New England Fishery Management Council
50 WATER STREET | NEWBURYPORT, MASSACHUSETTS 01950 | PHONE 978 465 0492 | FAX 978 465 3116
John Pappalardo, *Chairman* | Paul J. Howard, *Executive Director*

MEMORANDUM

DATE: September 17, 2009

TO: Groundfish and Scallop Oversight Committees

FROM: Scallop and Groundfish Plan Development Teams

SUBJECT: **Yellowtail Flounder Sub-Components/ACLs and the Scallop Fishery**

Division into subcomponents:

1. A major sub-component of yellowtail flounder catch is incidental catch in the scallop fishery, most of which is discarded. Amendment 16 calls for this catch to be estimated and identified as an "other sub-component" until accountability measures (AMs) can be adopted through the scallop FMP. When the AMs are adopted, the sub-component will be considered a sub-ACL. This ACL will apply to all scallop fishery catches of yellowtail flounder.

2. Current regulations specify that when the NLCA, CAI, or CAII access areas are open the scallop fishery incidental catches of yellowtail flounder are capped at 10 percent of the TTAC for GB (CAI, CAII areas open) or SNE/MA (NLCA area open) yellowtail flounder. Amendment 16 does not alter this regulation – the maximum yellowtail that can be harvested from one of the three original access areas remains capped at 10 percent of the appropriate yellowtail flounder TAC. This cap can be considered the minimum ACL for the year one of the three access areas is open; but it should be clear this minimum would limit catches of yellowtail both inside and outside the access areas.

3. The groundfish and scallop PDTs met together to discuss the how to estimate the scallop incidental catch of yellowtail flounder so that an appropriate ACL could be considered. The two PDTs reviewed the ratio of yellowtail discards to scallop kept catches (see enclosure 1) and the tentative scallop rotational management program for the next few years. The two PDTs agreed to provide the Council the following information:

a. The minimum ACL during years when a GB access area (CAI, CAII, or the NLCA) is open: 10 percent of the yellowtail flounder ABC.

b. Using estimates of scallop harvest and observed ratios of the discards of YTF to scallop kept catch, the PDTs will estimate the yellowtail flounder necessary to harvest the entire scallop yield. These estimates will be calculated using a recently observed discard ratio, adjusted by the expected change in YTF SSB and scallop exploitable biomass.

4. Table 1 provides the estimated yellowtail flounder catch needed to harvest the expected scallop yield during FY 2010-FY 2012. The scallop PDT is developing two options for scallop fishing mortality and two options for the adoption of a potential scallop rotational management area to be closed in the Great South Channel; yellowtail flounder catch scenarios are provided for all four resulting scenarios. In addition, the estimates assume CAI is open in FY 2011 and CAII in FY 2012 – it is possible the opposite may occur or there may be some other combination of access on GB depending on the status of the EFH closure boundaries. The estimates generally fall within the range of recent dredge discards of yellowtail flounder (Table 5). The table also shows the yellowtail flounder needed as a percent of the U.S. ABC. Please note the GB yellowtail flounder ABC could change as a result of future US/CA discussions.

5. Table 2 provides the difference between the yellowtail needed by the scallop fishery and the 10 percent cap. In this table, a positive value represents a shortfall and suggests that the scallop fishery would exceed the ACL if it is limited to this amount, or would have to forego scallop yield to remain under this amount. The table also compares the shortfall to a percentage of the ABC. Many of the shortfalls occur when there is no minimum ACL defined because one of the three access areas with this minimum is not open.

For CC/GOM yellowtail flounder the estimate of required yellowtail flounder allocation is always less than five percent. For GB yellowtail flounder the estimate of required allocation ranges from 11 to 29 percent, while for SNE/MA yellowtail flounder it ranges from 14 to 41 percent. There are differences between the scallop scenarios with the no new closure scenarios requiring the least yellowtail flounder for GB and SNE/MA yellowtail stocks. The range is relatively large due to variety of scallop allocation scenarios under consideration (Table 3).

Table 4 provides a summary of the four scenarios in terms of expected scallop yield and estimated DAS allocations per full-time vessel. Open area DAS allocations are higher for the 2 scenarios that close the Channel because in order to maintain overall F targets, more DAS need to be allocated to compensate for the new closure. Since open areas with high

scallop biomass are limited on GB, that open area effort is expected to shift to areas in the Mid-Atlantic. That explains why estimated SNE/MA YT catch increases for the two scenarios with the new closure. When the area reopens in 2013 scallop effort would return to the Channel and reduce YT catch in SNE/MA.

6. The Council may want to select an allocation to the scallop fishery that is outside the range of values provided by the PDTs. The PDTs will need guidance on what factors the Council will want to consider when making the decision on this allocation.

Adjustment for Management Uncertainty

7. The Council also needs to identify the level of management uncertainty related to the sub-ACL allocated to the scallop fishery. Management uncertainty is, in part, a function of the regulatory measures and monitoring programs in the fishery. In addition, the Council may want to consider effectiveness of AMs. The Council may want to consider whether the adjustment for management uncertainty should be the responsibility of the Scallop Committee rather than the Groundfish Committee, since the Scallop Committee is charged with developing AMs. In FY 2010, the allocation is considered an "other sub-component" and it may be appropriate to not have any adjustment. One way to address uncertainty in this situation is to increase the other-sub-component portion.

Table 1 – Comparison of yellowtail flounder needed to harvest scallop yield to minimum ACL

	Estimated Yellowtail Flounder (mt) Needed to Harvest Scallop Yield									YTF as % of ABC		
No Closure F = 0.20	*By YTF Stock Area, Scallop Access Area*						*Total, YTF Stock Area*					
Year	*GB-Cl*	*GB-Op*	*SNE-Op*	*NLS*	*ET*	*HCS*	*CC*	*GB*	*SNEMA*	*CC*	*GB*	*SNEMA*
2010	0	110	75	35	1	0	30	110	111	3.4%	11.4%	22.5%
2011	69	157	67	24	1	3	26	226	96	2.4%	20.9%	14.0%
2012	157	196	143	0	2	5	32	353	151	2.8%	28.8%	15.0%
No Closure - F = 0.24												
Year	*GB-Cl*	*GB-Op*	*SNE-Op*	*NLS*	*ET*	*HCS*	*Total CC*	*TotGB*	*TotSNE*			
2010	0	146	99	35	0.8	0	39	146	135	4.5%	15.2%	27.3%
2011	69	161	70	24	1.3	3.3	26	230	98	2.5%	21.2%	14.3%
2012	157	195	144	0	2.2	5.3	32	352	151	2.8%	28.7%	15.1%
Closure F = 0.18												
Year	*GB-Cl*	*GB-Op*	*SNE-Op*	*NLS*	*ET*	*HCS*	*Total CC*	*TotGB*	*TotSNE*			
2010	0	182	143	35	0.8	0	17	182	179	2.0%	18.9%	36.3%
2011	69	187	102	24	1.3	3.3	13	256	130	1.3%	23.7%	19.0%
2012	157	163	143	0	3.1	5.3	10	320	151	0.9%	26.1%	15.1%
Closure F = 0.20												
Year	*GB-Cl*	*GB-Op*	*SNE-Op*	*NLS*	*ET*	*HCS*	*Total CC*	*TotGB*	*TotSNE*			
2010	0	215	166	35	0.8	0	20	215	202	2.4%	22.4%	40.9%
2011	69	194	105	24	1.3	3.3	13	263	134	1.3%	24.3%	19.5%
2012	157	160	145	0	3.2	5.3	10	317	153	0.8%	25.9%	15.3%

Table 2 – Difference between yellowtail flounder needed to harvest yield and regulatory minimum. Shaded cells illustrate years/stock areas where there is no access area open that triggers the regulatory minimum ACL.

	DIfference (mt)			*Shortfall (as percent of ABC)*		
	CC	*GB*	*SNE/MA*	*CC*	*GB*	*SNE/MA*
No Closure F = 0.20						
2010	30	110	61	3.4%	11.4%	12.5%
2011	26	118	27	2.4%	10.9%	4.0%
2012	32	231	151	2.8%	18.8%	15.0%
Closure F = 0.18						
2010	39	146	86	4.5%	15.2%	17.3%
2011	26	122	29	2.5%	11.2%	4.3%
2012	32	229	151	2.8%	18.7%	15.1%
Closure F = 0.18						
2010	17	182	129	2.0%	18.9%	26.3%
2011	13	148	62	1.3%	13.7%	9.0%
2012	10	197	151	0.9%	16.1%	15.1%
Closure F = 0.20						
2010	20	215	153	2.4%	22.4%	30.9%
2011	13	155	65	1.3%	14.3%	9.5%
2012	10	195	153	0.8%	15.9%	15.3%

Table 3 – Range of YT catch needed for the 4 scallop allocation scenarios under consideration

	2010	2011	2012
CC/GOM	2.0 - 4.5%	1.3 - 2.5%	0.8 - 2.8%
GB	11.4 - 22.4%	20.9 - 24.3%	25.9 - 28.8%
SNE/MA	22.5 - 40.9%	14.0 - 19.5%	15.0 - 15.3%

Table 4 – Summary of expected scallop catch and DAS allocations for 2010

	2010 Scallop Landings (mt)	2010 Estimate of DAS per FT vessel
No Closure F = 0.20	18829	29
No Closure - F = 0.24	21445	38
Closure F = 0.18	22299	42
Closure F = 0.20	24269	51

Table 5 – Summary of YT TACs and YT catch on scallop dredge vessels for 2004-2008 compared to estimates for 2010

	Fishing Year	2004	2005	2006	2007	2008	*2010 Estimates*
CC/GOM	Total TAC	881	1233	650	1078	1406	*863*
	Total TAC for scallop fishery*	86.3	120.8	63.7	105.6	137.8	*???*
	Scallop AA open or closed	N/A	N/A	N/A	N/A	N/A	*N/A*
	Total YT catch by dredge gear (landings and discards)	18	6	12	35	5	*17-30*
SNE	Total TAC	707	1982	146	213	312	*493*
	Total TAC for scallop fishery*	69	194	14	21	31	*???*
	Scallop AA open or closed	open	closed	open	open	open	*open*
	Total YT catch by dredge gear (landings and discards)	125	130	168	188	151	*111-202*
GB	Total TAC	6000	4260	2070	900	1869	*960*
	Total TAC for scallop fishery*	588	417	203	88	183	*???*
	Scallop AA open or closed	open	open	open	open	closed	*open*
	Total YT catch by dredge gear (landings and discards)	84	194	254	122	134	110-215

*Scallop TAC has been calculated from total TAC = 9.8% of total TAC. These values have not been confirmed with regulations.

Note that the 2010 YT TACs are = ABC recommended by SSC

ENCLOSURE #1

Scallop Dredge Yellowtail Flounder Discard Rates
2004-2008

Data/Methods
The NEFSC observer program provided observed scallop dredge landings and discards of yellowtail flounder, and observed kept catches of scallop meats, for 2006-2008. Data was binned by year, statistical area, month, location (defined as an access area or open area), and trip category (limited access, general, or unknown). Upon receipt, each data row was coded for half-year and yellowtail flounder stock area. Scallop meat weights were converted to round weight using a multiplier of 8.33.

To verify the data were consistent with the discard estimation performed in GARM III and the recent Trans-Boundary resource Assessment Committee, several sample discard ratios were calculated and compared to the values used in thiose assessments. The ratios were calculated as discard(yellowtail) to kept(scallops live weight). The assessment uses kept(all species) in the denominator, but scallops comprise almost all of the kept catch for this gear. The sample ratios were comparable to those used in the assessment after this difference is considered.

The ratio of yellowtail flounder to kept scallop was calculated for a number of different factors and are shown in the following tables and graphs. Yellowtail ratios were calculated based on both discarded yellowtail and total yellowtail caught. In most instances, there are very minor differences between these values, reflecting the fact that most yellowtail flounder is discarded by dredge vessels.

Results
In almost all instances there are only minor differences between the D/K ratios when calculated using discarded yellowtail flounder and the total catch of yellowtail flounder.

In general, scallop dredge discard rates in 2006 through 2006 were higher in the GB yellowtail flounder stock area than in either the CC/GOM or SNE/MA yellowtail stock area (table/chart A). When examined based on type of trip, there are differences between the stock areas. In the CC/GOM YTF stock area, rates for general category trips were higher than rates for limited access trips in 2007 and 2008. For the one year (2007) a comparison can be made in the GB stock area the limited access ratio was higher than for general category trips. In the SNE/MA YTF stock area limited access trips had a higher ratio than general category trips in all three years (table/chart B).

Discard rates between open and access areas were also compared. With trip categories combined, in the GB YTF stock area discard rates in the CAI access area were always several times lower than discard rates in the open areas of GB. In 2006, the only year that can be compared using these data, the discard rates in CAII were 25 percent higher than the discard rates in the open areas. In the SNE/MA YTF stock area discard rates in the NLCA were always lower than the rates in the open areas. Discard rates in the Hudson

Canyon and Elephant Trunk areas were far lower than discard rates in either the open areas of the NLCA (table/charts E, F).

When rates are compared between different trip categories (table/charts G, H), limited access trips in open areas had lower discard rates in the CC/GOM stock area, while they had higher rates in the SNE/MA stock area. Within the access areas, limited access trips had lower rates than general category trips in CAI but had higher rates in the NLCA. Rates in the Hudson Canyon and Elephant Trunk areas are so low it is difficult to make meaningful comparisons between the trip categories.

Discard rates were also calculated for a semi-annual calendar period, In general, discard rates tended to be higher in the second half of the year in all YTF stock areas, though in some years and areas the differences are slight. They differences seem to be most dramatic in the GB YTF stock area in 2006 and 2007, but are more moderate in 2008.

After noting that in 2006 discard rates in CAII were higher than on the rest of GB outside the area, the analysis was extended to 2004 and 2005 to determine if the same differences occurred in those years. Discard rates in CAII were consistently higher than outside the area in all three years (table/chart L). The opposite was true for the NLCA: during 2004 and 2005, discard rates were higher in the access area than in the open areas (table/chart M), while the opposite was true in 2006-2008.

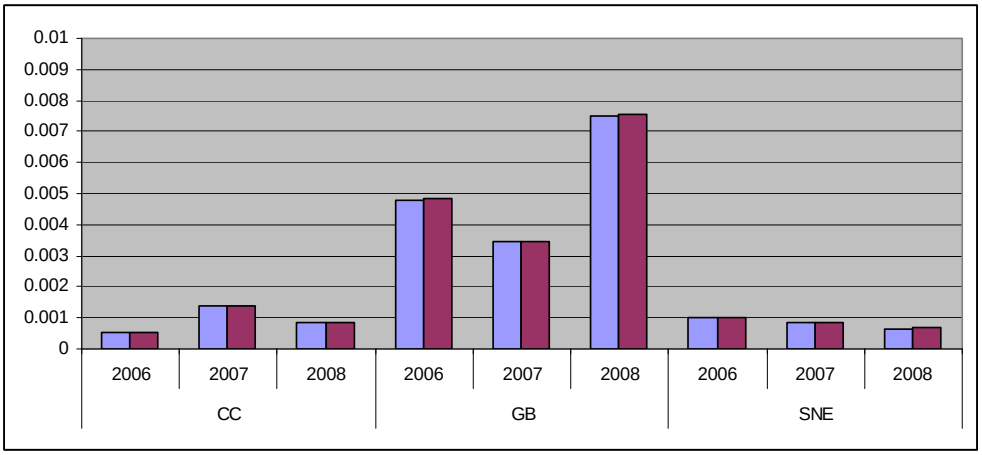
Discussion

These results suggest the following should be considered when allocating yellowtail flounder to the scallop fishery:

- There were consistently different discard rates between the open areas and the access areas from 2006 through 2008 though these differences are not always in the same direction. Which areas will be open in any given year should be considered when allocating yellowtail flounder to this fishery.
- While there are often differences between general category and limited access trips, given the relative size of the scallop catch by these categories it may not be necessary to consider these differences when allocating yellowtail flounder to the fishery.
- There appear to have been seasonal differences in discard rates during 2006-2008. If the timing of scallop catches can be anticipated, it may be possible to better estimate the yellowtail flounder needed for the fishery to harvest the entire scallop ACL.
- Discard rates in CAII were the highest observed in any open or access area during the period 2004-2006 and were higher than the rates observed in the open areas of GB during the same years. Recent GB yellowtail flounder stock assessments have reported that this stock appears concentrated in a small area of GB that includes CAII, so the increased rates observed seems consistent with the relative abundance of the stock inside and outside the access area. An implication may be that discard rates can be expected to increase in other areas as stocks rebuild.

A. Open and Access areas combined, all trip categories combined

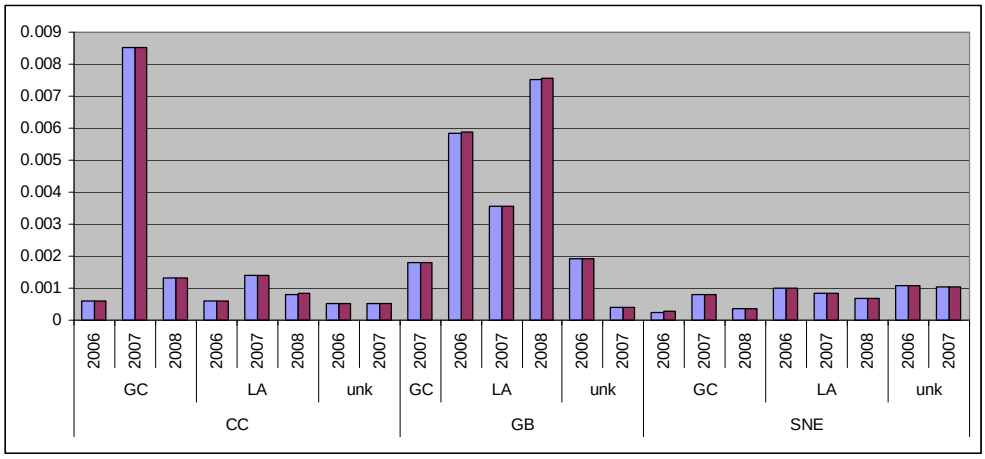
Open and Access Areas Combined, All Categories			
		D/K	C/K
CC	2006	0.000551445	0.000551445
	2007	0.00140843	0.00140843
	2008	0.000830858	0.000862484
GB	2006	0.004809628	0.004828219
	2007	0.003481928	0.003481928
	2008	0.007508373	0.007552018
SNE	2006	0.001020721	0.001021093
	2007	0.000828142	0.000833602
	2008	0.000662943	0.000667647



B. Open and access areas combined, by stock area and trip category

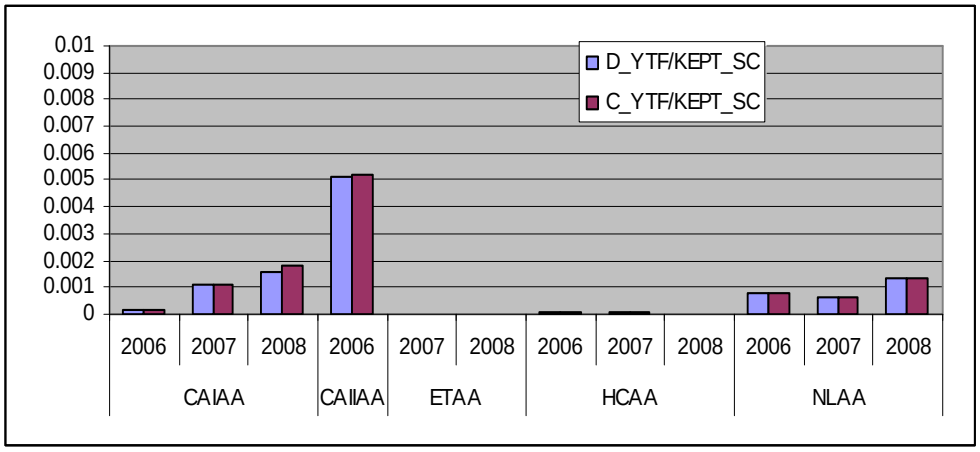
Open and access areas combined				
			D/K	C/K
CC	GC	2006	0.000610048	0.000610048
		2007	0.00850011	0.00850011
		2008	0.001324008	0.001324008
	LA	2006	0.000617199	0.000617199
		2007	0.001416515	0.001416515
		2008	0.000805435	0.000838691
	unk	2006	0.000514458	0.000514458
		2007	0.000507867	0.000507867
GB	GC	2007	0.001818511	0.001818511
	LA	2006	0.005846447	0.005871717
		2007	0.003555219	0.003555219
		2008	0.007508373	0.007552018
	unk	2006	0.001923182	0.001923182
		2007	0.000396426	0.000396426
SNE	GC	2006	0.000255507	0.00026519
		2007	0.000817129	0.000817129

		2008	0.000363844	0.000364508
	LA	2006	0.00099477	0.000994898
		2007	0.000820289	0.000826276
		2008	0.000694468	0.000699598
	unk	2006	0.001085609	0.001085609
		2007	0.001037408	0.001037408



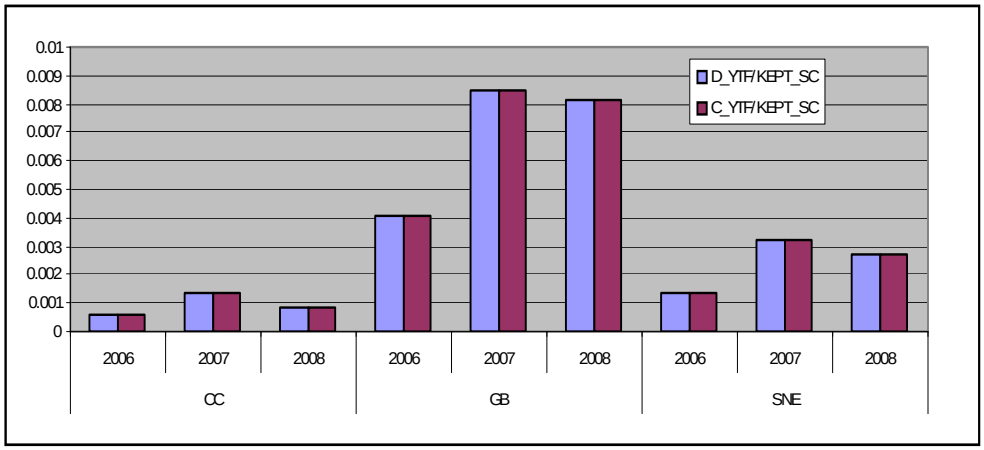
C. All trip categories, Access Areas

		D_YTF/KEPT_SC	C_YTF/KEPT_SC
CAIAA	2006	0.000169072	0.000169072
	2007	0.001101598	0.001101598
	2008	0.001551977	0.001818524
CAIIAA	2006	0.005149511	0.005173228
ETAA	2007	1.09268E-05	1.11071E-05
	2008	7.56534E-06	7.56534E-06
HCAA	2006	8.88791E-05	8.88791E-05
	2007	5.00758E-05	5.00758E-05
	2008	0	0
NLAA	2006	0.000764019	0.000764128
	2007	0.000648925	0.000648925
	2008	0.001301707	0.001324612



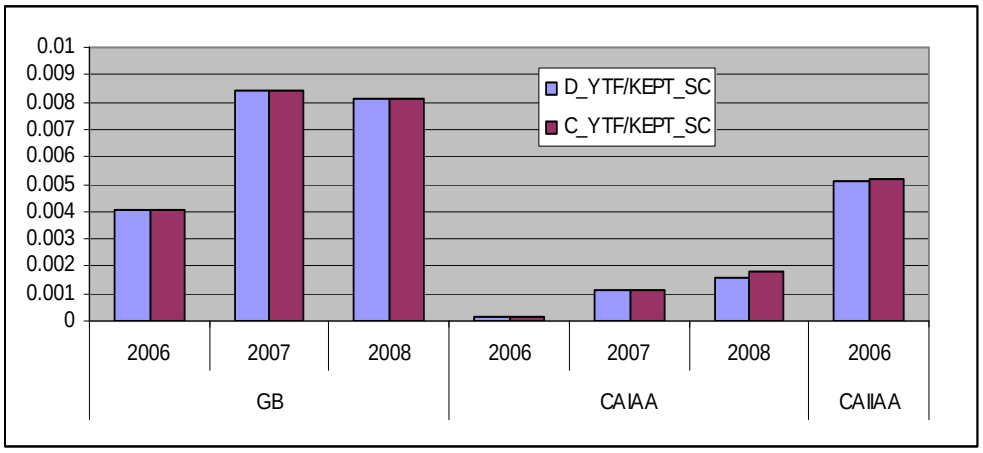
D. All trip categories, Open Areas

YTF STK Area		D_YTF/KEPT_SC	C_YTF/KEPT_SC
CC	2006	0.000551445	0.000551445
	2007	0.00135885	0.00135885
	2008	0.000847331	0.000879838
GB	2006	0.004070111	0.004070111
	2007	0.008442954	0.008442954
	2008	0.00811846	0.008138989
SNE	2006	0.00132228	0.001322933
	2007	0.003193006	0.003219647
	2008	0.002677857	0.002684126



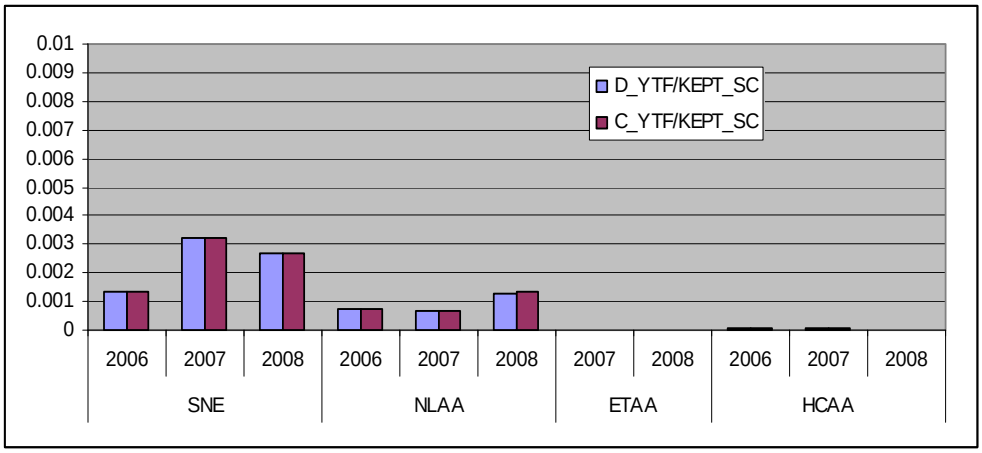
E. All trip categories, grouped by stock area - GB

GB		D_YTF/KEPT_SC	C_YTF/KEPT_SC
GB	2006	0.004070111	0.004070111
	2007	0.008442954	0.008442954
	2008	0.00811846	0.008138989
CAIAA	2006	0.000169072	0.000169072
	2007	0.001101598	0.001101598
	2008	0.001551977	0.001818524
CAIIAA	2006	0.005149511	0.005173228



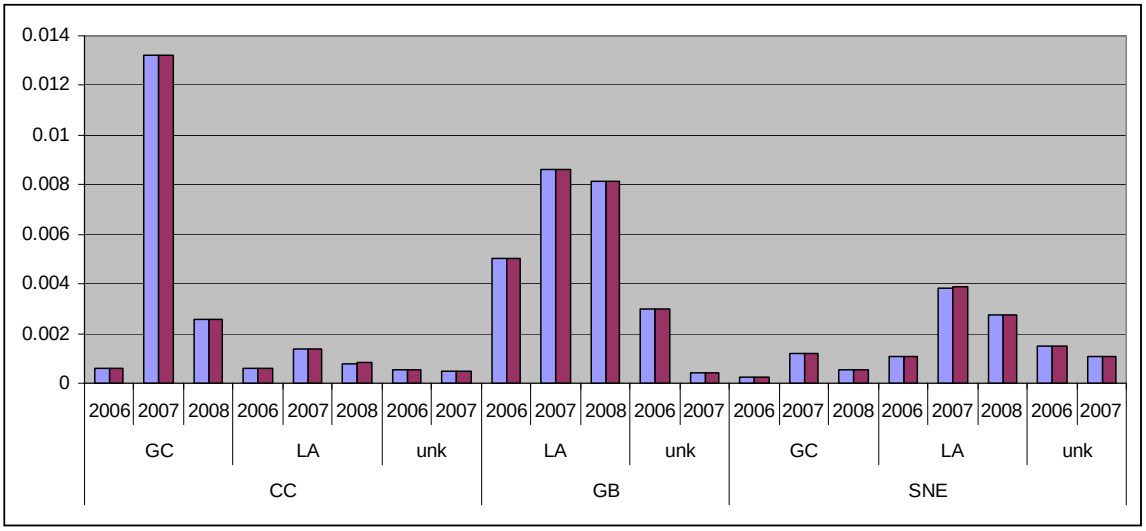
F. All trip categories, grouped by stock area – SNE

Annual, Grouped by Stock Area			
SNE		D_YTF/KEPT_SC	C_YTF/KEPT_SC
SNE	2006	0.00132228	0.001322933
	2007	0.003193006	0.003219647
	2008	0.002677857	0.002684126
NLAA	2006	0.000764019	0.000764128
	2007	0.000648925	0.000648925
	2008	0.001301707	0.001324612
ETAA	2007	1.09268E-05	1.11071E-05
	2008	7.56534E-06	7.56534E-06
HCAA	2006	8.88791E-05	8.88791E-05
	2007	5.00758E-05	5.00758E-05
	2008	0	0



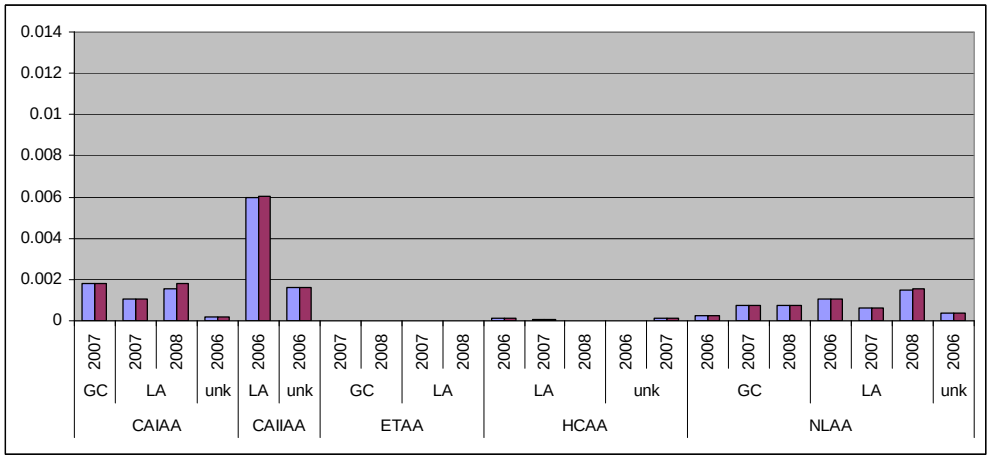
G. Open Areas, by category

Open			D_YTF/KEPT_SC	C_YTF/KEPT_SC
CC	GC	2006	0.000610048	0.000610048
		2007	0.013221378	0.013221378
		2008	0.002575595	0.002575595
	LA	2006	0.000617199	0.000617199
		2007	0.001351724	0.001351724
		2008	0.000801374	0.000834745
	unk	2006	0.000514458	0.000514458
		2007	0.000507867	0.000507867
GB	LA	2006	0.005014712	0.005014712
		2007	0.008607427	0.008607427
		2008	0.00811846	0.008138989
	unk	2006	0.003010371	0.003010371
		2007	0.000396426	0.000396426
SNE	GC	2006	0.000255866	0.000266453
		2007	0.001213377	0.001213377
		2008	0.00051876	0.00051876
	LA	2006	0.001084228	0.001084228
		2007	0.003836412	0.003871201
		2008	0.002758897	0.002765402
	unk	2006	0.001487494	0.001487494
		2007	0.001052197	0.001052197



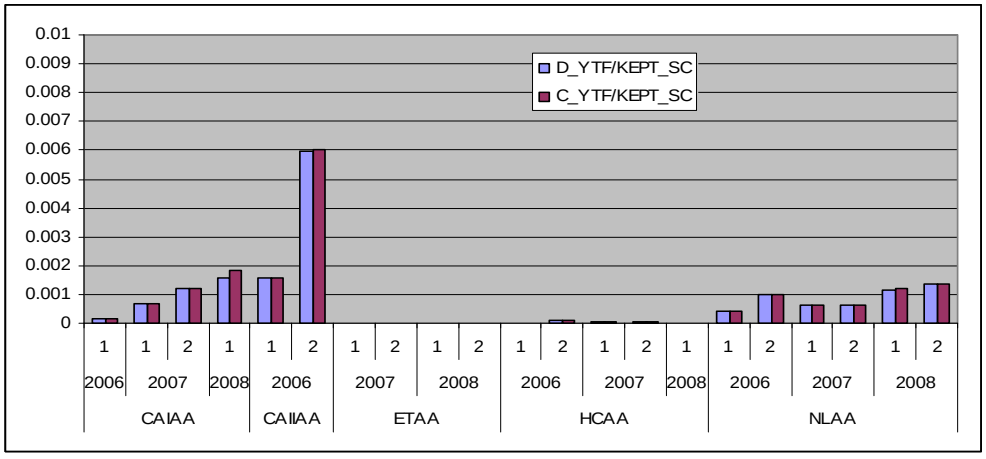
I. Access Areas, by category

Access			D_YTF/KEPT_SC	C_YTF/KEPT_SC
CAIAA	GC	2007	0.001775241	0.001775241
	LA	2007	0.001069086	0.001069086
		2008	0.001551977	0.001818524
	unk	2006	0.000169072	0.000169072
CAIIAA	LA	2006	0.005977022	0.006006258
	unk	2006	0.00159364	0.00159364
ETAA	GC	2007	0	0
		2008	1.323E-05	1.323E-05
	LA	2007	1.09494E-05	1.11301E-05
		2008	7.13253E-06	7.13253E-06
HCAA	LA	2006	9.46545E-05	9.46545E-05
		2007	4.95554E-05	4.95554E-05
		2008	0	0
	unk	2006	0	0
		2007	0.000132357	0.000132357
NLAA	GC	2006	0.000251673	0.000251673
		2007	0.000725078	0.000725078
		2008	0.00073144	0.000732938
	LA	2006	0.001029468	0.001029655
		2007	0.000635837	0.000635837
		2008	0.001507534	0.001538165
	unk	2006	0.000399056	0.000399056



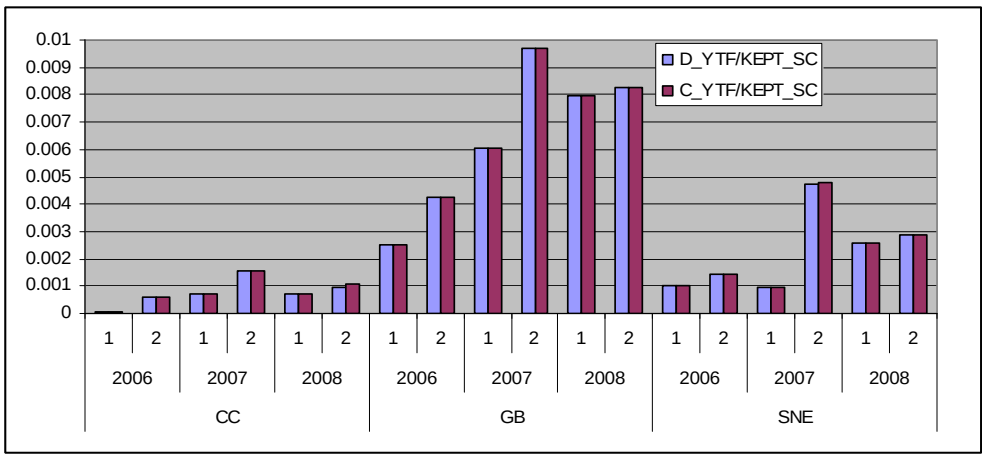
J. Semi-annual, all categories, access areas

			D_YTF/KEPT_SC	C_YTF/KEPT_SC
CAIAA	2006	1	0.000169072	0.000169072
	2007	1	0.000694784	0.000694784
		2	0.00120439	0.00120439
	2008	1	0.001551977	0.001818524
CAIIAA	2006	1	0.00159364	0.00159364
		2	0.005977022	0.006006258
ETAA	2007	1	1.72232E-05	1.75557E-05
		2	3.46669E-06	3.46669E-06
	2008	1	3.54962E-06	3.54962E-06
		2	1.31645E-05	1.31645E-05
HCAA	2006	1	0	0
		2	9.46545E-05	9.46545E-05
	2007	1	3.43615E-05	3.43615E-05
		2	6.24522E-05	6.24522E-05
	2008	1	0	0
NLAA	2006	1	0.000426312	0.000426312
		2	0.000968703	0.000968877
	2007	1	0.000651625	0.000651625
		2	0.000645286	0.000645286
	2008	1	0.001138219	0.001215161
		2	0.001369306	0.001369867



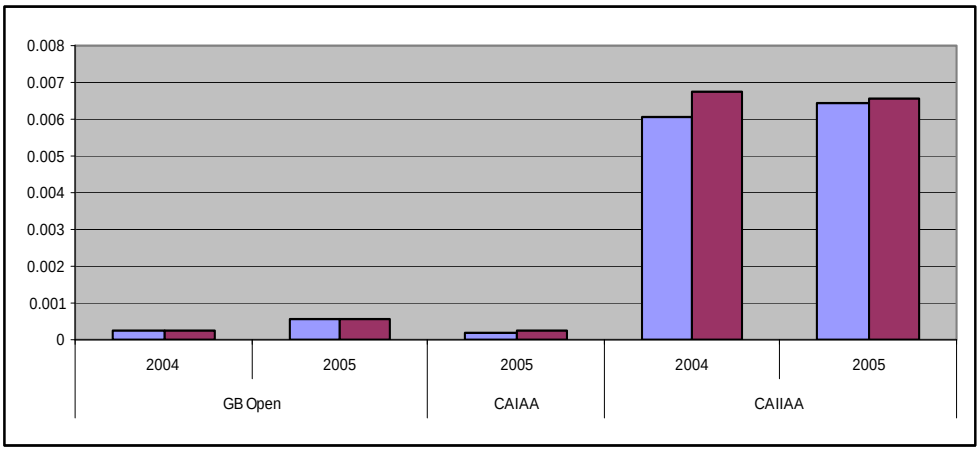
K. Semi-annual, all categories, open areas

			D_YTF/KEPT_SC	C_YTF/KEPT_SC
CC	2006	1	6.75318E-05	6.75318E-05
		2	0.000607216	0.000607216
	2007	1	0.000731798	0.000731798
		2	0.001550321	0.001550321
	2008	1	0.000729121	0.000729121
		2	0.000980012	0.001049004
GB	2006	1	0.002502367	0.002502367
		2	0.004279711	0.004279711
	2007	1	0.006059409	0.006059409
		2	0.009680735	0.009680735
	2008	1	0.007942826	0.007942826
		2	0.008250496	0.008286459
SNE	2006	1	0.001025875	0.001025875
		2	0.001433832	0.001434732
	2007	1	0.000986251	0.000986251
		2	0.004724163	0.004769287
	2008	1	0.002567607	0.002567607
		2	0.002857188	0.002873656



L. All categories, GB stock area

All categories, by YT Stock Area			
GB			
GB Open	2004	0.000221	0.000221
	2005	0.000587	0.000587
CAIAA	2005	0.000184	0.000226
CAIIAA	2004	0.006072	0.006765
	2005	0.006422	0.006555



M. All categories, SNE YTF stock area

SNE Open	2004	2.96E-05	2.97E-05
	2005	0.000131	0.000131
NLAA	2004	0.00091	0.000921
	2005	0.000638	0.000638
HCAA	2004	1.79E-06	1.79E-06
	2005	2.64E-06	2.64E-06