Permit, Port and Fishery Revenue Exposure Analysis

Updated NY Bight Wind Areas

Intergovernmental Renewable Energy Task Force Meeting

New York, New York

November 28, 2018

Contact

Kathryn Connelly
Economist
NEFSC/NOAA
Kathryn.Connelly@noaa.gov

Benjamin Galuardi
Statistician
GARFO
Gloucester, MA
Benjamin.Galuardi@noaa.gov

The information presented is a collaborative effort of the Regional Wind Team from GARFO/NEFSC

Analyses

- VMS Effort
- Combines Primary and Secondary Recommended Areas
- Displayed graphics:
  - Scallop, Surfclam, and Ocean Quahog effort
  - Other important species effort
  - Permit exposure in the two areas

- VTR Modeled (DePiper 2014)
- Primary separate from Secondary
- Displayed graphs:
  - Total revenue, all species
  - Scallop, Surfclam, and Ocean Quahog revenue
  - Other important species revenue
  - Impacted ports, all species
  - Permit dependence on the two areas

VMS

- Vessel monitoring system (VMS) data was used to identify hotspots and permit exposure
- Polling time is variable between fisheries, but is at least once per hour
- Zero to five knots is the fishing speed filter
- Data is binned in 5 nautical mile squares
- Grid cells with less than three unique permits are masked.

VTR Data and Model

- The model compares 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).
- 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.
- 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.

Data Caveats

- Limited haul-by-haul location data to develop a reliable distribution model
- Spatial imprecision of VTR points can lead to the assignment of revenue in unlikely locations.
- 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.
- Only a portion of the lobster fishery is captured in the VTR data, and VTR data underrepresent lobster revenue/effort.
- VTR data do not explain the dynamic factors that influence landings and revenue. It would be incorrect to assume from the data that low catch means a low abundance of species.
- Redistribution of effort into other locations may result in other effects, but alternative fishing choices are difficult to predict.
- 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.

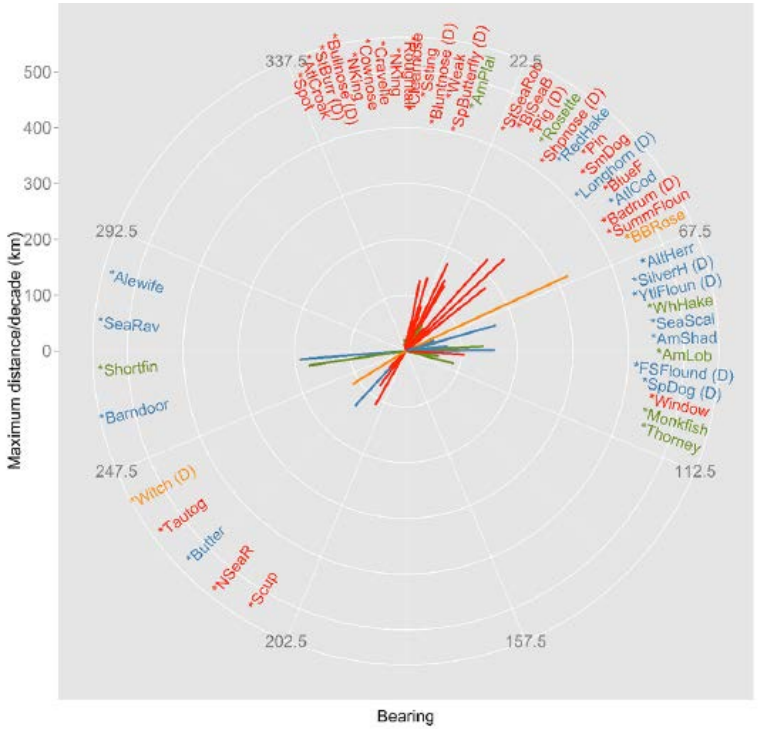
Influence of Climate Change

Some species will be more affected than others

Biological Sensitivity	Climate Exposure		
		Ocean & Northern Quahogs	Atlantic Salmon Bay Scallop
		14 Atlantic species including: Halibut Scallop Surfclam Tilefish Witch flounder Northern Shrimp	18 species including: Winter flounder Oysters River herring Shortnose & Atlantic sturgeons Shellfish (blue mussel, softshell crab, whelks, blue crab) Stripe bass Tautog
		12 Atlantic species including Cod Redfish Mackerel Sandlance Lobster Hagfish Pollock Skate species	Red drum American eel Conger eel Black sea bass Spotted sea trout
		21 species including Butterfish Squid species Bluefish Deep-sea red crab Hake species (silver, red, offshore) Skate species (winter, clearnose) Anchovies Flounders (yellowtail, windowpane) Haddock Atlantic Herring	Summer flounder Spanish mackerel Atlantic croaker Spot Northern kingfish Menhaden Weakfish Scup

Source: Hare, et al. (2016)

Scale and direction of shifts have been detected

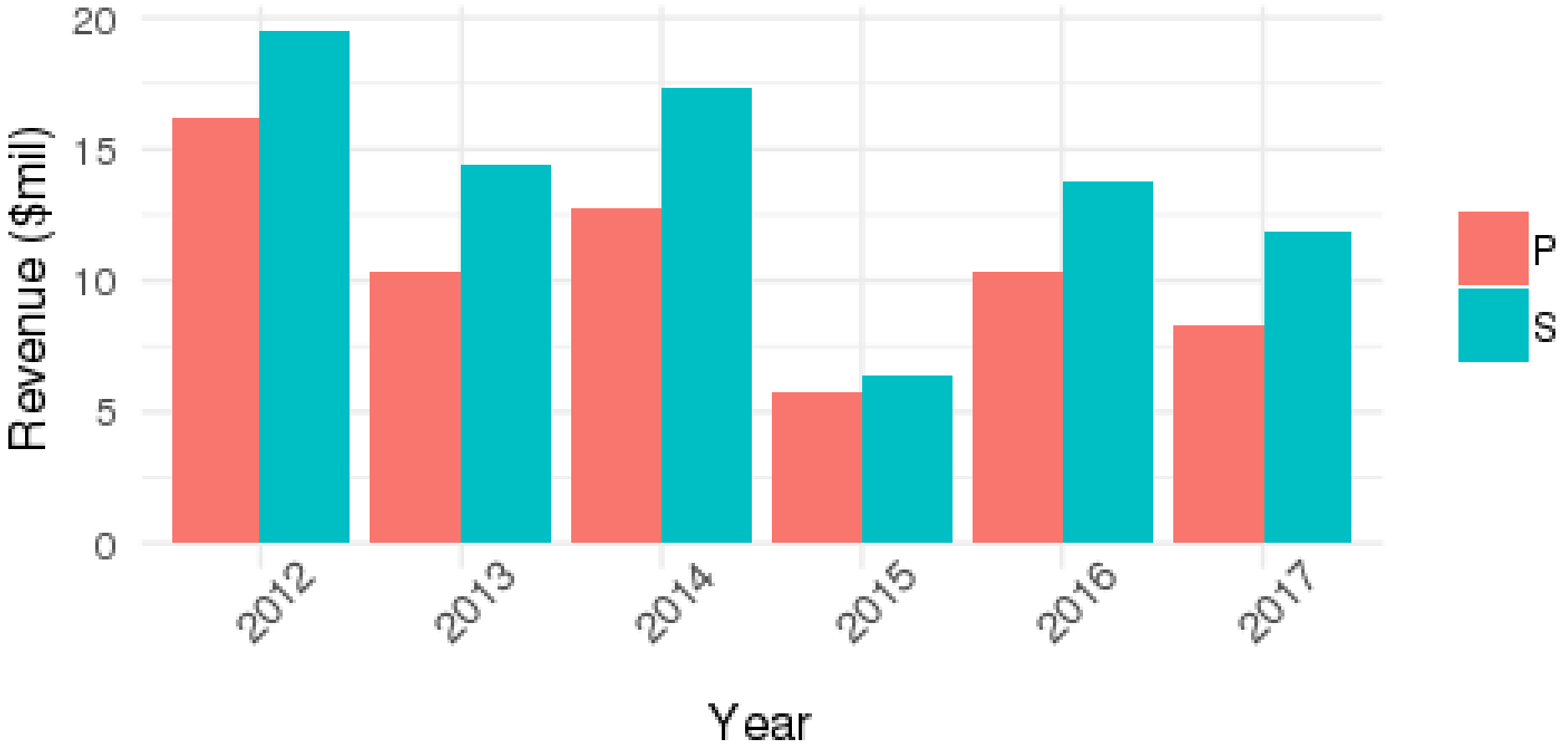


Source: Kleisner, et al., (2016)

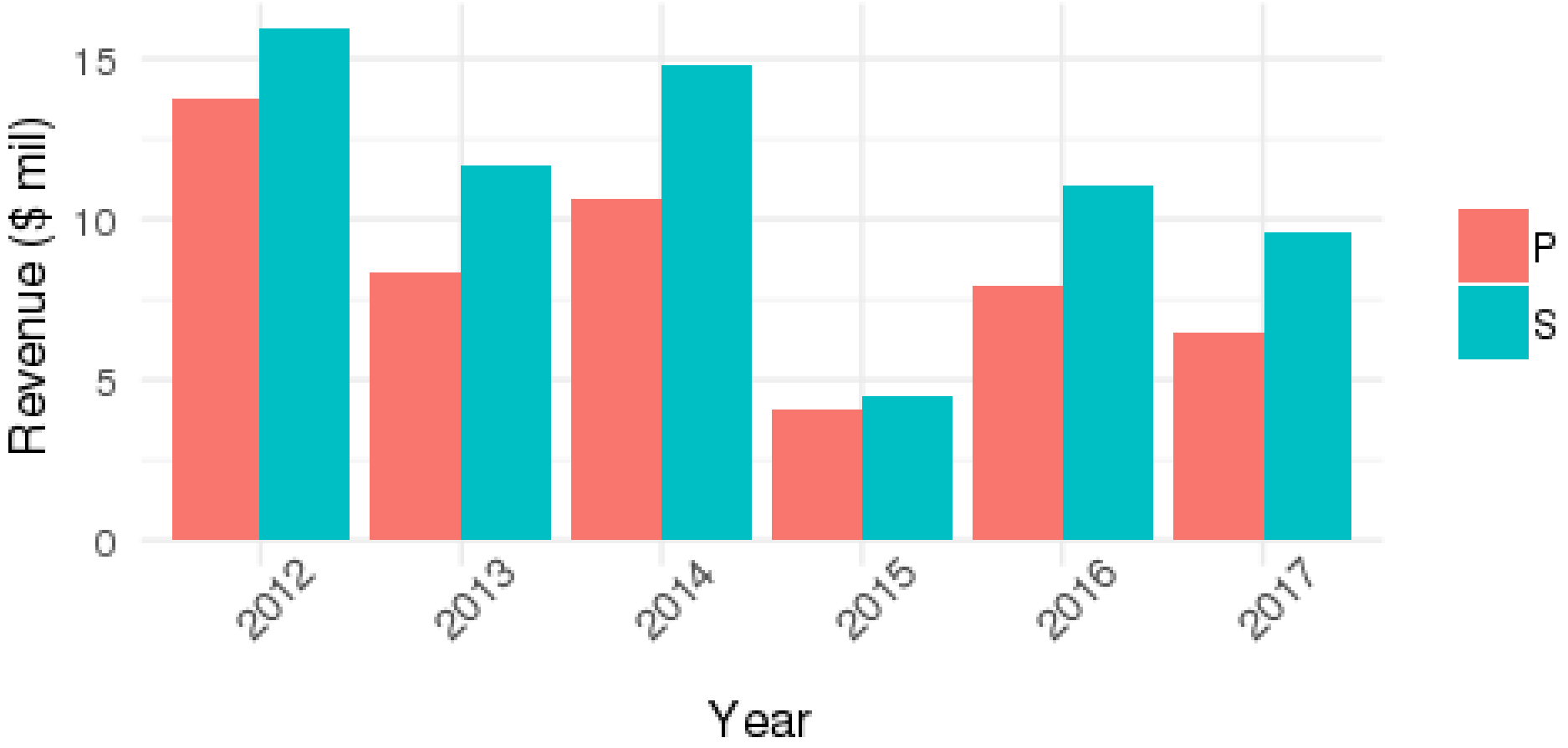
Data Usage

- We believe this type of information is suitable for planning level applications, instead of for an authoritative assessment of potential fisheries impacts.

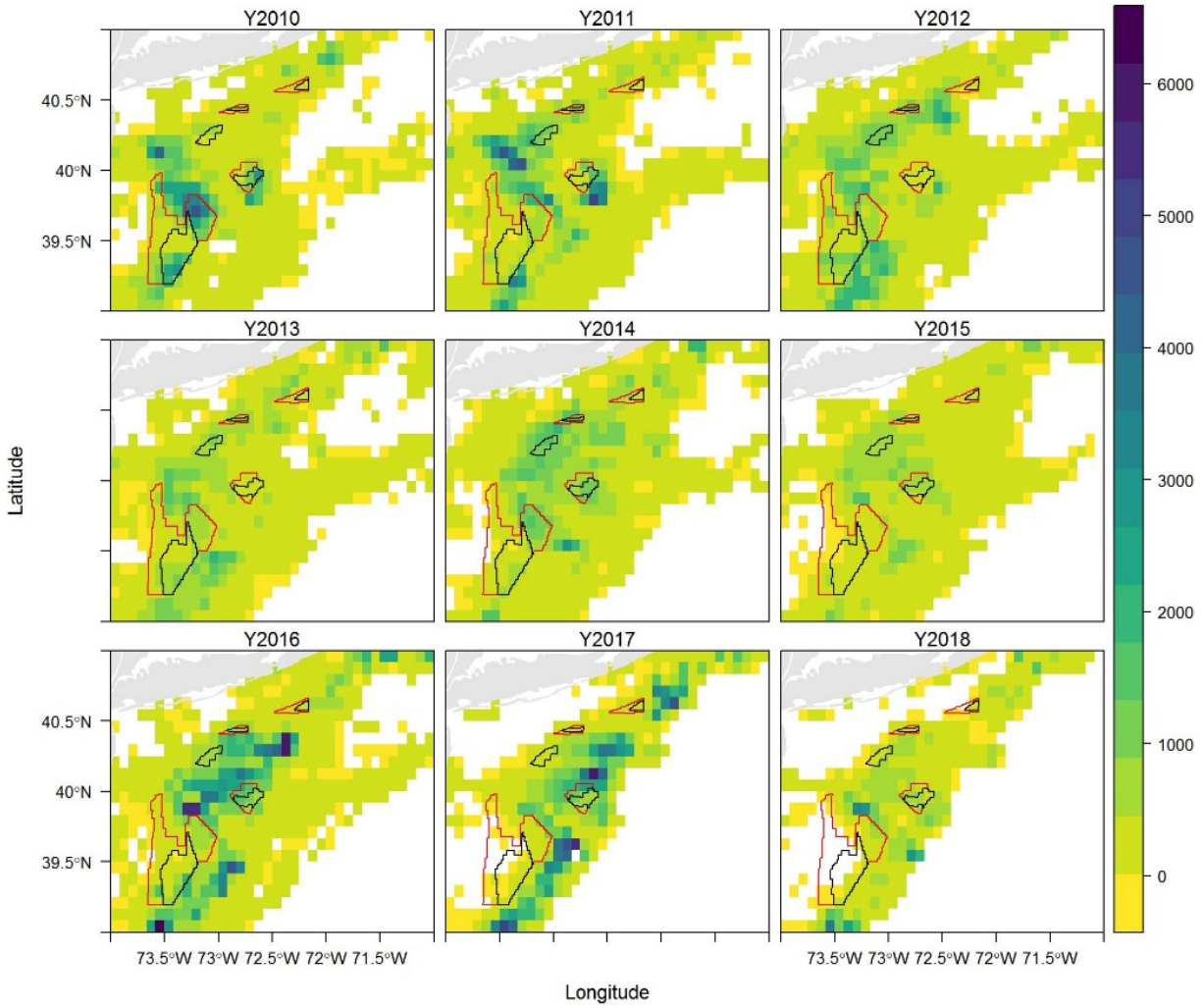
All Revenue from Recommended Areas, 2012-2017



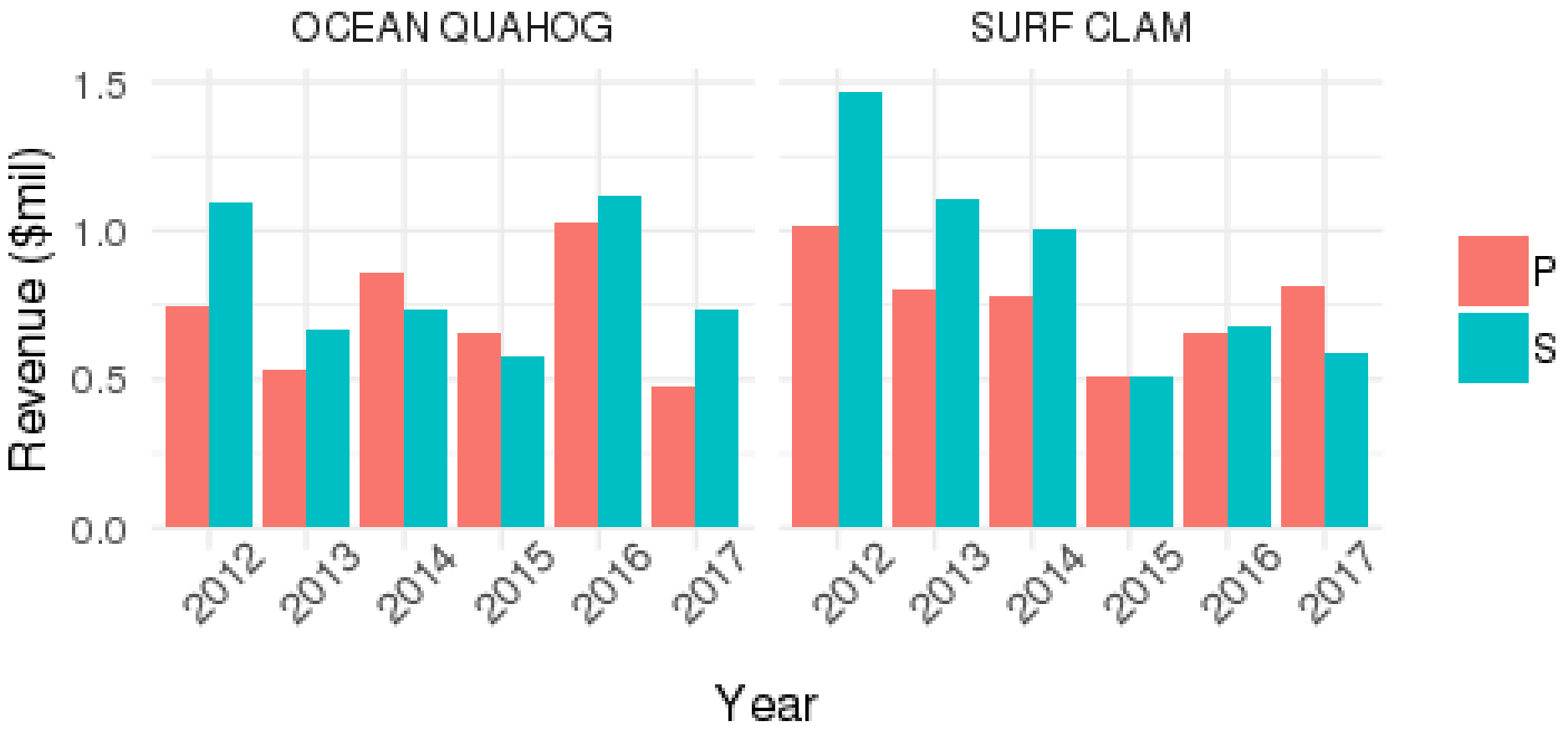
Scallop Revenue from Recommended Areas, 2012-2017



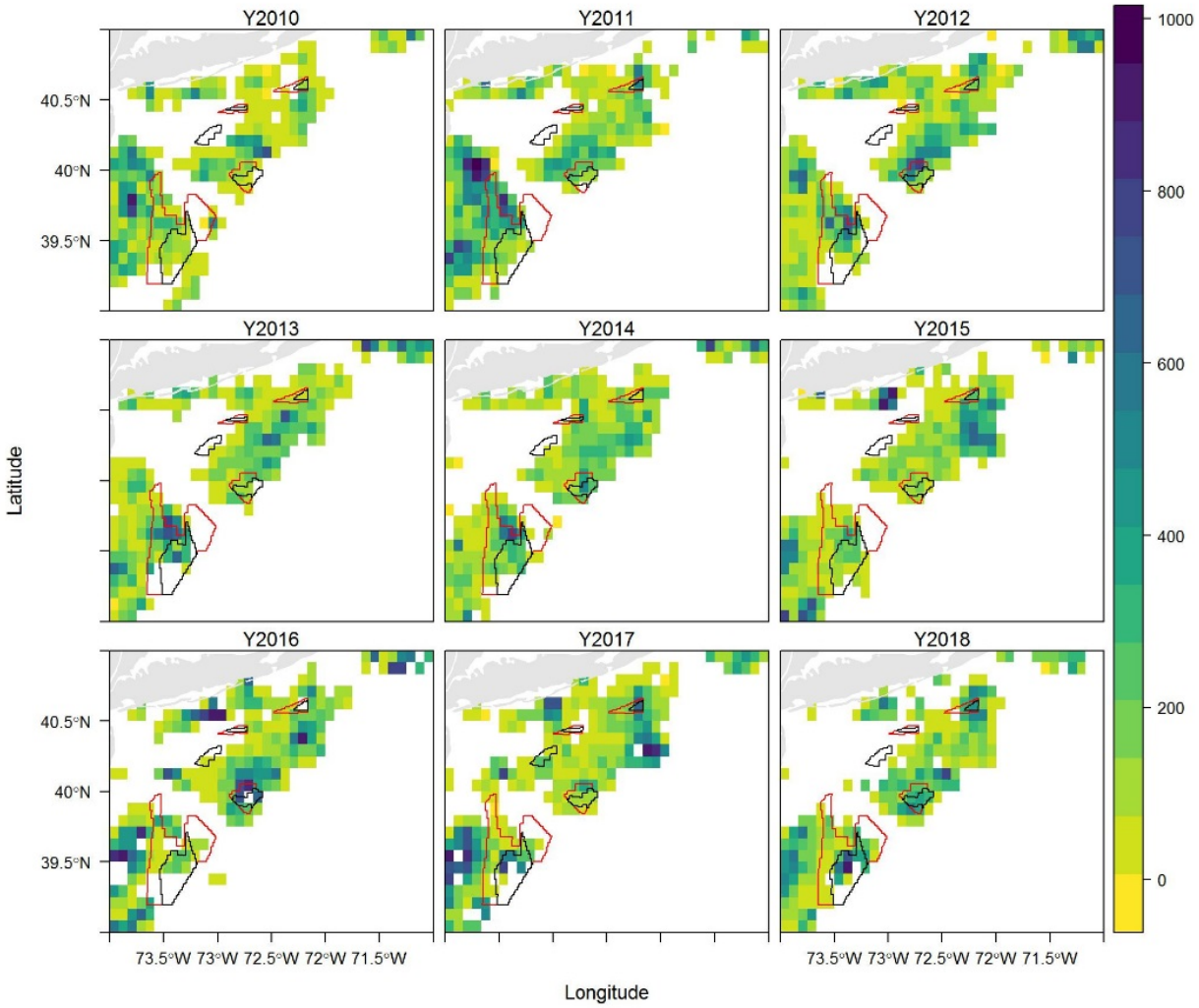
Scallop Effort Heat Map (VMS)



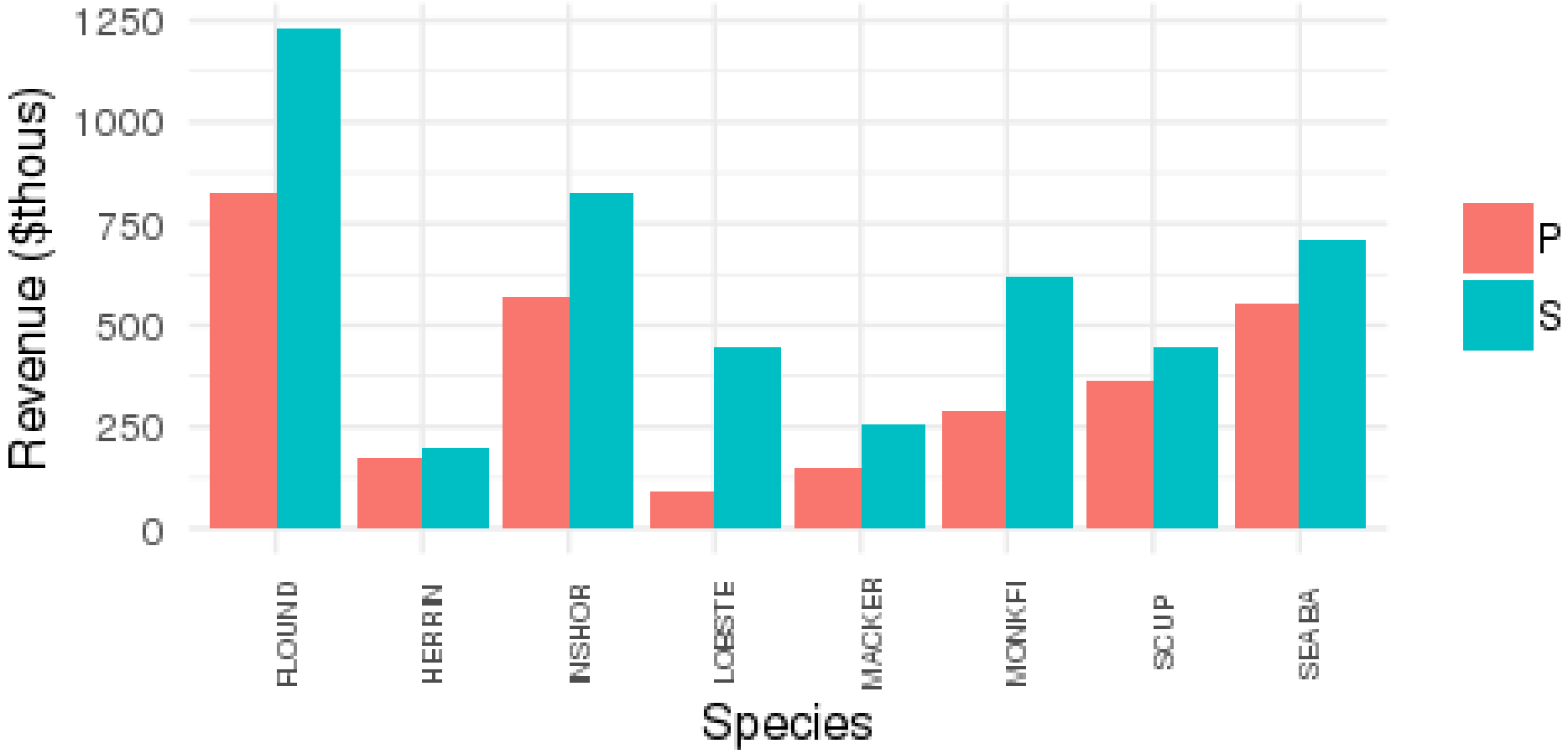
Surfclam and Ocean Quahog Revenue from Recommended Areas, 2012-2017



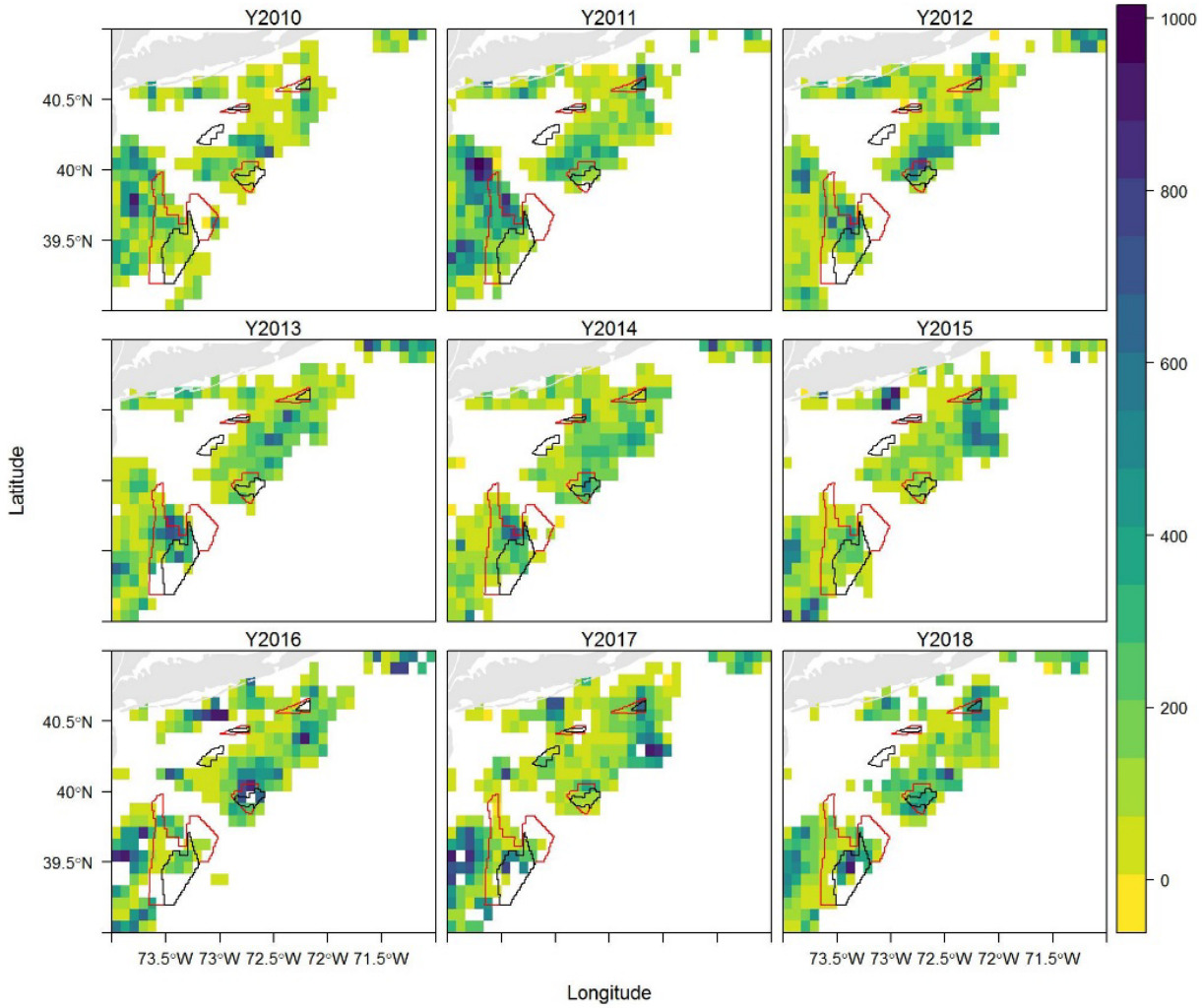
Surfclam/Ocean Quahog Effort Heat Map (VMS)



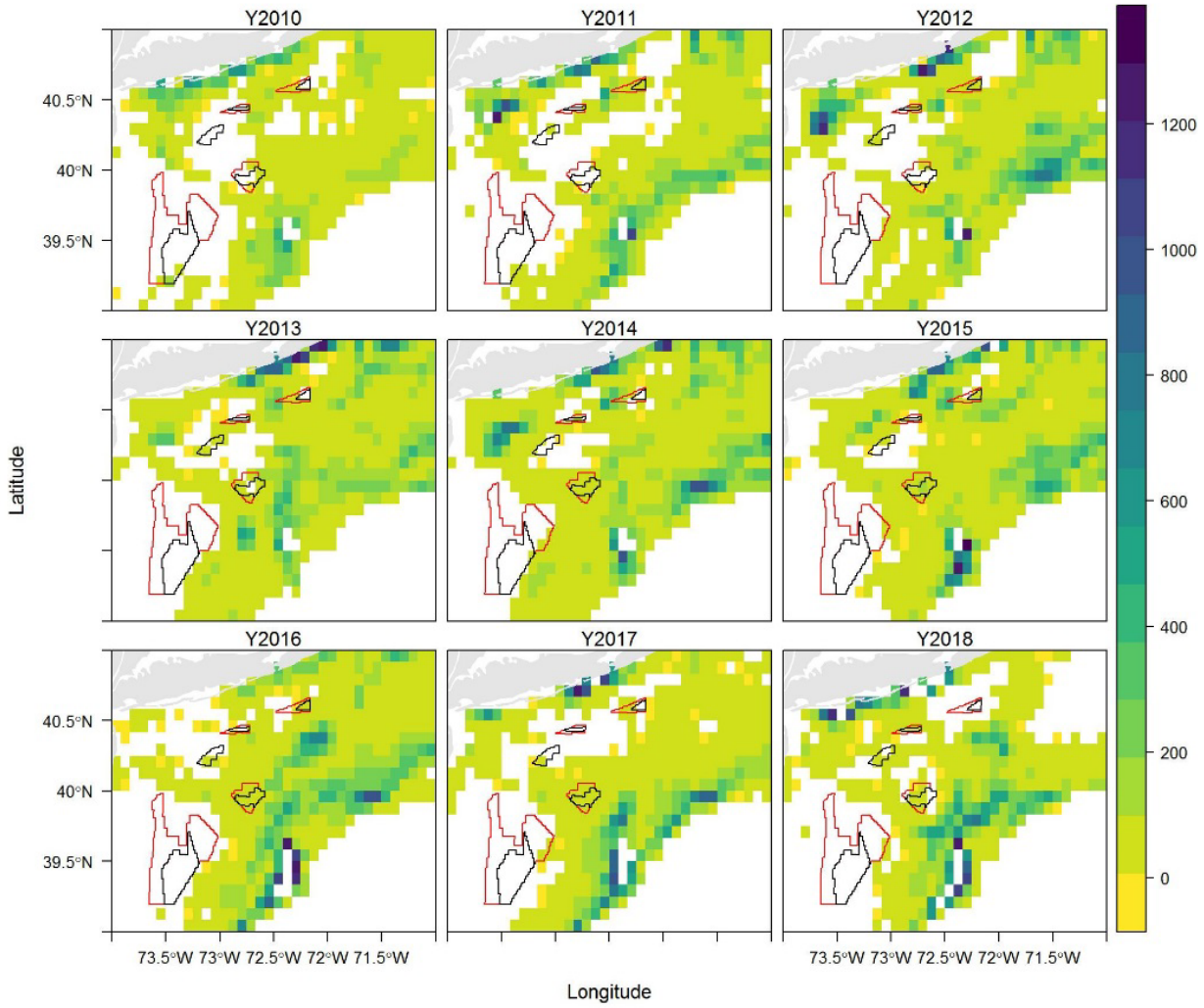
Other Top Species Revenue, 2012-2017



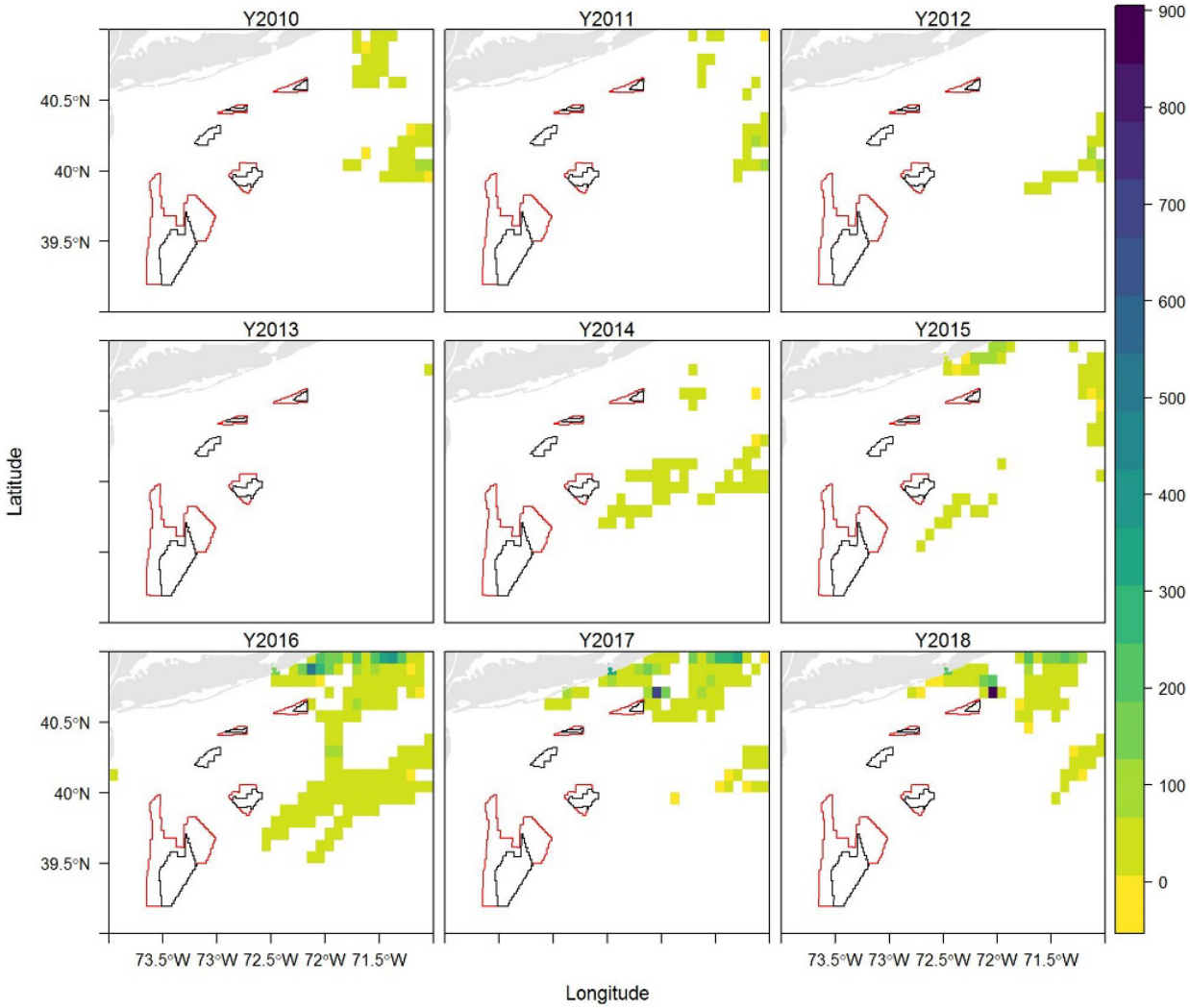
Declared out of Fishery (DOF) Effort Heat Map (VMS)



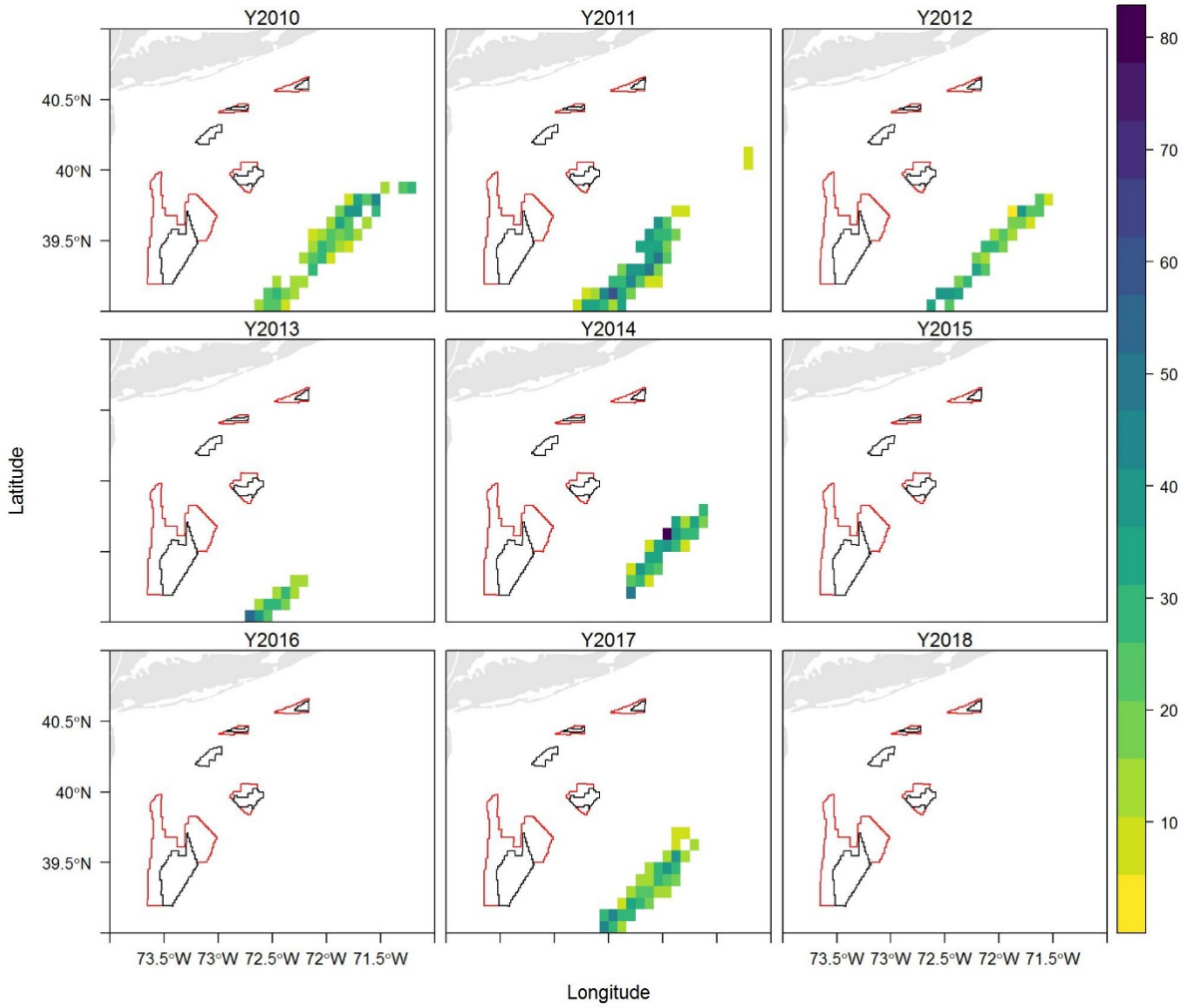
Squid, Mackerel, and Butterfish Effort Heat Map (VMS)



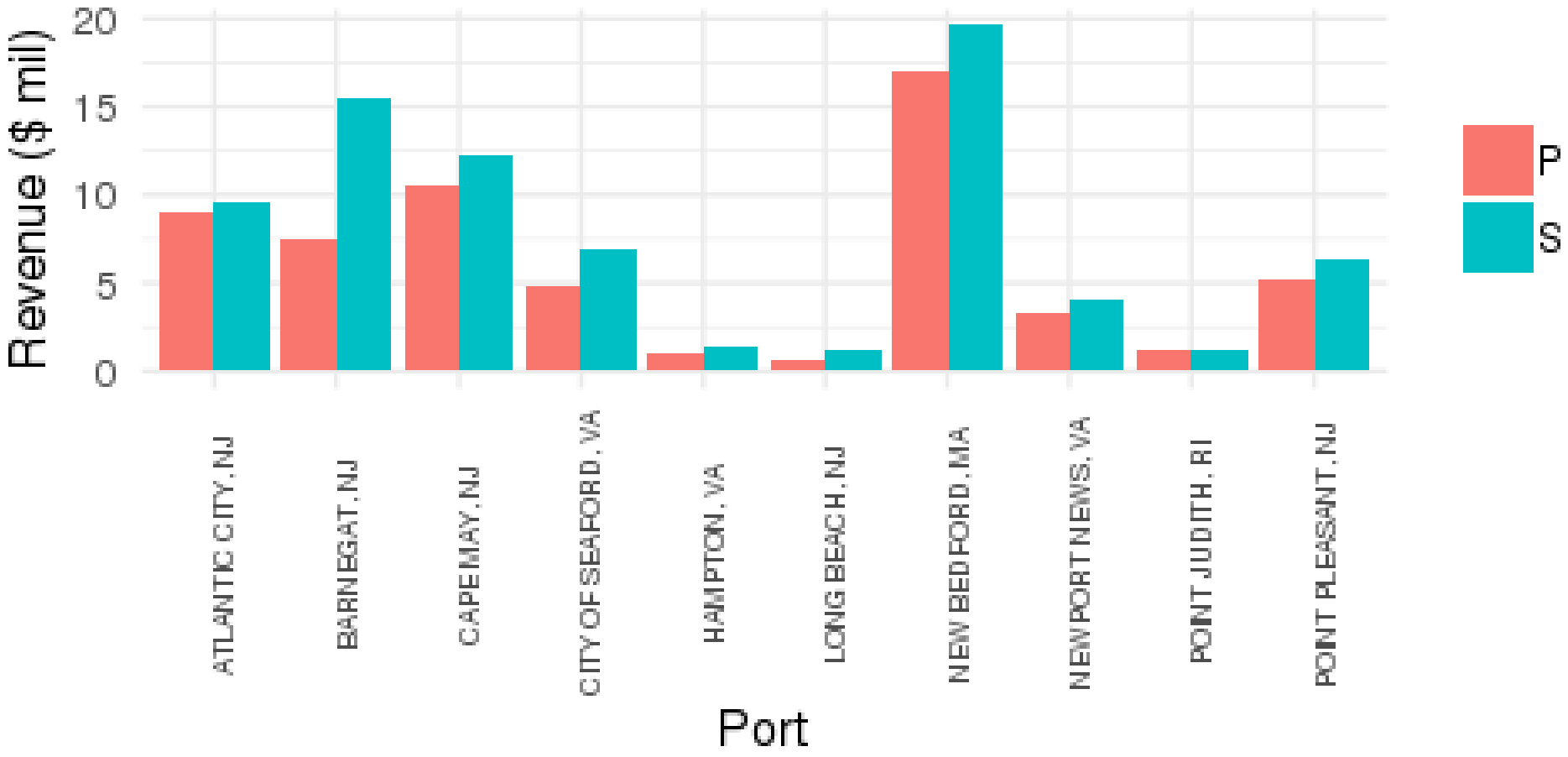
Groundfish (Northeast Multispecies) Effort Heat Map (VMS)



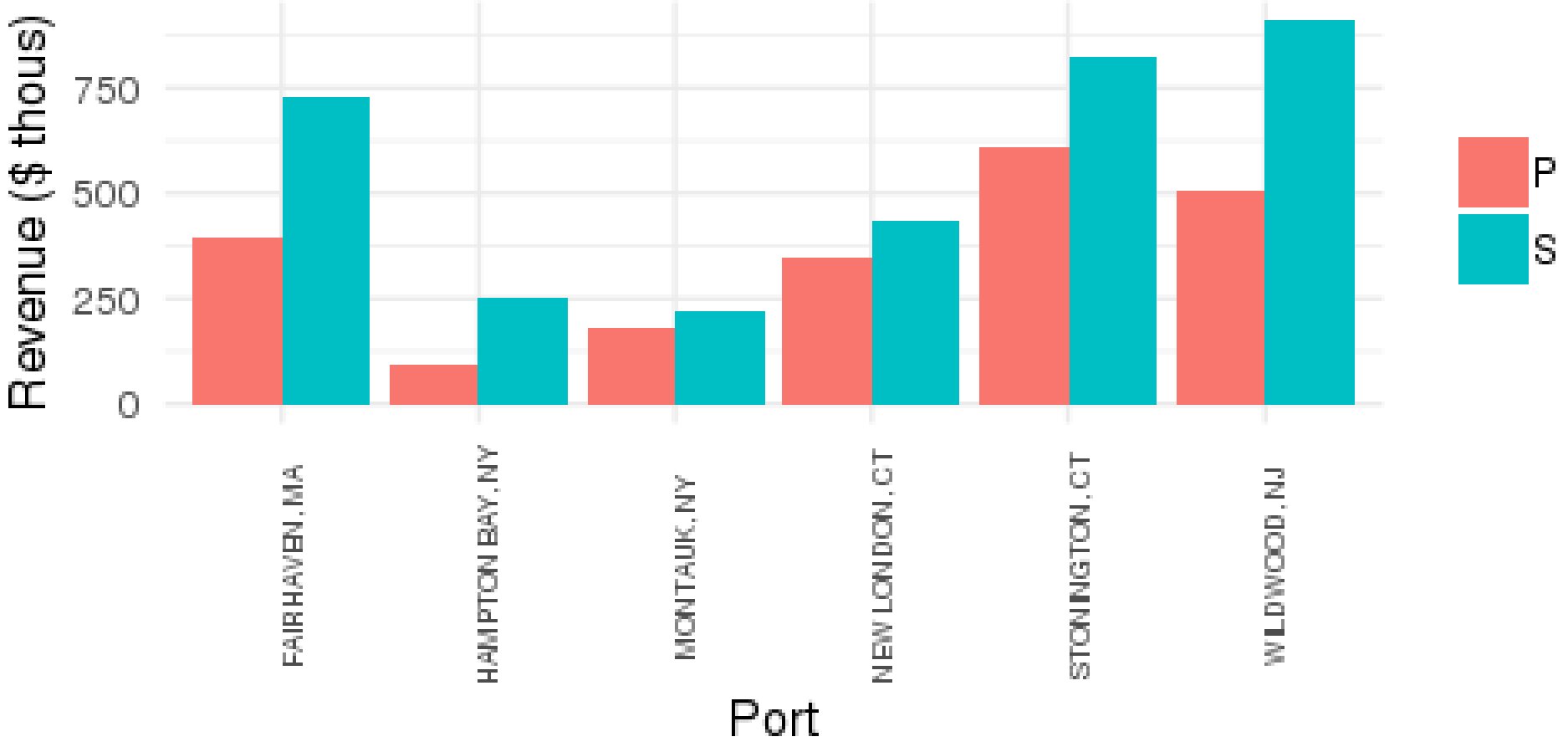
Highly Migratory Species Effort Heat Map (VMS)



Top Ports by Landed Revenue from Recommended Areas, 2012-2017



Other Ports by Landed Revenue from Recommended Areas, 2012-2017



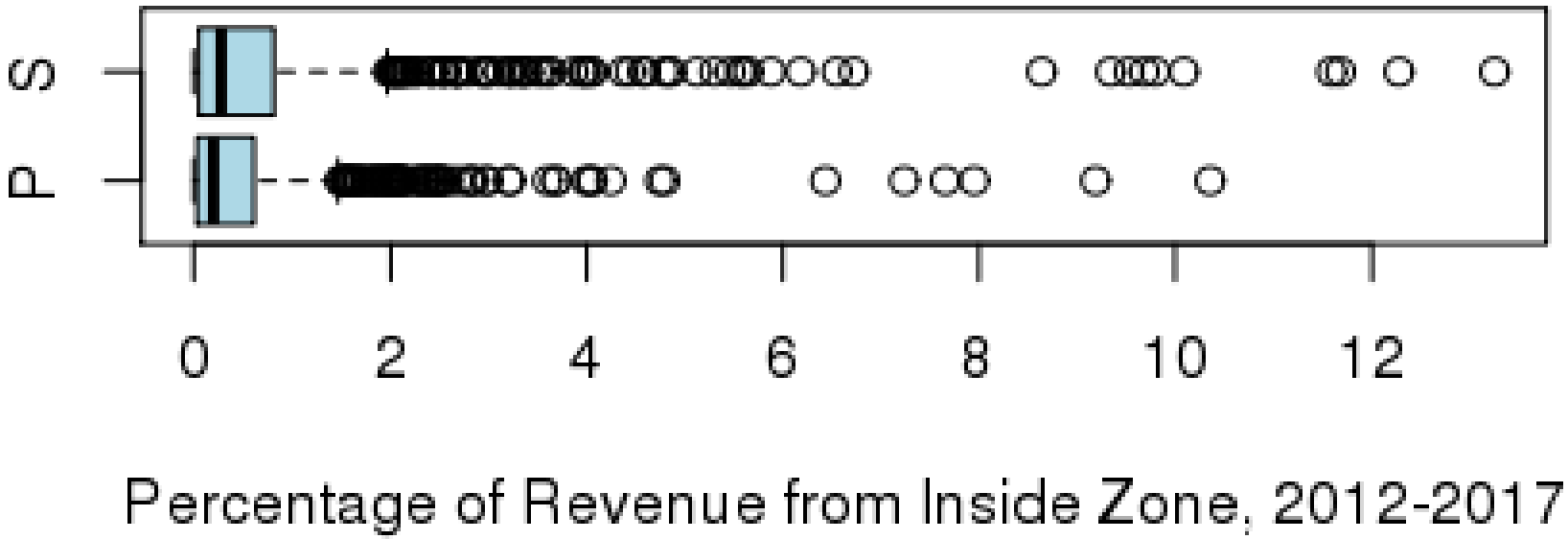
Total Permits Exposed within Primary & Secondary Areas (VMS)

	Scallop	Surfclam/Ocean Quahog	DOF	Squid/Mack/Butterfish	Herring	Groundfish	Highly Migratory
2010	261	22	120	18	12	<3	<3
2011	243	24	111	18	11	<3	3
2012	212	26	95	13	10	<3	<3
2013	174	25	83	25	7	<3	<3
2014	264	23	99	33	4	<3	<3
2015	190	23	94	23	4	3	<3
2016	277	23	119	39	10	4	<3
2017	278	31	80	28	5	<3	<3
2018	146	29	44	20	11	<3	<3

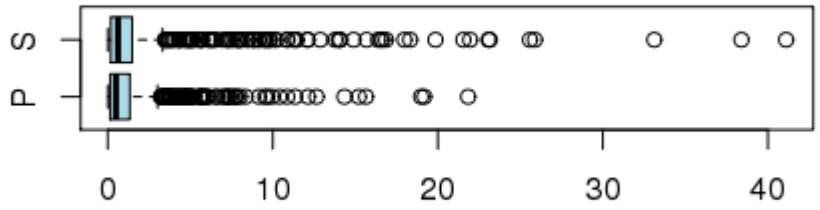
Effort (%) in Primary and Secondary Areas Relative to Total Fishery (VMS)

	Scallop	Surfclam/Ocean Quahog	DOF	Squid/Mack/Butterfish	Herring	Groundfish	Highly Migratory
2010	7.54	4.77	3.87	0.14	0	0	0
2011	2.59	7.20	1.53	0.03	0.06	0	0
2012	4.22	7.30	1.69	0.07	0.06	0	0
2013	4.02	6.95	1.30	0.11	0.25	0	0
2014	5.59	7.59	1.77	0.13	0	0	0
2015	2.47	4.73	1.24	0.21	0	0	0
2016	2.90	5.11	0.40	0.10	0.93	0	0
2017	1.80	6.51	0.41	0.17	0	0	0
2018	1.06	10.53	0.16	0.07	0.50	0	0

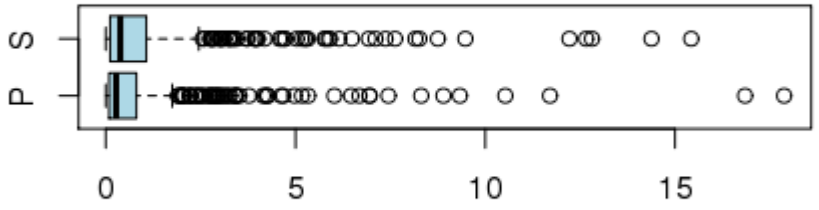
Permit Dependence (%) on Revenue from Recommended Areas, 2012-2017



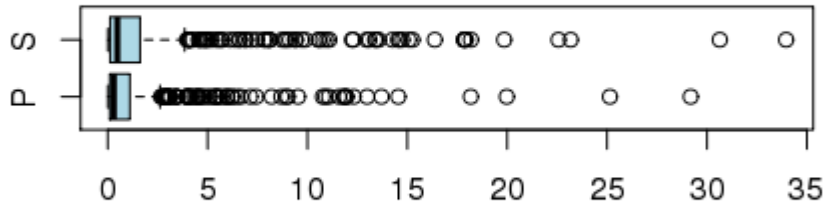
Permit Dependence (%), cont.



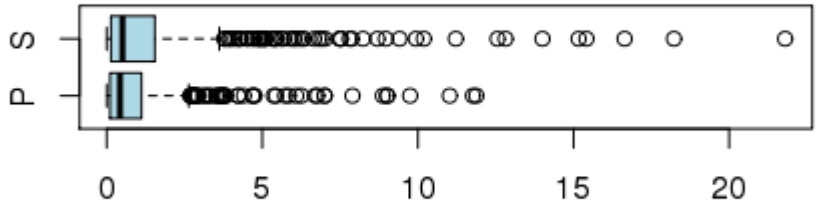
Percentage of Revenue from Inside Zone, 2012



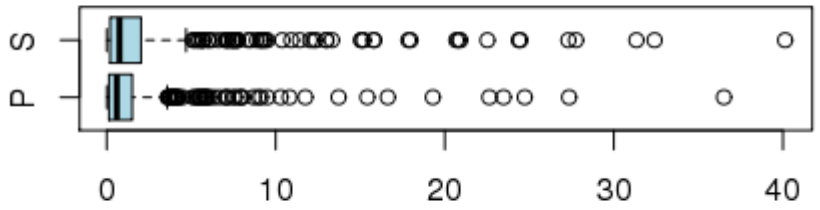
Percentage of Revenue from Inside Zone, 2015



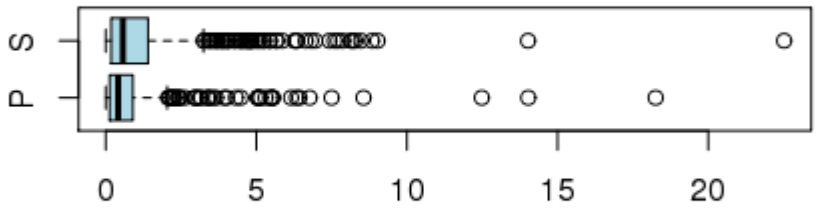
Percentage of Revenue from Inside Zone, 2013



Percentage of Revenue from Inside Zone, 2016



Percentage of Revenue from Inside Zone, 2014



Percentage of Revenue from Inside Zone, 2017

Preliminary Conclusions

- Fishing effort within the primary and secondary areas overlaps with known fishing operations and is variable between years and fisheries.
- Scallop, Surfclam, Ocean Quahog, and other fisheries (Summer Flounder, Scup, Black Sea Bass, Whiting) are the most exposed to development within the modified Call Areas
- Fishing revenue from within the primary and secondary areas varies between $5 - $19 million per year.
- Based upon this preliminary analysis, secondary areas may more adversely impact smaller ports (e.g. Hampton Bay, NY; Barnegat, NJ; Fairhaven, MA) than large ports
- Smaller ports and individual vessels could be more sensitive to adverse impacts, despite marginal impacts to total effort/revenue reflected in this analysis
- **More detailed analysis of available fisheries data should be conducted including assessing cumulative regional impacts from other development areas, and a process to vet these results with industry.**

Sources

- DePiper, Geret. “Statistically Assessing the Precision of Self-reported VTR Fishing Locations.” National Marine Fisheries Service, NOAA, June 2014. https://www.nefsc.noaa.gov/publications/tm/tm229/tm229.pdf.
- Original GARFO, NMFS, MAFMC, NEFMC public comment: http://s3.amazonaws.com/nefmc.org/180607_GARFO-to-BOEM-re-NY-Bight-Call-For-Information_NMFS-Comments_June-2018.pdf