

**Flatfish AM Considerations**

**Catch reduction from shorter aprons:**

1. CFF studies show a reduction in flatfish bycatch and scallop catch between an 8-row and 5-row apron, and a 7-row and a 5-row apron. See Table 1 below, and CFF presentations to the PDT on [March 1](#) and [May 4](#).
2. A pro-active AM was adopted through FW25, which sets a 7-row maximum. This action was implemented in FY2014.
3. Given the changes in regulation, and differences in flatfish bycatch reduction between the 7 and 8-row aprons to the 5-row apron, a core question in AM development is: How much can we reasonably expect to reduce flatfish bycatch by requiring the use of a 5-row apron in the commercial fishery?
  - a. The number of rows fished on observed trips were examined over several years with the assumption that observer data is representative of the entire fishery.
    - i. Figure 1 shows the distribution of apron lengths fished on observed trips between FY2010 and FY2017. Prior to the implementation of the 7-row maximum (FY2014), there appears to be a broader distribution of the number of rows fished.
    - ii. Figure 1 also suggests that compliance with the 7-row maximum improved over several years, with nearly 100% of observed trips fishing a 7-row apron or less in FY2016 and FY2017. In FY2014, 53% of observed CA II trips fished an 8-row apron or larger in 2014 (Figure 2).
  - b. The bycatch estimates developed during FW28 for CAII are from a time period when the fishery was transitioning to a maximum 7 row aprons. Observer data in Figure 2 suggests that the majority of observed vessels fished aprons 8 rows and longer in that area in FY2014.
  - c. Based on the bycatch reduction results of the CFF research, the broad range of rows fished ( $\geq 8$ ) suggests:
    - i. That the GB YT bycatch projection in FW28 may be an overestimate because d/K ratios from FY2014 reflect a range of rows fished that is  $> 7$ .
    - ii. That the use of a 5-row apron in CA II may yield bycatch reduction closer to the results of the 8-row apron (vs. 7-row apron).
    - iii. FY2014 could be used as proxy for anticipated catch reductions when using a 5-row apron in CAII for yellowtail and windowpane.
4. To calculate the 5 vs 8-row reduction:  $\frac{2014 \text{ Observed flatfish catch} \cdot 67}{2014 \text{ Observed scallop catch} \cdot 90} * \text{Dealer } K_{all} = \text{Total bycatch}$ 
  - a. This approach could be applied on a finer scale (monthly), and in other areas (SNE/MA), using different time periods.
5. The PDT could consider developing a range of potential reduction in CA II given the rows fished.
6. If data is pooled over time, d/K ratios will include data from trips that fish  $>7$ -row aprons. In these cases, it may be appropriate to consider a range of flatfish reduction (say between results of 7 and 8-row aprons) to better reflect the fishery regulations over that time period.

Table 1 - Comparison of bycatch reduction results testing shorter aprons. Source: Coonamessett Farm Foundation.

5-row apron	Scallops	Yellowtail Flounder	Windowpane Flounder
Vs. 8-row	-10%	-33%	-46%
Vs. 7-row (ongoing)	-4%	-16%	-14%

Figure 1 – Distribution of the number of apron rows by fishing year from observer data (FY2010 – FY2017). The larger the circle, the higher the percentage of trips that fished that apron size.

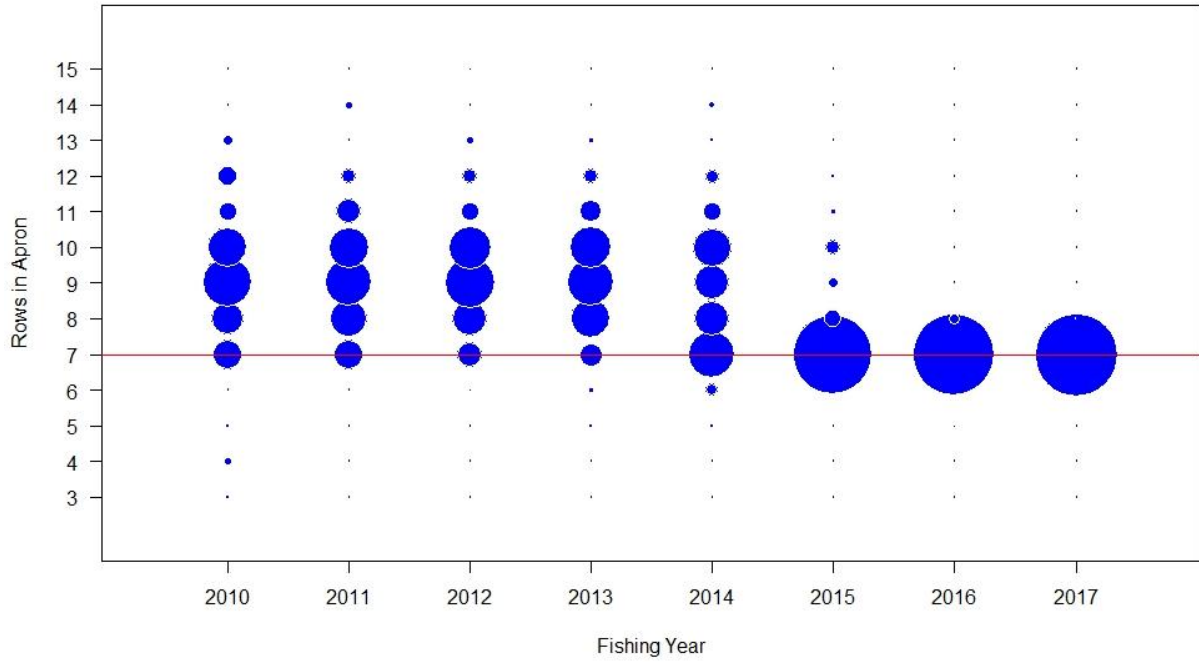


Figure 2 - Distribution of rows in apron on observed limited access CA II trips from FY2011 - FY2014.

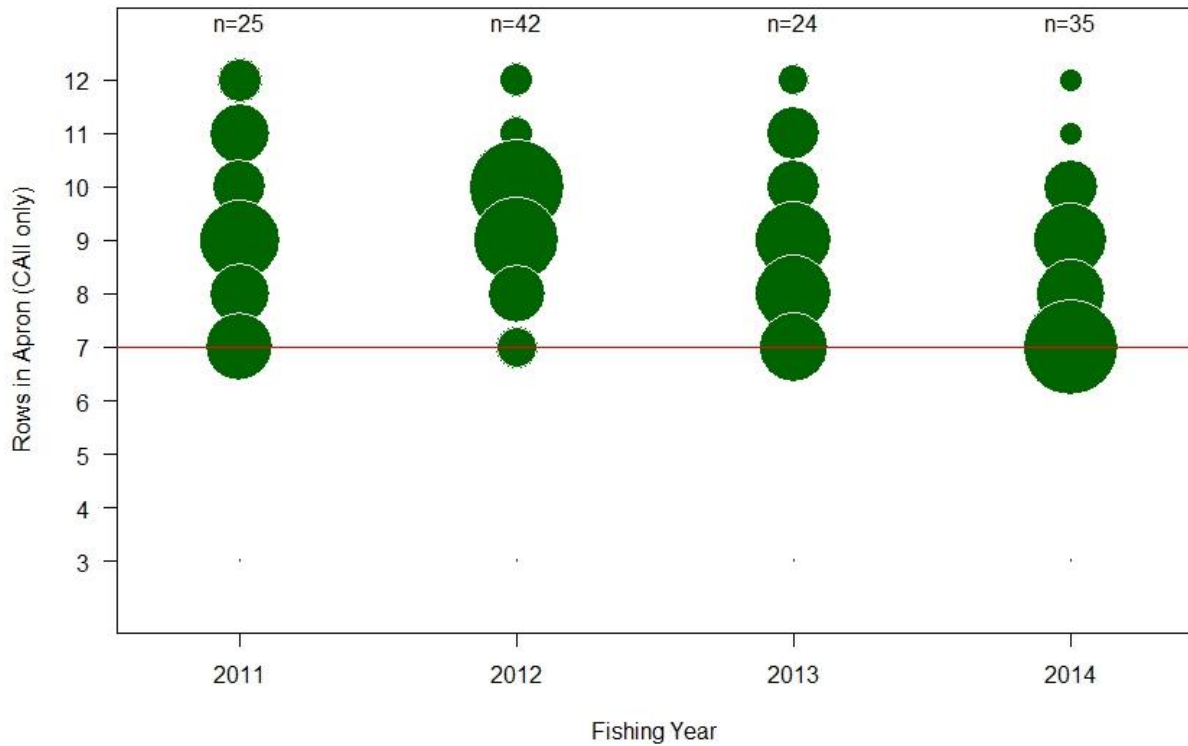
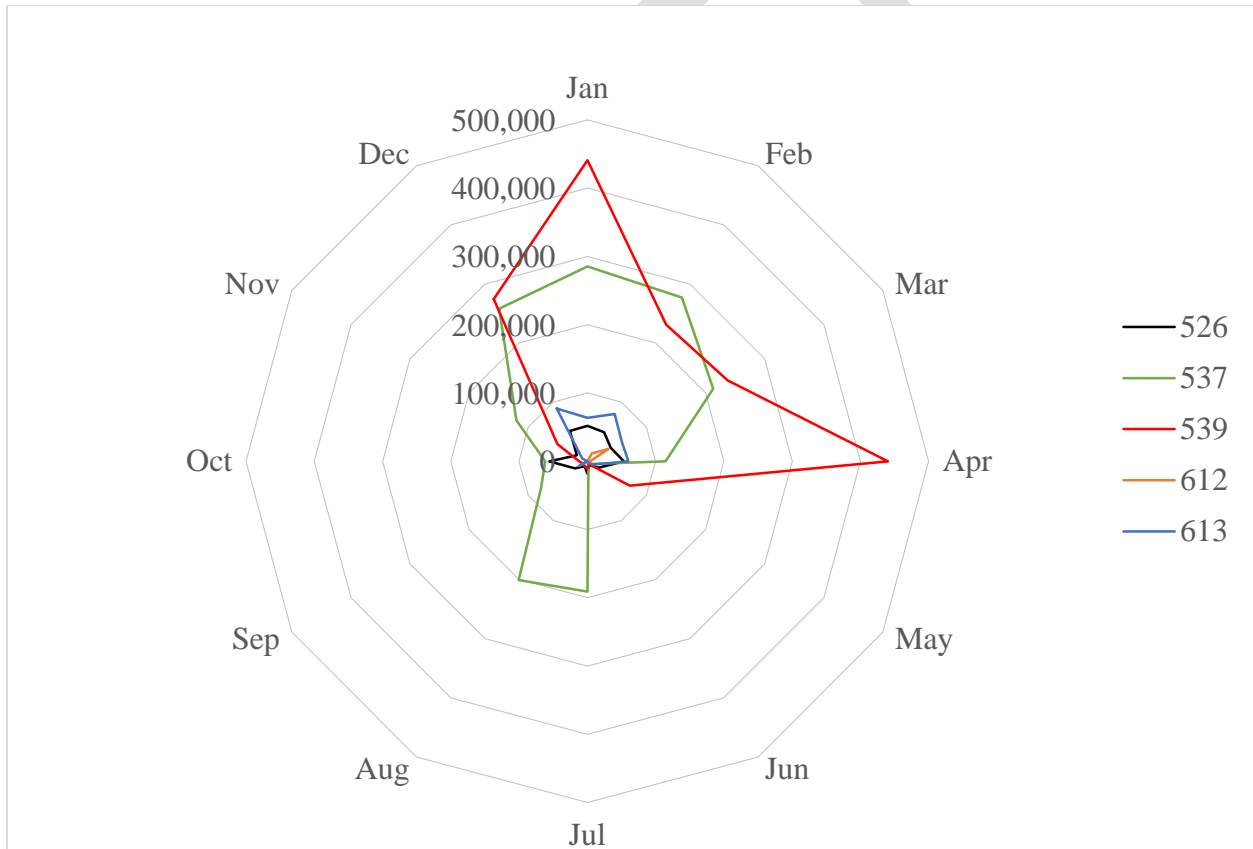


Table 2 - Percentage of rows in apron on observed trips by fishing year (including time series average).

# Rows Fished	2011	2012	2013	2014	2011-2014 Average
12	8%	5%	4%	3%	5%
11	16%	5%	13%	3%	8%
10	12%	38%	13%	9%	20%
9	28%	31%	25%	20%	26%
8	16%	14%	25%	23%	19%
7	20%	7%	21%	43%	22%

Figure 3. Cumulative yellowtail flounder landings (lbs.) by month for all gear types from FY2010 to FY2016 in SRA 526, 537, 539, 612, and 613.



Draft, not for distribution

Table 3 - Bycatch reduction calculations for GB YT and NWP in CAII for the 5 vs. 8 row apron and 5 vs. 7 row apron.

	a	b	c	d	e	f	g
1		GB YT	N. Windowpane	Scallops	2014 CAII Kall	YT reduction	Wnd reduction
2	Lbs observed	7254.3	9779.9	210052	2,346,395		
3	d/K	0.034535734	0.046559423				
4	Total bycatch	81,034	109,247				
5	d/k: 5 to 8	-33%	-46%	-10%	2,346,395		
6	lbs observed	4860.381	5281.146	189046.8		-26%	-40%
7	new d/K	0.025709935	0.027935654				
8	Total bycatch	60,326	65,548				
9	d/k: 5 to 7	-16%	-14%	-4%	2,346,395		
10	lbs observed	6093.612	8410.714	201649.92		-13%	-10%
11	new d/K	0.030218767	0.041709483				
12	Total bycatch	70,905	97,867				
13							
14	FW28 Estimate	138,891	227,076				
15	2017 fishery ACL	443,129	379,195				
16	scallop sub-ACL	70,548	83,776				
17	% of 2017 sub-ACL	198%	272%				
18	% of ACL	31%	60%				
19	Range reduction	13% - 26%	10% - 40%				
20	5 vs. 8 estimate	102,780	136,246				
21	5 vs. 7 estimate	120,835	204,369				
22	AM est. as % of ACL	23% - 26%	36% - 54%				

**Key Considerations:** The bycatch reduction estimates for CAII will likely need to be a range because the d/K estimates used in this analysis come from vessels that fished with a different number of rows in the apron (between 7-12). Table 3 considers the scenario of requiring the use of a 5-row apron in CAII year round. This approach is expected to reduce the bycatch of GBYT between 13% - 26%, and NWP between 40% and 10%.

# Scallop landings in SNE/Mid-Atlantic Yellowtail areas

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Table 1: Total LA Pounds by Fishing Year and Stat Area

	526	537	539	612	613
2008	7,518,861	208,159	1,456	985,741	536,728
2009	3,761,710	126,508	7,926	3,133,381	842,990
2010	7,320,590	124,591	97,780	4,326,870	2,575,865
2011	2,540,626	199,691	130,116	7,153,040	3,659,065
2012	6,953,449	93,928	4,987	2,715,121	5,255,522
2013	6,684,558	119,032	368,013	1,845,339	3,072,894
2014	2,709,380	122,553	381,386	2,074,941	7,102,196
2015	2,714,481	84,148	170,053	745,845	1,912,575
2016	2,168,657	143,850	331,880	715,555	6,063,013

Table 2: Total LAGC Pounds by Fishing Year and Stat Area

	526	537	539	612	613
2008	315,240	171,945	67,453	1,151,480	86,525
2009	8,333	371,092	46,998	1,482,735	359,442
2010	241,957	60,461	77,458	331,143	155,611
2011	13,151	75,933	156,929	691,856	160,391
2012	23,825	9,680	113,384	515,055	174,200
2013	71,935	13,964	137,151	441,512	217,381
2014	24,182	50,486	81,344	477,109	143,407
2015	10,234	53,760	71,743	305,149	137,568
2016	285,578	73,554	199,513	503,741	468,766

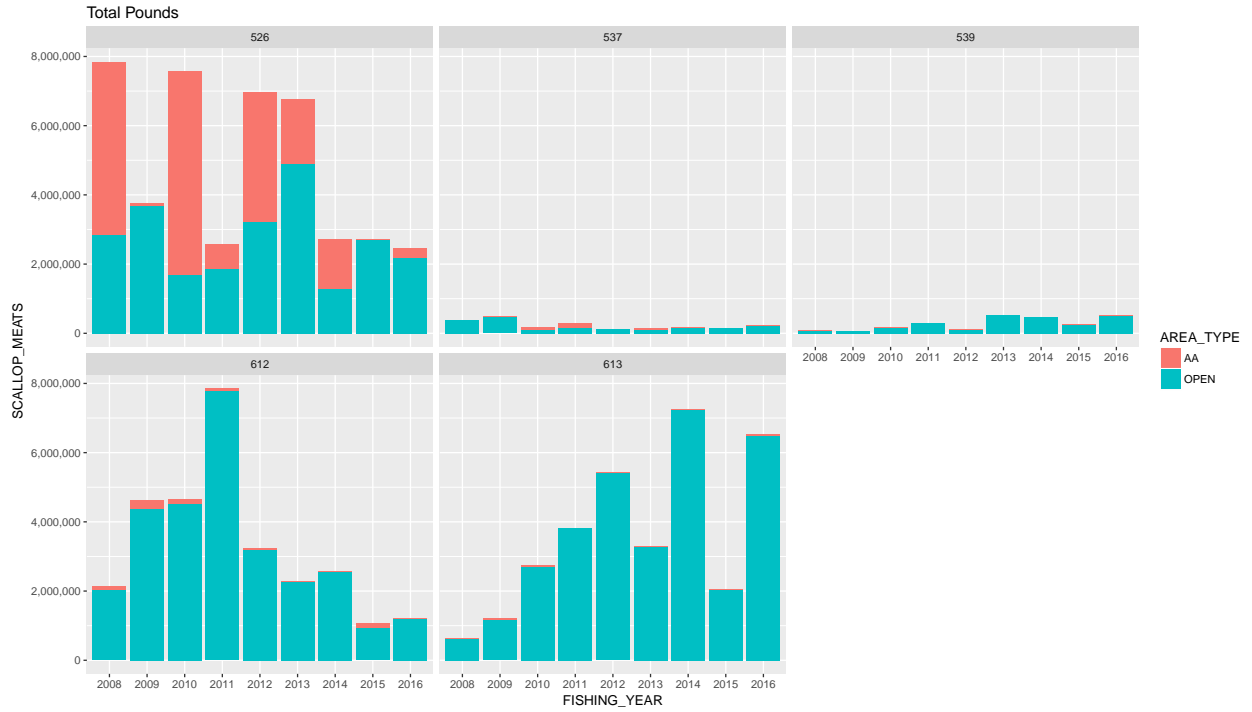


Figure 1: Landings by Stat Area, Open vs. Access Area, and Fishing Year

Table 3: Total LA Pounds by Month and Stat Area

	526	537	539	612	613
January	1,402,152	17,396	14,148	437,115	255,815
February	1,863,787	638	6,699	1,500,701	1,089,955
March	1,187,666	25,097	9,327	2,867,288	1,599,412
April	2,626,482	139,343	189,762	3,990,113	4,769,074
May	4,841,634	255,063	211,252	5,353,589	6,668,572
June	6,364,414	153,911	244,117	3,508,223	4,813,152
July	12,856,775	218,162	222,491	1,572,369	2,697,379
August	5,029,597	263,971	72,383	1,347,933	2,719,707
September	2,810,989	92,201	227,174	1,536,365	3,395,176
October	1,524,034	1,423	160,798	741,224	2,215,620
November	905,714	26,005	71,323	428,434	547,155
December	959,068	29,250	64,123	412,479	249,831

Table 4: Total LAGC Pounds by Month and Stat Area

	526	537	539	612	613
January	15,004	36,030	28,712	230,977	135,003
February	8,386	16,657	22,591	217,761	114,764
March	4,018	44,917	26,001	281,141	89,414
April	3,228	82,621	43,567	524,823	161,276
May	148,221	99,236	107,200	630,694	149,107
June	312,952	220,288	124,433	1,112,883	301,977
July	274,811	125,744	140,255	862,532	193,217
August	98,701	79,462	143,465	683,190	151,802
September	43,604	87,558	114,834	674,769	252,966
October	30,959	28,431	73,840	241,840	154,491
November	32,222	27,091	79,162	113,429	93,895
December	22,329	32,840	47,913	325,741	105,379

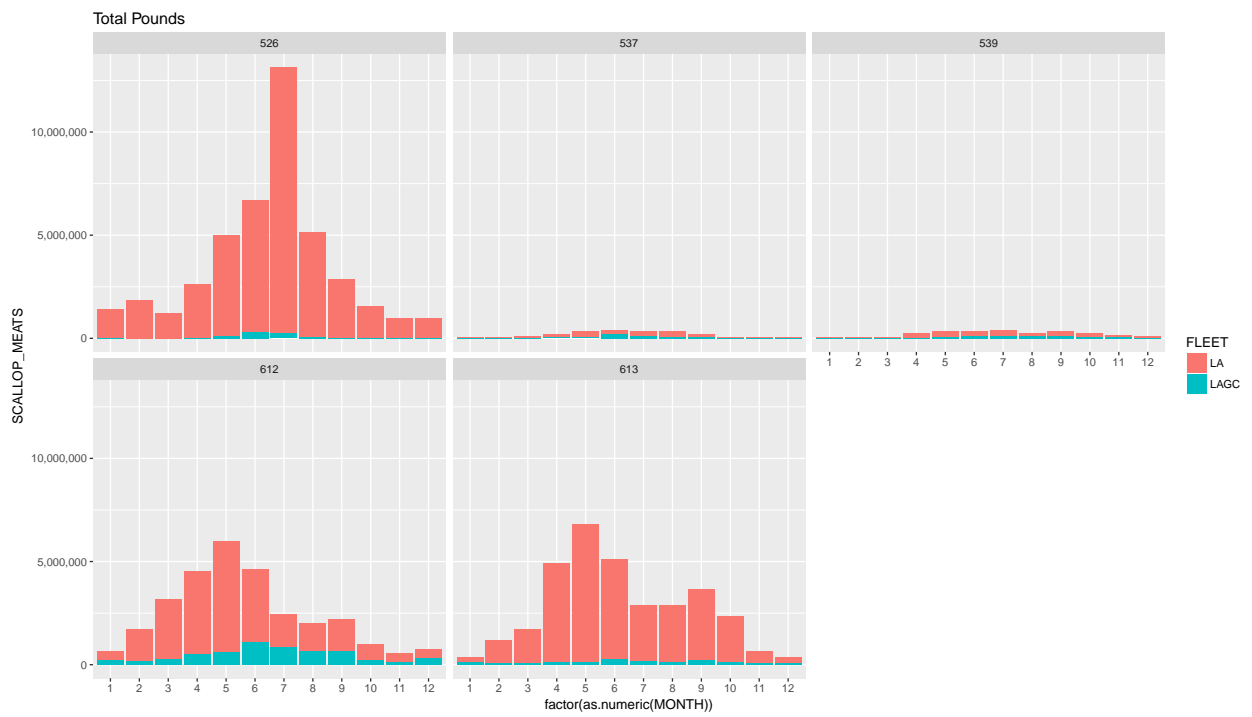


Figure 2: Landings by Stat Area, Fleet, and Month