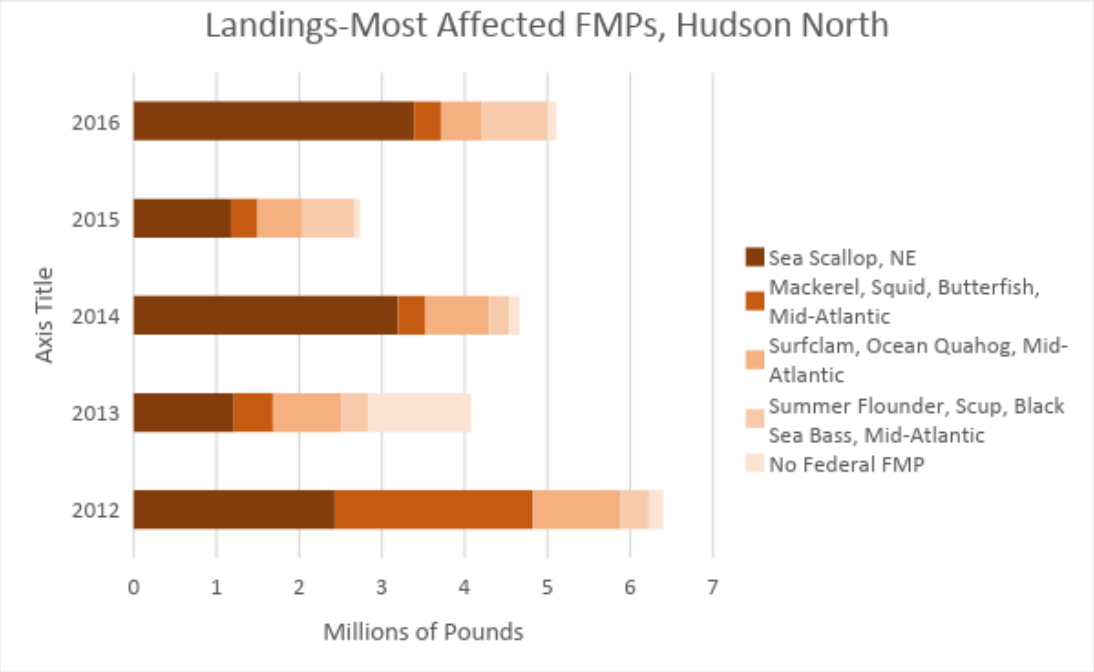


Table 1.5 Five Year Total Landings, Most Impacted FMPs, Fairways North

FMP	Five Year Total
Sea Scallop, NE	11,399,000
Mackerel, Squid, Butterfish, Mid-Atlantic	3,842,000
Surfclam, Ocean Quahog, Mid-Atlantic	3,697,000
Summer Flounder, Scup, Black Sea Bass, Mid-Atlantic	2,339,000
No Federal FMP	1,713,000
Total (Pounds)	**22,991,000**

Figure 1.6 Revenue from Most Impacted FMPs, Hudson North

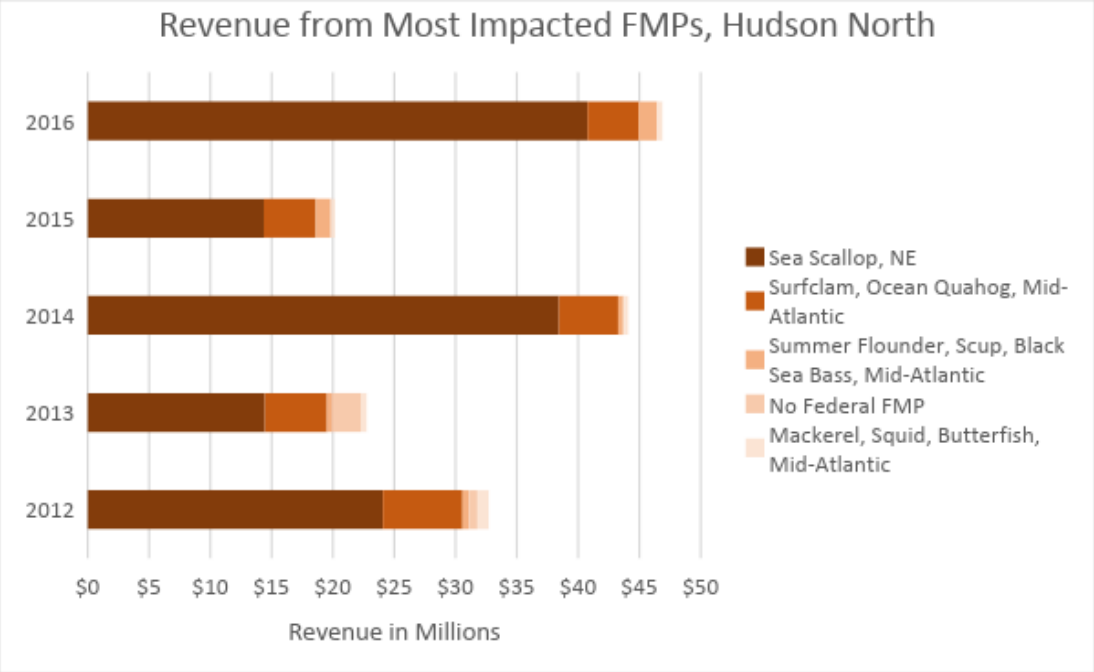


Table 1.6 Five Year Total Revenue for Most Impacted FMPs, Hudson North

FMP	Five Year Revenue
Sea Scallop, NE	$132,095,000
Surfclam, Ocean Quahog, Mid-Atlantic	$24,783,000
Summer Flounder, Scup, Black Sea Bass, Mid-Atlantic	$4,070,000
No Federal FMP	$3,290,000
Mackerel, Squid, Butterfish, Mid-Atlantic	$2,338,000
Total	**$166,575,000**

Hudson South

The Sea Scallop FMP had the greatest five year landings within Hudson South, totaling 8.783 million pounds. In 2015 a low of 565,000 pounds of scallops were landed within Hudson South. In 2012 a high of 3.257 million pounds of scallops were landed. Figure 1.7 displays the annual landings within Hudson South for each FMP, and Table 1.7 displays the five year totals.

The Sea Scallop FMP also had the greatest five year revenue from landings within Hudson South, totaling $98.532 million. In 2012 scallops generated a high of $32.147 million from landings within Hudson South. In 2015 scallops generated a low of $7.007 million. Figure 1.8 displays the annual revenue from landings within Hudson South for each FMP, and Table 1.8 displays the five year totals.

Figure 1.7 Landings-Most Impacted FMPs, Hudson South

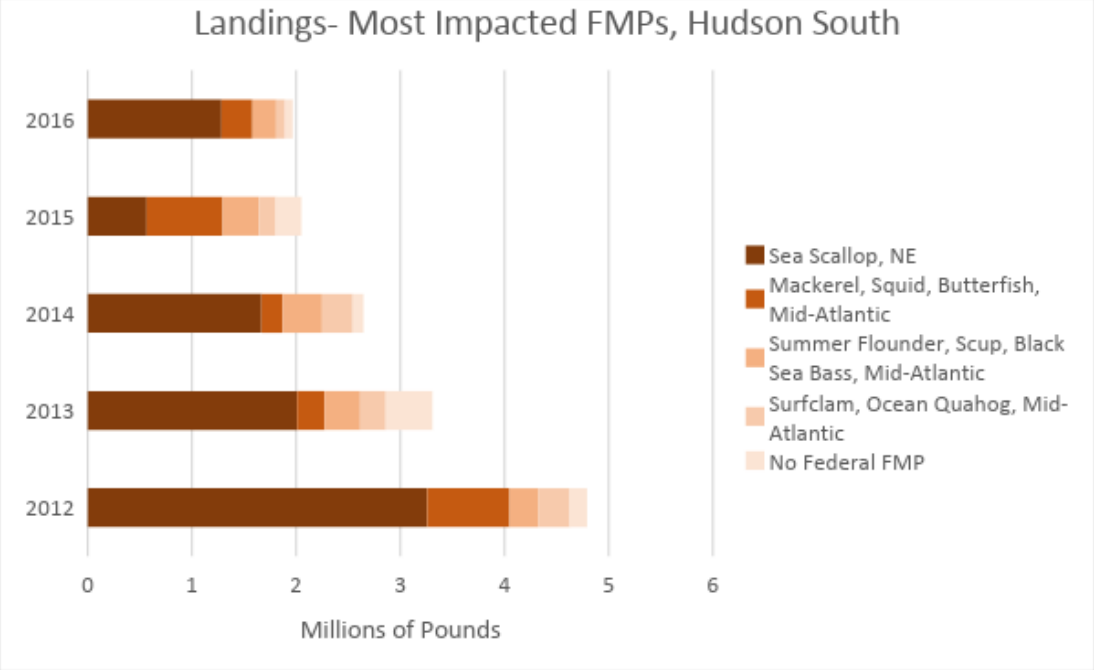


Table 1.7 Five Year Total Landings, Most Impacted FMPs, Hudson South

FMP	Five Year Total
Sea Scallop, NE	8,783,000
Mackerel, Squid, Butterfish, Mid-Atlantic	2,283,000
Summer Flounder, Scup, Black Sea Bass, Mid-Atlantic	1,572,000
Surfclam, Ocean Quahog, Mid-Atlantic	1,092,000
No Federal FMP	1,033,000
Total (Pounds)	**14,763,000**

Figure 1.8 Revenue from Most Impacted FMPs, Hudson South

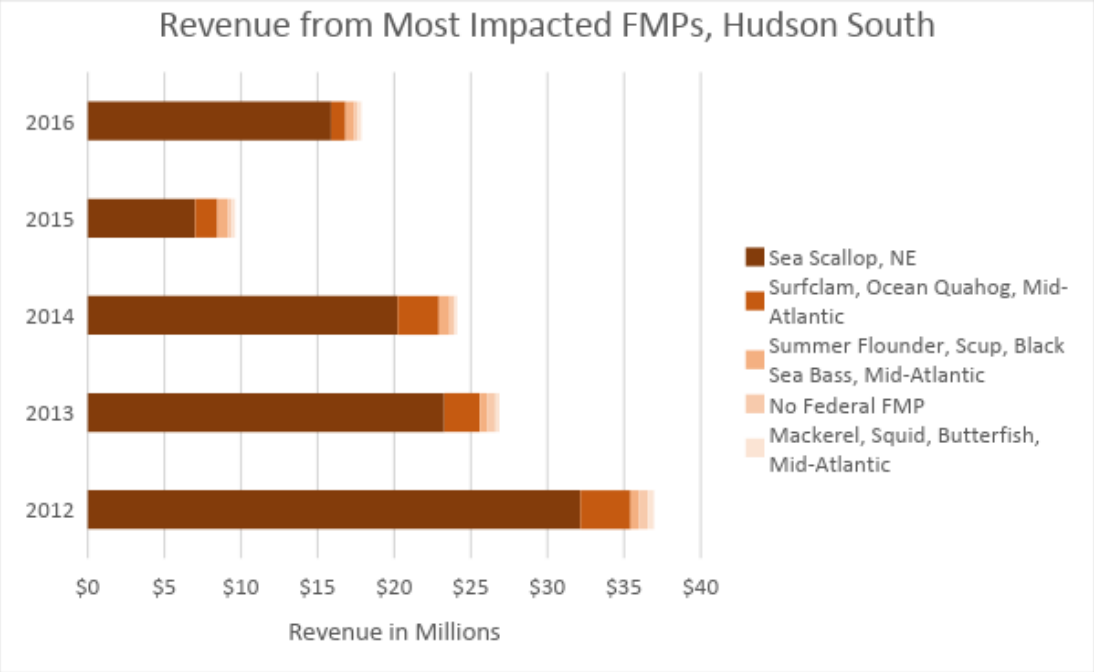


Table 1.8 Five Year Total Revenue for Most Impacted FMPs, Hudson South

FMP	Five Year Revenue
Sea Scallop, NE	$98,532,000
Surfclam, Ocean Quahog, Mid-Atlantic	$10,663,000
Summer Flounder, Scup, Black Sea Bass, Mid-Atlantic	$3,003,000
No Federal FMP	$1,822,000
Mackerel, Squid, Butterfish, Mid-Atlantic	$1,358,000
Total	**$115,379,000**

Summary

The most impacted FMPs generated an estimated $335.509 million from within the proposed New York Call Areas. Scallops generated the most revenue, at $268.298 million, or approximately 80 percent of all five FMP revenues combined. Table 1.9 below displays the totals for each FMP. Table 1.10 displays the total five year revenue and landings in each call area for the most impacted FMPs. Hudson North totals the most pounds landed and the most revenue, with $166.575 million coming from these 5 FMPs.

Table 1.9 Most Impacted FMPs Five Year Landings and Revenue, All Call Areas

FMP	Five Year Revenue	Five Year Landings (Pounds)
Sea Scallop, NE	$268,298,000	23,459,000
Surfclam, Ocean Quahog, Mid-Atlantic	$47,702,000	6,269,000
Summer Flounder, Scup, Black Sea Bass, Mid-Atlantic	$9,068,000	5,319,000
No Federal FMP	$5,863,000	3,288,000
Mackerel, Squid, Butterfish, Mid-Atlantic	$4,578,000	7,045,000
Total	**$335,509,000**	**45,381,000**

Table 1.10 Most Impacted FMPs Five Year Landings and Revenue

Call Area	Five Year Revenue	Five Year Landings (Pounds)
Fairways North	$25,624,000	4,189,000
Fairways South	$27,931,000	3,438,000
Hudson North	$166,575,000	22,991,000
Hudson South	$115,379,000	14,763,000
Total	**$335,509,000**	**45,381,000**

Other Impacted FMPs

We analyzed other impacted FMPs separately in order to better visualize the estimated landings and revenues. The other impacted FMPs are: Atlantic Herring, NE (Northeast); Monkfish, Joint; Skate, NE; NE Multispecies, Small; NE Multispecies, Large; Spiny Dogfish, Joint; Bluefish, Mid-Atlantic; Golden Tilefish, Mid-Atlantic; Red Crab, NE; River Herring, Joint; and Highly Migratory Species.

Fairways North

Within the "Other Impacted FMP" groups, the Atlantic Herring FMP had the greatest five year landings within Fairways North, totaling 2.379 million pounds. Herring also displayed the greatest variability over the five year period, with a high of 1.335 million pounds in 2013 and a low of 125,000 pounds in 2016. Figure 2.1 displays the annual landings within Fairways North for each FMP, and Table 2.1 displays the five year totals.

Monkfish had the greatest five year revenue within Fairways North, totaling $2.965 million. Several FMPs displayed variability throughout the five year period. For example, Atlantic Herring revenue was at a high in 2013 with $187,000 generated from landings within Fairways North, and it was at a low in 2016 with only $16,771. Golden Tilefish, Spiny Dogfish, and Highly Migratory Species also varied, although the overall revenues were much smaller. Figure 2.2 displays the annual landings within Fairways North for each FMP, and Table 2.2 displays the five year totals.

Figure 2.1 Landings-Other Impacted FMPs, Fairways North

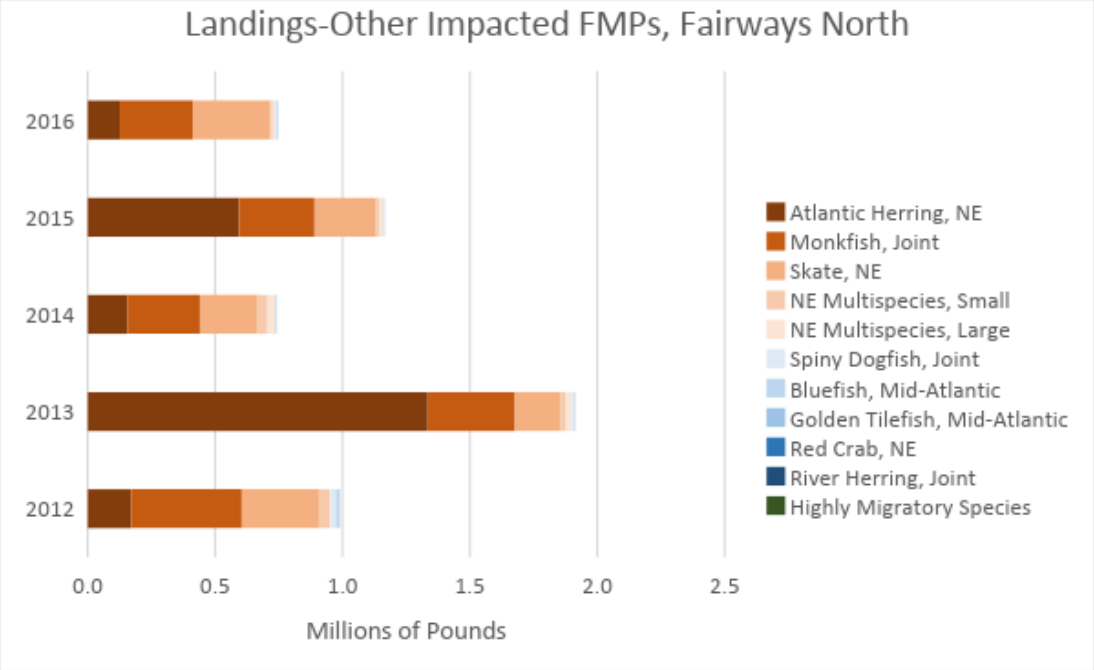


Table 2.1 Five Year Total Landings, Other Impacted FMPs, Fairways North

FMP	Five Year Total
Atlantic Herring, NE	2,379,000
Monkfish, Joint	1,645,000
Skate, NE	1,250,000
NE Multispecies, Small	125,000
NE Multispecies, Large	85,000
Spiny Dogfish, Joint	41,000
Bluefish, Mid-Atlantic	26,000
Golden Tilefish, Mid-Atlantic	2,000
Red Crab, NE	1,000
River Herring, Joint	<500
Highly Migratory Species	<500
Total (Pounds)	**5,555,000**

Figure 2.2 Revenue from Other Impacted FMPs, Fairways North

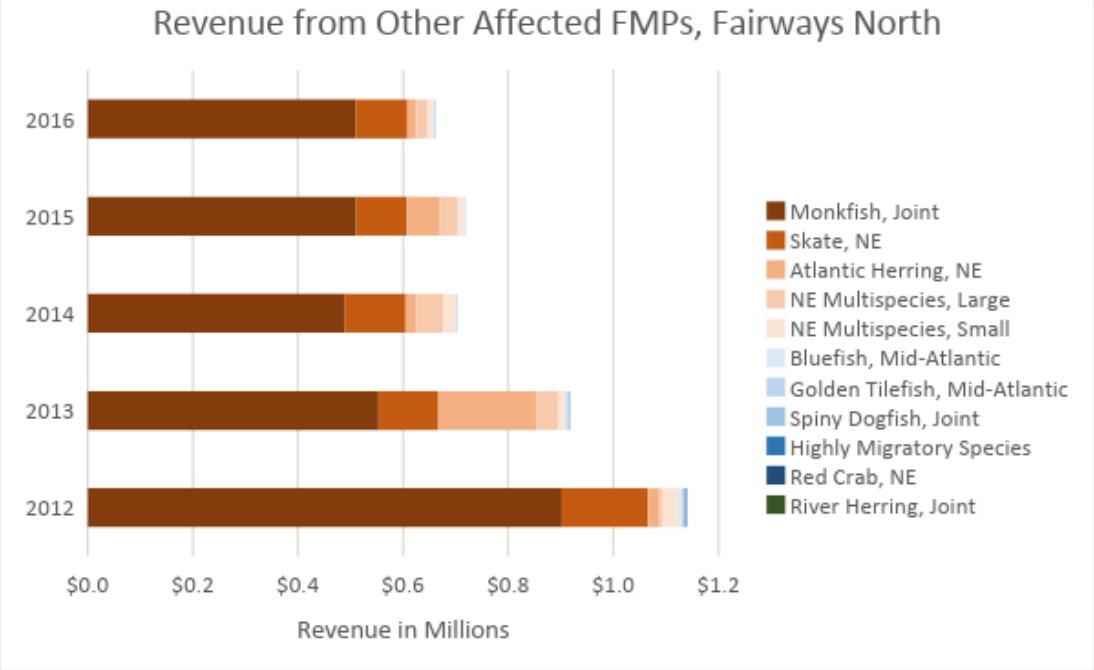


Table 2.2 Five Year Total Revenue for Other Impacted FMPs, Fairways North

FMP	Five Year Revenue
Monkfish, Joint	$2,965,000
Skate, NE	$589,000
Atlantic Herring, NE	$307,000
NE Multispecies, Large	$156,000
NE Multispecies, Small	$87,000
Bluefish, Mid-Atlantic	$17,000
Golden Tilefish, Mid-Atlantic	$9,000
Spiny Dogfish, Joint	$8,000
Highly Migratory Species	$3,000
Red Crab, NE	$1,000
River Herring, Joint	<$500
Total	**$4,141,000**

Fairways South

In Fairways South, Herring again had the largest number of landings with 1.426 million pounds over five years. Herring and Spiny Dogfish both had considerable variation between the years. Herring with a low of 30,000 pounds landed in 2014 and a high of 888,000 in 2013 and Spiny Dogfish with a low of 158 pounds in 2015 and a high of 16,000 in 2012. Figure 2.3 displays the annual landings within Fairways South for each FMP, and Table 2.3 displays the five year totals. Herring and Monkfish drew in similar revenues from landings within Fairways South, Herring totaling $185,000 and Monkfish $184,000. Herring had a high of $122,800 in revenues in 2013 and a low of $3,000 in 2014. Figure 2.4 displays the annual revenue from landings within Fairways South for each FMP, and Table 2.4 displays the five year totals.

Figure 2.3 Landings-Other Impacted FMPs, Fairways South

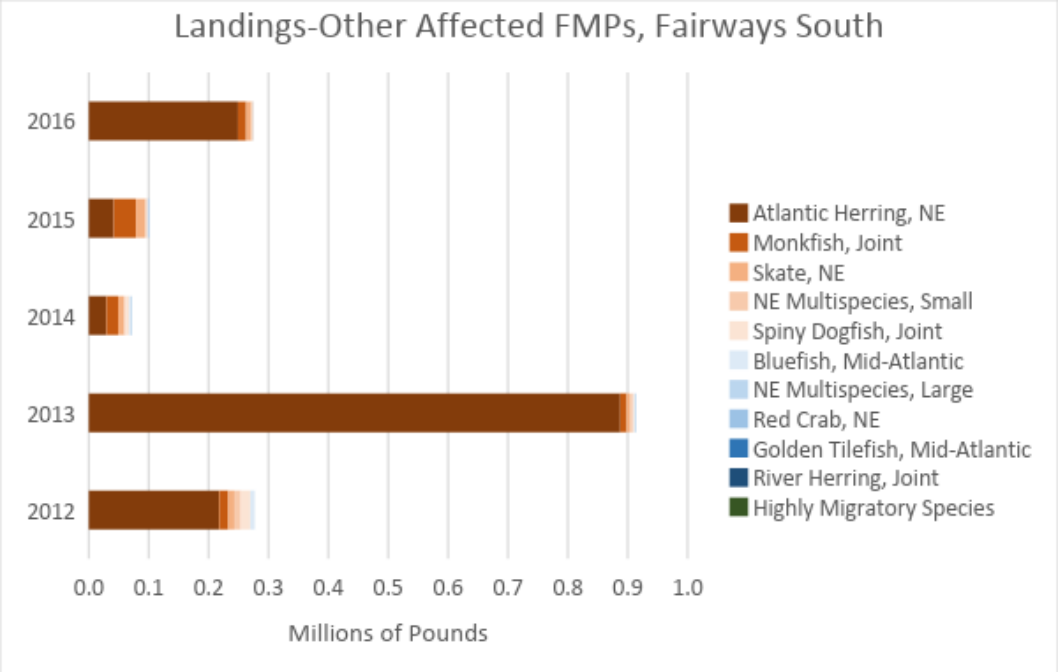


Table 2.3 Five Year Total Landings, Other Impacted FMPs, Fairways South

FMP	Five Year Landings
Atlantic Herring, NE	1,426,000
Monkfish, Joint	96,000
Skate, NE	49,000
NE Multispecies, Small	26,000
Spiny Dogfish, Joint	24,000
Bluefish, Mid-Atlantic	10,000
NE Multispecies, Large	6,000
Red Crab, NE	1,000
Golden Tilefish, Mid-Atlantic	<500
River Herring, Joint	<500
Highly Migratory Species	<500
Total (Pounds)	**1,638,000**

Figure 2.4 Revenue from Other Impacted FMPs, Fairways South

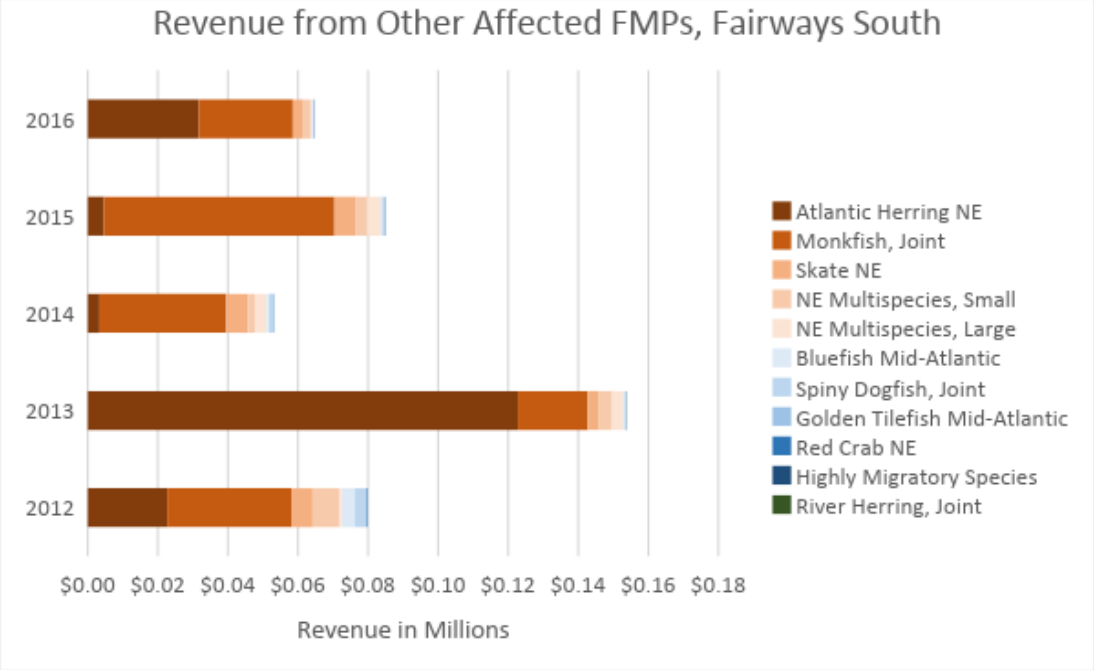


Table 2.4 Five Year Total Revenue for Other Impacted FMPs, Fairways South

FMP	Five Year Revenue
Atlantic Herring NE	$185,000
Monkfish, Joint	$184,000
Skate NE	$25,000
NE Multispecies, Small	$19,000
NE Multispecies, Large	$11,000
Bluefish Mid-Atlantic	$6,000
Spiny Dogfish, Joint	$5,000
Golden Tilefish Mid-Atlantic	$1,000
Red Crab NE	$1,000
Highly Migratory Species	<$500
River Herring, Joint	<$500
Total	**$437,000**

Hudson North

The Herring FMP totaled 4.557 million pounds landed within Hudson North. In the five year period, Herring brought in a low of 166,000 pounds in 2014 and a high of 1.985 million pounds in 2013. Figure 2.5 displays the annual landings within Fairways South for each FMP, and Table 2.5 displays the five year totals.

Monkfish totaled $1.808 million from landings inside Hudson North. In the five year period, Herring experienced considerable variability in total revenue between years. In 2014, Herring

totaled $19,000 while in 2013 Herring totaled $272,000. Similarly, The NE Multispecies, Large FMP and Highly Migratory Species experienced variability as well, however the overall revenue brought in are much smaller than Herring. For example, the Multispecies FMP brought in under $500 in 2016, and $4,000 in 2015. Highly Migratory Species totaled under brought in under $500 in all years but one, 2013, when revenues reached $2,000. Figure 2.6 displays the annual revenue from landings within Fairways South for each FMP, and Table 2.6 displays the five year totals.

Figure 2.5 Landings-Other Impacted FMPs, Hudson North

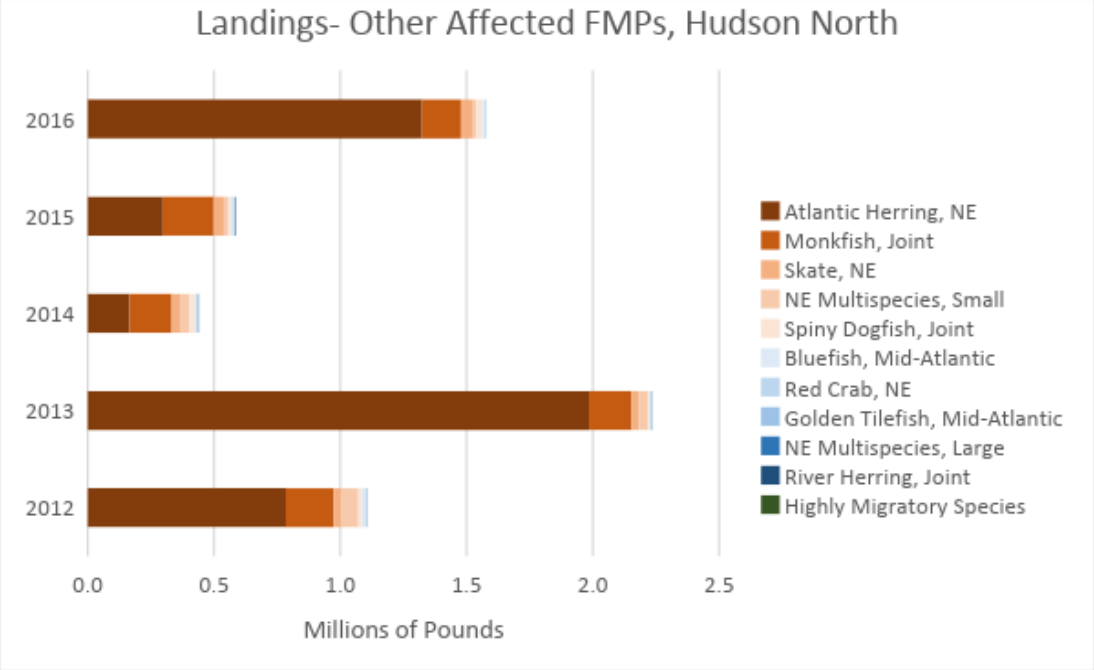


Table 2.5 Five Year Total Landings, Other Impacted FMPs, Hudson North

FMP	Five Year Total
Atlantic Herring, NE	4,557,000
Monkfish, Joint	879,000
Skate, NE	179,000
NE Multispecies, Small	170,000
Spiny Dogfish, Joint	76,000
Bluefish, Mid-Atlantic	42,000
Red Crab, NE	20,000
Golden Tilefish, Mid-Atlantic	17,000
NE Multispecies, Large	5,000
River Herring, Joint	1,000
Highly Migratory Species	1,000
Total (Pounds)	5,947,000

Figure 2.6 Revenue from Other Impacted FMPs, Hudson North

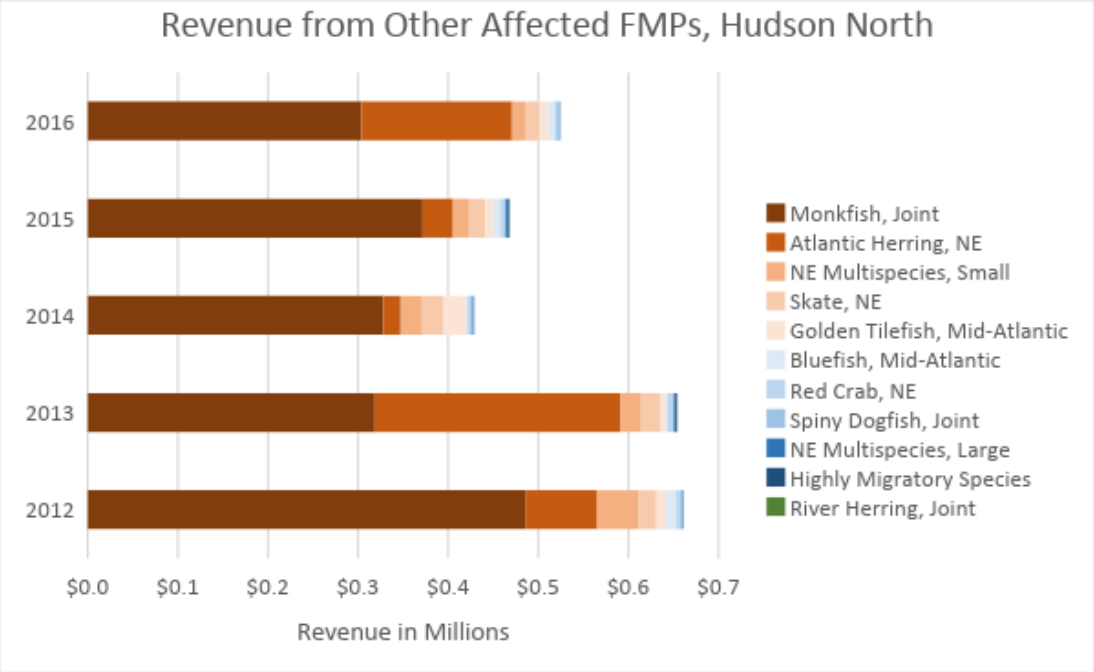


Table 2.6 Five Year Total Revenue for Other Impacted FMPs, Fairways North

FMP	Five Year Revenue
Monkfish, Joint	$1,808,000
Atlantic Herring, NE	$572,000
NE Multispecies, Small	$125,000
Skate, NE	$98,000
Golden Tilefish, Mid-Atlantic	$60,000
Bluefish, Mid-Atlantic	$30,000
Red Crab, NE	$20,000
Spiny Dogfish, Joint	$13,000
NE Multispecies, Large	$8,000
Highly Migratory Species	$3,000
River Herring, Joint	$1,000
Total	**$2,738,000**

Hudson South

Herring totaled the largest pounds landed in the five year period in Hudson South at 2.498 million. Figure 2.7 displays the annual revenue from landings within Hudson South for each FMP, and Table 2.7 displays the five year totals. Monkfish derived the most revenue from landings inside Hudson South with $1.29 million in five years. Figure 2.8 displays the annual revenue from landings within Hudson South for each FMP, and Table 2.8 displays the five year totals.

Figure 2.7 Landings-Other Impacted FMPs, Hudson South

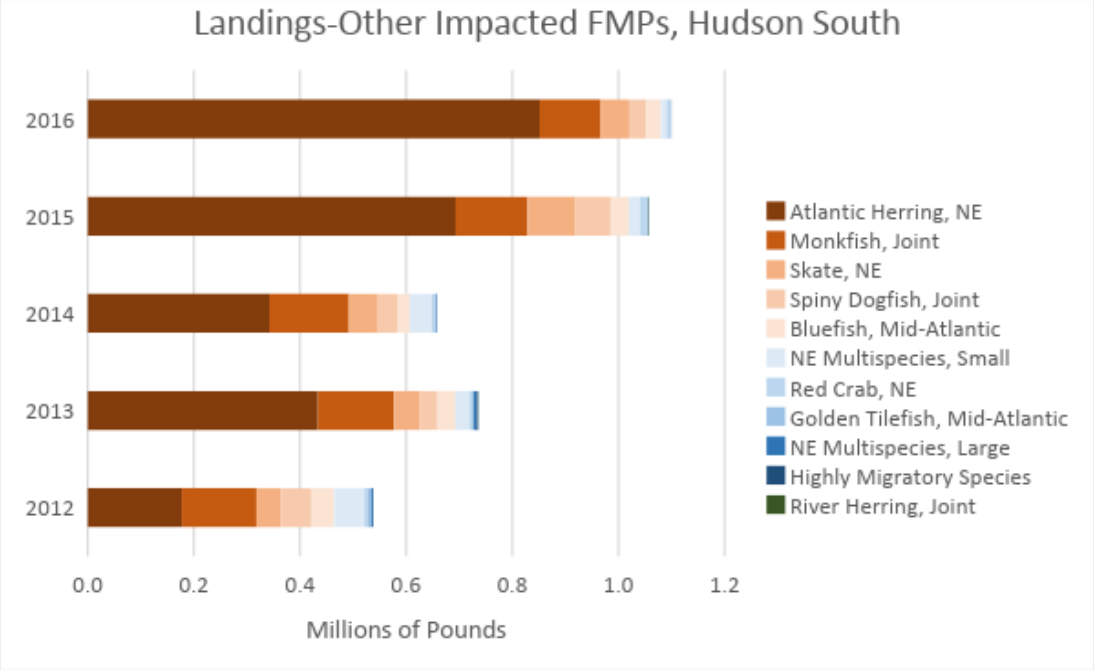


Table 2.7 Five Year Total Landings, Other Impacted FMPs, Hudson South

FMP	Five Year Total
Atlantic Herring, NE	2,498,000
Monkfish, Joint	684,000
Skate, NE	292,000
Spiny Dogfish, Joint	225,000
Bluefish, Mid-Atlantic	164,000
NE Multispecies, Small	157,000
Red Crab, NE	38,000
Golden Tilefish, Mid-Atlantic	13,000
NE Multispecies, Large	13,000
Highly Migratory Species	4,000
River Herring, Joint	1,000
Total (Pounds)	**4,089,000**

Figure 2.8 Revenue from Other Impacted FMPs, Hudson South

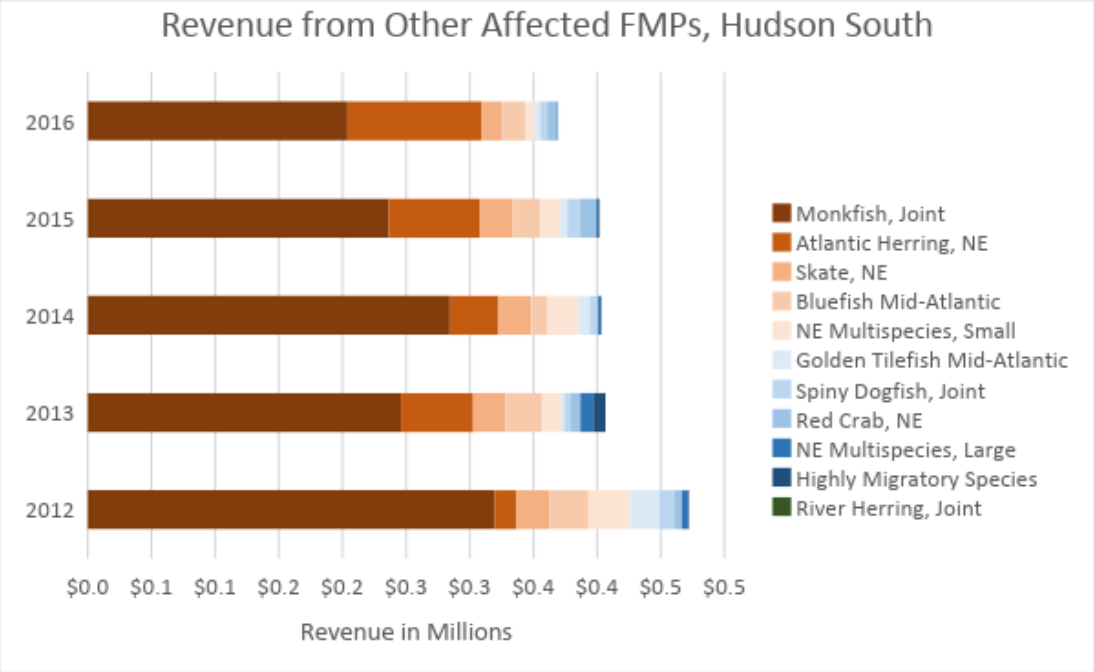


Table 2.8 Five Year Total Revenue for Other Impacted FMPs, Hudson South

FMP	Five Year Revenue
Monkfish, Joint	$1,290,000
Atlantic Herring, NE	$289,000
Skate, NE	$118,000
Bluefish Mid-Atlantic	$112,000
NE Multispecies, Small	$95,000
Golden Tilefish Mid-Atlantic	$45,000
Spiny Dogfish, Joint	$39,000
Red Crab, NE	$34,000
NE Multispecies, Large	$20,000
Highly Migratory Species	$11,000
River Herring, Joint	$1,000
Total	**$2,053,000**

Summary

The eleven FMPs in the "Other Impacted FMPs" group generated an estimated $9.369 million from within the proposed New York Bight Call Areas. Monkfish generated the most revenue, at $6.247 million, or approximately 67 percent of all eleven FMP revenues combined. Herring landed the most pounds in the New York Bight Call Areas, totaling 10,859,000 pounds, or about 63 percent of the total. Table 2.9 below displays the totals for each FMP. Table 2.10 displays the total five year revenue and landings in each Call Areas for these eleven FMPs. Fairways North

totals the most revenue, with $4.141 million, while Hudson North totals the most pounds landed, with 5.947 million.

Table 2.9 Other Impacted FMPs Five Year Landings and Revenue, All Call Areas

FMP	Five Year Revenue	Five Year Landings (Pounds)
Atlantic Herring, NE	$1,352,000	10,859,000
Bluefish Mid-Atlantic	$166,000	242,000
Golden Tilefish Mid-Atlantic	$115,000	33,000
Highly Migratory Species	$17,000	5,000
Monkfish, Joint	$6,247,000	3,304,000
NE Multispecies, Large	$194,000	109,000
NE Multispecies, Small	$326,000	478,000
Red Crab, NE	$55,000	61,000
River Herring, Joint	$2,000	3,000
Skate, NE	$830,000	1,770,000
Spiny Dogfish, Joint	$64,000	366,000
Total	**$9,369,000**	**17,229,000**

Table 2.10 Other Impacted FMPs Five Year Landings and Revenue

Call Area	Five Year Revenue	Five Year Landings (Pounds)
Fairways North	$4,141,000	5,555,000
Fairways South	$437,000	1,638,000
Hudson North	$2,738,000	5,947,000
Hudson South	$2,053,000	4,089,000
Total	**$9,369,000**	**17,229,000**

Select Species

We analyzed select species due to their economic importance in the area and to isolate them from combined FMPs. The select species are: Black Sea Bass, Butterfish, Lobster, Atlantic Mackerel, Ocean Quahog, Scup, Squids, and Summer Flounder.

Fairways North

In the Fairways North area, 796,000 pounds of Ocean Quahog were landed between 2012-2016 (Figure and Table 3.1), which equates to approximately $6.236 million (Figure and Table 3.2). Figure 3.1 displays the interannual variability of each specie. For example, in 2015, twice the amount of Ocean Quahog was landed compared to 2013. Figure 3.2 shows how this affected revenues; 2013 brought in approximately 46 percent of the revenues of 2015.

Figure 3.1 Landings of Select Species, Fairways North

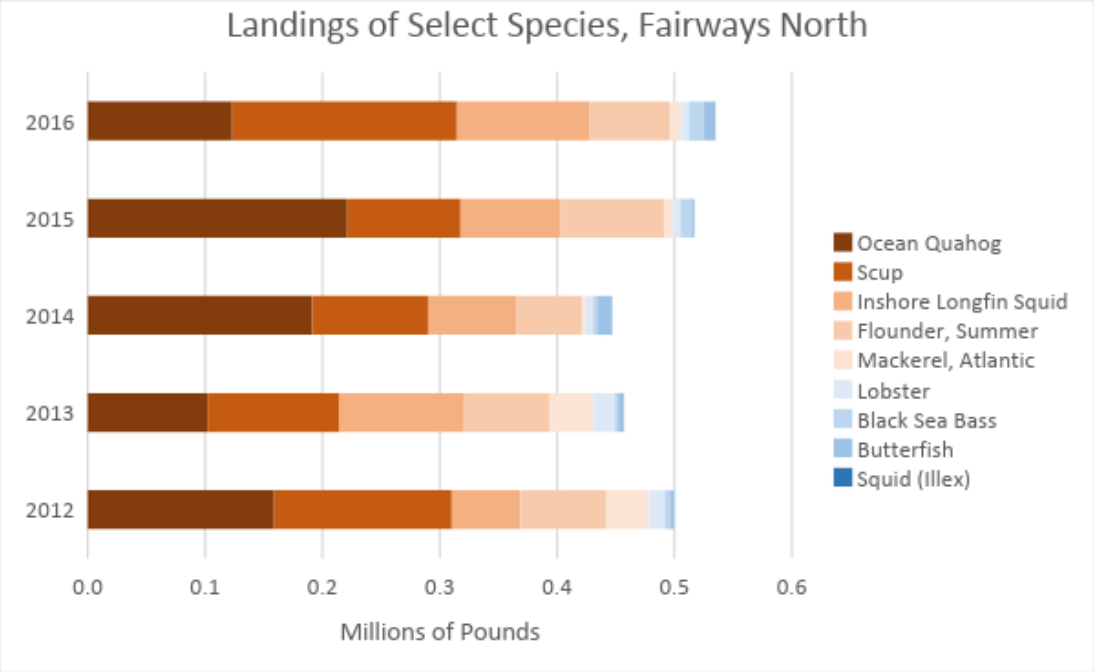


Table 3.1 Five Year Total Landings, Select Species, Fairways North

Species	Five Year Total
Ocean Quahog	796,000
Scup	650,000
Inshore Longfin Squid	439,000
Flounder, Summer	358,000
Mackerel, Atlantic	93,000
Lobster	53,000
Black Sea Bass	33,000

Butterfish	33,000
Squid (*Illex*)	1,000
Total (Pounds)	**2,456,000**

Figure 3.2 Revenue from Select Species, Fairways North

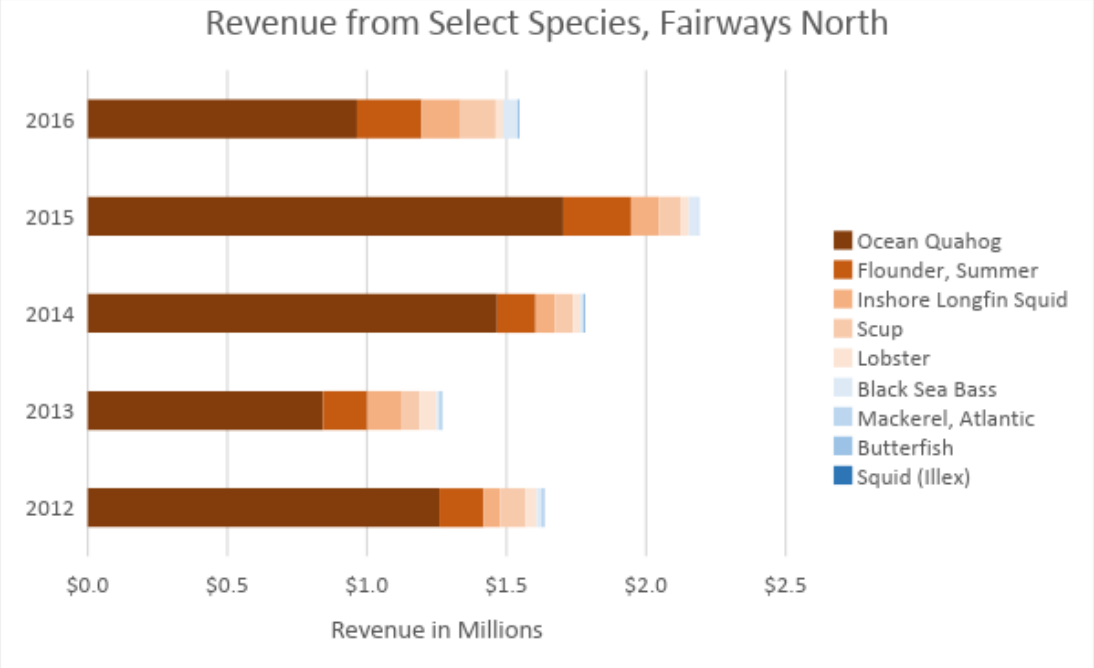


Table 3.2 Five Year Total Revenue for Select Species, Fairways North

Species	Five Year Revenue
Ocean Quahog	$6,236,000
Flounder, Summer	$929,000
Inshore Longfin Squid	$492,000
Scup	$423,000
Lobster	$183,000
Black Sea Bass	$120,000
Mackerel, Atlantic	$22,000
Butterfish	$21,000
Squid (Illex)	<$500
Total	$8,425,000

Fairways South

In the Fairways South Call Area, Atlantic Mackerel experienced considerable interannual variability, with a low of less than 500 pound caught in 2014, and a high of 43,000 pounds caught in 2012. In revenues, this equated to $13,000 in 2012 and less than $500 in 2014. Lobster also varied within the five year period, with a high of 9,000 pounds caught in 2015

(approximately $36,000) and a low of less than 500 pounds in 2014 (approximately $1,000). Figure 3.3 and Table 3.3 display the annual and total five year landings, respectively. Figure 3.4 and Table 3.4 display the annual and total five year revenues, respectively.

Figure 3.3 Landings of Select Species, Fairways South

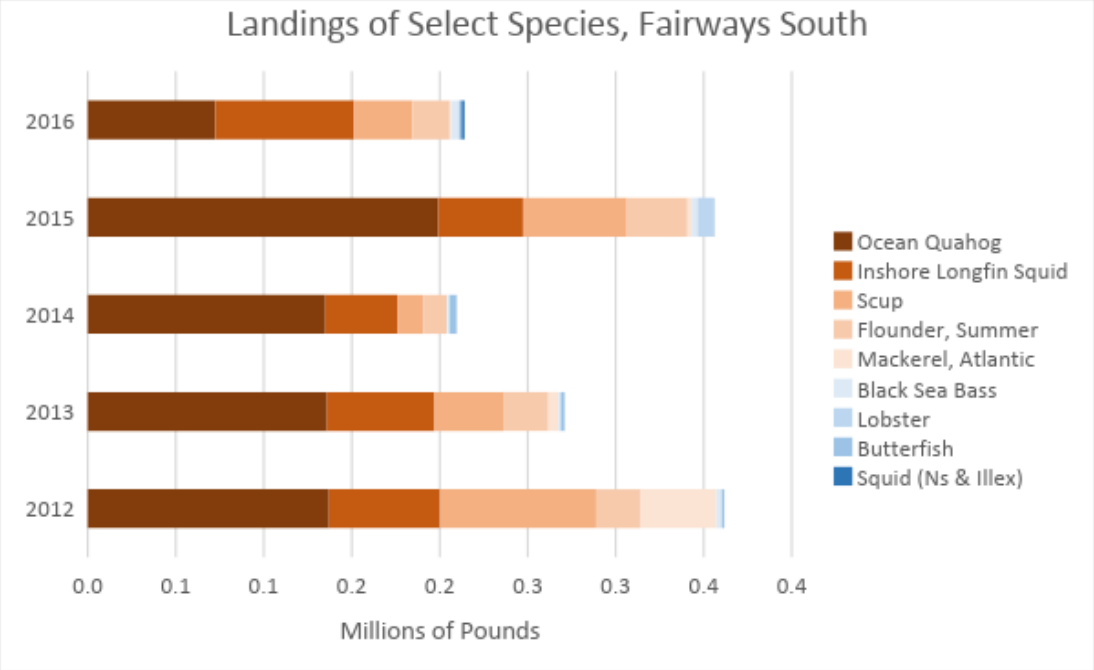


Table 3.3 Five Year Total Landings, Select Species, Fairways South

Species	Five Year Landings
Ocean Quahog	680,000
Inshore Longfin Squid	292,000
Scup	234,000
Flounder, Summer	120,000
Mackerel, Atlantic	53,000
Black Sea Bass	12,000
Lobster	11,000
Butterfish	9,000
Squid (Ns & Illex)	2,000
Total (Pounds)	**1,412,000**

Figure 3.3 Revenue from Select Species, Fairways South

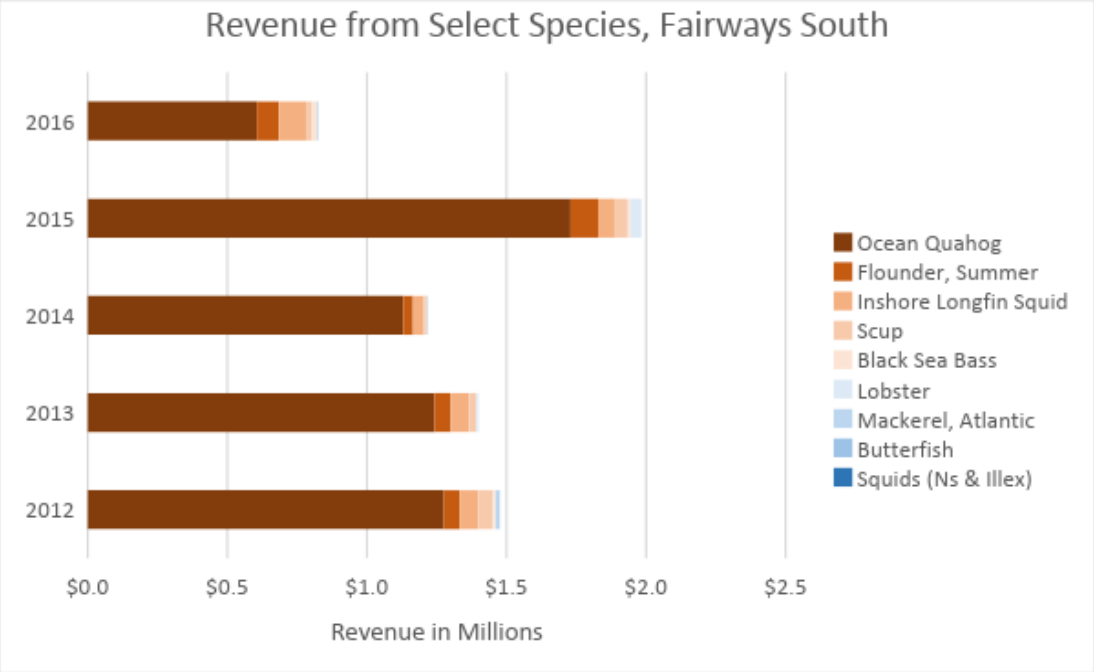


Table 3.3 Five Year Total Revenue for Select Species, Fairways South

Species	Five Year Revenue
Ocean Quahog	$5,982,000
Flounder, Summer	$327,000
Inshore Longfin Squid	$325,000
Scup	$153,000
Black Sea Bass	$45,000
Lobster	$44,000
Mackerel, Atlantic	$15,000
Butterfish	$6,000
Squids (Ns & Illex)	$1,000
Total	**$6,898,000**

Hudson North

In Hudson North Ocean Quahog landed 3,674,000 pounds in the five year period. Atlantic Mackerel experienced considerable interannual variability, with a low of 4,000 pounds landed in 2014, and a high of 2,112,000 pounds landed in 2012. In revenues, this equated to $634,000 in 2012 and less than $2,000 in 2014. Figure 3.5 and Table 3.5 display the annual and total five year landings, respectively. Figure 3.6 and Table 3.6 display the annual and total five year revenues, respectively.

Figure 3.5 Landings of Select Species, Hudson North

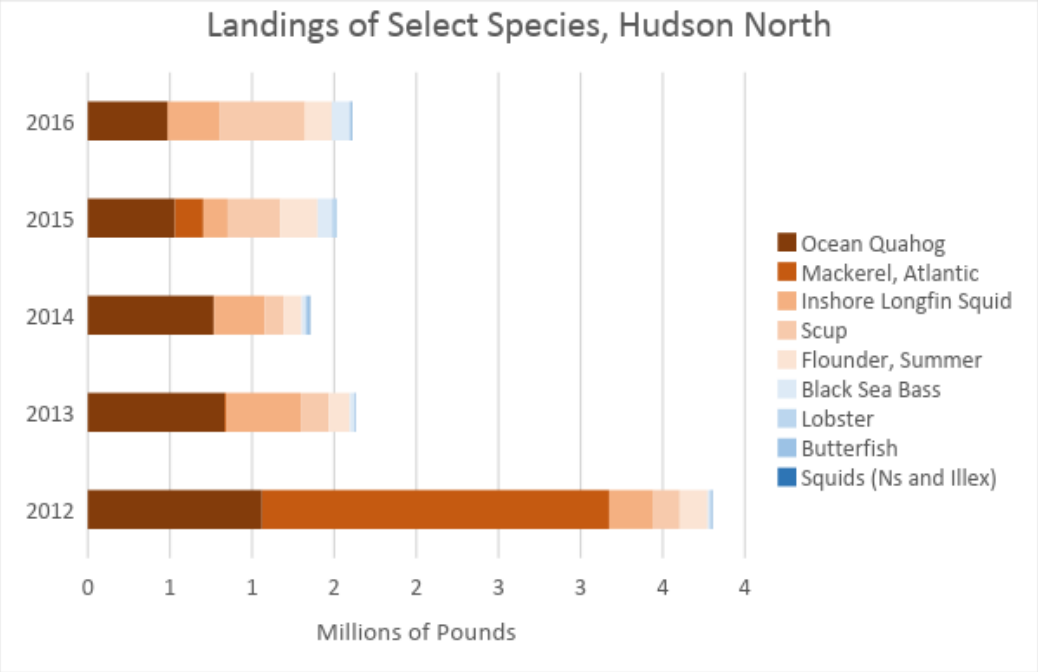


Table 3.5 Five Year Total Landings, Select Species, Fairways North

Species	Five Year Total
Ocean Quahog	3,674,000
Mackerel, Atlantic	2,304,000
Inshore Longfin Squid	1,493,000
Scup	1,288,000
Flounder, Summer	796,000
Black Sea Bass	256,000
Lobster	58,000
Butterfish	36,000
Squids (Ns and Illex)	9,000
Total (Pounds)	**9,914,000**

Figure 3.6 Revenue from Select Species, Hudson North

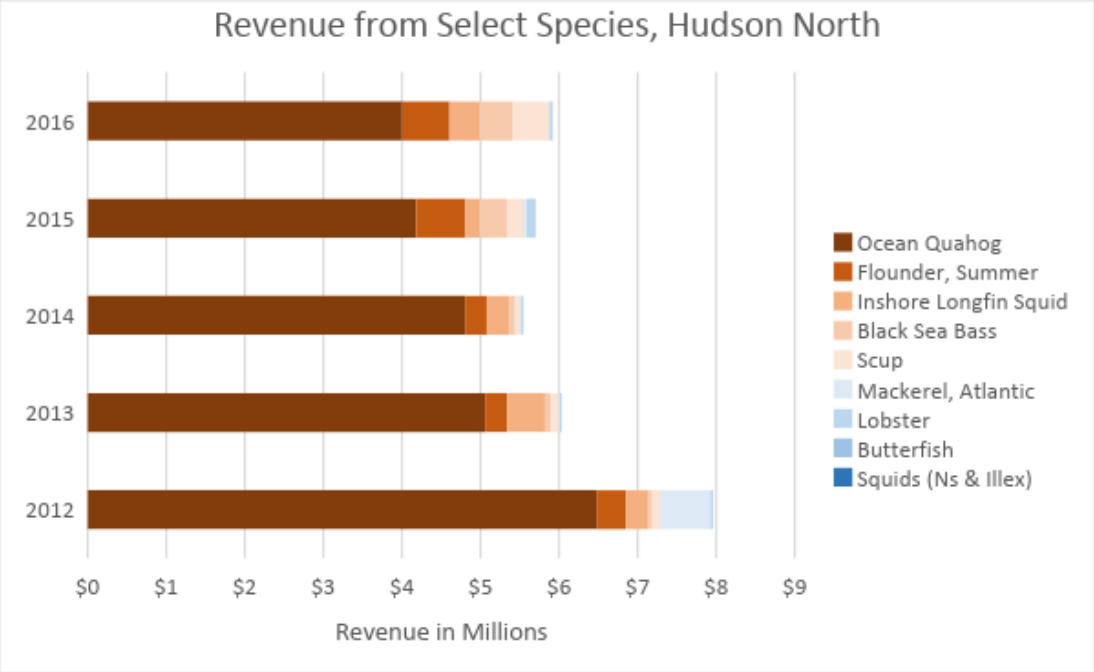


Table 3.6 Five Year Total Revenue for Select Species, Hudson North

FMP	Five Year Revenue
Monkfish, Joint	$1,808,000
Atlantic Herring, NE	$572,000
NE Multispecies, Small	$125,000
Skate, NE	$98,000
Golden Tilefish, Mid-Atlantic	$60,000
Bluefish, Mid-Atlantic	$30,000
Red Crab, NE	$20,000
Spiny Dogfish, Joint	$13,000
NE Multispecies, Large	$8,000
Highly Migratory Species	$3,000
River Herring, Joint	$1,000
Total	**$2,738,000**

Hudson South

Unlike the previous call areas, Hudson South had relatively low Ocean Quahog landings. In Hudson South Ocean Quahog landed only 150,000 total pounds over the five year period of analysis. Of the select species, Atlantic Mackerel landed the most in Hudson South and experienced considerable interannual variability, with a low of 4,000 pounds landed in 2014, and a high of 600,000 pounds landed in 2015. In revenues, this equated to approximately $2,000 in 2014 and $151,000 in 2015. In the five year period of analysis, Summer Flounder derived the

most revenue in Hudson South, compared to the other analyzed species, with a total of $1.815 million. Figure 3.7 and Table 3.7 display the annual and total five year landings, respectively. Figure 3.8 and Table 3.8 display the annual and total five year revenues, respectively.

Figure 3.7 Landings of Select Species, Hudson South

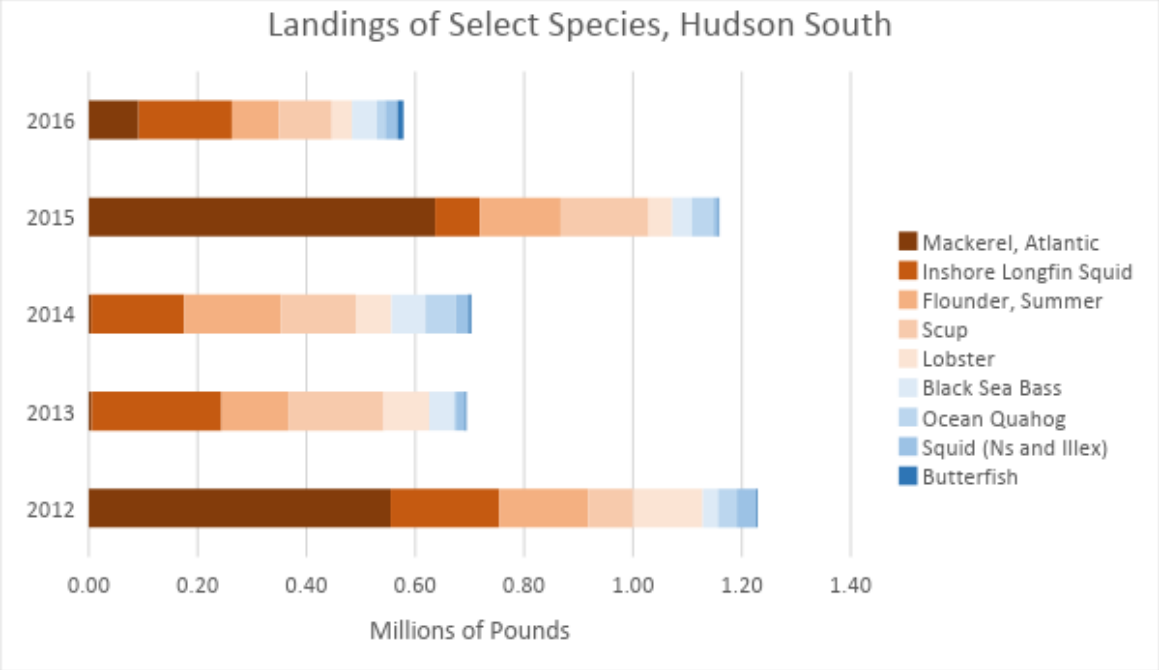


Table 3.7 Five Year Total Landings, Select Species, Hudson South

Species	Five Year Total
Mackerel, Atlantic	1,292,000
Inshore Longfin Squid	863,000
Flounder, Summer	701,000
Scup	654,000
Lobster	357,000
Black Sea Bass	217,000
Ocean Quahog	150,000
Squid (Ns and Illex)	106,000
Butterfish	23,000
Total (Pounds)	**4,362,000**

Figure 3.8 Revenue from Select Species, Hudson South

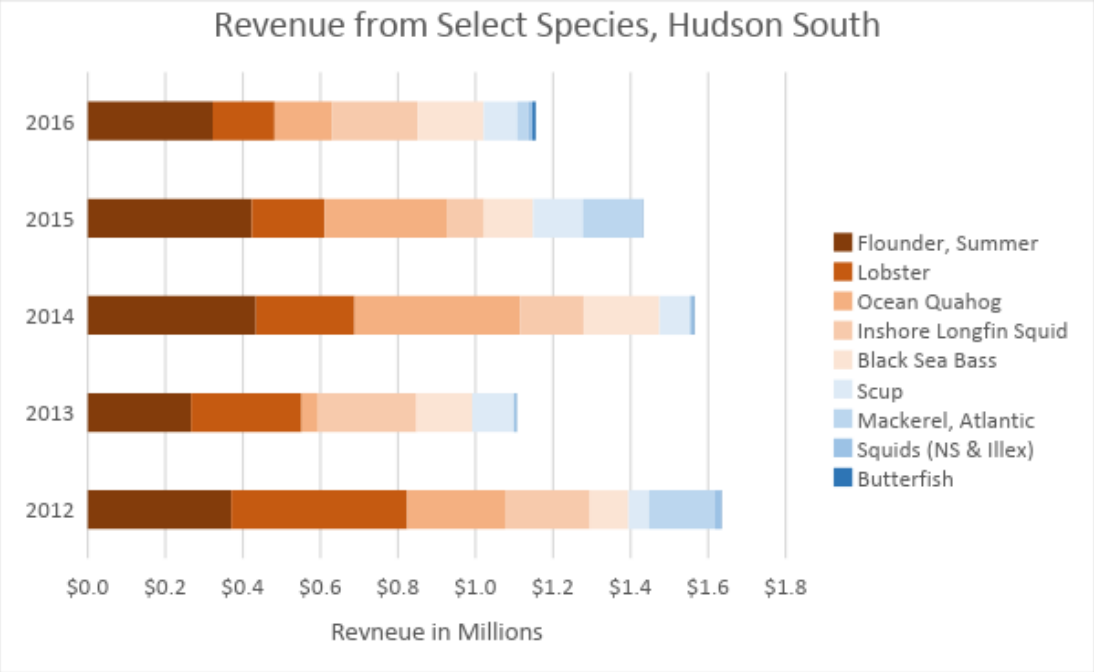


Table 3.8 Five Year Total Revenue for Select Species, Hudson South

Species	Five Year Revenue
Flounder, Summer	$1,815,000
Lobster	$1,341,000
Ocean Quahog	$1,188,000
Inshore Longfin Squid	$951,000
Black Sea Bass	$735,000
Scup	$453,000
Mackerel, Atlantic	$352,000
Squids (NS & Illex)	$40,000
Butterfish	$16,000
Total	**$6,890,000**

Summary

The select species are listed below in Table 3.9 along with their corresponding five year total revenue for all call areas and five year landings for all call areas. Table 3.10 displays the total five year revenue and landings in each call area for these nine species. Hudson North totals the most revenue, with $31.156 million, and the most pounds landed, with 9.914 million.

Table 3.9 Five Year Revenue and Landings, Select Species, All Call Areas

Species	Five Year Revenue	Five Year Landings (Pounds)
Ocean Quahog	$37,926,000	5,301,000
Flounder, Summer	$5,227,000	1,974,000
Inshore Longfin Squid	$3,398,000	3,087,000
Scup	$1,985,000	2,827,000
Black Sea Bass	$1,856,000	519,000
Lobster	$1,796,000	478,000
Mackerel, Atlantic	$1,070,000	3,741,000
Butterfish	$66,000	101,000
Squids (NS & Illex)	$44,000	117,000
Total	**$53,369,000**	**18,144,000**

Table 3.10 Five Year Revenue and Landings, Select Species

Call Area	Five Year Revenue	Five Year Landings (Pounds)
Fairways North	$8,425,000	2,456,000
Fairways South	$6,898,000	1,412,000
Hudson North	$31,156,000	9,914,000
Hudson South	$6,890,000	4,362,000
Total	**$53,369,000**	**18,144,000**

Bottom Tending Mobile Gear

Due to the impact wind turbine construction may have on the ocean floor, we isolated revenue and landings accomplished with mobile bottom tending gear. The following gear were isolated and presented by call area:

- Dredges: ocean quahog/surfclam, mussel, sea scallop, urchin, modified and unmodified chain-mat scallop, scallop with turtle deflector, and other
- Otter trawls: bottom (fish, scallop, shrimp, other), including those with haddock separator, Ruhle trawl, beam trawl, twin trawls, pair trawls, and other

Fairways North

Table 4.1 displays each FMP's five year total revenue and total landings when only considering bottom tending gear. The Sea Scallop, NE FMP had the greatest revenue and gross landings by bottom tending gear, comprising approximately 66 percent of total associated revenue. A total of 4.724 million pounds were landed in Fairways North by bottom tending gear during the five year period of analysis, generating an estimated $25.571 million.

Table 4.1 Revenue and Landings by Bottom Tending Gear 2012-2016, Fairways North

FMP	Five Year Revenue	Five Year Total (pounds)
Sea Scallop, NE	$16,852,000	1,423,000
Surfclam, Ocean Quahog, Mid-Atlantic	$6,251,000	798,000
Summer Flounder, Scup Black Sea Bass, Mid-Atlantic	$1,394,000	1,018,000
Mackerel, Squid, Butterfish, Mid-Atlantic	$525,000	511,000
NE Multispecies, Large	$153,000	84,000
Monkfish, Joint	$119,000	58,000
NE Multispecies, Small	$82,000	114,000
Skate, NE	$80,000	215,000
Atlantic Herring, NE	$59,000	429,000
No Federal FMP	$36,000	22,000
Bluefish, Mid-Atlantic	$13,000	20,000
Spiny Dogfish, Joint	$6,000	32,000
Golden Tilefish, Mid-Atlantic	$1,000	<500
Highly Migratory Species	<$500	<500
River Herring, Joint	<$500	<500
Total	**$25,571,000**	**4,724,000**

Fairways South

Table 4.2 displays each FMP's five year total revenue and total landings when only considering bottom tending gear. The Sea Scallop, NE FMP had the greatest revenue and gross landings by bottom tending gear, comprising approximately 75 percent of total associated revenue. A total of 3.506 million pounds were landed in Fairways North by bottom tending gear during the five year period of analysis, generating an estimated $27.883 million.

Table 4.2 Revenue and Landings by Bottom Tending Gear 2012-2016, Fairways South

FMP	Five Year Revenue	Five Year Landings (Pounds)
Sea Scallop NE	$20,800,000	1,853,000
Surfclam, Ocean Quahog, Mid-Atlantic	$6,006,000	682,000
Summer Flounder, Scup, Black Sea Bass, Mid-Atlantic	$523,000	365,000
Mackerel, Squid, Butterfish, Mid-Atlantic	$342,000	335,000
No Federal FMP	$75,000	34,000
Monkfish, Joint	$65,000	31,000
NE Multispecies, Small	$18,000	25,000
Atlantic Herring NE	$16,000	113,000
Skate NE	$16,000	29,000
NE Multispecies, Large	$11,000	6,000
Bluefish Mid-Atlantic	$6,000	9,000
Spiny Dogfish, Joint	$5,000	24,000
Golden Tilefish Mid-Atlantic	<$500	<500
Highly Migratory Species	<$500	<500
River Herring, Joint	<$500	<500
Total	**$27,883,000**	**3,506,000**

Hudson North

Table 4.3 displays each FMP's five year total revenue and total landings when only considering bottom tending gear. The Sea Scallop, NE FMP had the greatest revenue and gross landings by bottom tending gear, comprising approximately 81 percent of the total associated revenue. A total of 21.469 million pounds were landed in Hudson North by bottom tending gear during the five year period of analysis, generating an estimated $163.580 million.

Table 4.3 Revenue and Landings by Bottom Tending Gear, Hudson North

FMP	Five Year Revenue	Five Year Landings (Pounds)
Sea Scallop, NE	$132,067,000	11,397,000
Surfclam, Ocean Quahog, Mid Atlantic	$24,783,000	3,697,000
Summer Flounder, Scup, Black Sea Bass, Mid-Atlantic	$4,049,000	2,330,000

Mackerel, Squid, Butterfish, Mid-Atlantic	$1,983,000	2,631,000
Monkfish, Joint	$328,000	160,000
NE Multispecies, Small	$123,000	166,000
Atlantic Herring, NE	$119,000	910,000
No Federal FMP	$57,000	37,000
Skate, NE	$28,000	67,000
Bluefish, Mid-Atlantic	$26,000	34,000
NE Multispecies, Large	$8,000	5,000
Spiny Dogfish, Joint	$6,000	34,000
Golden Tilefish, Mid-Atlantic	$2,000	1,000
Highly Migratory Species	$1,000	<500
River Herring, Joint	<$500	<500
Total	**$163,580,000**	**21,469,000**

Hudson South

Table 4.4 displays each FMP's five year total revenue and total landings when only considering bottom tending gear. The Sea Scallop, NE FMP had the greatest revenue and gross landings by bottom tending gear, comprising approximately 87 percent of the total associated revenue. A total of 13.837 million pounds were landed in Hudson South by bottom tending gear during the five year period of analysis, generating an estimated $113.860 million.

Table 4.4 Revenue and Landings by Bottom Tending Gear, Hudson South

FMP	Five Year Revenue	Five Year Landings (Pounds)
Sea Scallop, NE	$98,531,000	8,783,000
Surfclam, Ocean Quahog, Mid-Atlantic	$10,663,000	1,092,000
Summer Flounder, Scup, Black Sea Bass, Mid-Atlantic	$2,966,000	1,560,000
Mackerel, Squid, Butterfish, Mid-Atlantic	$1,086,000	1,249,000
Monkfish, Joint	$307,000	149,000
NE Multispecies, Small	$89,000	143,000
No Federal FMP	$50,000	201,000
Skate NE	$45,000	152,000
Atlantic Herring NE	$38,000	292,000
Bluefish, Mid-Atlantic	$32,000	44,000
Spiny Dogfish, Joint	$28,000	159,000
NE Multispecies, Large	$19,000	12,000
Highly Migratory Species	$5,000	1,000
Golden Tilefish, Mid-Atlantic	$1,000	<500
River Herring, Joint	<$500	<500
Total	**$113,860,000**	**13,837,000**

Summary

Table 4.5 displays each FMP's five year total revenue and total landings across all call areas when only considering bottom tending gear. The Sea Scallop, NE FMP had the greatest revenue and gross landings by bottom tending gear, comprising approximately 81 percent of the total associated revenue. A total of 43.536 million pounds were landed by bottom tending gear during the five year period of analysis, generating an estimated $330.893 million. Total revenue from all call areas for all gear and FMPs was $344.878 million, meaning revenue from bottom tending gear landings is approximately 96 percent of all revenues in the NY Bight Area. Table 4.6 displays the total five year revenue and landings in each call area. Hudson North totals the most revenue, with $163.579 million, and the most pounds landed, with 21.468 million.

Table 4.5 Revenue and Landings by Bottom Tending Gear, All Call Areas

FMP	Five Year Revenue	Five Year Landings (Pounds)
Sea Scallop, NE	$268,250,000	23,455,000
Surfclam, Ocean Quahog, Mid-Atlantic	$47,702,000	6,269,000
Summer Flounder, Scup, Black Sea Bass, Mid-Atlantic	$8,931,000	5,273,000
Mackerel, Squid, Butterfish, Mid-Atlantic	$3,935,000	4,726,000
Monkfish, Joint	$819,000	398,000
NE Multispecies, Small	$313,000	448,000
Atlantic Herring NE	$232,000	1,744,000
No Federal FMP	$219,000	294,000
NE Multispecies, Large	$191,000	107,000
Skate NE	$170,000	463,000
Bluefish, Mid-Atlantic	$76,000	107,000
Spiny Dogfish, Joint	$44,000	248,000
Highly Migratory Species	$6,000	2,000
Golden Tilefish, Mid-Atlantic	$4,000	1,000
River Herring, Joint	$1,000	1,000
Total	**$330,893,000**	**43,536,000**

Table 4.6 Five Year Revenue and Landings, Bottom Tending Gear

Call Area	Five Year Revenue	Five Year Landings (Pounds)
Fairways North	$25,572,000	4,724,000
Fairways South	$27,882,000	3,506,000
Hudson North	$163,579,000	21,468,000
Hudson South	$113,860,000	13,838,000
Total	**$330,892,000**	**43,537,000**

Totals

Tables 4.7 through 4.10 display the give year total revenue and total landed pounds within each call area. Hudson North totals the most pounds landed, 28.938 million, and the most revenue derived from within a call area, $169.313 million. This is almost six times the revenue and pounds landed in the call area with the least of each, Fairways South.

Table 4.7 Five Year Total Revenue and Landings, Fairways North

Year	Five Year Revenue	Five Year Landings (Pounds)
2012	$4,853,000	1,761,000
2013	$5,676,000	2,765,000
2014	$9,304,000	1,779,000
2015	$4,302,000	1,831,000
2016	$5,630,000	1,608,000
Total	**$29,766,000**	**9,744,000**

Table 4.8 Five Year Total Revenue and Landings, Fairways South

Year	Five Year Revenue	Five Year Landings (Pounds)
2012	$9,319,000	1,449,000
2013	$4,455,000	1,461,000
2014	$6,569,000	725,000
2015	$3,403,000	590,000
2016	$4,622,000	851,000
Total	**$28,368,000**	**5,076,000**

Table 4.9 Five Year Total Revenue and Landings, Hudson North

Year	Five Year Revenue	Five Year Landings (Pounds)
2012	$33,372,000	7,509,000
2013	$23,397,000	6,313,000
2014	$44,511,000	5,103,000
2015	$20,632,000	3,323,000
2016	$47,401,000	6,690,000
Total	**$169,313,000**	**28,938,000**

Table 4.10 Five Year Total Revenue and Landings, Hudson South

Year	Five Year Revenue	Five Year Landings (Pounds)
2012	$37,419,000	5,330,000
2013	$27,274,000	4,044,000
2014	$24,498,000	3,304,000
2015	$10,019,000	3,107,000
2016	$18,222,000	3,067,000
Total	**$117,432,000**	**18,852,000**

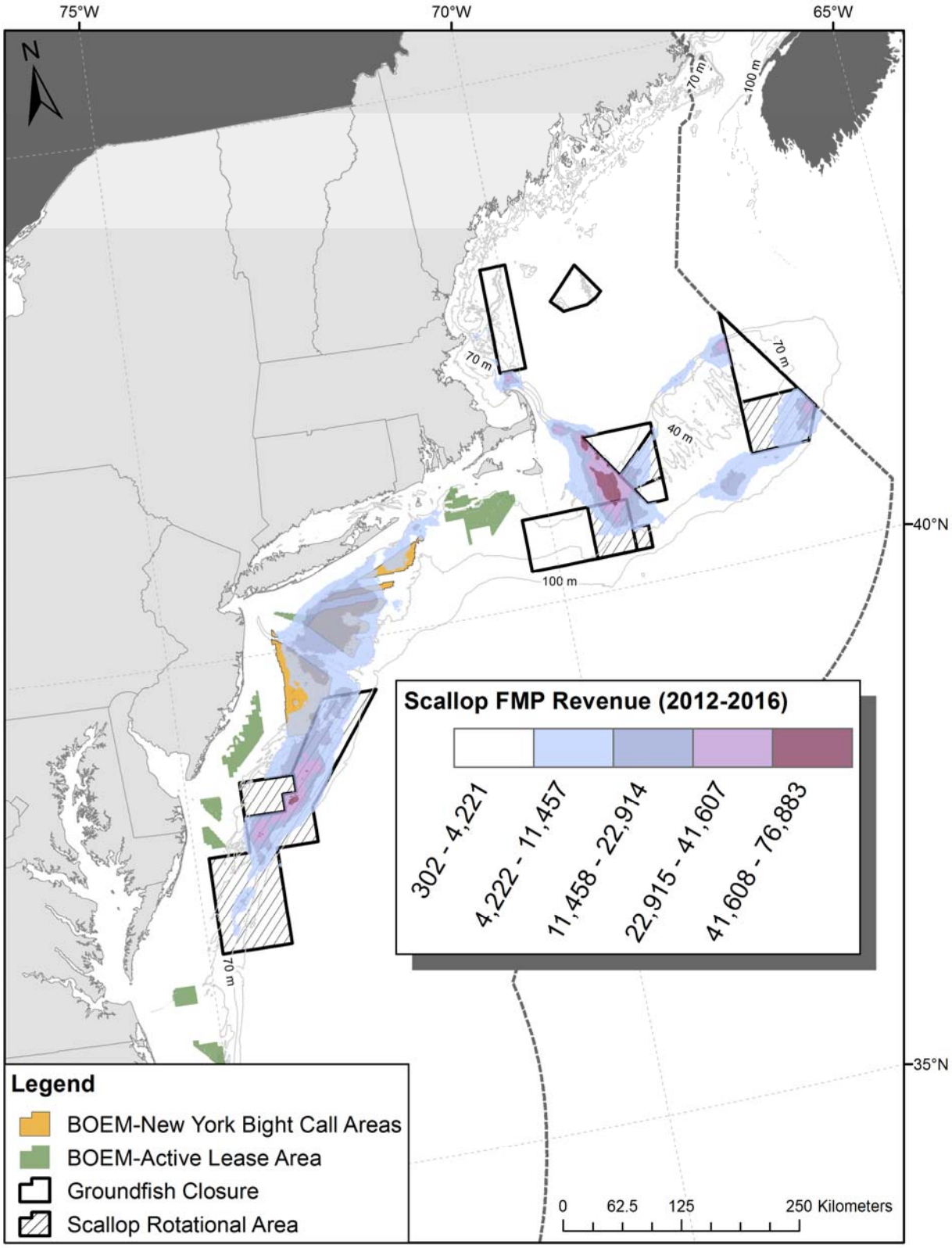
Table 4.11 Five Year Total Revenue and Landings, All Call Areas

Year	Five Year Revenue	Five Year Total (Pounds)
2012	$84,963,000	16,050,000
2013	$60,802,000	14,582,000
2014	$84,882,000	10,911,000
2015	$38,356,000	8,851,000
2016	$75,875,000	12,216,000
Total	**$344,878,000**	**62,611,000**

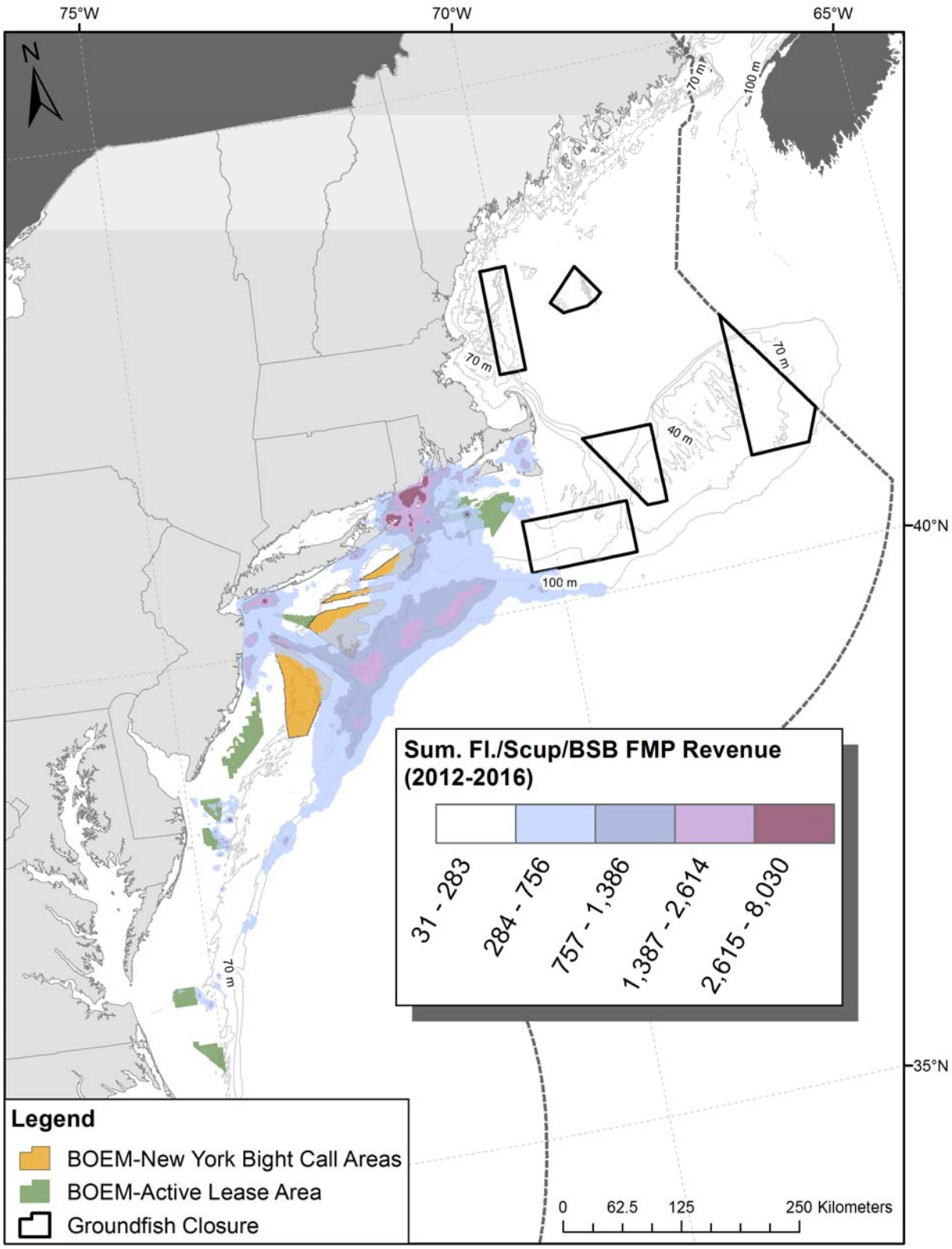
Maps

The maps on the following pages summarize total revenue across a five-year period from 2012-2016 in relation to NY Bight Call Areas and other WEAs. Selected fishery management areas shown in black.

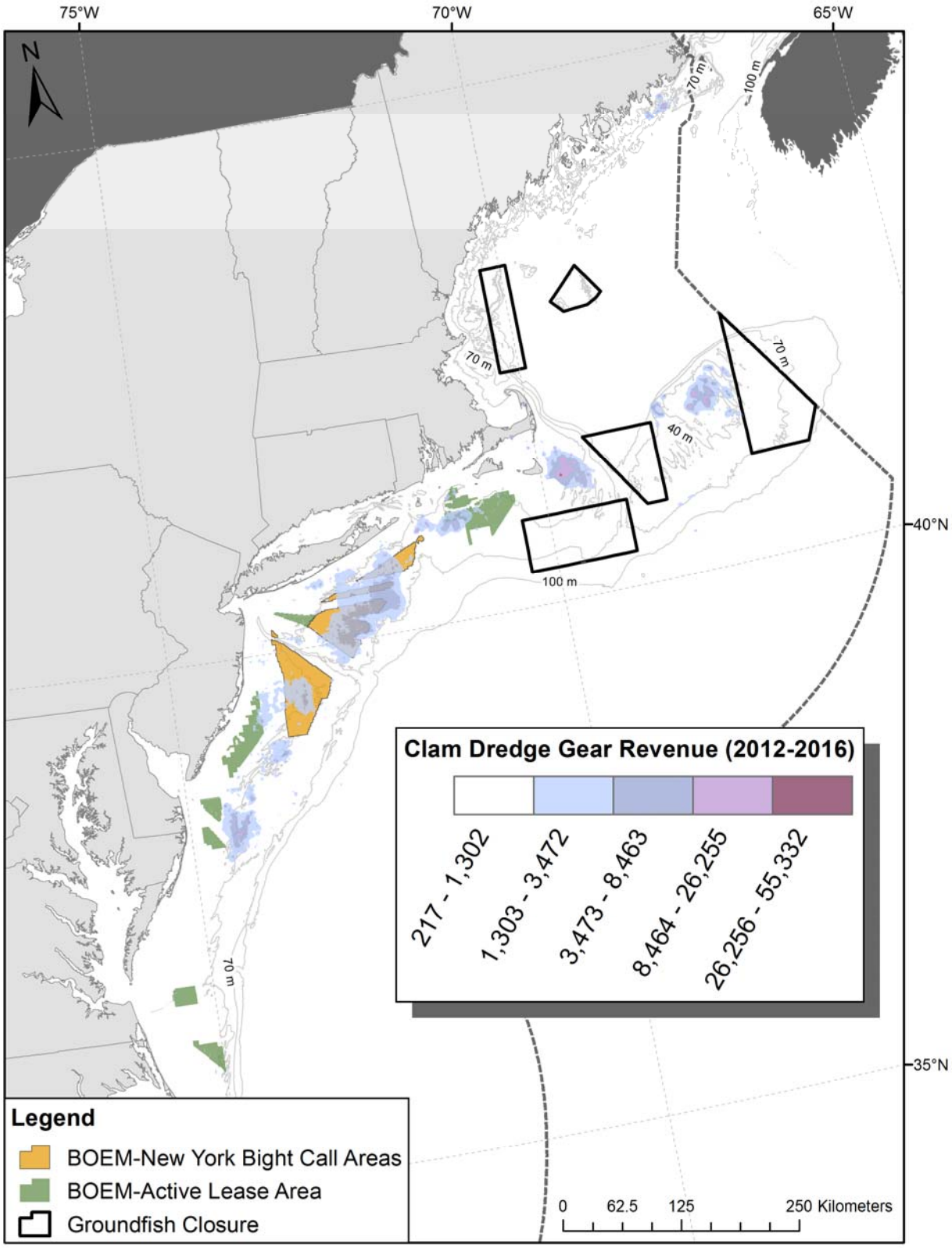
Map 1 – Sum of Sea Scallop FMP revenues (2012-2016)



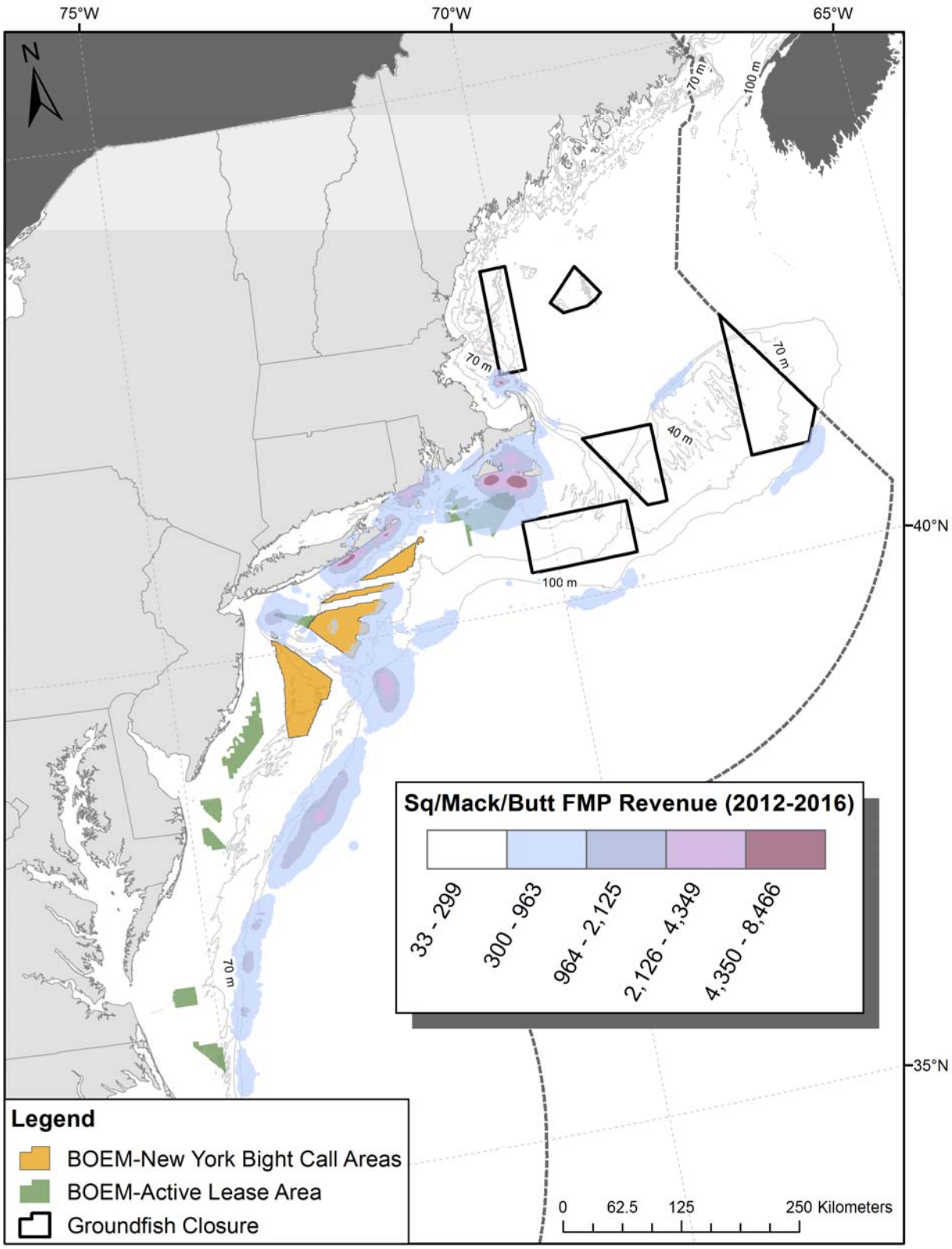
Map 2 – Sum of Summer Flounder/Scup/Black Sea Bass FMP revenues (2012-2016)



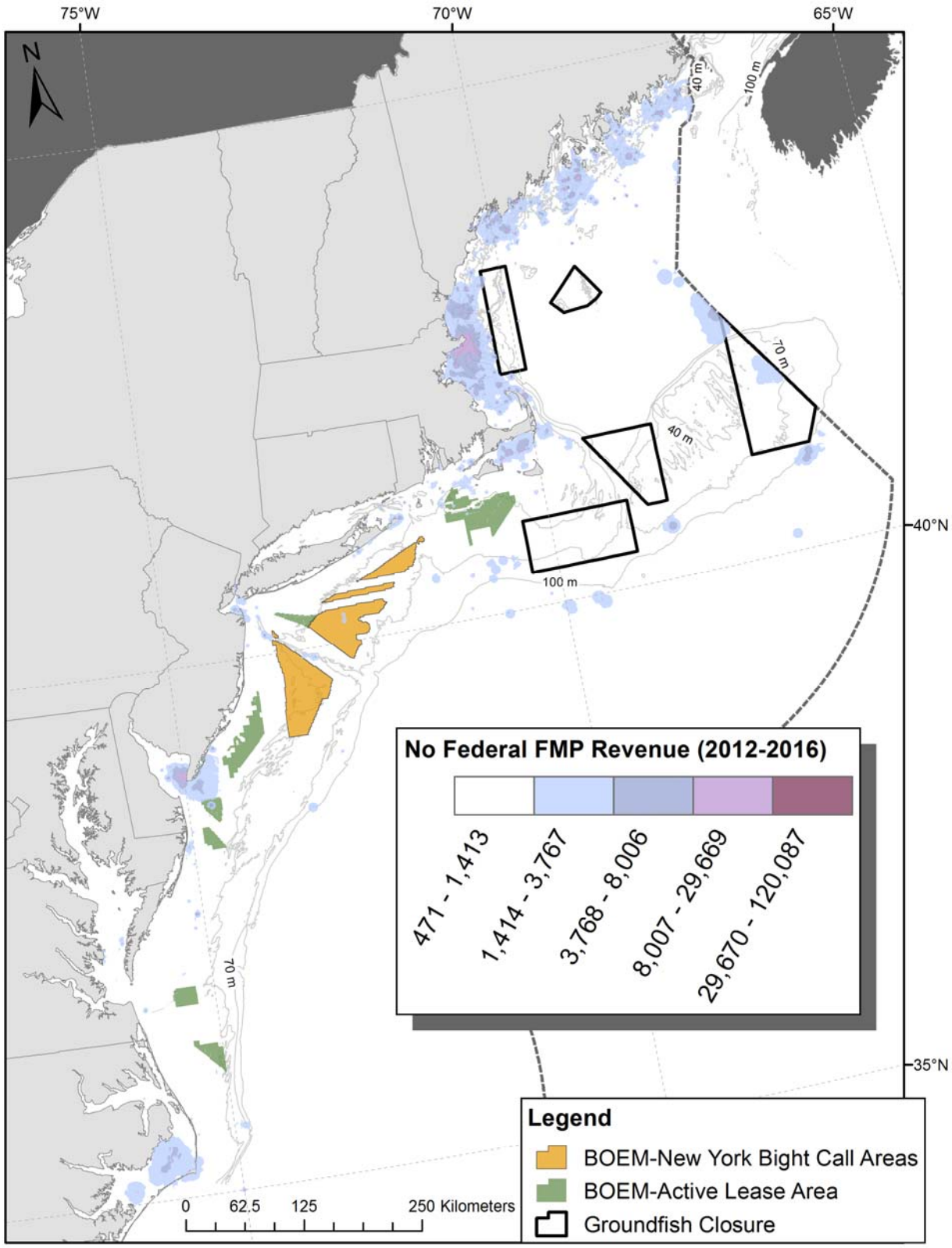
Map 3 – Sum of clam dredge gear revenues (a close approximation of Surfclam/Ocean Quahog FMP revenues, 2012-2016)



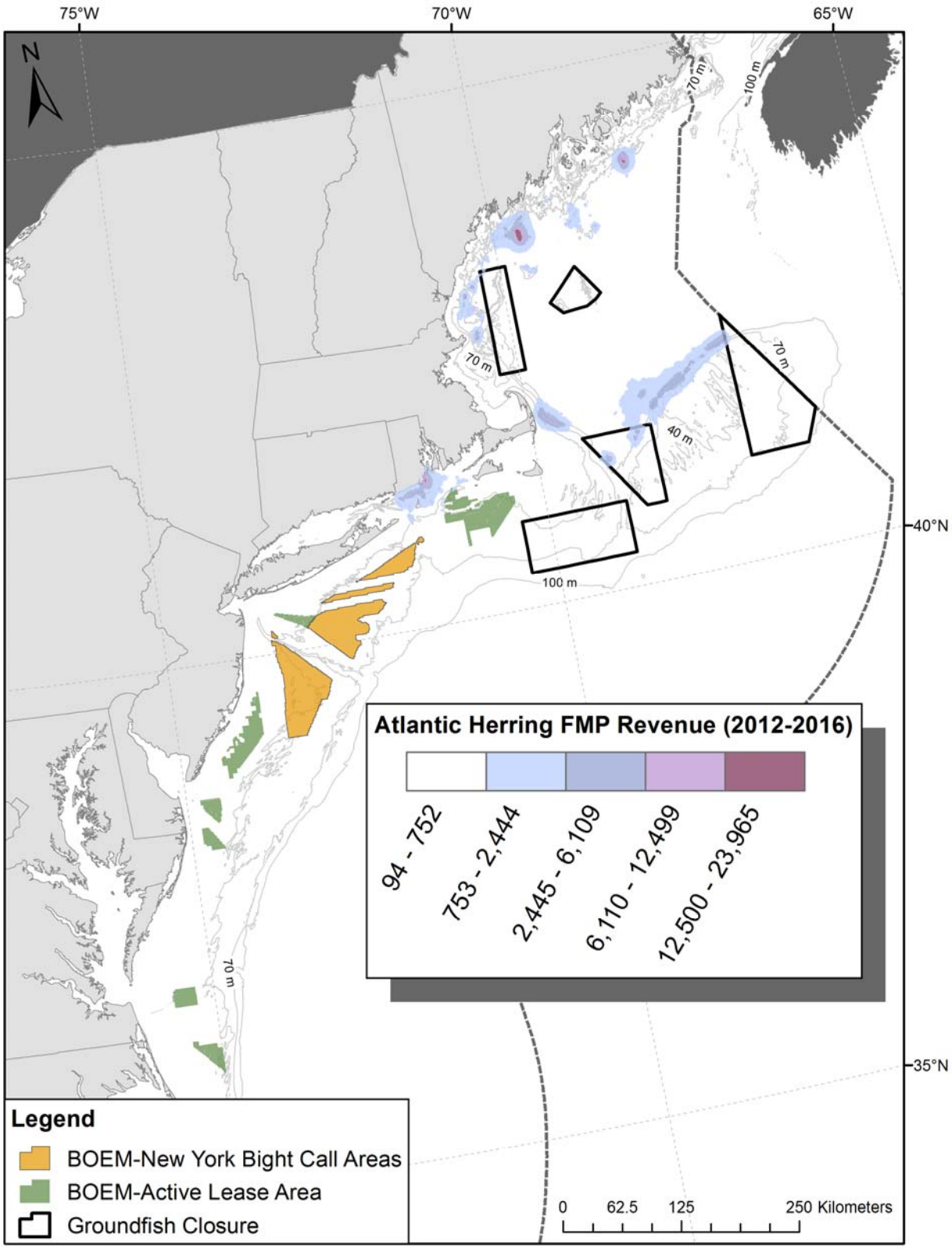
Map 4 – Sum of Mackerel/Squid/Butterfish FMP revenues (2012-2016)



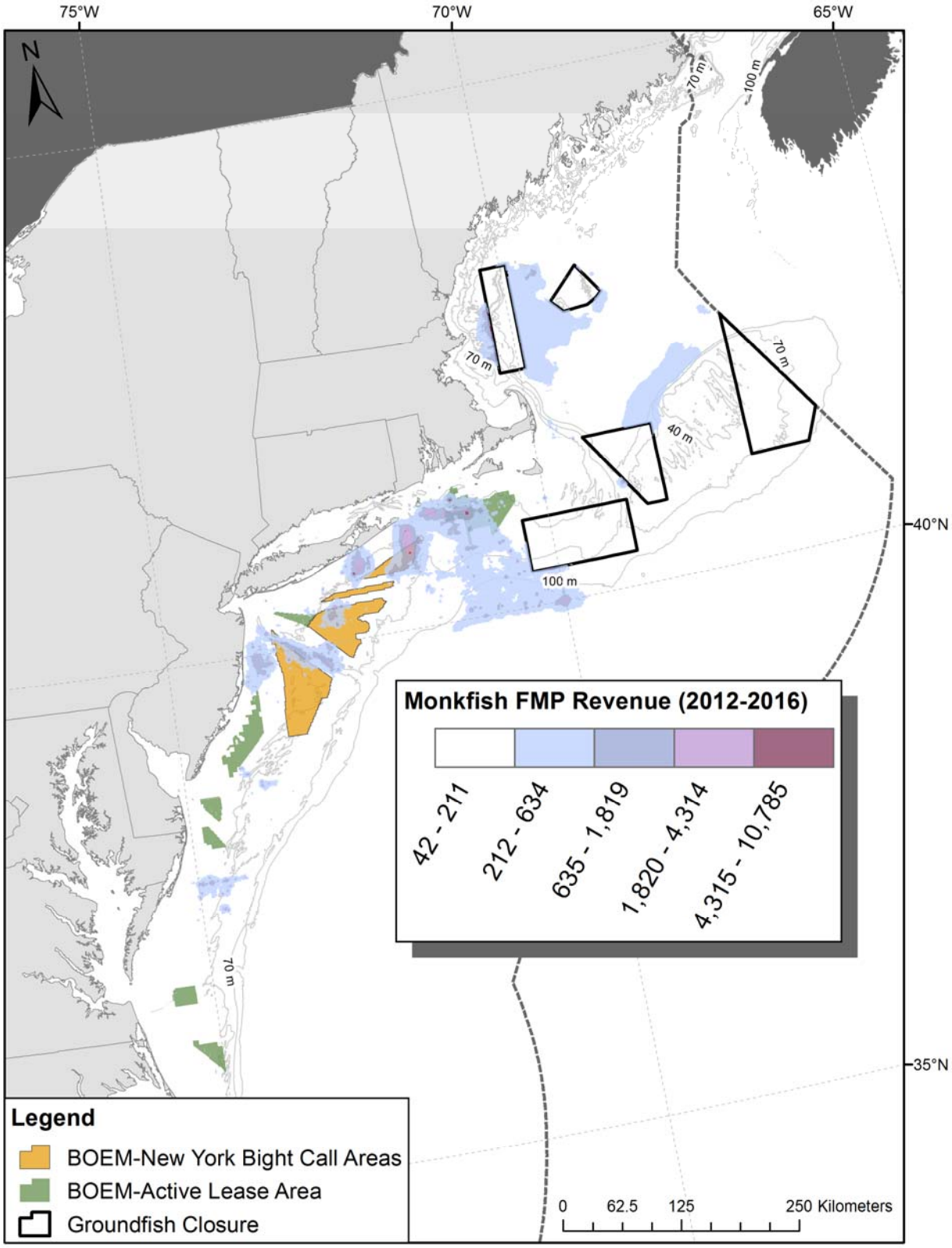
Map 5 – Sum of revenues for gears not managed under a federal FMP (2012-2016)



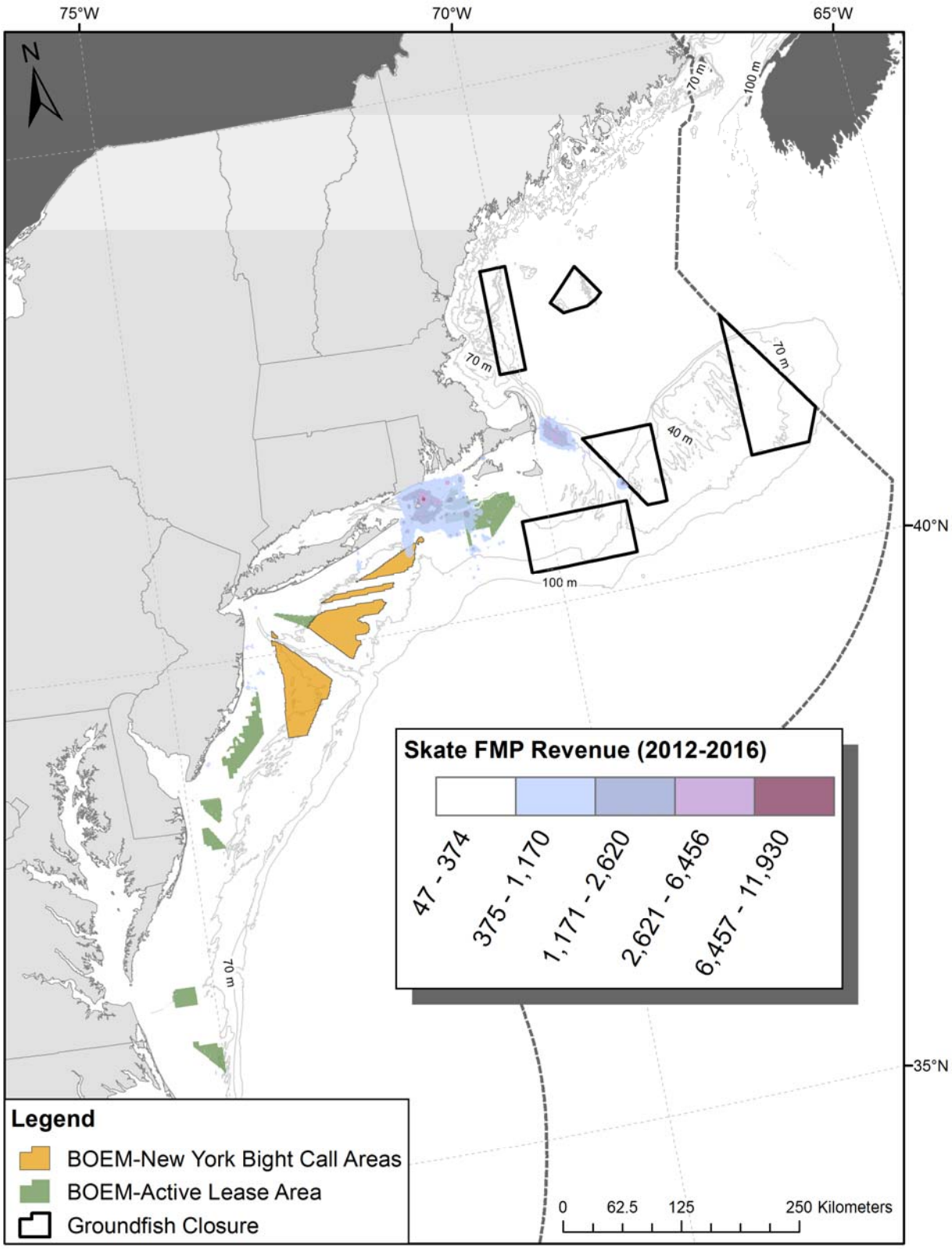
Map 6 – Sum of Atlantic Herring FMP revenues (2012-2016)



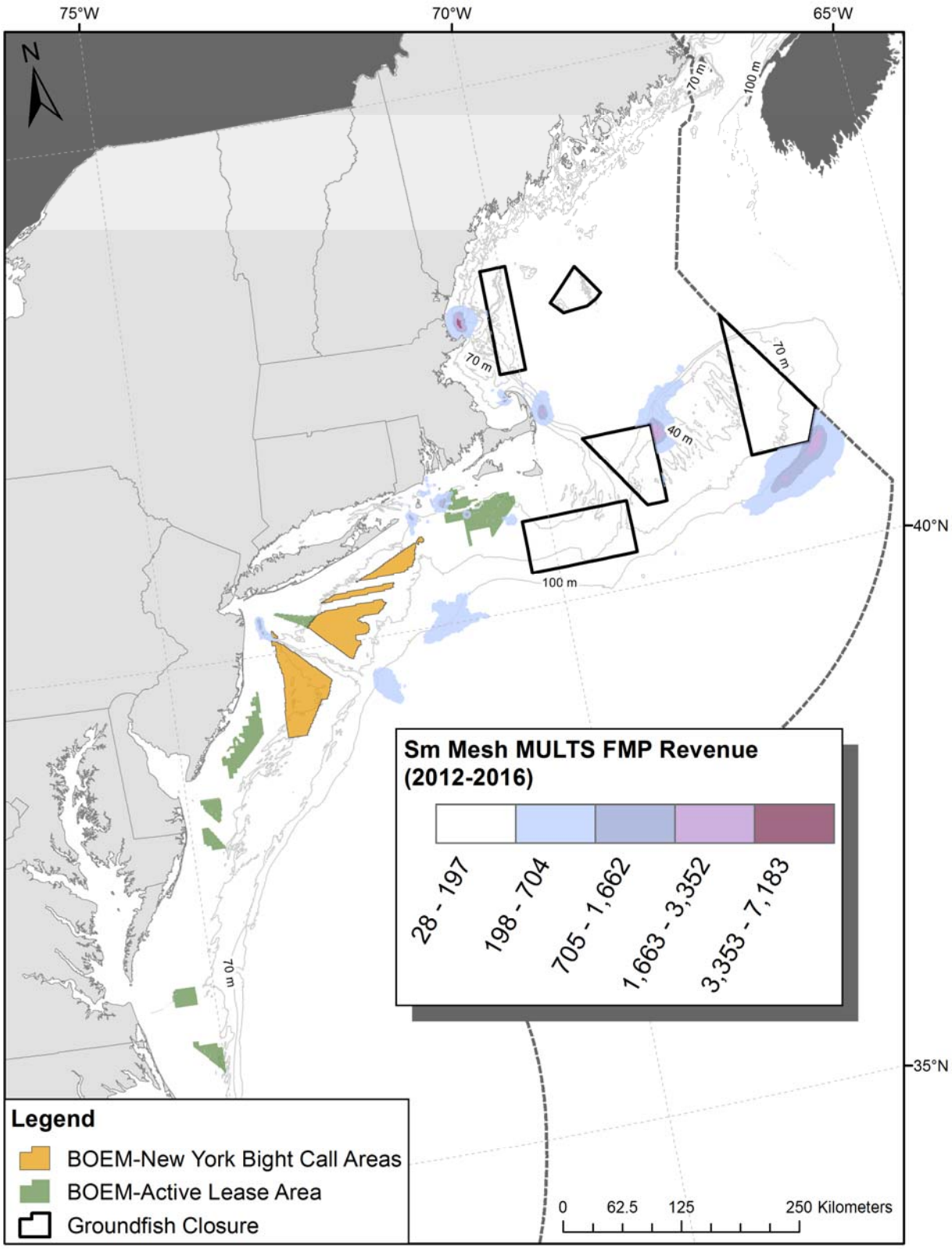
Map 7 – Sum of Monkfish FMP revenues (2012-2016)



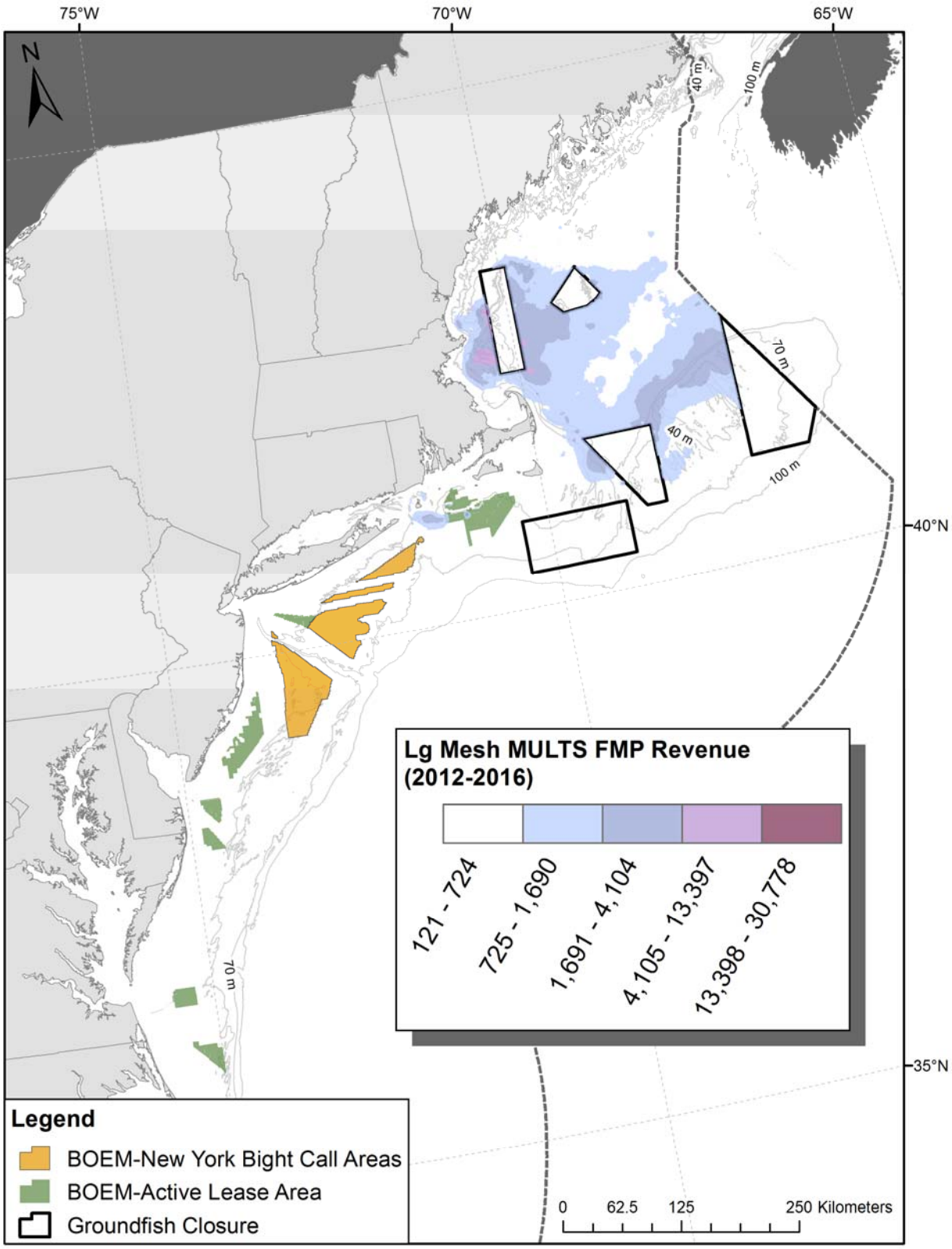
Map 8 – Sum of Skate FMP revenues (2012-2016)



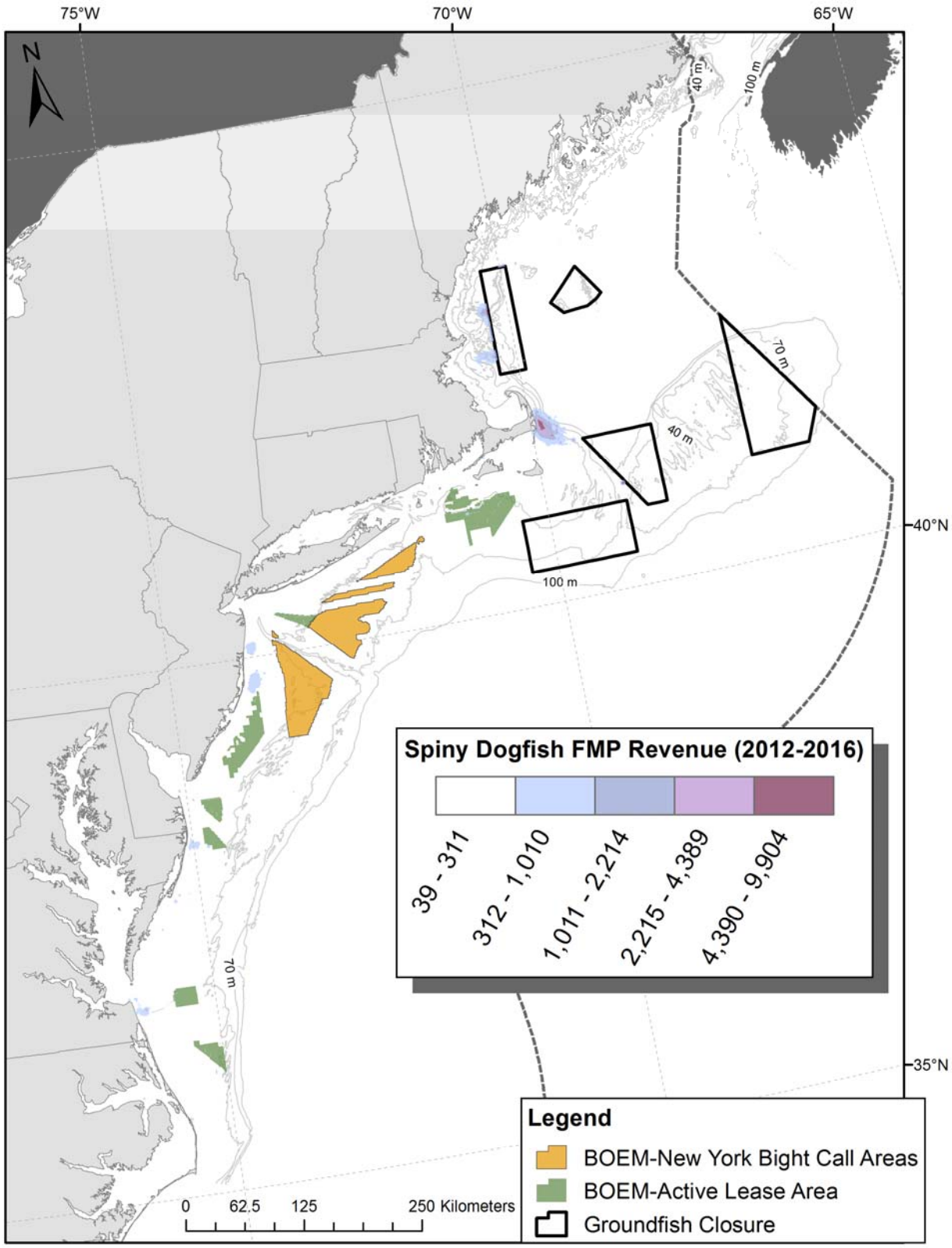
Map 9 – Sum of Small Mesh Multispecies FMP revenues (2012-2016)



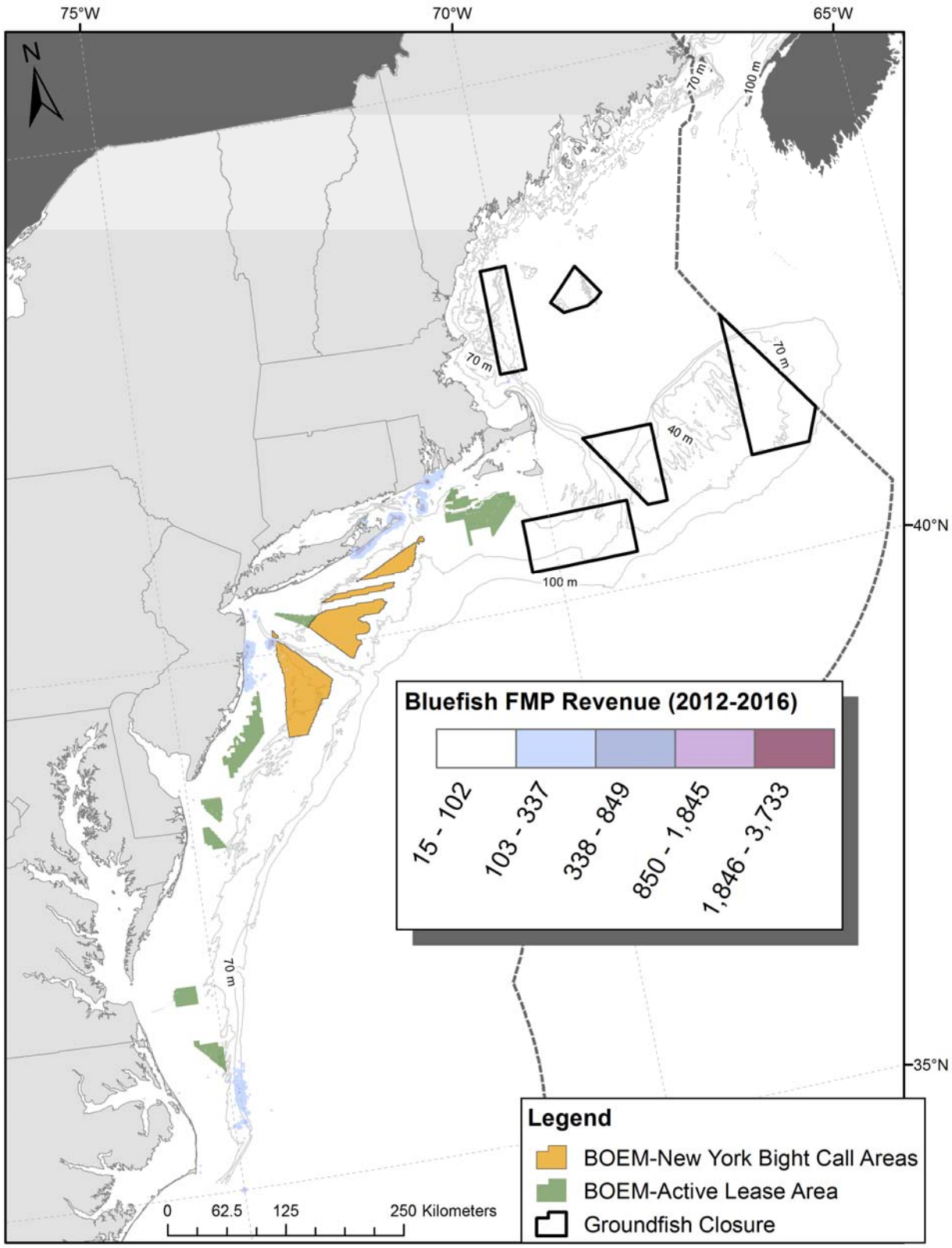
Map 10 – Sum of Large Mesh Multispecies FMP revenues (2012-2016)



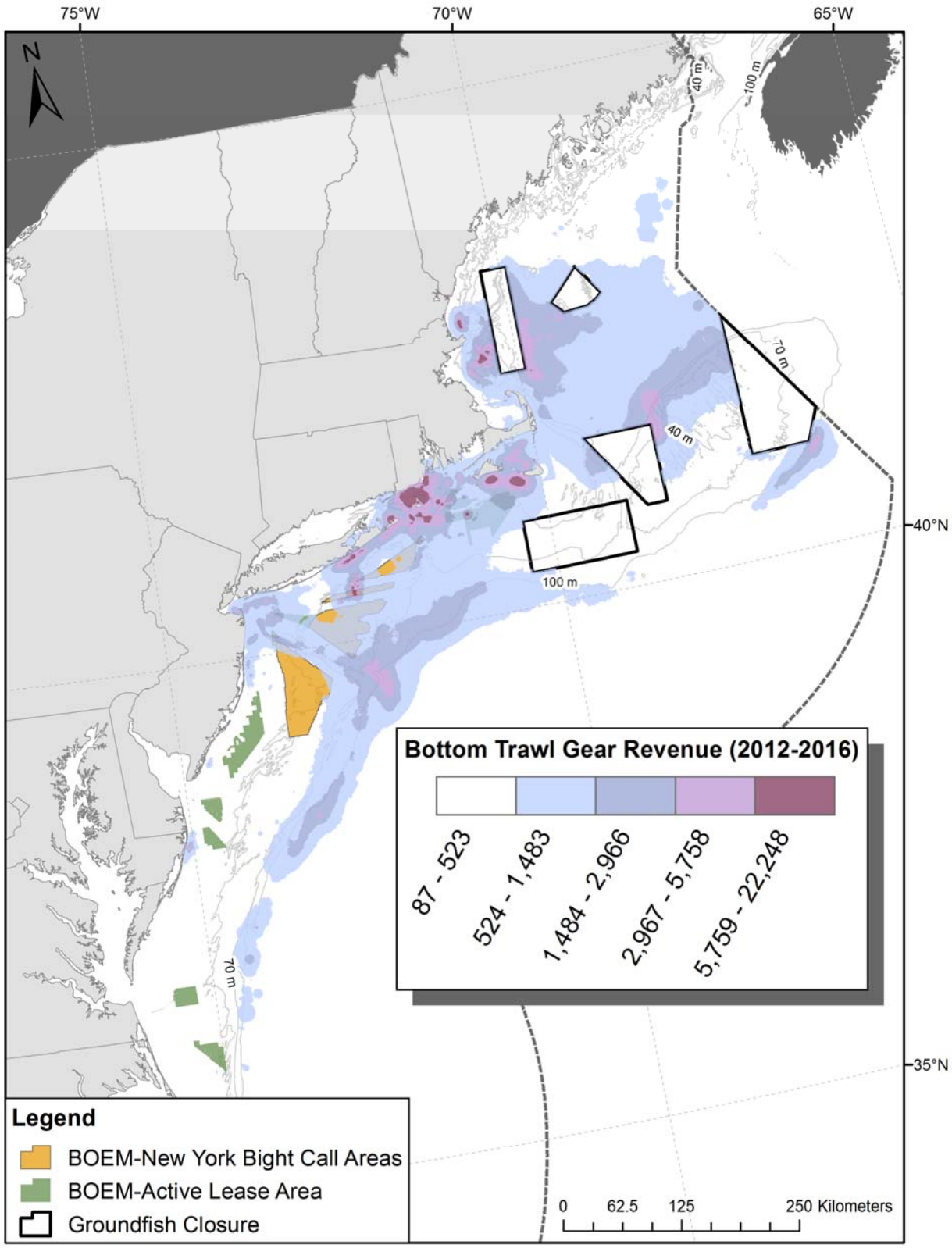
Map 11 – Sum of Spiny Dogfish FMP revenues (2012-2016)



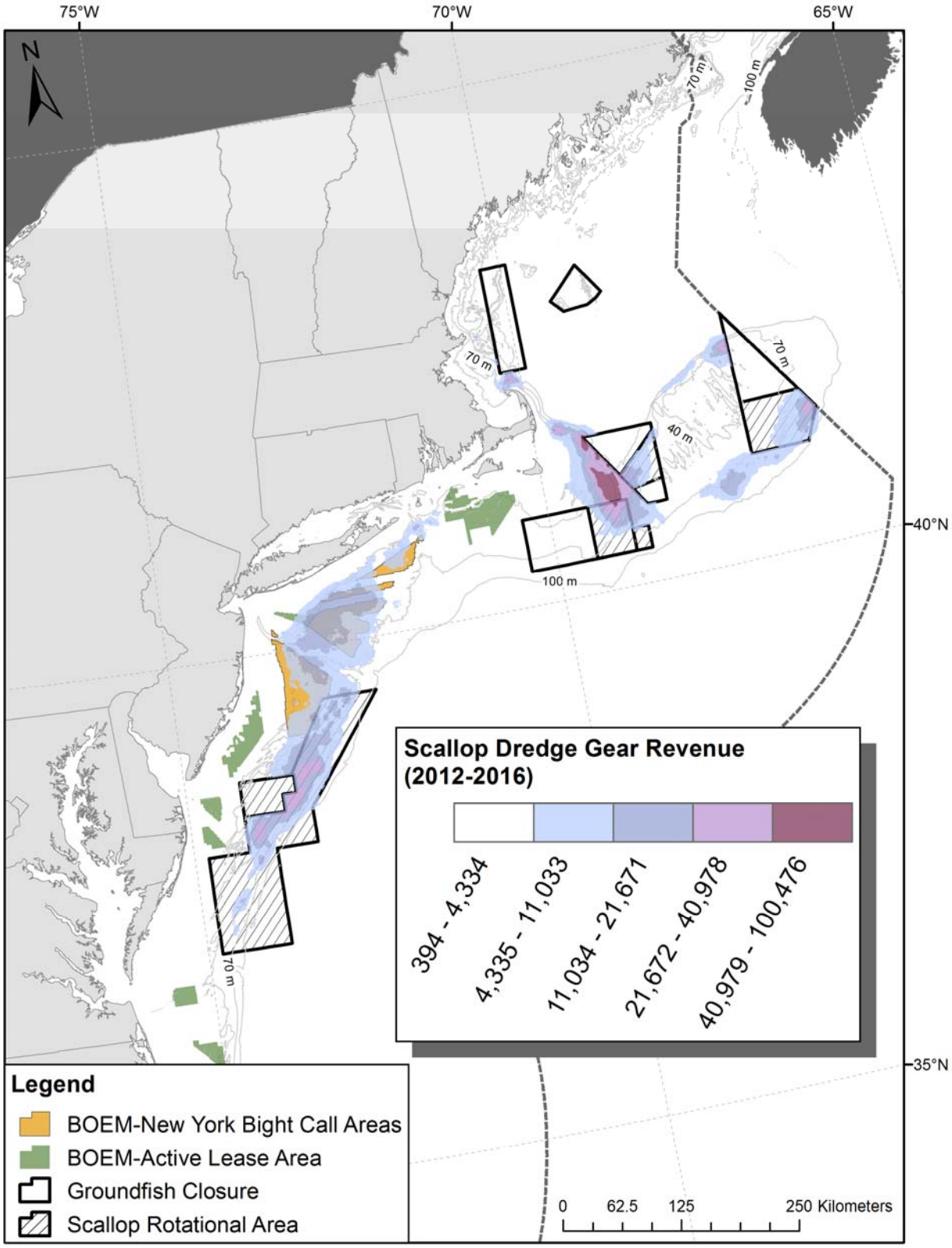
Map 12 – Sum of Bluefish FMP revenues (2012-2016)



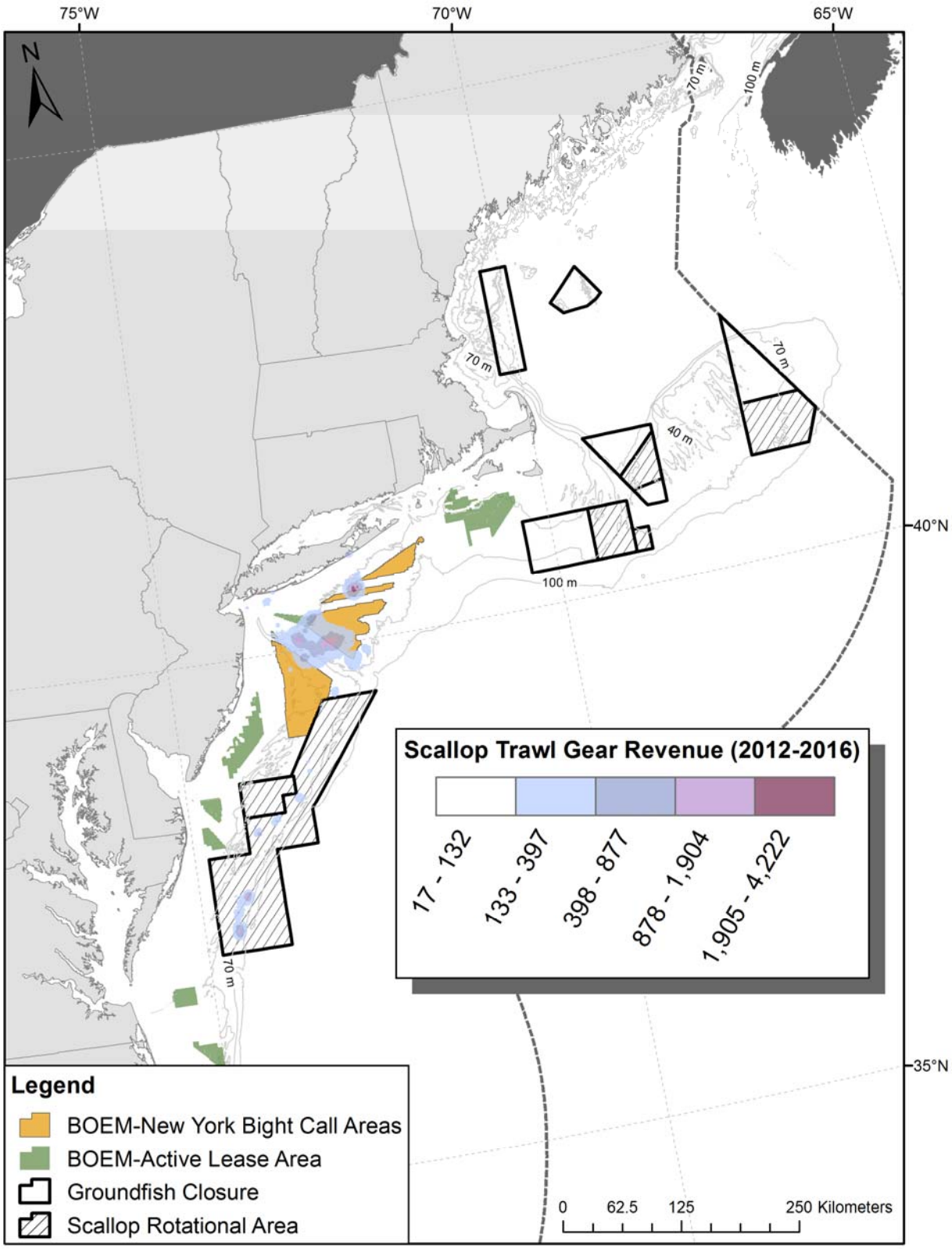
Map 13 – Sum of revenue across all bottom trawl gear, regardless of species/FMP (2012-2016)



Map 14 – Sum of scallop dredge revenue (2012-2016)



Map 15 – Sum of scallop trawl revenue (2012-2016)



APPENDIX D

Recreational Fishing Tournament Information for New York and New Jersey from 1980-2017

Recreational fishing tournament information for New York and New Jersey from 1980-2017.

Table 1. A breakdown of tournament catch reported by species

Figure 1.From 1980-2017	Total from NY				Total from NJ			
HMS Managed	# Kept	# Released	Weight Sum (kg)	Weight Sum (lb)	# Kept	# Released	Weight Sum (kg)	Weight Sum (lb)
Albacore Tuna	182	61	522	1,150	42	0	1,206	2,658
Big Eye Tuna	41	0	2,891	6,373	111	2	9,316	20,538
Blue Shark	5	0	629	1,386	25	292	1,319	2,909
Blue Marlin	2	0	41	91	133	368	7,784	17,161
Roundscale Spearfish	-	-	-	-	3	0	155	343
Sailfish	-	-	-	-	0	28	-	-
Skipjack Tuna	1	0	182	400	0	0	-	-
Shortfin Mako	22	5	1,413	3,114	14	48	1,335	2,943
Swordfish	5	0	354	781	23	10	1,253	2,763
Tiger Shark	1	0	1,376	3,033	0	0	-	-
Thresher	20	1	903	1,991	0	0	-	-
White Marlin	17	0	436	961	746	7,017	19,249	42,437
Yellowfin Tuna	312	33	4,844	10,680	1,728	49	45,049	99,315
NON-HMS Managed	Kept	Release	Weight Sum (kg)	Weight Sum (lb)	Kept	Released	Weight Sum (kg)	Weight Sum (lb)
Blueline Tilefish	14	45	426	940	50	12	18,341	40,436
Dolphin fish/Mahi Mahi	14	0	64	140	207	0	1,509	3,327
Wahoo	2	0	33	72	51	0	1,200	2,645

Table 2. A chronological distribution of the number of tournaments between 1980 and 2017.

	Number of Tournaments	
Year	**NJ**	**NY**
1980	5	2
1981	1	-
1983	12	-
1984	-	6
1987	7	-
1988	8	-
1989	15	-
1990	15	-
1991	15	-
1992	12	-
1993	12	-
1994	5	-
1995	7	1
1996	6	-
1997	7	-
1998	8	-
1999	12	-
2000	8	4
2001	7	4
2002	6	2
2003	5	6
2004	13	3
2005	11	3
2006	8	2
2007	11	-
2008	11	-
2009	12	-
2010	15	2
2011	10	6
2012	11	-
2013	18	2
2014	17	4
2015	12	11
2016	18	2
2017	13	3
	Number of Tournaments	
	NJ	NY
	353	63

APPENDIX E

Essential Fish Habitat Information for the New York Bight Call Areas

Table 1. Species Managed by Regional Fishery Management Councils with Essential Fish Habitat Designations in the New York Bight Call Areas

Species	High EFH overlap	Low to moderate EFH overlap	Habitat type and other comments
Atlantic cod	A (D)	E,L (P)	Complex bottom habitats, important commercial species, over-fished, only in area during winter and in small numbers
Haddock	J (D)	L (P)	Sand, shell, gravel habitats, important commercial species
Ocean pout	A (D)	J (D)	Mud and sand near rocks and gravel, over-fished
Windowpane flounder	E, L (P), J,A (D)		Mud and sand, over-fished
Winter flounder	J,A (D)		Mud and sand, also on hard bottom, overfished in SNE
Yellowtail flounder	J,A (D)		Sand and mixed sand habitats, SNE stock over-fished
Silver hake (whiting)	L (P), J (D)		Sand, larvae pelagic
Red hake	L (P), J (D)		Juveniles on soft bottom, seek shelter, over-fished
Monkfish	E, L (P),	J,A (D)	Large variety of benthic habitats >50m, eggs & larvae pelagic
Little skate	J (D)	A (D)	Sand and gravel
Winter skate	J(D)	A (D)	Sand and gravel
Sea scallops	E, L (P), J,A (D)		Sand and gravel, commercial species with high economic value
Atlantic herring	J, A (P)		Migrate south from GOM/GB in winter/spring, pelagic habitats, harvested commercially
Atlantic butterfish	J (P)	E, L, A (P)	Pelagic habitats
Atlantic mackerel	J, A (P)	E, L (P)	Migratory, pelagic habitats, predatory species, harvested commercially
Atlantic surfclams	J, A (D)		Sand and gravel habitats buried in sediment, 10-65 m
Ocean quahogs	J, A (D)		In soft bottom sediments, 10-75 m
Black sea bass	J (D)		Inner shelf in spring/summer (5-50 m), aggregate over reefs/structured habitat, high site fidelity, important commercial and recreational species
Inshore longfin squid	J (P)	A (P)	Inshore in spring/summer, demersal eggs mostly observed inshore of Call Areas, important fishery resource
Scup	J, A (D)		Form loose schools over nearshore structured habitats, migrate to outer shelf in fall
Bluefish	A (P)	E, L (P)	Pelagic habitats, major predator
Spiny dogfish	A (P,D)		Pelagic and epibenthic habitats
Summer flounder	A (D)	E, L (P), J (D)	Mostly sandy habitats, over-fishing occurring, but not over-fished, important commercial and recreational fisheries

Source: Essential Fish Habitat Source Documents published as NOAA Technical Memoranda 1999-2007

J = Juveniles, A= Adults, E= Eggs, L= Larvae, P= Pelagic (in water column), D= Demersal (on bottom), SNE= southern New England, WEAs= wind energy areas, m= meters

Table 2. Highly Migratory Species with Essential Fish Habitat Designations in the New York Bight Call Areas

Species	Life Stages	Habitat
Albacore tuna	Juvs + adults	Circumpolar, epipelagic species
Bluefin tuna	Juvs + adults	45°N to equator in western Atlantic, spawn in Gulf of Mexico and Florida Straits, juveniles migrate to nursery areas Cape Cod to Cape Hatteras
Skipjack tuna	Juvs + adults	Circumpolar in tropical and warm temperate waters, epipelagic oceanic species
Yellowfin tuna	Juvs + adults	Epipelagic, oceanic species, circumpolar in tropical and temperate waters
Common thresher shark	All	Cosmopolitan in warm and temperate waters, coastal and oceanic species
Dusky shark	Juvs + adults	Open water over continental shelf 20-200 m, inshore nursery areas, over-fished
Sand tiger shark	Neonates + juveniles	Large coastal species in tropical and warm, temperate waters throughout the world, Cape Cod to Cape Hatteras, inshore nursery areas
Sandbar shark	All	Coastal species, most common 20-55 m on sand, mud, shells, and in rocky habitats, inshore nursery areas, over-fished
Shortfin mako shark	All	Oceanic species in warm and warm temperate waters in all oceans, over-fished
Tiger shark	Juvs + adults	Inhabits offshore and coastal waters in western N Atlantic to 40°N
White shark	All	Coastal and offshore waters, seasonally common in western Atlantic, sporadic, juveniles off south shore of Long Island
Blue shark	All	Common, wide-ranging species, on continental shelf in NW Atlantic in summer
Smooth dogfish	All	Common coastal species from Massachusetts to Argentina, largely demersal inshore to 200 m, YOY juveniles in estuaries in summer

Table 3. Spawning Times and Habitats for Species Managed by Regional Fishery Management Councils with Essential Fish Habitat Designations in or Near the New York Bight Call Areas

Species	Time of Year	Habitat	Comments
Summer flounder	Sept-Oct in southern New England (SNE) and Mid-Atlantic Bight (MAB)	Sandy bottom	Begin spawning inshore, then over middle and outer shelf in late fall and winter
Black sea bass	April-Oct, peaks in August between Cape Hatteras and northern NJ	Mostly 20-50 m over sandy bottom and on structured habitats (eg reefs)	Strong site fidelity, large and variable home ranges
Atlantic mackerel	Mid-April to June in MAB	Open water	Migrate inshore to spawn, most spawning in shoreward half of shelf
Bluefish	Late summer in NY, peak in July	Open water	Eggs and larvae mostly over inner shelf some years, more widely distributed in other years
Yellowtail flounder	March and April off NJ and Long Island	Sand and mixed sand habitats	Most eggs collected 50-100 m on continental shelf
Windowpane flounder	Peaks in May and Sept off NJ and NY	Mud and sand bottom on inner shelf	Split spawning season
Sea scallops	Primarily in spring south of Hudson Canyon, late summer to early fall north of the canyon	Sand and gravel habitats	On sediment surface
Atlantic surfclams	May-August	10-65 m in sand and gravel habitats	Burrow into sediment
Ocean quahogs	May-Nov, most intense Aug-Nov	10-75 m in mud and sand habitats	Burrow into sediment
Longfin inshore squid	Late spring to early summer in MAB, mostly in May, eggs hatch 10-30 days	Eggs deposited in dense egg “mops” on variety of bottom habitats <50 m	Eggs caught in bottom trawls on south shore of Long Island and NJ coast inshore of Call Areas
Ocean pout	Peaks Sept-Oct	Eggs deposited in sheltered rocky areas in the Gulf of Maine	No information specific to the Mid-Atlantic area

Source: Essential Fish Habitat Source Documents published as NOAA Technical Memoranda 1999-2007

APPENDIX F

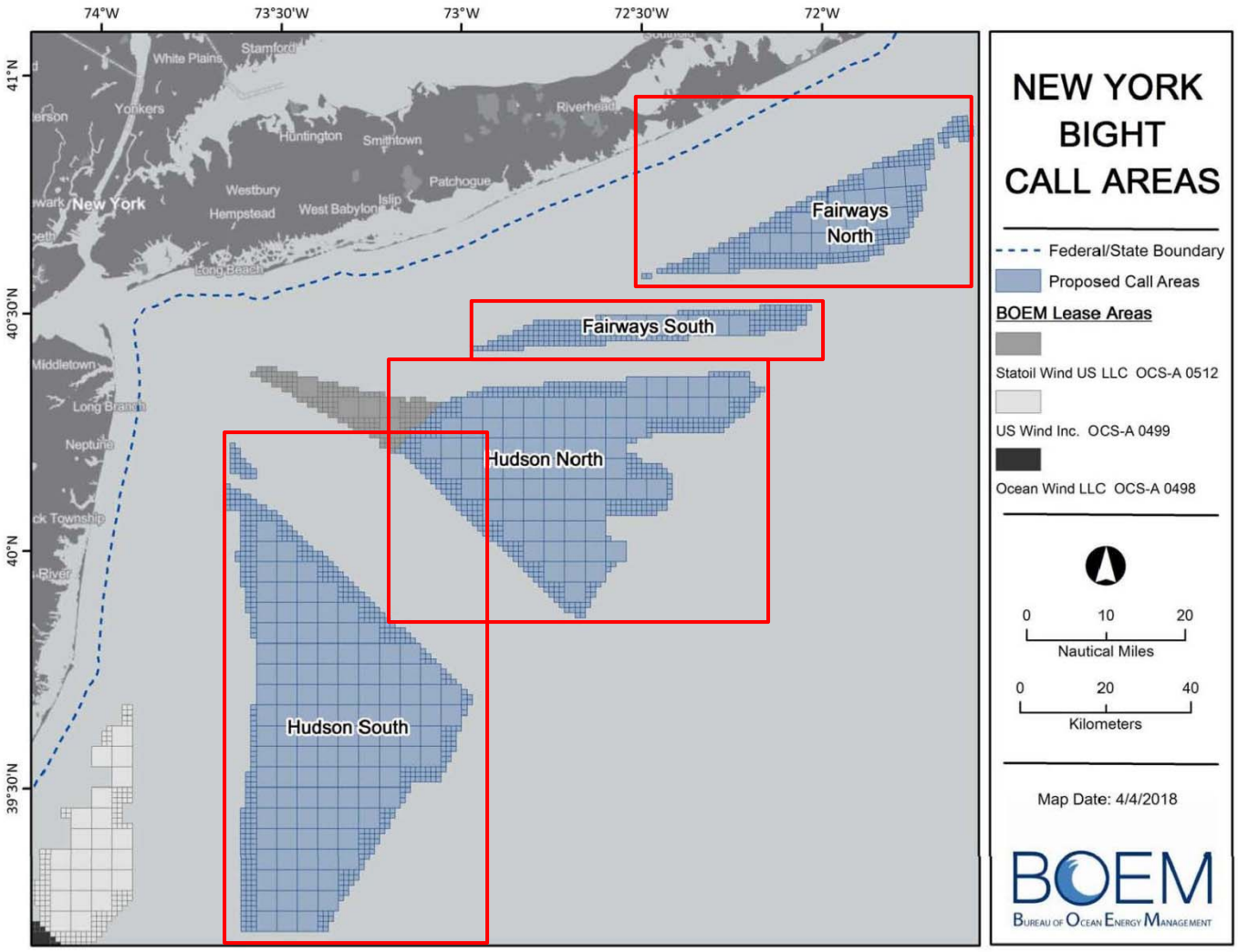
Bathymetry Maps for the New York Bight BOEM Call Areas and NYSERDA Areas of Consideration

NEW YORK BIGHT PROPOSED BOEM CALL AREA and NYSERDA AREAS OF CONSIDERATION BATHYMETRY (excluding leased areas)

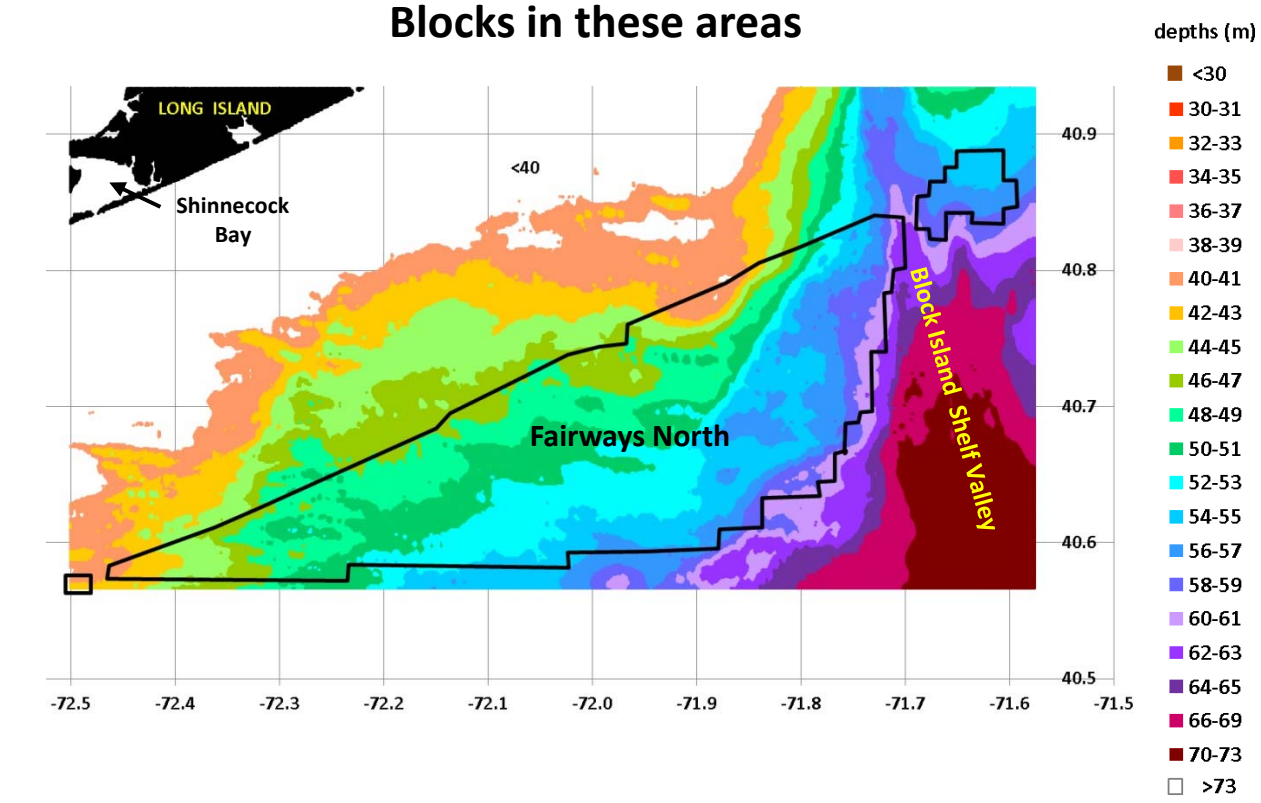
2-meter depth contour intervals
based on NOAA, NCEI 3 arc-second bathymetric data

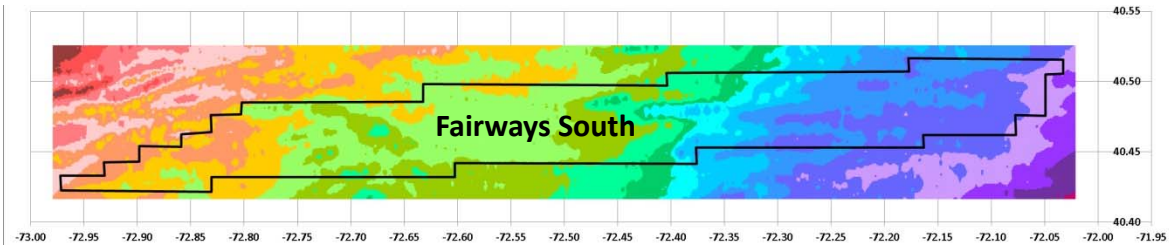
Caution: margins of call blocks in bathymetry maps are approximate

Vincent G. Guida
U.S. DOC, NOAA, NMFS, NEFSC
J.J. Howard Laboratory


74°W
73°30'W
73°W
72°30'W
72°W
41°N
40°30'N
40°N
39°30'N
White Plains
Stamford
Yonkers
Riverhead
Huntington
Smithtown
Patchogue
Westbury
New York
Hempstead
West Babylon
Islip
Long Beach
Middletown
Long Branch
Neptune
Fairways North
Fairways South
Hudson North
Hudson South
NEW YORK BIGHT CALL AREAS
Federal/State Boundary
Proposed Call Areas
BOEM Lease Areas
Statoil Wind US LLC OCS-A 0512
US Wind Inc. OCS-A 0499
Ocean Wind LLC OCS-A 0498
0 10 20
Nautical Miles
0 20 40
Kilometers
Map Date: 4/4/2018
BOEM
Bureau of Ocean Energy Management

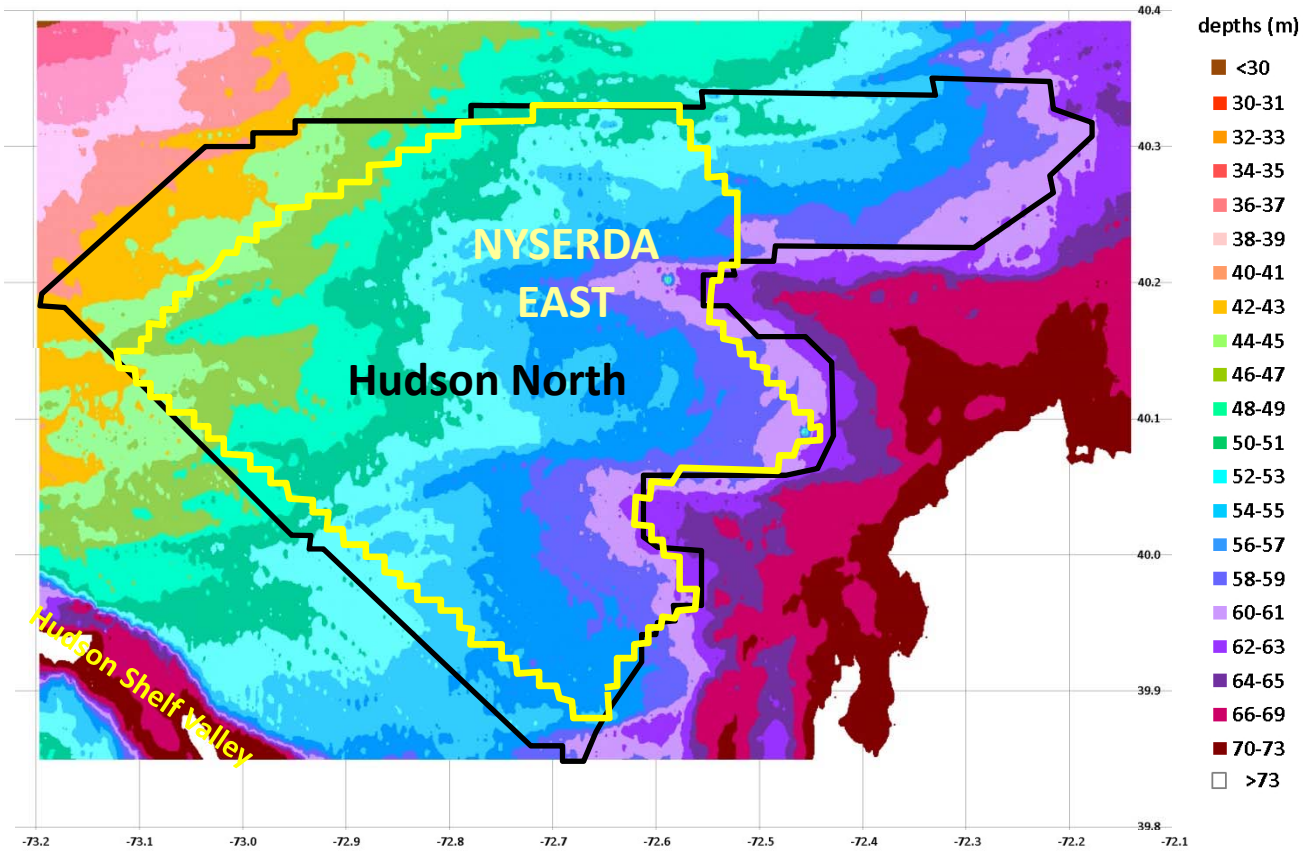
NY Bight Call Areas:
BOEM Blocks Only: No NYSERDA Blocks in these areas





Based on NOAA, NCEI 3 arc-second bathymetric data

NY Bight Call Areas:
BOEM and NYSERDA Blocks



Based on NOAA, NCEI 3 arc-second bathymetric data

NY Bight Call Areas: BOEM and NYSERDA blocks