

Southern Red Hake Rebuilding Alternatives Committee Recommendations

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**Council Meeting
January 30, 2020**



Council tasking from December

- ▶ That the Council task the Whiting Committee and the PDT to develop the approaches agreed upon by the Council for an action no later than June 2020.



Draft Approaches Agreed Upon by Council

- ▶ Council approved approaches 1, 2, and 3:
 1. Allow post-season AMs to take hold
 2. Establish a year-round possession limit of 400 lbs. (or some other amount based on further analysis and/or input of advisors)
 3. Reduce catch by a staircase approach until sufficient increases in biomass are observed

- ▶ The Committee recommended further developing these 3 draft approaches



Next Steps, Timeline

- ▶ Present potential PDT analyses for the 3 Council-approved draft alternative approaches to the Council
- ▶ PDT conducts analyses approved by Council in the spring
- ▶ Complete action by April or June 2020 Council meeting

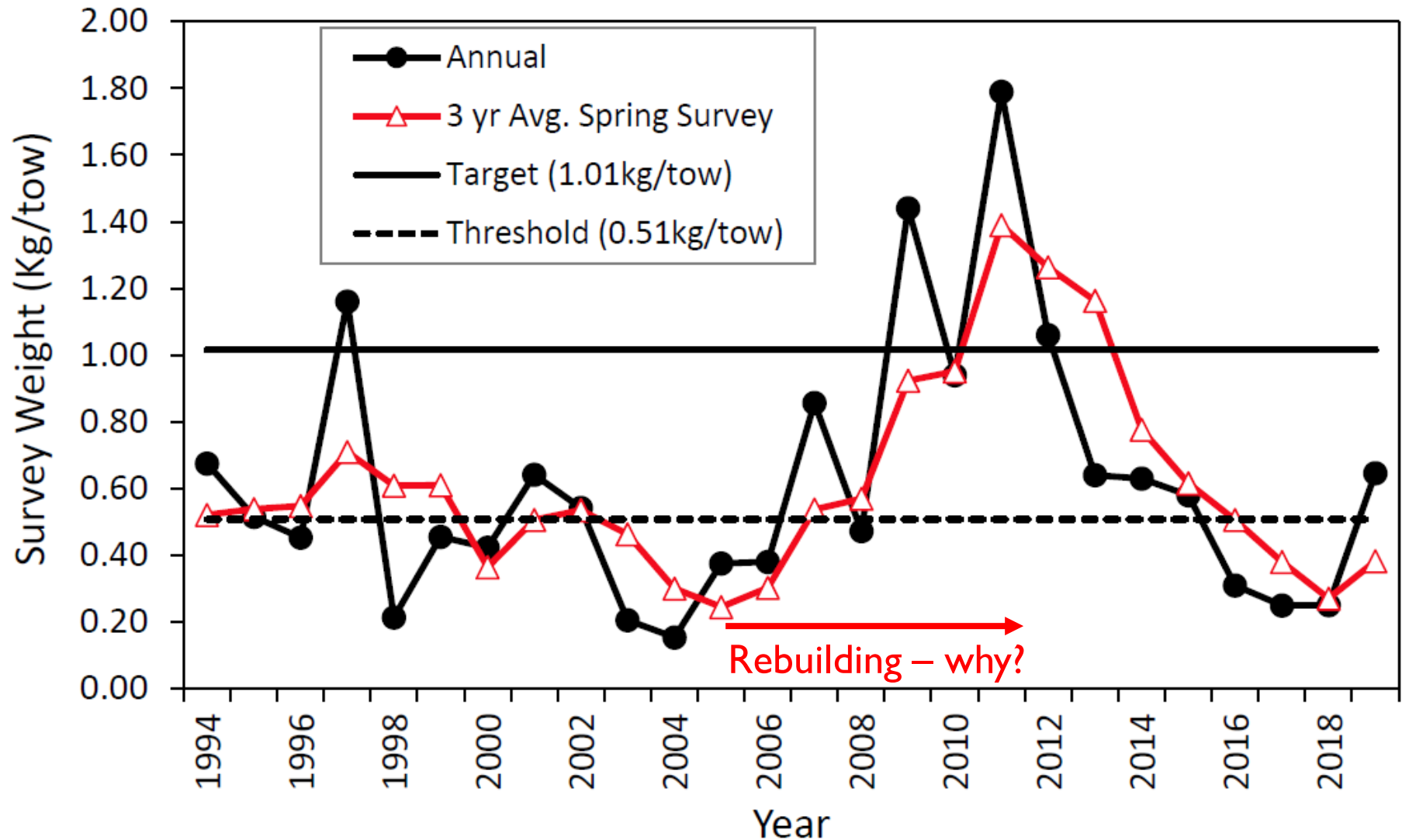


Can we meet our goal to rebuild S. Red Hake?

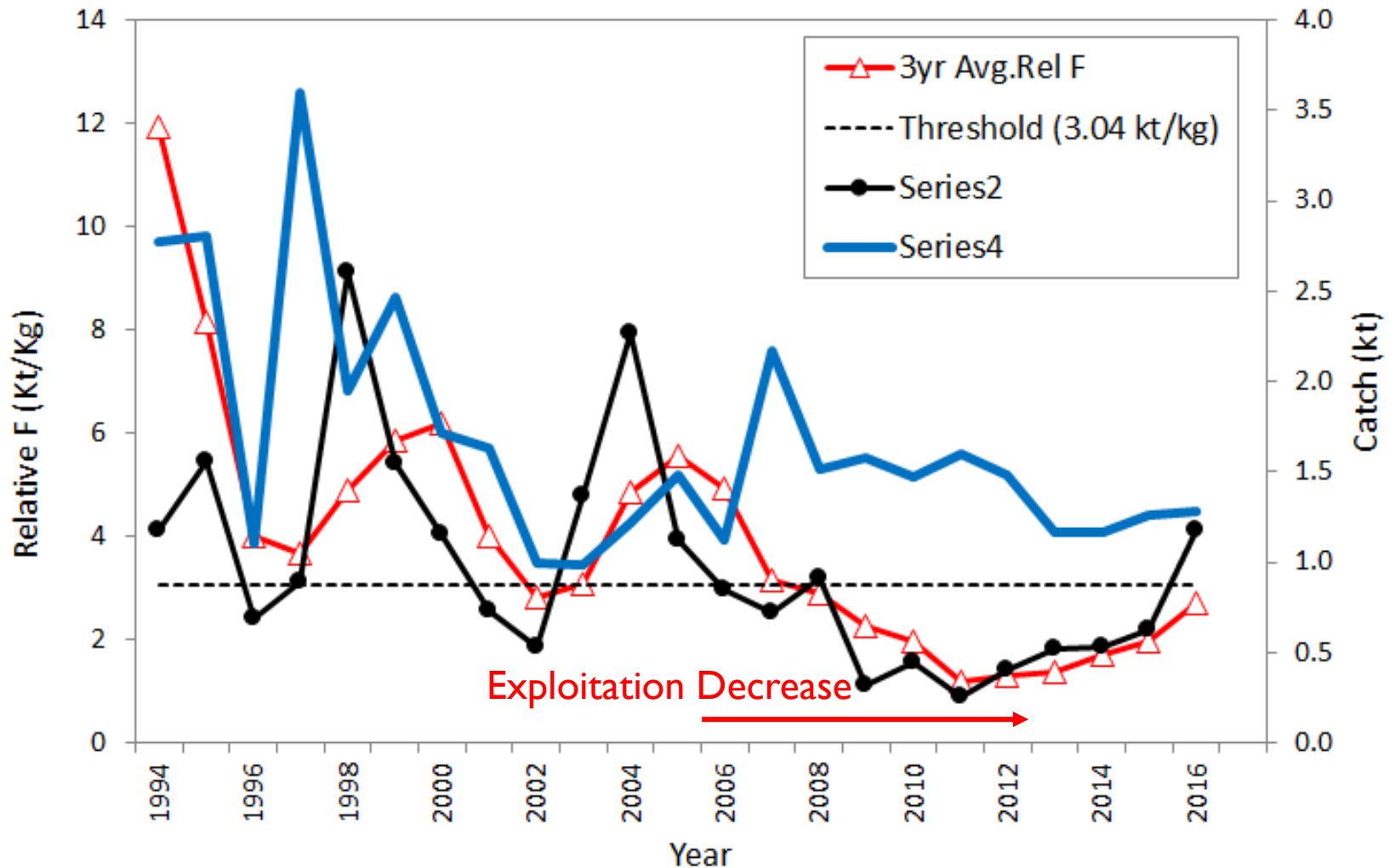
- ▶ No population model to estimate rebuilding potential or derive forecasts
- ▶ Some literature and data on growth rates and fecundity at age to derive some choice of rebuilding period – no PDT recommendations at this time.
- ▶ Impacts on catch for rebuilding are uncertain BUT under optimal conditions, S. red hake could rebuild with changes in fishing and reduction in fishing mortality
 - ▶ No quantitative estimates available
 - ▶ Only historic performance



Figure 27. Updated survey biomass trend (stratified mean weight per tow in FSV Albatross units) for **southern red hake**, compared to biological reference points. The horizontal dash line represents the biomass threshold and the solid horizontal line is the biomass target.



S. Red Hake Catch and Relative F



PDT conclusions

- ▶ **Biomass increase in 2006-2010**
 - ▶ Threshold to target level
 - ▶ Not caused by strong recruitment
 - ▶ Not caused by spillover from the north
 - ▶ Unlikely to be caused by uncertainty/changes in catchability
- ▶ **Rebuilding is possible with below threshold exploitation with average or better recruitment**
 - ▶ Similar AMs and possession limit reduction, plus good recruitment rebuild northern stock



PDT conclusions

- ▶ Rebuilding period at various F levels is not possible

Biological data may guide choice of appropriate rebuilding period

- ▶ Maturity at age; full maturity ~ age 4

- ▶ Growth rate

- ▶ Maximum age

- ▶ Surplus production model for northern stock

- ▶ Analogy to other stocks with similar life history

- ▶ Preliminary results from research track

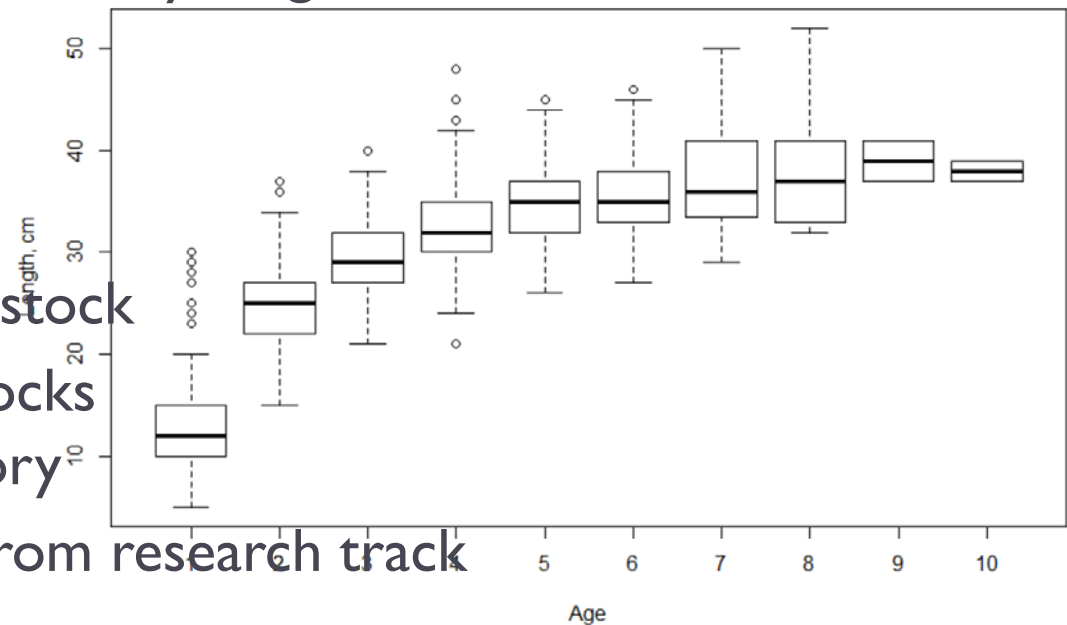


Table 11. Total discard (mt) estimates for vessels using small mesh trawls on trips landing more than 2,000 lbs. of whiting or 400 lbs. of red hake. Source: D/Kall ratios on NEFOP and ASM small-mesh multispecies trips applied to landings of all species by year, quarter, and management area.

Northern				Southern			
Species	Calendar year			Species	Calendar year		
	2014	2015	2016		2014	2015	2016
Red hake	91.4	224.1	209.6	Red hake	657.0	1099.0	1400.6
Haddock	476.8	241.0	353.0	Haddock	199.9	233.7	76.0
Winter skate	6.8	114.9	98.4	Winter skate	29.7	13.4	285.2
Spiny dogfish	98.3	90.7	399.2	Spiny dogfish	534.9	376.3	130.8
Butterfish	4.0	4.2	1.5	Butterfish	376.5	260.4	161.2
Little skate	12.3	29.1	44.6	Little skate	140.2	66.6	171.1
Silver hake	175.2	34.5	133.5	Silver hake	619.0	101.5	231.5
Barndoor skate	2.9	4.0	7.5	Barndoor skate	37.2	51.7	151.9
Atlantic herring	20.2	77.3	4.6	Atlantic herring	1.5	11.4	0.0
Monkfish	0.9	2.6	5.7	Monkfish	4.4	24.5	135.6
Summer flounder	4.8	1.5	1.5	Summer flounder	21.7	129.5	93.4
Yellowtail flounder	3.0	13.7	7.9	Yellowtail flounder	1.5	0.0	0.8
Witch flounder	1.5	4.9	14.0	Witch flounder	9.6	57.2	9.7
Winter flounder	5.6	2.3	1.5	Winter flounder	15.1	0.2	25.6
Ocean pout	0.1	0.7	0.6	Ocean pout	58.3	5.2	13.3
American plaice	4.0	3.2	10.5	American plaice	0.0	0.0	0.1
Cod	0.7	0.8	1.4	Cod	0.3	0.0	1.1
Windowpane	1.1	0.2	5.6	Windowpane	2.3	0.0	2.0
White hake	1.3	2.6	1.4	White hake	0.0	0.1	1.1
Smooth skate	0.0	0.0	0.0	Smooth skate	0.0	0.0	0.0
Thorny skate	0.4	0.0	0.4	Thorny skate	0.0	0.0	0.0
Pollock	0.9	0.1	0.2	Pollock	0.1	0.0	0.5
Redfish	0.7	1.4	0.1	Redfish	0.0	0.0	0.0
Total	913.0	853.8	1302.6	Total	2709.3	2430.9	2891.5

Summary of Alternative Approaches

1. Interim rebuilding: allow responsive or trigger adjustments to allowable catch
2. Limit landings of S. red hake: incentivize fishing where bycatch is less
3. Reduce discards of S. red hake: identify times, areas, gears with high bycatch → restrict fishing



Committee Motion (1/27/20)

To recommend that the PDT conduct analyses to design a Southern red hake rebuilding plan.

1. A rebuilding control rule with a timeline that is consistent with red hake biological characteristics, either by direct estimation or by analogy with a stock having similar biological characteristics.
2. The PDT develop alternatives for an adaptive approach that identifies when the Council may trigger actions that are necessary to achieve its rebuilding objectives.
3. Analyze a range of Southern red hake year-round possession limits for all gears and fisheries as a rebuilding option.
4. The PDT to continue to evaluate gears or other methods that may be effective at reducing catch of red hake for inclusion in other actions.



PDT Discussion of Draft Alternative Approaches

- ▶ It is unclear the effect of reducing catch on rebuilding without population dynamic models
 - ▶ Reduction in catch from current ABC may not increase biomass unless the stock produces above or above average recruitment
- ▶ A SW to NE re-distribution of red hake in response to warming waters have been observed → redistribution of recruitment and relative change in S. red hake productivity?



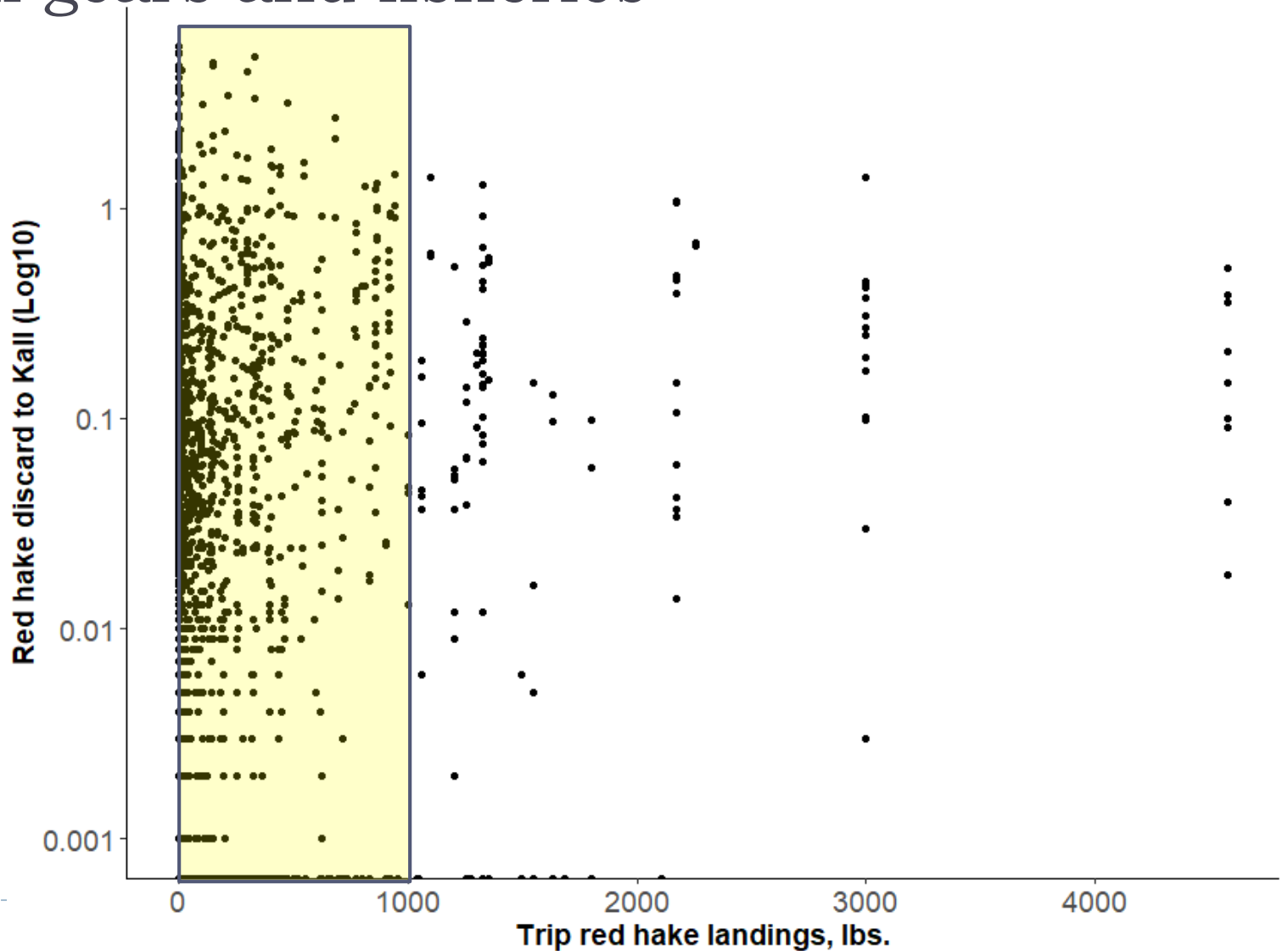
Potential PDT Analyses

- ▶ **Quantifying the amount of landings and revenue affected by a reduction in possession limit**
 - ▶ Potentially ineffective given S. red hake isn't a target species and high discard mortality
- ▶ **Analyze the effect of catch avoidance on reducing discarding using haul data on observed trips**
 - ▶ Fishermen unable to land high amounts of red hake
 - ▶ May choose to fish in other areas or use more selective gear
- ▶ **Analyze time-area closures by gear or fishery**
 - ▶ Determine when discards are high relative to kept species using observed haul data by depth
 - ▶ Applies to other fisheries with high S. red hake bycatch



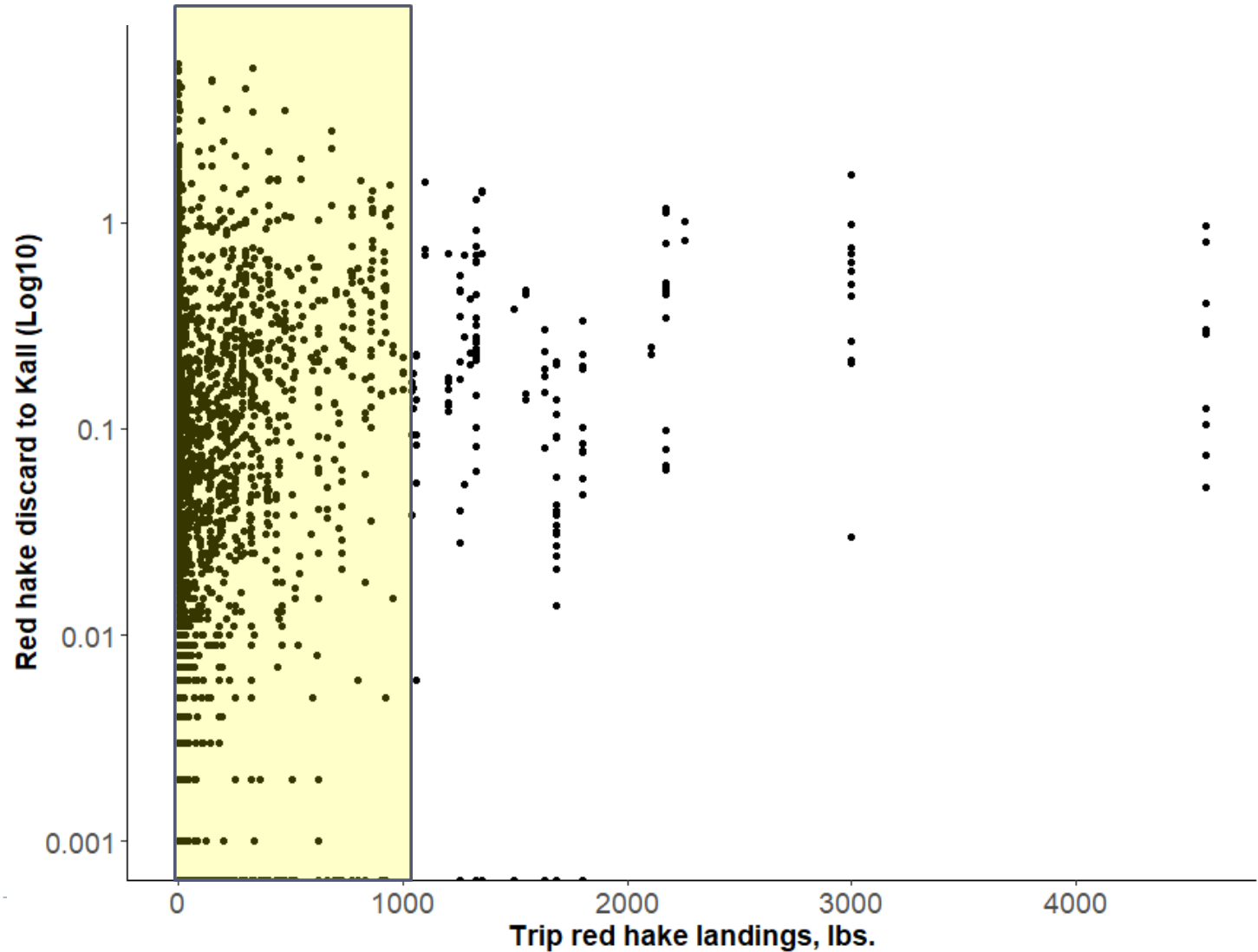
Red hake discard ratio vs. red hake landings per trip, southern area

All gears and fisheries

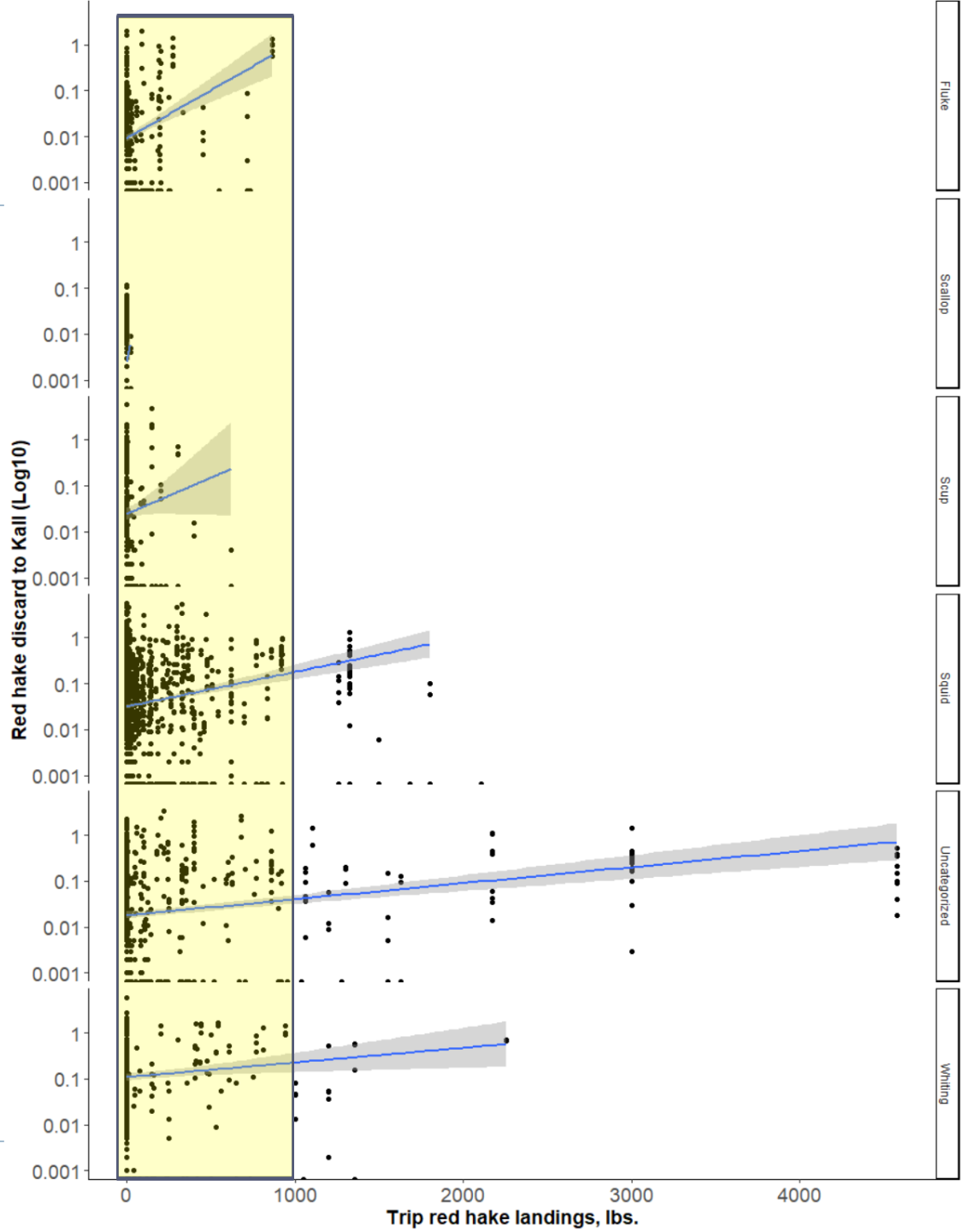


Red hake catch ratio vs. red hake landings per trip, southern area

All gears and fisheries



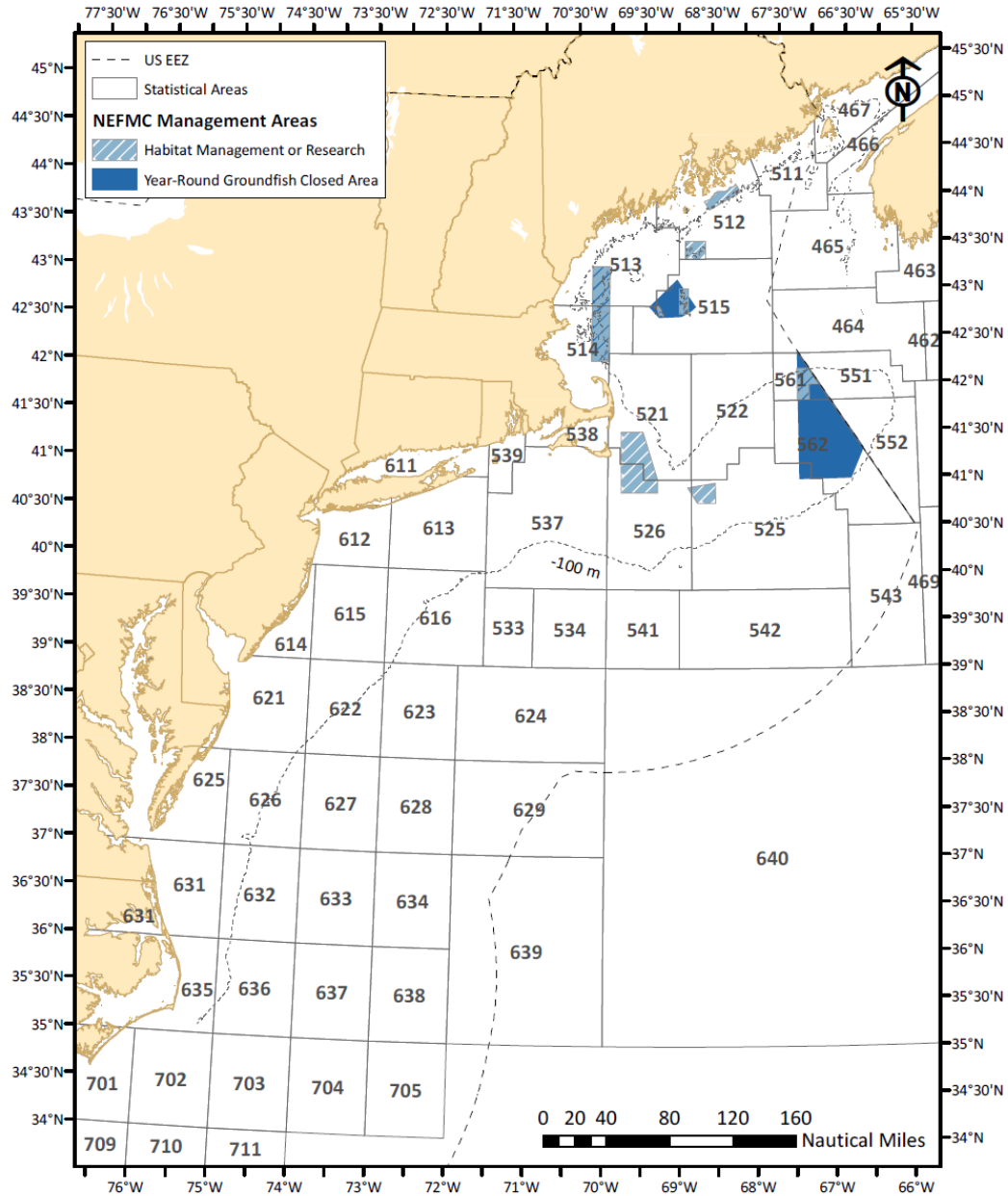
Red hake catch ratio vs. red hake landings per trip
GARFO-binned by fishery



Discard ratio by fishery, gear, and quarter (red cells > 2%)

MGMT_AREA	Southern										
GEAR_TYPE	(All)										
TRAWL_TYPE	(All)										
Quarter											
		1	2	3	4	Total Ave D/Kall		Total Hauls			
Fishery		Ave D/Kall	Hauls	Ave D/Kall	Hauls	Ave D/Kall	Hauls	Ave D/Kall	Hauls		
Black sea bass		0.000	127	0.000	153	0.002	58	0.024	225	0.010	563
Dogfish gillnet		0.000	916	0.000	449	0.000	154	0.000	382	0.000	1,901
Fluke		0.037	718	0.006	1,243	0.003	1,533	0.004	902	0.010	4,396
Groundfish		0.001	555	0.002	858	0.007	316	0.002	304	0.002	2,033
Lobster/Crab		0.001	107	0.007	187	0.028	305	0.005	112	0.014	711
Red Crab		0.000	175	0.000	161	0.000	116	0.000	137	0.000	589
Scallop		0.000	5,663	0.001	14,242	0.002	11,605	0.000	6,066	0.001	37,576
Scup		0.049	381	0.027	459	0.010	380	0.029	377	0.029	1,597
Skate trawl		0.000	44	0.003	64	0.001	182	0.001	124	0.001	414
Squid		0.015	2,242	0.013	3,592	0.022	3,913	0.068	2,175	0.026	11,922
State		0.000	1	0.000	207	0.044	314	0.000	110	0.022	632
Uncategorized		0.003	1,274	0.001	2,072	0.001	2,281	0.000	2,053	0.001	7,680
Whelk/Conch		0.000	8	0.000	248	0.000	196	0.000	240	0.000	692
Whiting		0.022	40	0.286	227	0.198	139	0.119	64	0.215	470
No Match						0.018	2,149	0.004	988	0.014	3,137
Grand Total		0.007	12,251	0.006	24,162	0.009	23,641	0.013	14,259	0.008	74,313

New England Fishery Management Council Greater Atlantic Region Statistical Areas with selected groundfish and habitat management areas



Discard ratio by area, quarter, and mesh category, 2017-2019

MGMT_AREA	Southern										
GEAR_TYPE	Otter Trawl										
TRAWL_TYPE	(All)										
	Column Labels										
	LG		SM		UNK		XL		Total Ave [Total Hauls		
Row Labels	Ave D/Kall	Hauls	Ave D/Kall	Hauls	Ave D/Kall	Hauls	Ave D/Kall	Hauls			
Jan-Mar	0.008	1,558	0.028	2,482	0.006	133	0.000	63	0.020	4,236	
562	0.500	4	0.243	32	0.035	4			0.248	40	
537	0.009	305	0.129	327	0.003	29			0.068	661	
613	0.024	161	0.023	160	0.000	7	0.000	3	0.023	331	
616	0.009	453	0.010	1,389	0.000	20	0.000	21	0.010	1,883	
Apr-Jun	0.008	2,418	0.031	3,648	0.001	123	0.009	125	0.022	6,314	
562	0.000	33	0.238	132					0.190	165	
525	0.002	61	0.103	127			0.000	7	0.068	195	
611	0.009	178	0.043	546	0.001	11			0.034	735	
612	0.013	171	0.034	415	0.000	7			0.028	593	
539	0.019	230	0.034	312	0.003	14			0.027	556	
537	0.015	477	0.026	510	0.002	29	0.056	9	0.021	1,025	
526	0.000	50	0.121	13	0.000	12	0.003	44	0.015	119	
616	0.012	198	0.009	411	0.005	11	0.000	10	0.010	630	
613	0.008	254	0.006	571	0.000	24	0.054	9	0.007	858	
Jul-Sep	0.023	2,777	0.023	4,165	0.006	133	0.000	129	0.022	7,204	
613	0.127	309	0.025	634	0.000	6			0.058	949	
537	0.031	592	0.048	1,364	0.075	8	0.000	7	0.043	1,971	
539	0.017	278	0.015	563	0.006	15			0.016	856	
616	0.004	48	0.018	30	0.000	2	0.000	43	0.006	123	
Oct-Dec	0.022	1,583	0.052	2,765	0.004	102	0.000	143	0.039	4,593	
616	0.091	318	0.094	1,002	0.006	28	0.000	38	0.089	1,386	
537	0.015	131	0.106	225	0.000	9	0.000	5	0.070	370	
613	0.007	330	0.037	406	0.000	15			0.023	751	
Grand Total	0.016	8,336	0.033	13,060	0.004	491	0.003	460	0.025	22,347	

Qtr 1
562, 537

Qtr 2
562, 525, 526

Qtr 3
537

Qtr 4
537, 616



Figure 17. Comparable catches of silver hake (target), red hake, regulated multispecies, and other species by body shape for six raised footrope trawl/control trials in 1994. Data from Carr 1996, used with permission of MA DMF.



Questions?



Additional Slides (if needed)

