

## DRAFT – VMS Corridor Analysis updated for November meetings

### Alternatives

Currently DAS are allocated to the limited access fishery based on an estimate of projected catch in open areas divided by an estimate of average catch per day for all LA vessels combined. This estimate of catch per DAS uses “DAS charged”; the time between when a vessel crosses the VMS demarcation line on the way out, and the way back. Framework 26 is considering measures to allow a vessel more flexibility to get off the clock on the return to port, which would have impacts on the DAS charged value, thus the LPUE estimate.

One alternative includes a specific VMS corridor from Montauk, NY to Cape Henry, VA (Alternative 2.8.2). Safety concerns have been raised about this alternative and the Scallop Committee currently recommends this alternative be considered and rejected in FW26 (October Motion #6).

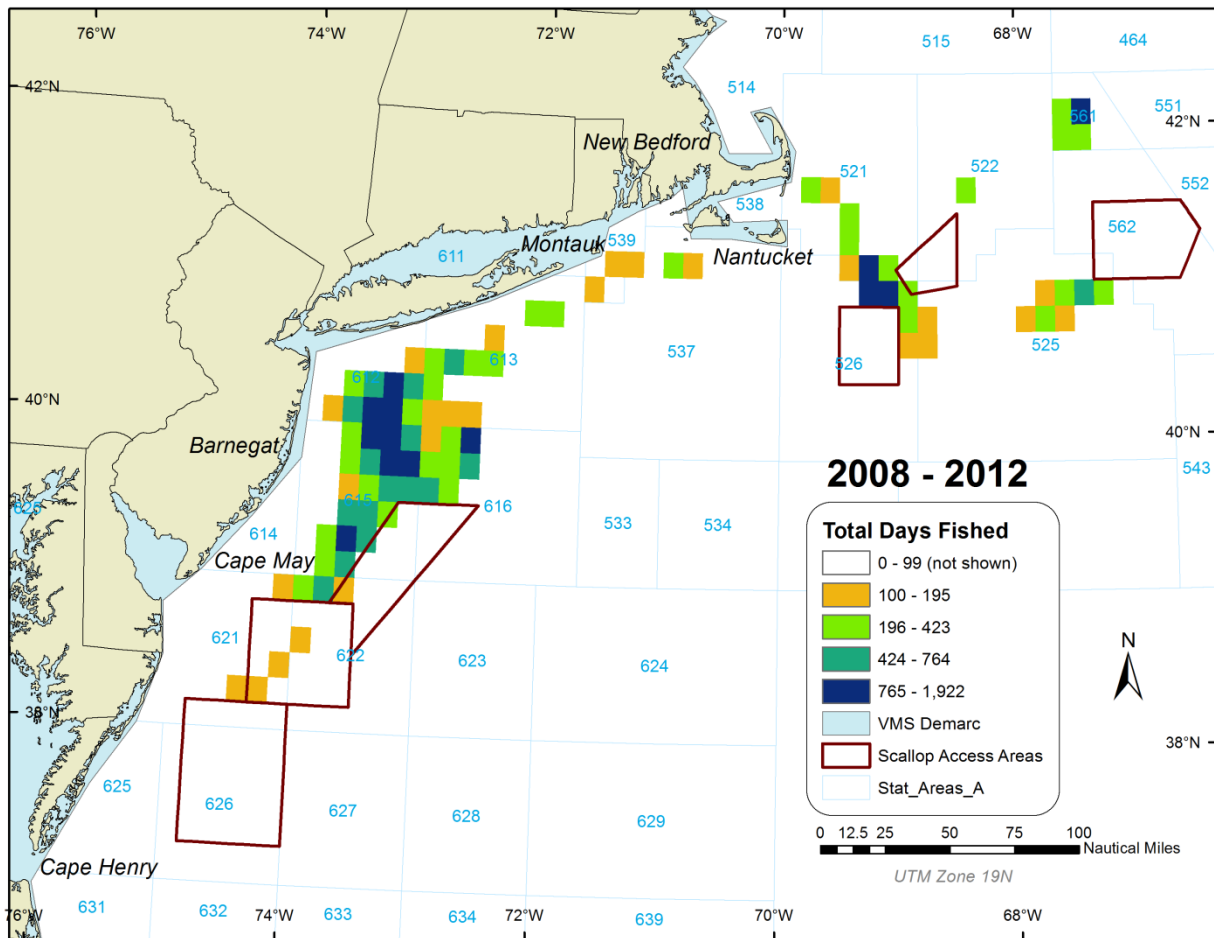
Another alternative in FW26 would allow a vessel to declare out of the fishery once it crosses the VMS demarcation line at any point (Alternative 2.8.3 – “DOF from anywhere”). Finally, the Scallop Committee developed a new alternative at their October meeting based on a motion from the AP. This alternative is similar to the “DOF from anywhere” alternative, except a vessel would only be able to DOF from Cape May and would need to transit south (Alternative 2.8.4).

### Methods

Under each scenario, some amount of time that is currently part of “DAS charged”, would no longer be charged. That will have some effect on future estimates per DAS. The PDT developed a method for estimating those potential effects.

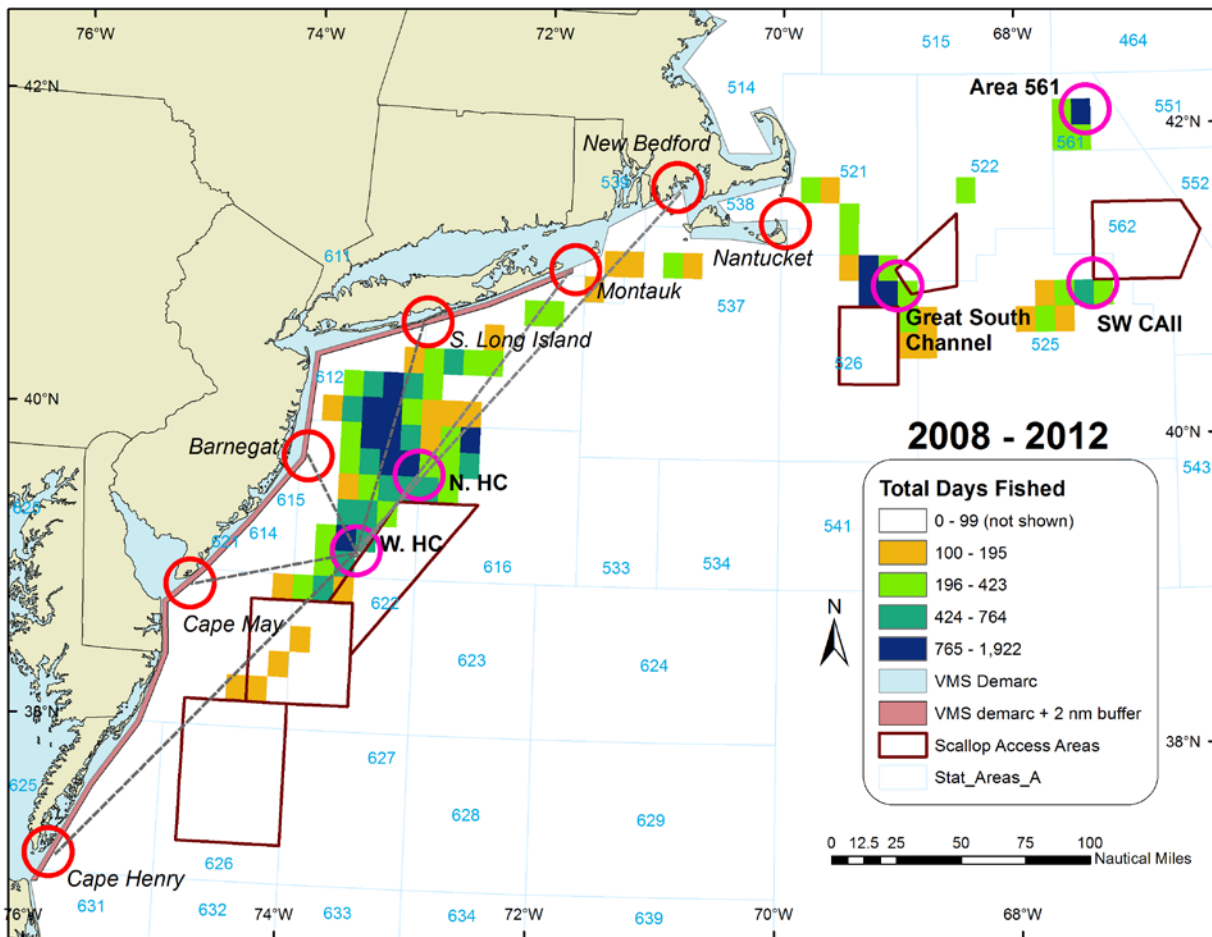
VMS data have been summarized by ten minute square for all LA vessels. In addition to the raw VMS data, these analyses also use model results from a NEFSC project that has calculated the probability that a vessel is fishing or steaming for each VMS poll by fishery (D. Records and C. Demarest, unpublished). Maps of binned values for total hours fished, based on the Records and Demarest model, were used to determine fishing hotspots in open areas using 2008-2012 VMS data. Trips that had VMS pollings within scallop access areas were removed, leaving just open area trips for the last five years of VMS data available (2008-2012). A map of total DAS fished for LA open area trips is summarized below for 2008-2012 (Figure 1).

**Figure 1 – Total days fished for 2008-2012 for all open area LA trips based on VMS model**



This map was used to identify five general hot spots in open areas (3 on GB and 2 in MA): Area 561 near northern edge; SW CAII just outside of CA2south; Great South Channel between CA1 and NL scallop access areas; the “gully” on the north side of the approach to New York City; and open areas north of the Hudson Canyon scallop access area (). These hot spots do change over time and a similar map was developed for each year separately (Figure 3).

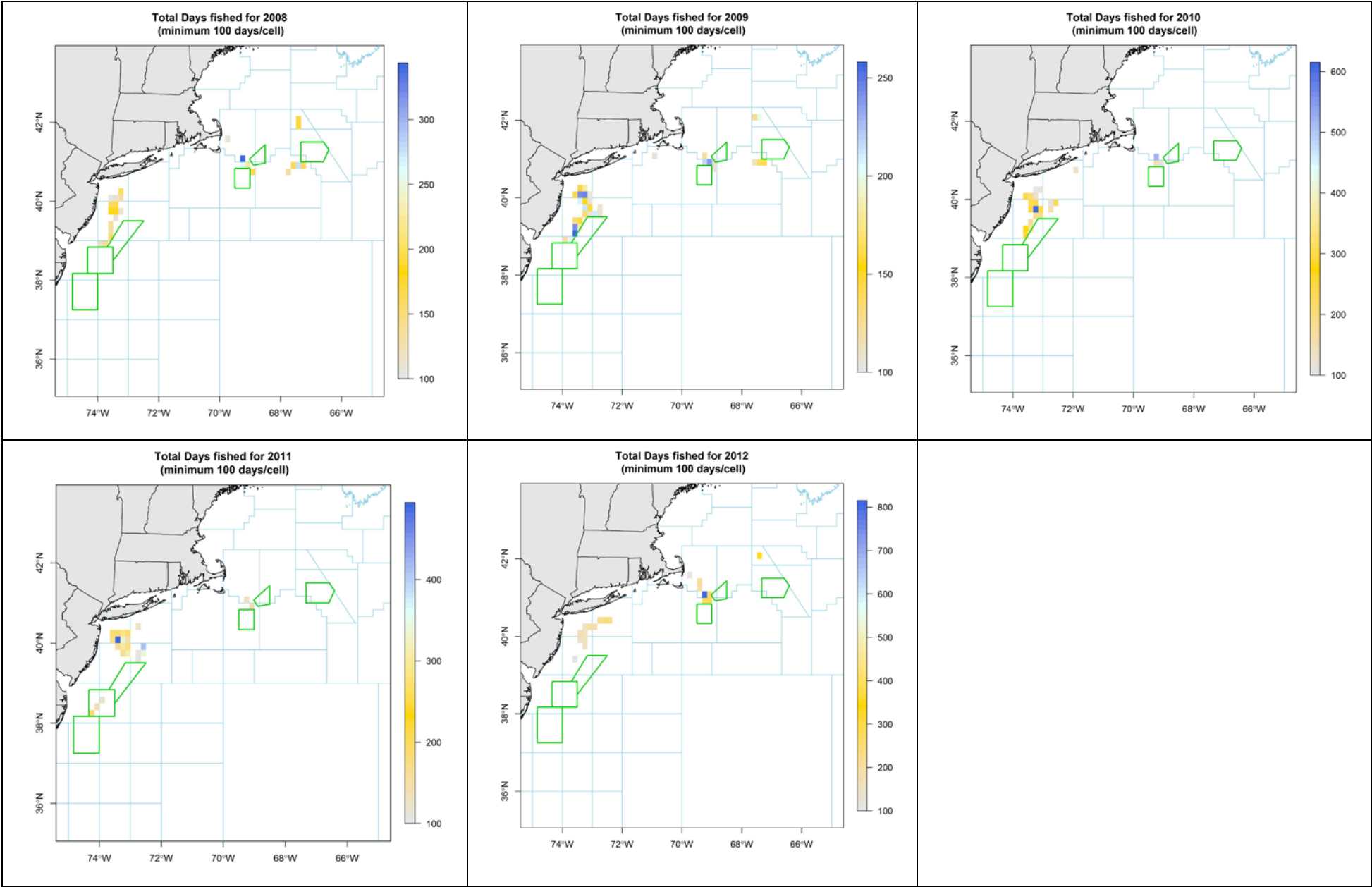
**Figure 2 – Primary open area fishing location hotspots (pink circles), and primary destinations (major ports or closest access inside VMS demarcation (red circles)).**  
Lines indicate examples of measurements made



Vessels from different regions have different open area fishing patterns. Limited access vessels were separated into a series of homeport groups based on permit data. All vessels were put in one of three homeport state groups:

- 1) Massachusetts (All New England states: ME, NH, MA, RI, CT = MA) (Figure 4)
- 2) New Jersey (NY, NJ, PA = NJ) (Figure 5)
- 3) Virginia (VA, NC, DE, and MD = VA) (Figure 6)

Figure 3 - Total days fished by year all open area LA trips based on VMS model



**Figure 4 - Total days fished by year for all open area LA trips on “MA” vessels based on VMS model**

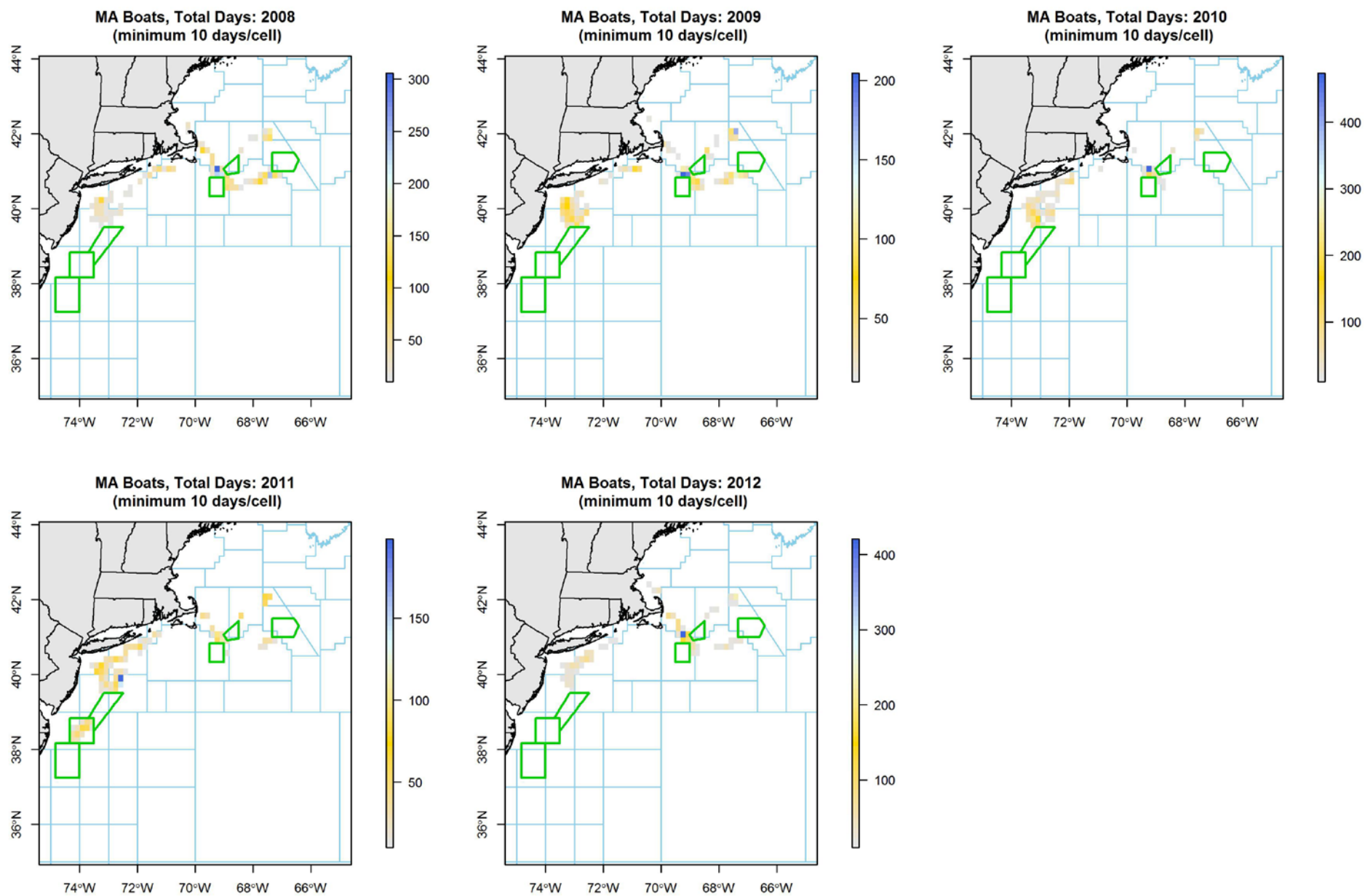
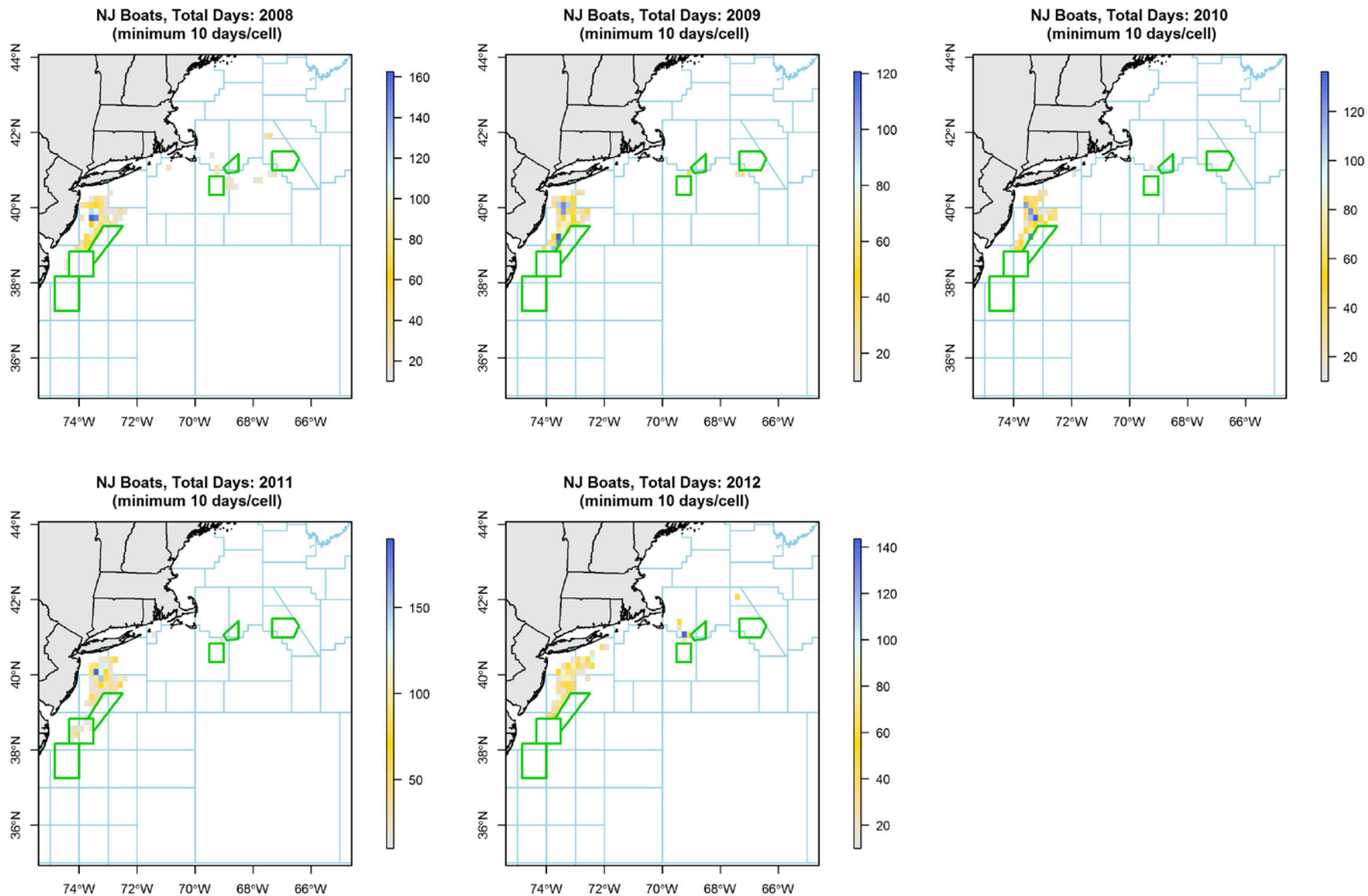
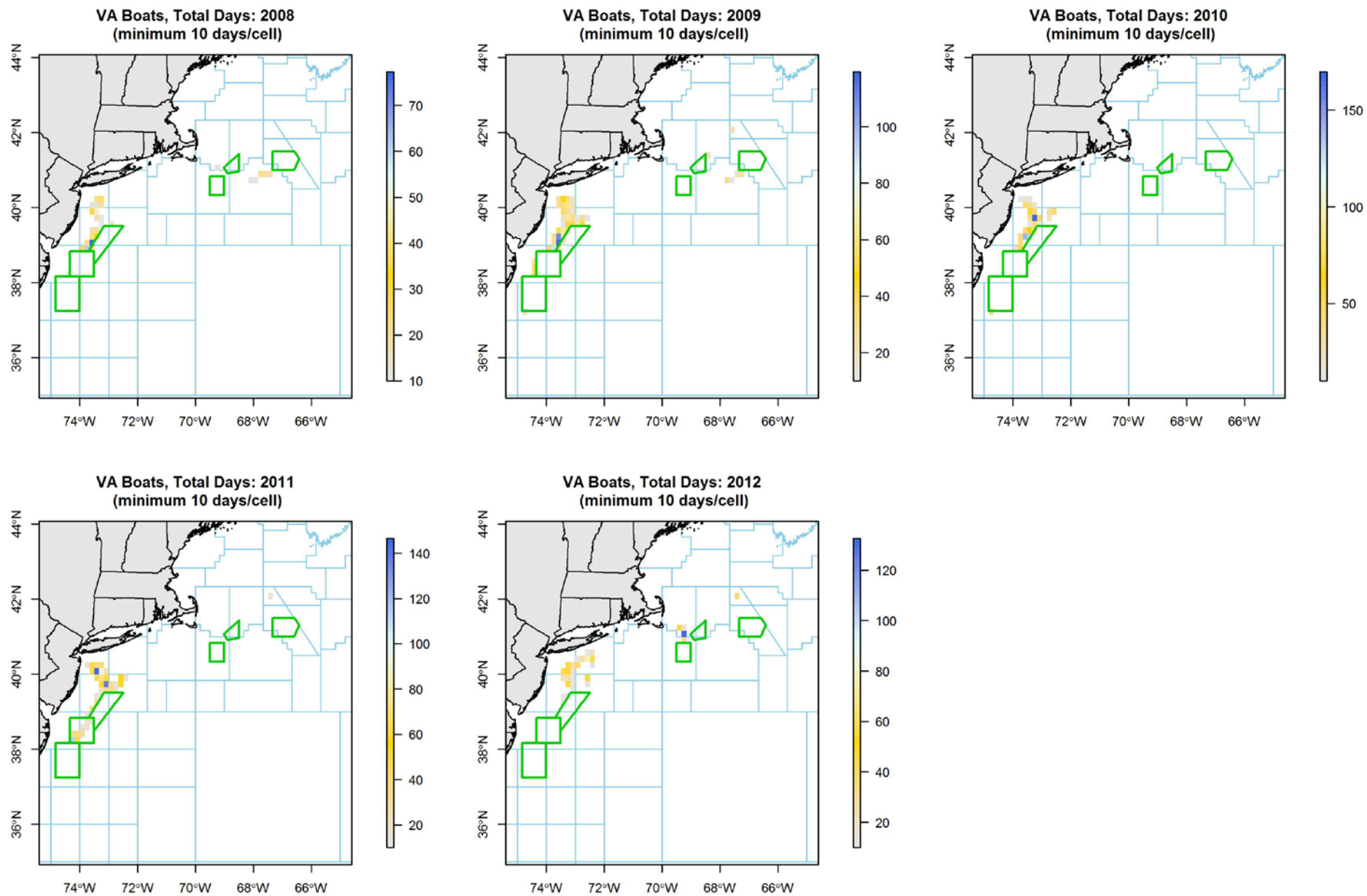


Figure 5 - Total days fished by year for all open area LA trips on “NJ” vessels based on VMS model



**Figure 6 - Total days fished by year for all open area LA trips on “VA” vessels based on VMS model**



Distances from hotspots to primary landing ports and demarcation line entry points were measured using *GIS routing*, a measuring tool available in ArcGIS. Distances from likely demarcation line entry points and final port were also measured. The difference between the demarcation line entry point and final port is the assumed savings in the Day at Sea calculation.

Some key assumptions

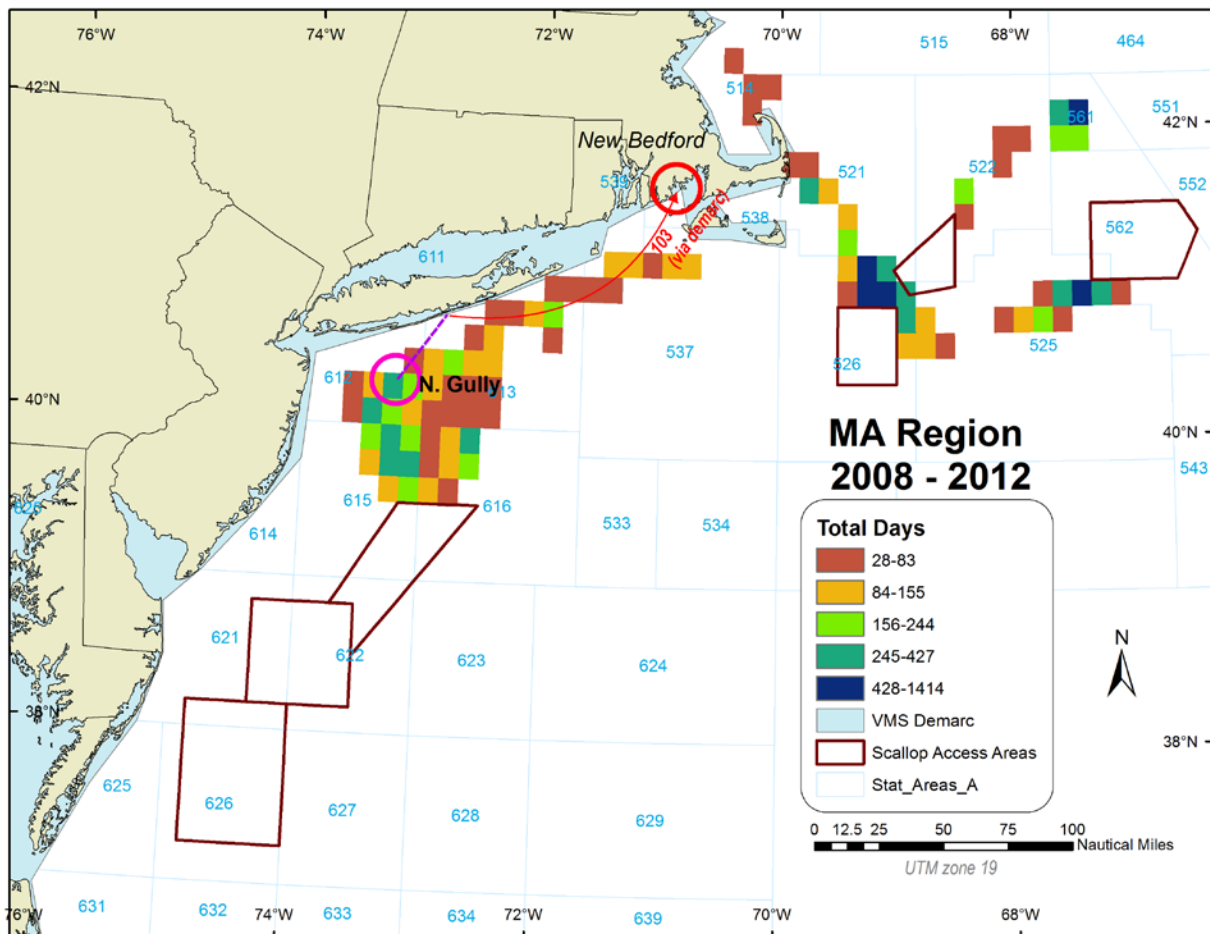
- Assume 8.5 kts cruising speed for steaming back to port.
- The PDT decided not to measure to nearest demark from Georges Bank hotspots as these are most heavily fished by New England vessels and the DAS savings from Nantucket to New Bedford is minimal. It should be recognized that there would be some savings if the DOF everywhere alternative is selected, but these analyses do not include an estimate for those potential savings.
- However, the PDT did estimate a DAS savings for New England vessels fishing in MA open areas and returning back to New England ports. For these trips an entry point of Fire Island New York was used as a likely re-entry for return trips to New Bedford.
- The PDT selected several demarcation entry points along the New Jersey coast and measured distances to likely ports. The “Cape May only” option is considered a subset of the “DOF anywhere”. Sample distances are provided in
- The PDT did not directly provide results for the VMS corridor alternative, since the Committee recommends that alternative be removed from consideration. Those analyses could be completed at a later date if necessary.

**Table 1 - Distances from likely demarc entry points to likely ports (nautical miles). These distances were measured in ArcGIS and were used in subsequent calculations.**

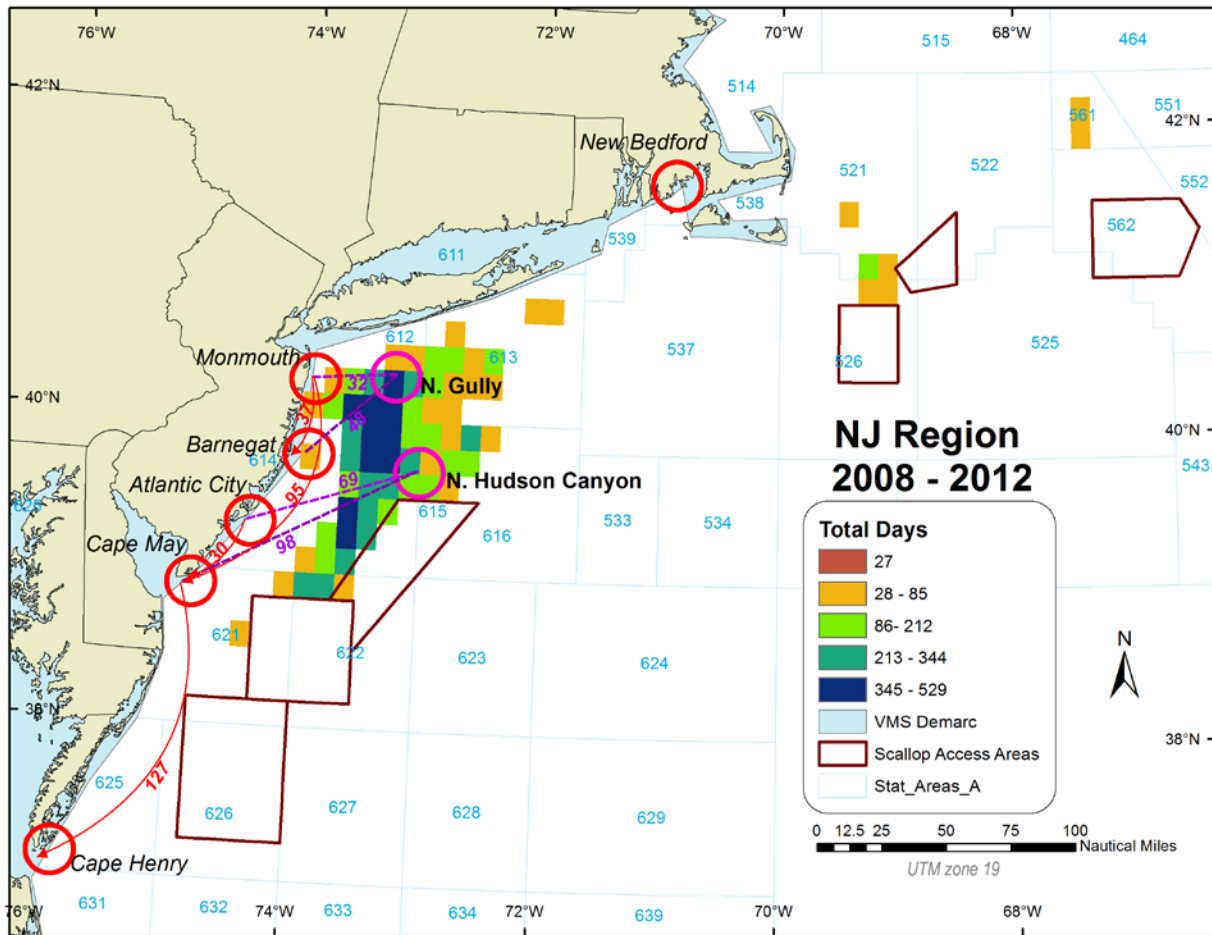
Demarc entry to final port				
	Barnegat	Cape May	Cape Henry	New Bedford
Monmouth	37	95	222	
Atlantic City		30	157	
Cape May			127	
Nantucket		260	371	
Fire Island				103



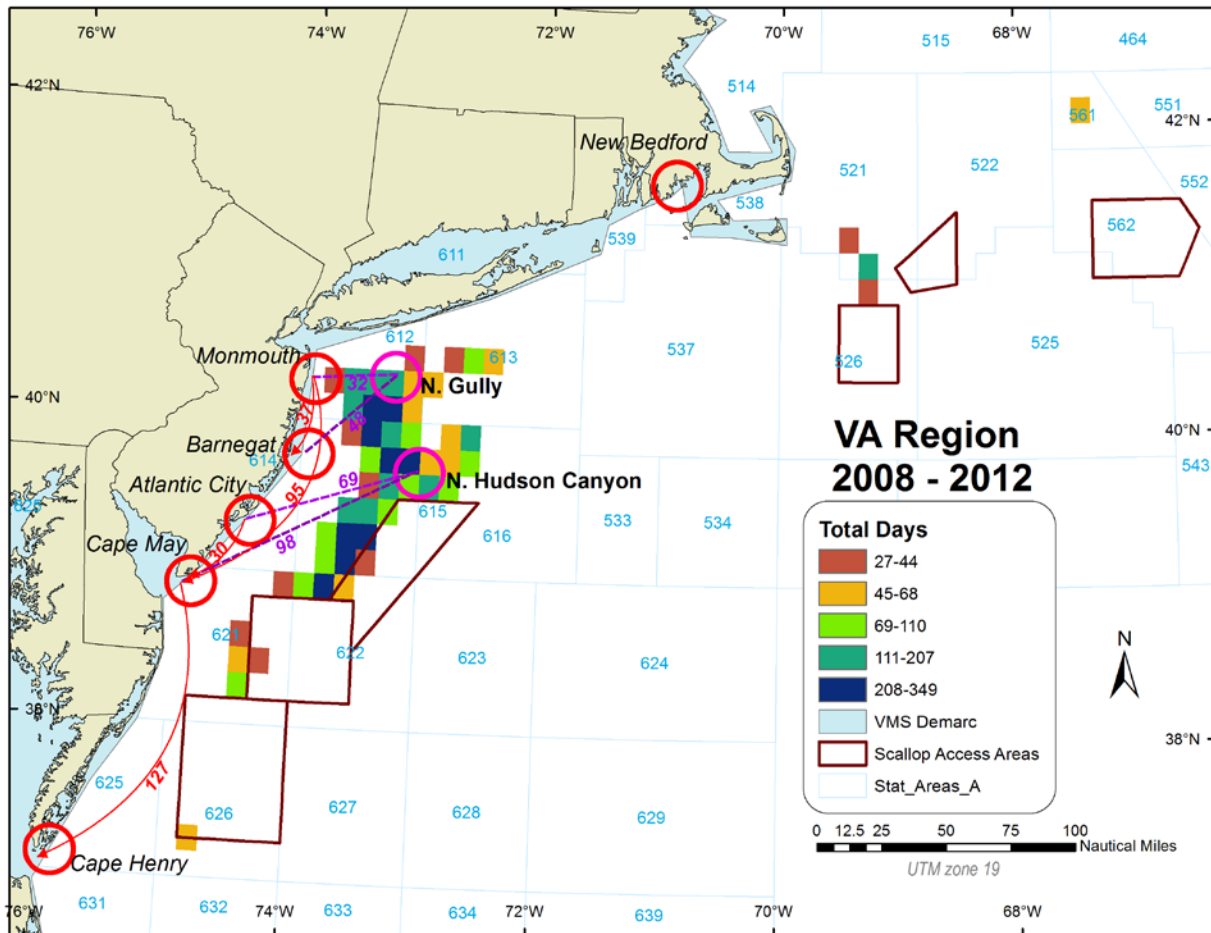
**Figure 7 - Massachusetts region (all New England states) fishing hotspots for 2008-2012. Distances between hotspots (pink circles), assumed demarc entry locations (red circles) are shown in purple. Distances between demarc entry point and final port are shown in red text. All distances are geodesic, in nautical miles and typically follow the VMS demarcation line. Curved lines are used for aesthetics.**



**Figure 8 - New Jersey region (NJ, NY, PA) fishing hotspots for 2008-2012. Distances between hotspots (pink circles), assumed demarc entry locations (red circles) are shown in purple. Distances between demarc entry point and final port are shown in red text. All distances are geodesic, in nautical miles and typically follow the VMS demarcation line. Curved lines are used for aesthetics.**



**Figure 9 - Virginia region (VA, NC, MD, DE) fishing hotspots for 2008-2012. Distances between hotspots (pink circles), assumed demarc entry locations (red circles) are shown in purple. Distances between demarc entry point and final port are shown in red text. All distances are geodesic, in nautical miles and typically follow the VMS demarcation line. Curved lines are used for aesthetics.**



## Scenarios for Analysis

The PDT identified a handful of scenarios to capture the potential DAS savings for both DOF alternatives. A “worse case” as well as a more “realistic” scenario were developed for both the DOF anywhere and the DOF Cape May Alternatives. It should be noted that predicting fishing behavior is very complex and none of these scenarios may reflect how vessels actually respond to new measures to provide more flexibility for vessels to save DAS on open area trips. There are many factors involved with where a vessel decides to land product and these analyses could never capture all the issues involved.

The scenarios were informed by using landings information by homeport of the vessel (permit data) and landing port (based on VMS), as well as the fishing location information from the region specific VMS analyses. There are about 345 limited access vessels including all permit categories (part time, full-time small dredge etc.). When all LA permit types are converted into “full-time equivalents” or FTE, the total number is 327 vessels. For these analyses the PDT divided those 327 FTE vessels as such: MA = 160

vessels; NJ = 97 vessels; and VA = 70 vessels (Table 2). A distribution of landings by homeport state and state of landings is summarized in Table 3.

**Table 2 – Sum of LA permitted vessels by homeport state (2011)**

Row Labels	Sum of 2011
CT	9
MA	147
NC	31
NJ	89
PA	3
RI	3
VA	39
<b>Grand Total</b>	<b>321</b>

**Table 3 –Scallop landings by home state and state landed (Sum total for 2009-2013 fishyears, LA vessels only, excludes IFQ trips, VTR data)**

Home State	State landed					Grand Total
	CT+RI	MA+NE+NH	NC	NJ+NY+MD+DE	VA	
CT+RI	71%	24%	0%	4%	0%	100%
MA+ME	0%	98%	0%	2%	0%	100%
NC	2%	30%	3%	24%	41%	100%
NJ+NY+PA	4%	27%	0%	64%	5%	100%
VA	0%	25%	0%	8%	67%	100%

For these analyses the PDT assumes each vessel will take three ten-day open area trips, but it should be noted that is probably a low estimate since some years have higher allocations, and some vessels take shorter trips. For example, if all vessels took four trips instead of three the results would be different. A summary of the scenarios below as well as described in Table 4.

#### **Alternative 2.8.3 – Implement a separate VMS declaration code for steaming back to port**

More vessels would potentially use this alternative so the adjustment needed would be higher.

Worse Case – MA – all three open area trips in Mid-Atlantic region; for NJ vessels one of three trips in GB and 2/3 trips in Mid-Atlantic; for VA vessels 1/3 trips on GB and 2/3 trips in Mid-Atlantic

Realistic – MA – 2/3 trips in Mid-Atlantic and 1/3 GB; for NJ vessels and VA vessels – all three trips in Mid-Atlantic. *But no DAS savings assumed for MA vessels or NJ vessels because all vessels assumed to steam back to port inside demark. If this is not the case mode DAS adjustment should be applied for MA vessels steaming from trips in Mid-Atlantic.*

#### **Alternative 2.8.4 – Implement a separate VMS declaration code for steaming back to port south of Cape May only**

Fewer vessels would potentially use this alternative so the adjustment would be lower.

Worse Case – MA – ignored – minimal savings; for NJ vessels – ignored – minimal savings; for VA vessels 3/3 trips in Mid-Atlantic

Realistic – MA – ignored – minimal savings; for NJ vessels – ignored – minimal savings; for VA vessels 3/3 trips in Mid-Atlantic, but only half of the vessels will return to VA (35 vessels) because it is assumed that half of the VA fleet is already steaming back.

**Table 4 – Summary of scenarios analyzed for both DOF Alternatives**

<b>DOF Everywhere</b>	<b>Region</b>	<b># vessels</b>	<b>Trip Assumptions</b>
Worse case	NE Region	160	3/3 in MA region
	NJ	97	1/3 GB; 2/3 MA
	VA/NC	70	1/3 GB; 2/3 MA
Realistic	NE Region	160	2/3 MA; 1/3 GB
	NJ	97	3/3 MA
	VA/NC	70	3/3 MA
<b>DOF Cape May only</b>	<b>Region</b>	<b># vessels</b>	<b>Trip Assumptions</b>
Worse case	NE Region	160	N/A
	NJ	97	N/A
	VA/NC	70	3/3 trips in MA
Realistic	NE Region	178	N/A
	NJ	114	N/A
	VA/NC	<b>35</b>	3/3 trips in MA

An excel file was created to translate the total number of days assumed to be saved into DAS charged or DAS adjustment per LA vessel for both the DOF everywhere and the DOF Cape May only options. Figure 7 shows how these analyses work for various assumptions of trips and number of vessels that may potentially take advantage of DAS savings provided under the alternatives considered. For example, if the DOF Cape May option was selected, and all 70 vessels from VA region took advantage of the DAS savings from Cape May south on three trips per year, which would be a total of 130.7 DAS. When the total DAS are divided by 327 FT equivalent vessels the DAS adjustment is 0.4DAS per LA vessel.

(3 trips \* 70 vessels \* distance from Cape May to Cape Henry (127nm))

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Steaming speed (8.5 knots) / 24 hours

= 130.7 days

130.7 days / 327 LA vessels = 0.4 DAS per vessel

Using the excel file an estimate of DAS cost can be determined for each scenario. **For DOF anywhere the worse case DAS charge would be 2.25 DAS and 0.7 for the realistic scenario. For DOF Cape May only, the worse case scenario comes in at 0.4 DAS per LA vessel and the realistic scenario is 0.2 DAS or 5 hours per LA vessel (Table 5).**

**Table 5 – Summary of potential DAS costs associated with both DOF alternatives**

<b>DOF Anywhere</b>	<b>Region</b>	<b># vessels</b>	<b>Trip Assumptions</b>	<b>Total DAS</b>	<b>DAS adjustment</b>	<b>Final DAS cost</b>	<b>DAS in hours</b>
Worse case	Mass	160	3/3 in MA region	242	0.75		
	NJ	97	1/3 GB; 2/3 MA	123 + 90	0.37 + 0.27		
	VA/NC	70	1/3 GB; 2/3 MA	127 + 152	0.4 + 0.46	2.25	54
				Total = 734 DAS			
Realistic	Mass	160	2/3 MA; 1/3 GB	0	0		
	NJ	97	3/3 MA	0	0		
	VA/NC	70	3/3 MA	229	0.7	0.7	17
<b>DOF Cape May only</b>	<b>Region</b>	<b># vessels</b>	<b>Trip Assumptions</b>	<b>Total DAS</b>	<b>DAS adjustment</b>	<b>Final DAS cost</b>	<b>DAS in hours</b>
Worse case	Mass	160	N/A	0	0		
	NJ	97	N/A	0	0		
	VA/NC	70	3/3 trips in MA	131	0.4	0.4	10
Realistic	Mass	178	N/A	0	0		
	NJ	114	N/A	0	0		
	VA/NC	<b>35</b>	3/3 trips in MA	65	0.2	0.2	5

Figure 10 – Screenshot of excel file used to evaluate DAS savings and adjustments

1					nm				
2		Gully	Cape May		114		Cape May only alternative		
3		Cape May	Newport News	via demarc	140		DOF anywhere		
4		Monmouth	Barnegat		37		DOF anywhere		
5		Monmouth	Cape May		95		DOF anywhere		
6		Atlantic City	Cape May		30		DOF anywhere		
7		Cape May	Cape Henry	via demarc	127		DOF anywhere		
8		Nantucket	Cape henry		371		DOF anywhere		
9		Nantucket	Cape May		260		DOF anywhere		
10									
11		average speed on return steam			8.5 kts		full time	part time	
12		Number of LA permits			327		313	14	
13		DAS allocated (full time)			31				
14	Virginia Region								
15	Cape May only option								
16		Days at sea				Difference/permit in DAS			
17		Number of trips				Number of trips			
18	number of boats	1	2	3	4	1	2	3	4
19	1	0.623	1.245	1.868	2.490	0.002	0.004	0.006	0.008
20	2	1.245	2.490	3.735	4.980	0.004	0.008	0.011	0.015
21	3	1.868	3.735	5.603	7.471	0.006	0.011	0.017	0.023
22	4	2.490	4.980	7.471	9.961	0.008	0.015	0.023	0.030
23	5	3.113	6.225	9.338	12.451	0.010	0.019	0.029	0.038
24	6	3.735	7.471	11.206	14.941	0.011	0.023	0.034	0.046
25	7	4.358	8.716	13.074	17.431	0.013	0.027	0.040	0.053
26	8	4.980	9.961	14.941	19.922	0.015	0.030	0.046	0.061
27	9	5.603	11.206	16.809	22.412	0.017	0.034	0.051	0.069
28	10	6.225	12.451	18.676	24.902	0.019	0.038	0.057	0.076
29	11	6.848	13.696	20.544	27.392	0.021	0.042	0.063	0.084
30	12	7.471	14.941	22.412	29.882	0.023	0.046	0.069	0.091
31	13	8.093	16.186	24.279	32.373	0.025	0.049	0.074	0.099
32	14	8.716	17.431	26.147	34.863	0.027	0.053	0.080	0.107
33	15	9.338	18.676	28.015	37.353	0.029	0.057	0.086	0.114
34	16	9.961	19.922	29.882	39.843	0.030	0.061	0.091	0.122
35	17	10.583	21.167	31.750	42.333	0.032	0.065	0.097	0.129
36	18	11.206	22.412	33.618	44.824	0.034	0.069	0.103	0.137
37	19	11.828	23.657	35.485	47.314	0.036	0.072	0.109	0.145
75	57	35.485	70.971	106.456	141.941	0.109	0.217	0.326	0.434
76	58	36.108	72.216	108.324	144.431	0.110	0.221	0.331	0.442
77	59	36.730	73.461	110.191	146.922	0.112	0.225	0.337	0.449
78	60	37.353	74.706	112.059	149.412	0.114	0.228	0.343	0.457
79	61	37.975	75.951	113.926	151.902	0.116	0.232	0.348	0.465
80	62	38.598	77.196	115.794	154.392	0.118	0.236	0.354	0.472
81	63	39.221	78.441	117.662	156.882	0.120	0.240	0.360	0.480
82	64	39.843	79.686	119.529	159.373	0.122	0.244	0.366	0.487
83	65	40.466	80.931	121.397	161.863	0.124	0.247	0.371	0.495
84	66	41.088	82.176	123.265	164.353	0.126	0.251	0.377	0.503
85	67	41.711	83.422	125.132	166.843	0.128	0.255	0.383	0.510
86	68	42.333	84.667	127.000	169.333	0.129	0.259	0.388	0.518
87	69	42.956	85.912	128.868	171.824	0.131	0.263	0.394	0.525
88	70	43.578	87.157	130.735	174.314	0.133	0.267	0.400	0.533
89									

## Draft Impacts

These measures are not expected to have direct impacts on the resource or environment since overall fishing levels should remain constant, provided the DAS adjustment applied accounts for any savings in DAS. If some level of time under status quo that vessels spend steaming to port is converted from DAS charged to time off the clock, there could be impacts on fishing time. However, this action is considering an adjustment to account for potential DAS savings. If the adjustment is sufficient, there should be no direct impacts on the scallop resource or environment (EFH, PR and non-target species) from these measures compared to No Action.

Instead these alternatives were primarily developed to address the issue that a subset of vessels (primarily homeported in the southern range of the fishery) are unable to get inside the VMS demarcation line for a substantial portion of their return steam to port. Because many open area fishing grounds have been converted to scallop access areas in the southern range of the fishery, vessels from that area need to steam longer to get to primary fishing grounds. This may be one factor why a substantial portion of scallop landings from southern vessels have moved to other states closer to primary fishing grounds.

The focus of these analyses is economic in nature and concentrates on potential distributional impacts of the measures under consideration since vessels from different regions may have different impacts.

### **1.1.1 Measures to allow a limited access vessel to declare out of fishery on return to homeport**

#### **1.1.1.1 No Action**

Limited access scallop vessels on an open area DAS trip are charged DAS from the time a vessel positions seaward of the VMS demarcation line until it once again positions shoreward of the demarcation line. However, the current VMS demarcation line results in a higher DAS charge for each trip for the vessels homeported in Virginia and North Carolina due to the longer steaming times to reach the line. In order to prevent steaming time counted as DAS charged, some vessels from those more distant ports choose to land their scallops in New Jersey and ports closer to fishing grounds. When vessels change where they unload product there can be negative impacts on shoreside facilities, especially in ports farther from primary fishing grounds. If vessels decide to steam farther to land product, trip costs will be higher, which can reduce profits for crew from additional costs in fuel etc. If vessels decide to land product closer to primary fishing grounds, trip costs would be lower, and profits could be higher due to shorter steaming times. Under No Action, ports and the shoreside businesses that support them that are closer to primary fishing grounds benefit when additional product is landed there; while other ports that are more distant, or have less activity due to vessels changing behavior, may be impacted negatively under No Action.

#### **1.1.1.2 Implement a separate VMS declaration code to allow vessels to declare out of the fishery at any point (DOF from anywhere)**

This alternative would allow a vessel to declare out of the fishery once it crosses the VMS demarcation line at any point (Alternative 2.8.3 – “DOF from anywhere”). If this alternative is adopted an adjustment



will be made to DAS allocations for all vessels since the lower DAS charge for vessels from VA/NC will result in higher DAS to land scallops. Currently DAS are allocated to the limited access fishery based on an estimate of projected catch in open areas divided by an estimate of average catch per day for all LA vessels combined. This estimate of catch per DAS uses “DAS charged”; the time between when a vessel crosses the VMS demarcation line on the way out, and the way back.

The estimated gains and loss to vessels from different ports and adjustment to DAS to keep the total fishing mortality constant at the projected levels are shown in Table 31 and distributional economic impacts are shown in Table 32. Under the worst case scenario for this alternative, the open area DAS for all FT limited access vessels has to be reduced by 2.24 days. The gains in DAS charged is estimated to be about 1.51 days for vessels homeported in MA, 2.2 days for vessels homeported in NJ and about 3.99 days for vessels homeported in VA/NC areas if vessels take advantage of this option. The net gains or loss is the difference between the gains in DAS and adjustment to open area DAS allocations. Table 31 shows that vessels from MA will have their DAS reduced on the net by 0.73 days, but the vessels from VA/NC would have an additional 1.74 days, again if they take advantage of this option (see the last column of Table 31, net gain/loss in DAS). For the realistic scenario, adjustment for DAS would be less, about 0.70 days, however, the net gains for the vessels homeported in VA/NC would be higher with a net gain of 2.6 days.

The vessels homeported in MA, or New England states, could incur the largest net loss in their open area days under the worst case scenario with this alternative; estimated revenues per vessel could decline by \$22,514 and net revenues by \$20,778 (using the projected LPUE and prices for 2015 fishing year). This alternative would have positive economic impacts on the vessels from VA/NC with an estimated increase in revenues per vessel by \$53,538 and an increase in net revenues per vessel by \$49,410 for the worst case scenario (Table 32). Under a more realistic scenario, the loss to the vessels from MA would be slightly lower, but relatively higher from the vessels from NJ since this scenario assumes no gains from DAS charge for NJ vessels. Because the adjustment to total DAS is smaller for this scenario, the net gains for the vessels from VA/NC would be higher (\$79,062 in revenue and \$72,966 in net revenue per vessel). The last two columns of Table 32 show the changes in total revenue and net revenue for all the vessels by port.

#### **1.1.1.3 Implement a separate VMS declaration code for steaming back to port south of Cape May only**

Limited access vessels fishing an open area trip could finish their scallop trip by going inside the VMS demarcation line at a specific point, i.e. between Cape Henlopen and Cape May NJ in Delaware Bay, or inside of the VMS demarcation line south of 39 N. This alternative is similar to the previous one, except it would only apply to vessels that intend to land scallops south of Cape May. A vessel would be prohibited from declaring out of the fishery in Cape May, and then transiting to a port north of that area (Alternative 2.8.4).

This alternative is estimated to have smaller economic impacts compared to the above option because it is expected to have impacts only on the vessels homeported in VA and NC. Under the worst case

scenario for this alternative, the open area DAS for all FT limited access vessels has to be reduced by 0.40 days and under the realistic scenario, it has to be reduced by 0.22 days. Accordingly, the vessels from VA/NC would have an additional net 1.5 days for the worst case and an additional 1.63 days for the realistic scenario (see the last column of Table 31, net gain/loss in DAS).

The estimated revenues for the vessels homeported in MA and NJ could decline by \$12,319 per vessel and net revenues by \$11,369 per vessel for the worst case scenario (net of trip costs, using the projected LPUE and prices for 2015 fishing year). This alternative would have positive economic impacts on the vessels from VA/NC with an estimated increase in their revenues by \$53,538 and an increase in net revenues by \$49,410 per vessel for the worst case scenario (Table 32).

Under the realistic scenario, the loss to the vessels from both MA and NJ would be lower since adjustment in DAS would decline to 0.20 days. Because the adjustment to total DAS is smaller in this case, the net gains for the vessels from VA/NC would be lower as well compared to Option1 but still higher than compared to the worst case scenario (\$50,995 in revenue and \$47,063 in net revenue). The last two columns of Table 32 show the changes in total revenue and net revenue for all the vessels by port.

**Table 6. Adjustment to open area DAS and net gain/loss by homeport**

<b>DOF Anywhere</b>	<b>Region</b>	<b># vessels</b>	<b>Total DAS</b>	<b>DAS gain per vessel</b>	<b>DAS cost per vessel</b>	<b>Net gain/loss in DAS</b>
Worse case	Mass	160	242	1.51	2.24	-0.73
	NJ	97	213	2.20	2.24	-0.05
	VA/NC	70	279	3.99	2.24	1.74
	All vessels	327	734			
Realistic	Mass	160	0	0	0.70	-0.70
	NJ	97	0	0	0.70	-0.70
	VA/NC	70	229	3.27	0.70	2.6
	All vessels	327	229			
<b>DOF Cape May only</b>	<b>Region</b>	<b># vessels</b>	<b>Total DAS</b>	<b>DAS gain</b>	<b>DAS cost</b>	<b>Net gain/loss</b>
Worse case	Mass	160	0	0	0.40	-0.40
	NJ	97	0	0	0.40	-0.40
	VA/NC	70	131	1.9	0.40	1.5
	All vessels	327	131			
Realistic	Mass	178	0	0	0.20	-0.20
	NJ	114	0	0	0.20	-0.20
	VA/NC	<b>35</b>	65	1.9	0.20	1.66
	All vessels	327	65			

**Table 7. Distributional economic impacts of the VMS demarcation line alternatives for 2015 fishing year (Assuming LPUE=2500 lb. per Das, price \$12.30 and trip costs of \$2,371 per DAS)**

<b>DOF Anywhere</b>	<b>Region</b>	<b># vessels</b>	<b>Change in revenue per vessel</b>	<b>Change in costs per vessel</b>	<b>Change in net revenue per vessel</b>	<b>Total change in revenue</b>	<b>Total Change in net revenue</b>
Worse case	Mass	160	(22,514)	-1736	(20,778)	(3,602,170)	(3,324,422)
	NJ	97	(1,500)	-116	(1,384)	(145,475)	(134,258)
	VA/NC	70	53,538	4128	49,410	3,747,644	3,458,680
	All vessels	327				-	-
Realistic	Mass	160	(21,534)	-1660	(19,874)	(3,445,505)	(3,179,837)
	NJ	97	(21,534)	-1660	(19,874)	(2,088,837)	(1,927,776)
	VA/NC	70	79,062	6096	72,966	5,534,342	5,107,612
	All vessels	327				-	-
<b>DOF Cape May only</b>	<b>Region</b>	<b># vessels</b>	<b>Change in revenue per vessel</b>	<b>Change in costs per vessel</b>	<b>Change in net revenue per vessel</b>	<b>Total change in revenue</b>	<b>Total Change in net revenue</b>
Worse case	Mass	160	(12,319)	-950	(11,369)	(1,971,009)	(1,819,033)
	NJ	97	(12,319)	-950	(11,369)	(1,194,924)	(1,102,789)
	VA/NC	70	45,228	3487	41,740	3,165,933	2,921,822
	All vessels	327				-	
Realistic	Mass	178	(6,112)	-471	(5,641)	(1,088,005)	(1,004,113)
	NJ	114	(6,112)	-471	(5,641)	(696,812)	(643,084)
	VA/NC	35	50,995	3932	47,063	1,784,817	1,647,197
	All vessels	327				-	-

### Questions for AP

1. What is your recommendation for the final DAS adjustment that should be used for both DOF alternatives?  
Should it be the “worse case”, “realistic” example, something in the middle, or based on a different scenario assuming different vessel behavior dynamics?
2. Are there any potential benefits to vessels NOT from southern ports from the DOF Cape May alternative that have not been described? For example, are there potential benefits to vessels from other ports if more product is landed in southern ports? Specifically, if less scallop product is landed in NJ and northern ports would that potentially increase prices in those ports if supply is lower? Could prices increase as a result in those ports, having beneficial impacts for those vessels, or is that potential affect unlikely?
3. Impacts on shoreside businesses have not been fully assessed. A benefit for one would be a loss for another correct? Any further detail about these potential effects?