



NOAA
FISHERIES

C7 Adjust the Partial Coverage Observer Fee

Environmental Assessment

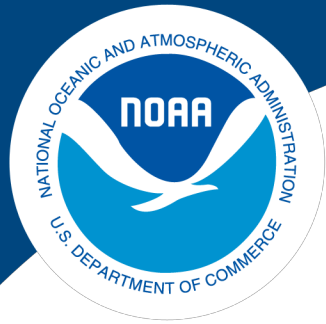
Jennifer Ferdinand

Jason Gasper

Geoff Mayhew

Alicia Miller

Cathy Tide



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Alaska
Regional
Office

C7 Adjust the Partial Coverage Observer Fee

Environmental Assessment
Fee Revenue Analysis

Cathy Tide
April 2019

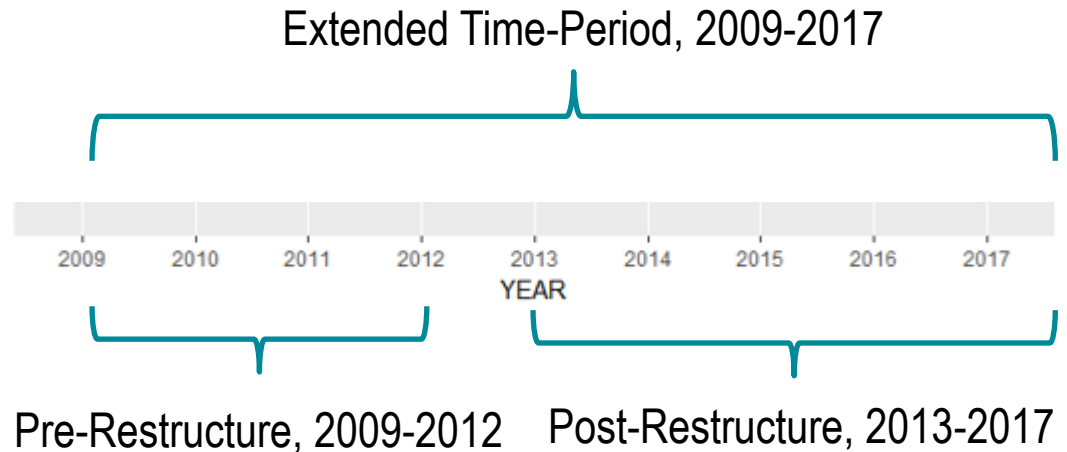
Fee Revenue Analysis

- Economic components of Observer Fee Revenues
 - Landings
 - Standard ex-vessel prices
 - Ex-vessel value
 - Fee percentages
- Basis for comparing fee alternatives and their potential impacts on coverage and information gaps
- Risk analysis for Various Funding Levels
- Fee Revenue Scenarios
- Effect of possible EM costs on fee revenues

Fee Revenue Analysis

- EA considers 4 species:

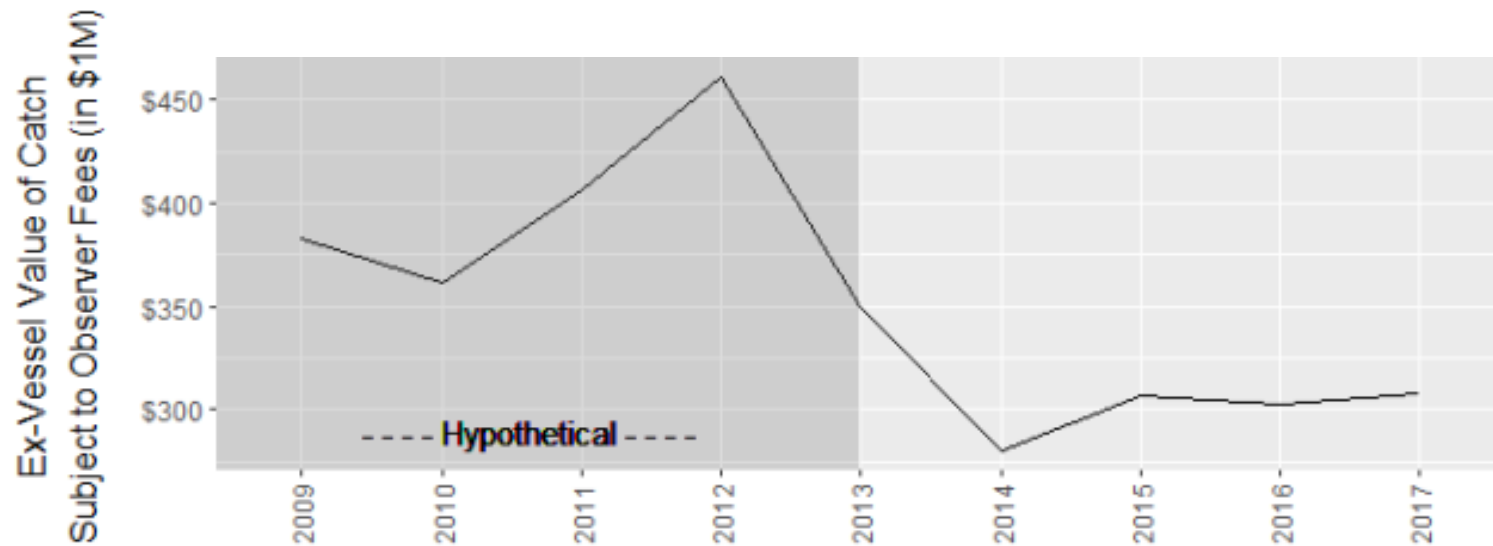
- Halibut
- Sablefish
- Pacific cod
- Pollock



- EA looks at 9 recent years

- 4 year pre-restructure (2009-2012)
- 5 years post-restructure (2013-2017)
- 2018 will be included in updated analysis

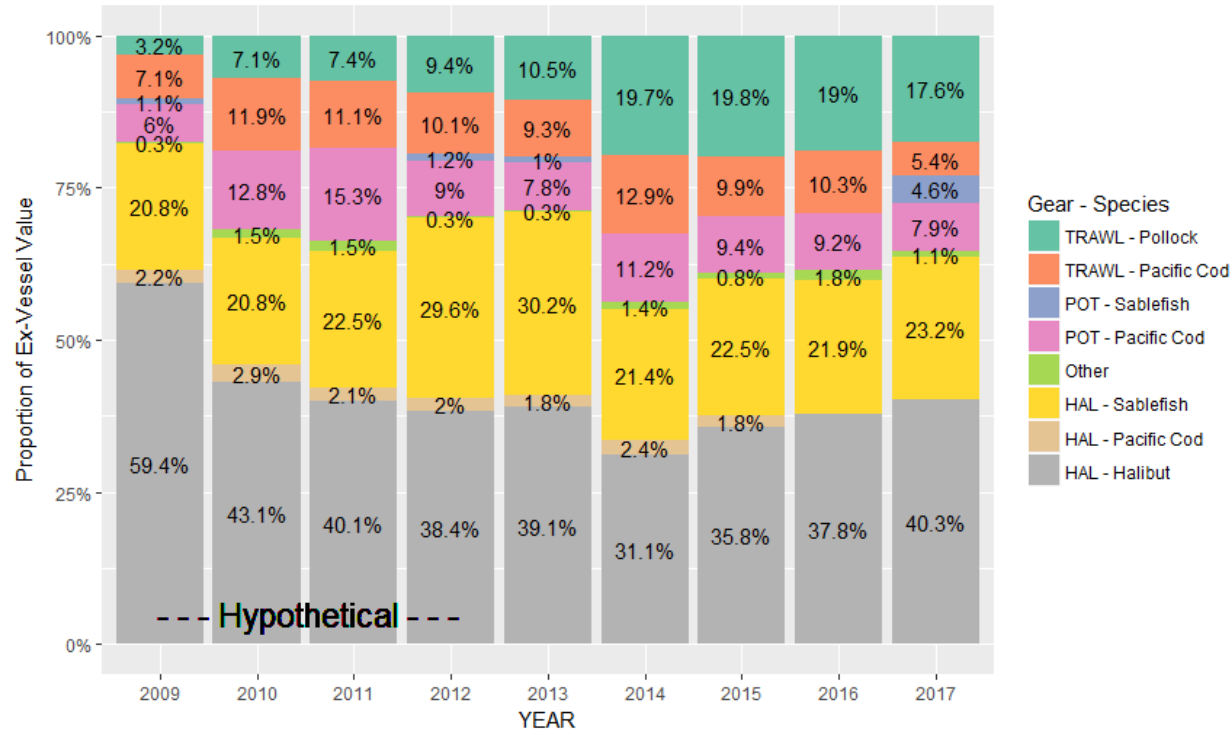
Ex-Vessel Value



- Overall ex-vessel value higher between 2009 and 2012 than 2013 and 2017

(Figures 4 and 5, pages 48 and 49)

Proportion of Ex-Vessel Value

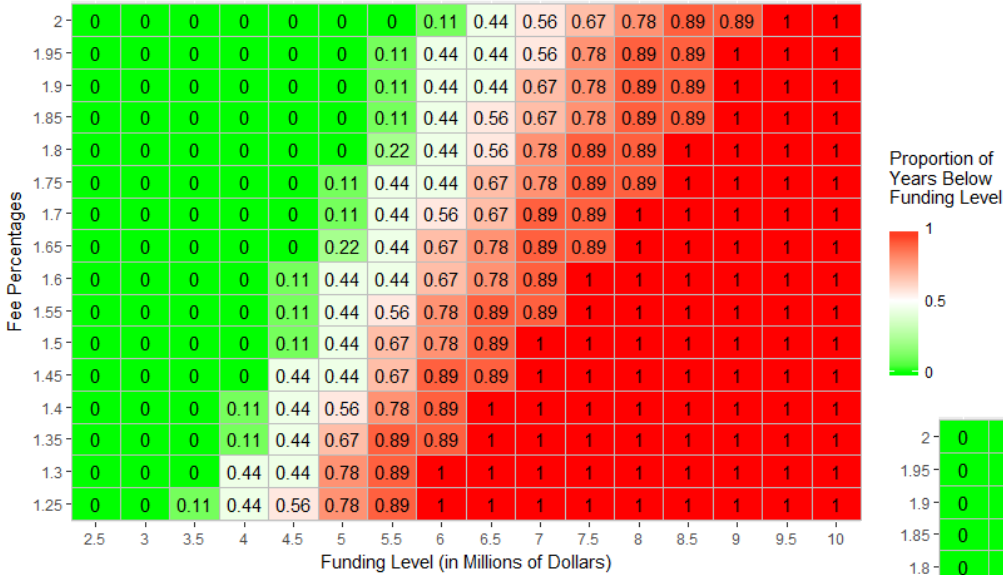


- Hook and line landings comprise the largest proportions of the ex-vessel value

(Figure 6, Page 60)

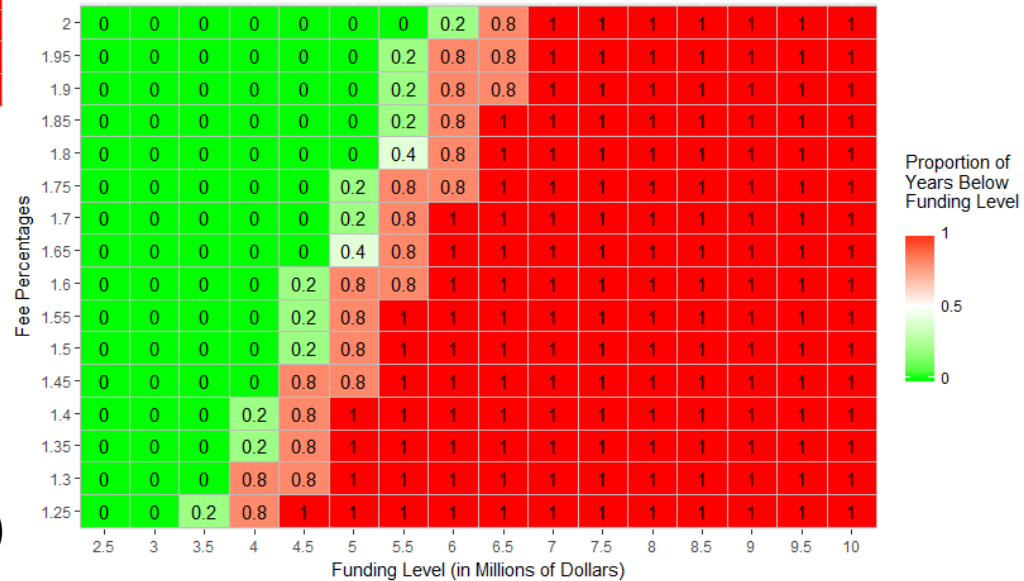
Risk Analysis

2009-2017



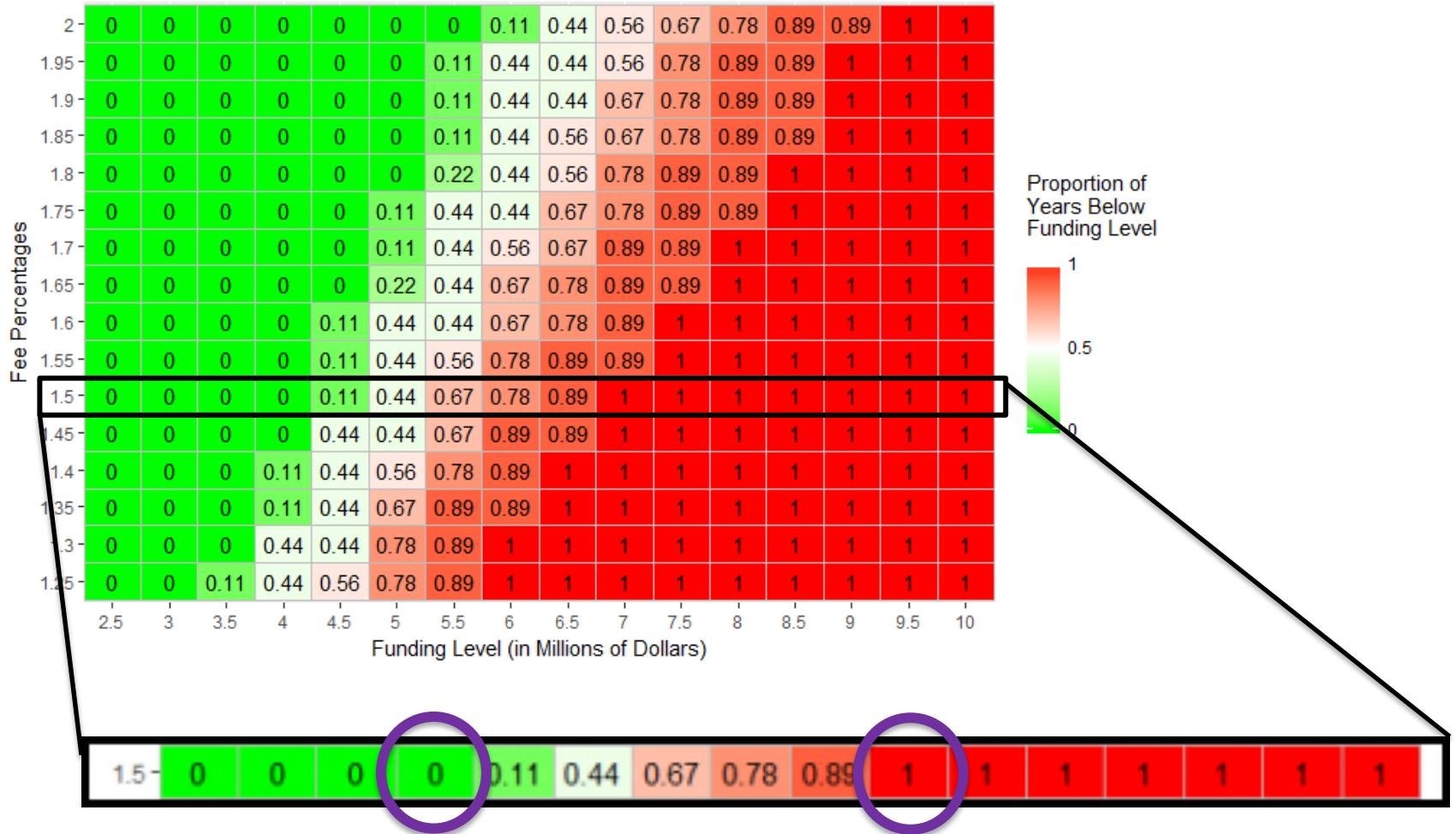
(Figure 7, page 57)

2013-2017



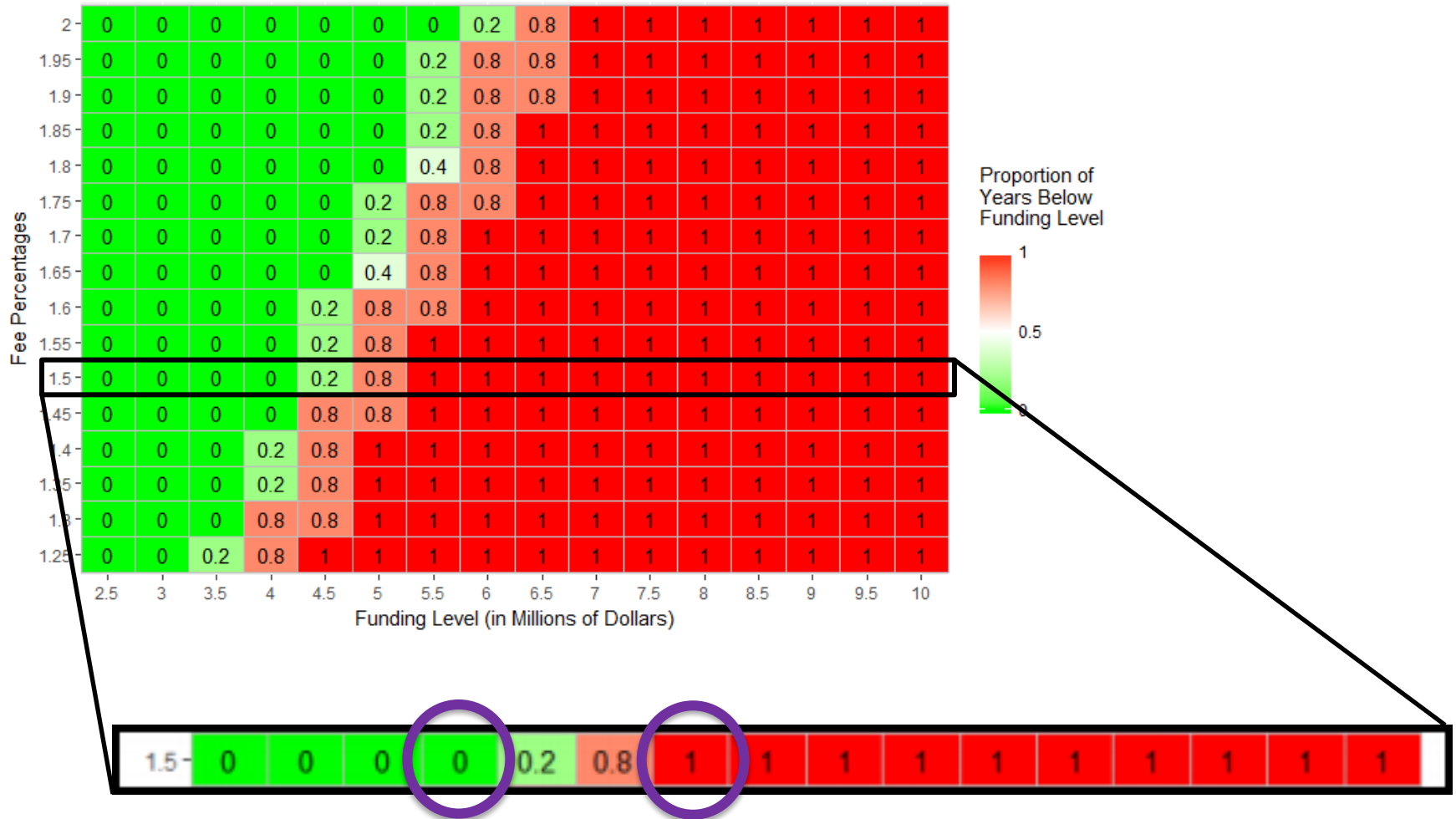
(Figure 8, page 58)

Risk Analysis: 2009-2017



(Figure 7, page 57)

Risk Analysis: 2013-2017



Risk Analysis

- The longer time-period may mask risks associated with a low-revenue trend

2009-2017

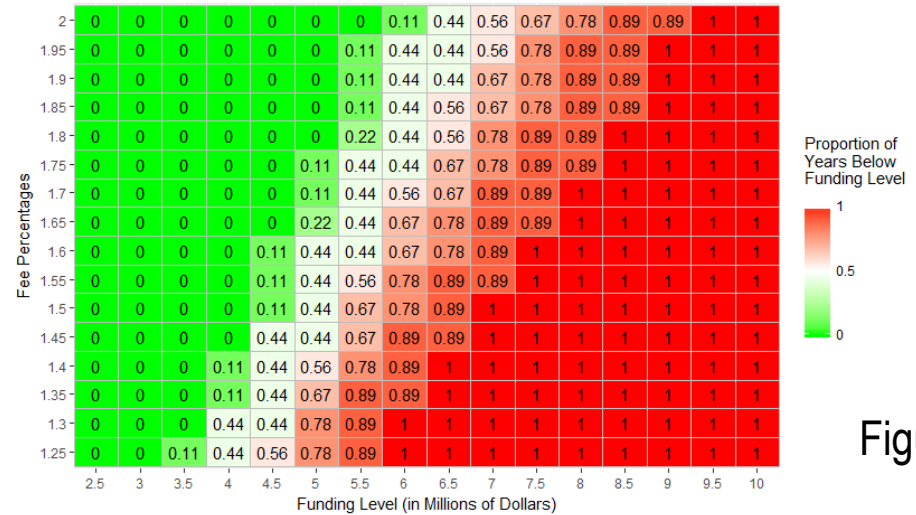


Figure 7

2013-2017

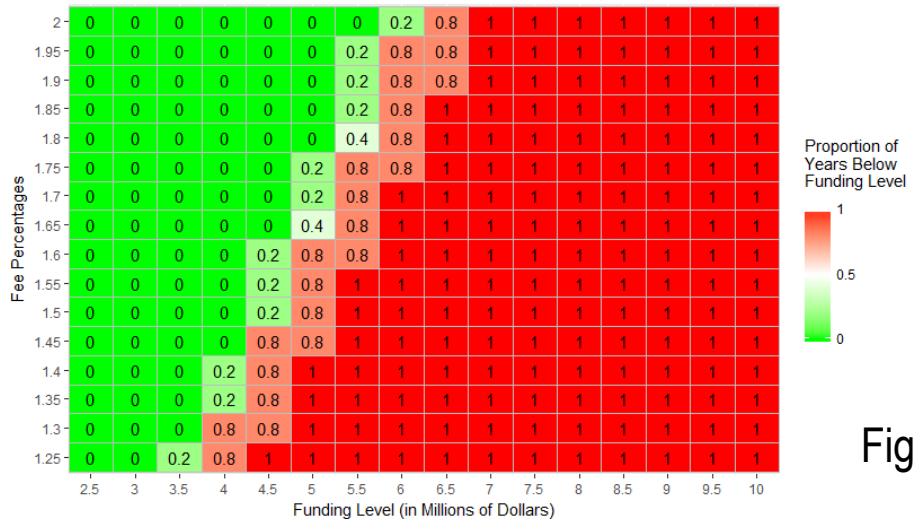


Figure 8

Fee Revenue and Fee Percentage Scenarios

- A wide range of fee revenues are possible depending on the ex-vessel value and fee percentage

Fee %	Hook and Line		
	Min 2014	Mean	Max 2012
1.25	\$1,918,970	\$2,929,089	\$4,033,948
1.3	\$1,995,729	\$3,046,253	\$4,195,306
1.35	\$2,072,487	\$3,163,416	\$4,356,663
1.4	\$2,149,246	\$3,280,580	\$4,518,021
1.45	\$2,226,005	\$3,397,743	\$4,679,379
1.5	\$2,302,764	\$3,514,907	\$4,840,737
1.55	\$2,379,522	\$3,632,071	\$5,002,095
1.6	\$2,456,281	\$3,749,234	\$5,163,453
1.65	\$2,533,040	\$3,866,398	\$5,324,811
1.7	\$2,609,799	\$3,983,561	\$5,486,169
1.75	\$2,686,558	\$4,100,725	\$5,647,527
1.8	\$2,763,316	\$4,217,888	\$5,808,885
1.85	\$2,840,075	\$4,335,052	\$5,970,243
1.9	\$2,916,834	\$4,452,216	\$6,131,600
1.95	\$2,993,593	\$4,569,379	\$6,292,958
2.0	\$3,070,352	\$4,686,543	\$6,454,316

(Table 7, page 55)

Fee Revenue and Fee Percentage Scenarios

$$\$2,456,281 + \$3,253 + \$435,018 + \$633,403 = \$3,527,955$$

Fee %	Hook and Line			Jig			Pot			Trawl			All Gears		
	Min 2014	Mean	Max 2012	Min 2017	Mean	Max 2011	Min 2009	Mean	Max 2011	Min 2009	Mean	Max 2014	Min 2014	Mean	Max 2012
1.25	\$1,918,970	\$2,929,089	\$4,033,948	\$2,541	\$10,658	\$25,869	\$339,858	\$488,594	\$818,490	\$494,846	\$956,630	\$1,150,102	\$3,493,627	\$4,384,971	\$5,763,709
1.3	\$1,995,729	\$3,040,253	\$4,195,306	\$2,643	\$11,084	\$26,904	\$353,453	\$508,137	\$851,229	\$514,640	\$994,896	\$1,196,106	\$3,633,372	\$4,560,370	\$5,994,258
1.35	\$2,072,487	\$3,163,416	\$4,356,663	\$2,745	\$11,511	\$27,938	\$367,047	\$527,681	\$883,969	\$534,434	\$1,033,161	\$1,242,110	\$3,773,117	\$4,735,769	\$6,224,806
1.4	\$2,149,246	\$3,280,580	\$4,518,021	\$2,846	\$11,937	\$28,973	\$380,641	\$547,225	\$916,708	\$554,228	\$1,071,426	\$1,288,114	\$3,912,862	\$4,911,168	\$6,455,354
1.45	\$2,216,005	\$3,397,743	\$4,679,379	\$2,948	\$12,363	\$30,008	\$394,236	\$566,768	\$949,448	\$574,022	\$1,109,691	\$1,334,118	\$4,052,607	\$5,086,567	\$6,685,903
1.5	\$2,302,764	\$3,514,907	\$4,840,737	\$3,049	\$12,790	\$31,043	\$407,830	\$586,312	\$982,188	\$593,816	\$1,147,957	\$1,380,122	\$4,192,352	\$5,261,966	\$6,916,451
1.55	\$2,379,522	\$3,632,071	\$5,002,095	\$3,151	\$13,216	\$32,077	\$421,424	\$605,856	\$1,014,927	\$613,609	\$1,186,222	\$1,426,126	\$4,332,097	\$5,437,364	\$7,146,999
1.6	\$2,456,281	\$3,749,234	\$5,163,453	\$3,253	\$13,642	\$33,112	\$435,018	\$625,400	\$1,047,667	\$633,403	\$1,224,487	\$1,472,130	\$4,471,842	\$5,612,763	\$7,377,548
1.65	\$2,533,040	\$3,866,398	\$5,324,811	\$3,354	\$14,069	\$34,147	\$448,613	\$644,943	\$1,080,406	\$653,197	\$1,262,752	\$1,518,134	\$4,611,588	\$5,788,162	\$7,608,096
1.7	\$2,609,799	\$3,983,561	\$5,486,169	\$3,456	\$14,495	\$35,182	\$462,207	\$664,487	\$1,113,146	\$672,991	\$1,301,017	\$1,564,138	\$4,751,333	\$5,963,561	\$7,838,645
1.75	\$2,686,558	\$4,100,725	\$5,647,527	\$3,558	\$14,921	\$36,216	\$475,801	\$684,031	\$1,145,886	\$692,785	\$1,339,283	\$1,610,142	\$4,891,078	\$6,138,960	\$8,069,193
1.8	\$2,763,316	\$4,217,888	\$5,808,885	\$3,659	\$15,348	\$37,251	\$489,396	\$703,575	\$1,178,625	\$712,579	\$1,377,548	\$1,656,146	\$5,030,823	\$6,314,359	\$8,299,741
1.85	\$2,840,075	\$4,335,052	\$5,970,243	\$3,761	\$15,774	\$38,286	\$502,990	\$723,118	\$1,211,365	\$732,372	\$1,415,813	\$1,702,151	\$5,170,568	\$6,489,758	\$8,530,290
1.9	\$2,916,834	\$4,452,216	\$6,131,600	\$3,863	\$16,200	\$39,321	\$516,584	\$742,662	\$1,244,104	\$752,166	\$1,434,078	\$1,748,155	\$5,310,313	\$6,665,156	\$8,760,838
1.95	\$2,993,593	\$4,569,379	\$6,292,958	\$3,964	\$16,627	\$40,355	\$530,179	\$762,206	\$1,276,844	\$771,960	\$1,452,343	\$1,794,159	\$5,450,058	\$6,840,555	\$8,991,386
2.0	\$3,070,352	\$4,686,543	\$6,454,316	\$4,066	\$17,053	\$41,390	\$543,773	\$781,750	\$1,309,584	\$791,754	\$1,520,609	\$1,840,163	\$5,589,803	\$7,015,954	\$9,221,935

$$\$2,929,089 + \$17,053 + \$684,031 + \$1,147,957 = \$4,778,130$$

(Table 7, page 55)

Link to Gap Analysis

Fee %	All Gears			Observer Fee Rate	Observer Coverage Budget	Observer Daily Rate	Strata	Deployment Rate
	Min 2014	Mean	Max 2012					
1.25	\$3,493,627	\$4,384,971	\$5,763,709	1.25	\$4,384,971.00	\$1,572.89	HAL	0.134
1.3	\$3,633,372	\$4,560,370	\$5,994,258				POT	0.134
1.35	\$3,773,117	\$4,735,769	\$6,224,806				POT_TENDER	0.134
1.4	\$3,912,862	\$4,911,168	\$6,455,354				TRW	0.134
1.45	\$4,052,607	\$5,086,567	\$6,685,903	1.50	\$5,261,965.00	\$1,400.18	TRW_TENDER	0.134
1.5	\$4,192,352	\$5,261,966	\$6,916,451				HAL	0.169
1.55	\$4,332,097	\$5,437,364	\$7,146,999				POT	0.153
1.6	\$4,471,842	\$5,612,763	\$7,377,548				POT_TENDER	0.154
1.65	\$4,611,588	\$5,788,162	\$7,608,096	1.75	\$6,138,959.00	\$1,298.35	TRW	0.211
1.7	\$4,751,333	\$5,963,561	\$7,838,645				TRW_TENDER	0.225
1.75	\$4,891,078	\$6,138,960	\$8,069,193				HAL	0.198
1.8	\$5,030,823	\$6,314,359	\$8,299,741				POT	0.158
1.85	\$5,170,568	\$6,489,758	\$8,530,290	2.00	\$7,015,954.00	\$1,231.20	POT_TENDER	0.160
1.9	\$5,310,313	\$6,665,156	\$8,760,838				TRW	0.303
1.95	\$5,450,058	\$6,840,555	\$8,991,386				TRW_TENDER	0.337
2.0	\$5,589,803	\$7,015,954	\$9,221,933				HAL	0.227
							POT	0.163
							POT_TENDER	0.166
							TRW	0.395
							TRW_TENDER	0.449

(Table 7, page 55)

(Table 9, page 66)

Effect of EM Costs on Fee Revenue

- Shift expectations on:
 - Observer coverage budget
 - Observer daily rate
 - Gap analysis
 - Frequency of no biological data

Fee %	Avg. Fee Revenue for All Gears (Table 7)	\$250,000 EM Costs		\$500,000 EM Costs	
		Remaining Revenue	Effect. Fee %	Remaining Revenue	Effect. Fee %
1.25	\$4,384,971	\$4,134,971	1.18	\$3,884,971	1.11
1.3	\$4,560,370	\$4,310,370	1.23	\$4,060,370	1.16
1.35	\$4,735,769	\$4,485,769	1.28	\$4,235,769	1.21
1.4	\$4,911,168	\$4,661,168	1.33	\$4,411,168	1.26
1.45	\$5,086,567	\$4,836,567	1.38	\$4,586,567	1.31
1.5	\$5,261,966	\$5,011,966	1.43	\$4,761,966	1.36
1.55	\$5,437,364	\$5,187,364	1.48	\$4,937,364	1.41
1.6	\$5,612,763	\$5,362,763	1.53	\$5,112,763	1.46
1.65	\$5,788,162	\$5,538,162	1.58	\$5,288,162	1.51
1.7	\$5,963,561	\$5,713,561	1.63	\$5,463,561	1.56
1.75	\$6,138,960	\$5,888,960	1.68	\$5,638,960	1.61
1.8	\$6,314,359	\$6,064,359	1.73	\$5,814,359	1.66
1.85	\$6,489,758	\$6,239,758	1.78	\$5,989,758	1.71
1.9	\$6,665,156	\$6,415,156	1.83	\$6,165,156	1.76
1.95	\$6,840,555	\$6,590,555	1.88	\$6,340,555	1.81
2.0	\$7,015,954	\$6,765,954	1.93	\$6,515,954	1.86

(Table 12, page 78)

Effect of EM Costs on Fee Revenue

Fee %	Avg. Fee Revenue for All Gears (Table 7)	\$250,000 EM Costs		\$500,000 EM Costs	
		Remaining Revenue	Effective Fee %	Remaining Revenue	Effective Fee %
1.25	\$4,384,971	\$4,134,971	1.18	\$3,884,971	1.11
1.3	\$4,560,370	\$4,310,370	1.23	\$4,060,370	1.16
1.35	\$4,735,769	\$4,485,769	1.28	\$4,235,769	1.21
1.4	\$4,911,168	\$4,661,168	1.33	\$4,411,168	1.26
1.45	\$5,086,567	\$4,836,567	1.38	\$4,586,567	1.31
1.5	\$5,261,966	\$5,011,966	1.43	\$4,761,966	1.36
1.55	\$5,437,364	\$5,187,364	1.48	\$4,937,364	1.41
1.6	\$5,612,763	\$5,362,763	1.53	\$5,112,763	1.46
1.65	\$5,788,162	\$5,538,162	1.58	\$5,288,162	1.51
1.7	\$5,963,561	\$5,713,561	1.63	\$5,463,561	1.56
1.75	\$6,138,960	\$5,888,960	1.68	\$5,638,960	1.61
1.8	\$6,314,359	\$6,064,359	1.73	\$5,814,359	1.66
1.85	\$6,489,758	\$6,239,758	1.78	\$5,989,758	1.71
1.9	\$6,665,156	\$6,415,156	1.83	\$6,165,156	1.76
1.95	\$6,840,555	\$6,590,555	1.88	\$6,340,555	1.81
2.0	\$7,015,954	\$6,765,954	1.93	\$6,515,954	1.86

Observer Fee Rate	Observer Coverage Budget	Observer Daily Rate	Strata	Deployment Rate
1.25	\$4,384,971.00	\$1,572.89	HAL	0.134
			POT	0.134
			POT_TENDER	0.134
			TRW	0.134
			TRW_TENDER	0.134
1.50	\$5,261,965.00	\$1,400.18	HAL	0.169
			POT	0.153
			POT_TENDER	0.154
			TRW	0.211
			TRW_TENDER	0.225
1.75	\$6,138,959.00	\$1,298.35	HAL	0.198
			POT	0.158
			POT_TENDER	0.160
			TRW	0.303
			TRW_TENDER	0.337
2.00	\$7,015,954.00	\$1,231.20	HAL	0.227
			POT	0.163
			POT_TENDER	0.166
			TRW	0.395
			TRW_TENDER	0.449

Table 12

Table 9

Effect of EM Costs on Fee Revenue

- Shift expectations on:
 - Fee percentage to achieve same at-sea observer coverage budget and observer daily rate

Fee %	Avg. Fee Revenue for All Gears (Table 7)	\$250,000 EM Costs		\$500,000 EM Costs	
		Remaining Revenue	Effective Fee %	Remaining Revenue	Effective Fee %
1.25	\$4,384,971	\$4,134,971	1.18	\$3,884,971	1.11
1.3	\$4,560,370	\$4,310,370	1.23	\$4,060,370	1.16
1.35	\$4,735,769	\$4,485,769	1.28	\$4,235,769	1.21
1.4	\$4,911,168	\$4,661,168	1.33	\$4,411,168	1.26
1.45	\$5,086,567	\$4,836,567	1.38	\$4,586,567	1.31
1.5	\$5,261,966	\$5,011,966	1.43	\$4,761,966	1.36
1.55	\$5,437,364	\$5,187,364	1.48	\$4,937,364	1.41
1.6	\$5,612,763	\$5,362,763	1.53	\$5,112,763	1.46
1.65	\$5,788,162	\$5,538,162	1.58	\$5,288,162	1.51
1.7	\$5,963,561	\$5,713,561	1.63	\$5,463,561	1.56
1.75	\$6,138,960	\$5,888,960	1.68	\$5,638,960	1.61
1.8	\$6,314,359	\$6,064,359	1.73	\$5,814,359	1.66
1.85	\$6,489,758	\$6,239,758	1.78	\$5,989,758	1.71
1.9	\$6,665,156	\$6,415,156	1.83	\$6,165,156	1.76
1.95	\$6,840,555	\$6,590,555	1.88	\$6,340,555	1.81
2.0	\$7,015,954	\$6,765,954	1.93	\$6,515,954	1.86

(Table 12, page 78)

C7 Observer Fee Analysis

4.2.2 Gap Analysis

Geoff Mayhew

FMA

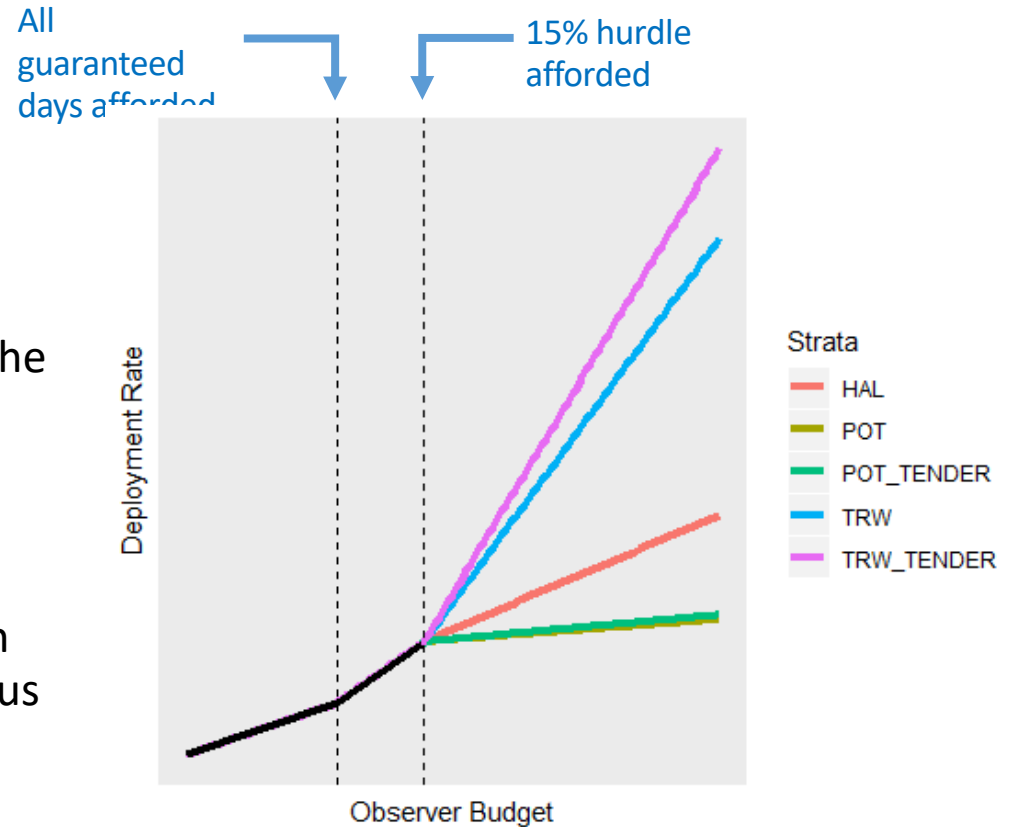
Pacific States Marine Fisheries Commission

Trip Selection Simulation and Gap Analysis

- Simulate trip selection using deployment rates funded at each fee %
 - Qualify and quantify data gaps (unobserved trips)
 - Simplified version of how the Catch Accounting System estimates discards for unobserved hauls
 - Group trips by **FMP**, **gear type** and **trip target**
 - For each unobserved trip, qualify the level of time and space that is needed to be able to generate a discard estimate from similar observed trips
- Data Quality ↑
- **COVER** – Trip selected for observer coverage
 - **AREA** – Unobserved trip within 15-days of observed trip in the same NMFS Area
 - **FMP** – Unobserved trip within 45-days of observed trip in the same FMP
 - **YTD** – Unobserved trip cannot be categorized in AREA or FMP (needs data year-to-date)
- Trips in the zero-selection pool rely on data from the observer pool

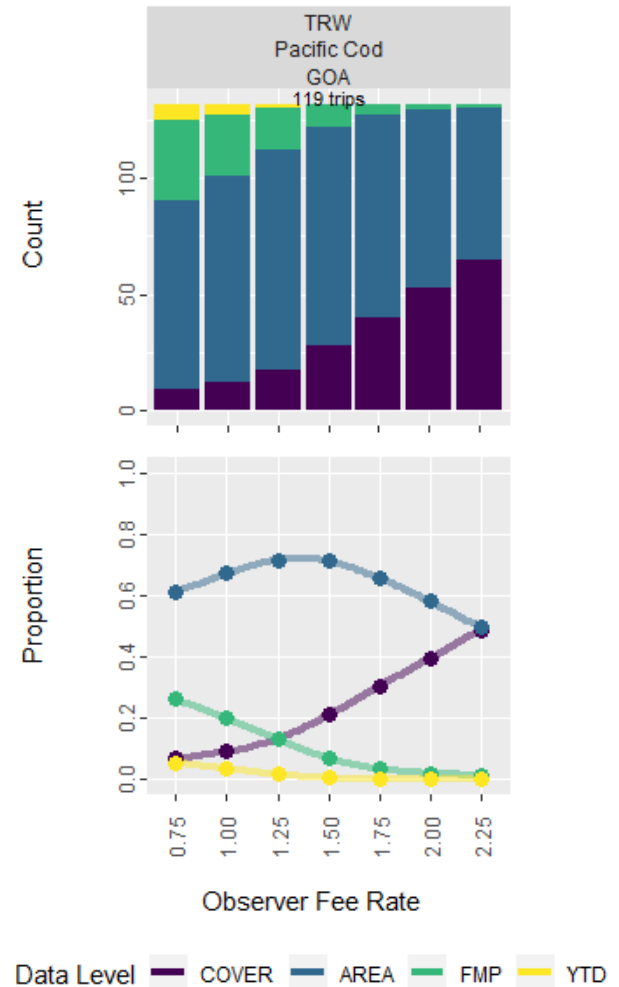
Breakpoints

- Two breakpoints exist:
 - When all guaranteed days in the PC contract can be afforded (almost impossible to see)
 - When the base hurdle of 15% can be afforded and allocation on optimization begins (obvious for TRW and TRW_TENDER)



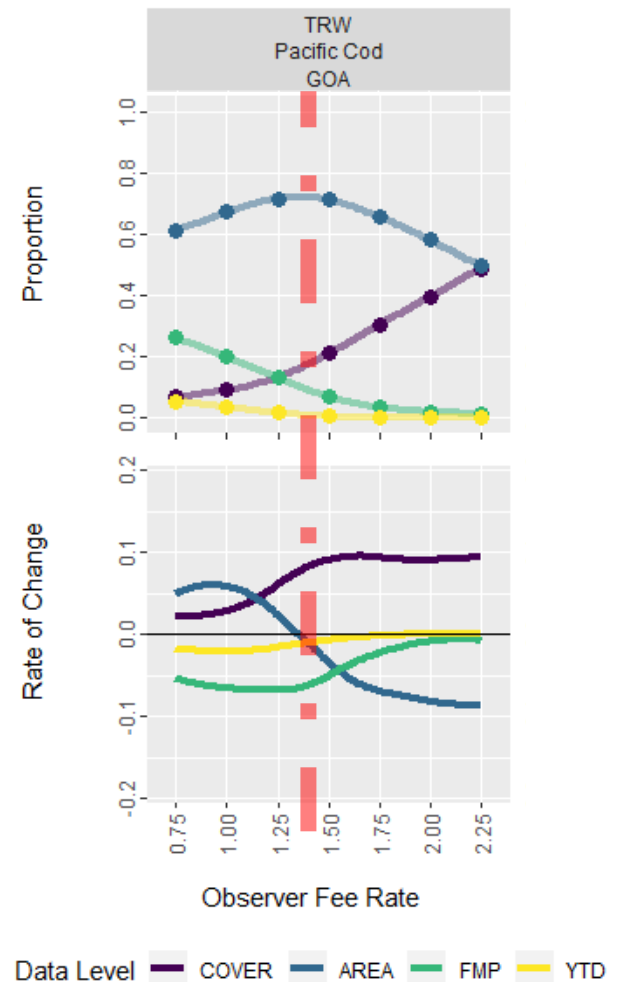
Interpreting the Results

- Count – Average number of trips at each data level
 - As observer fee rate increases:
 YTD → FMP → AREA → COVER
- Proportion – Relative proportion of trips for each data level
 - Useful for determining fee rates at which YTD and FMP are minimized.



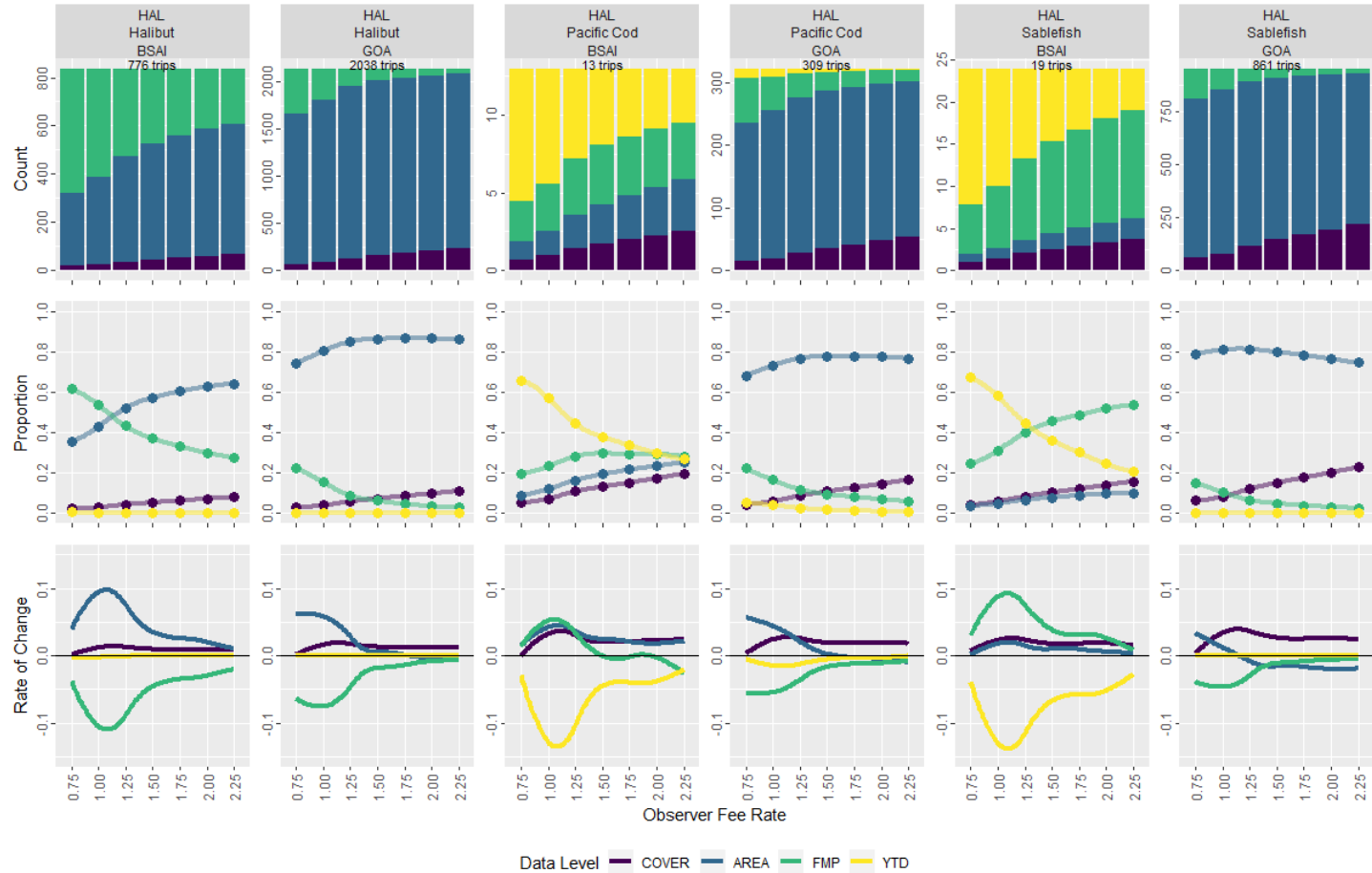
Interpreting the Results

- Rate of Change of Proportion
 - Peaks represent fee/budget levels where proportions of coverage gaps change the most
 - Positive values indicate increasing proportion per fee rate/budget available for coverage
 - Negative values indicate decreasing proportion per fee rate/budget available for coverage
- The breakpoint at which the 15% hurdle is met and TRW can allocate with optimization weights is at a fee rate between 1.25% and 1.5%



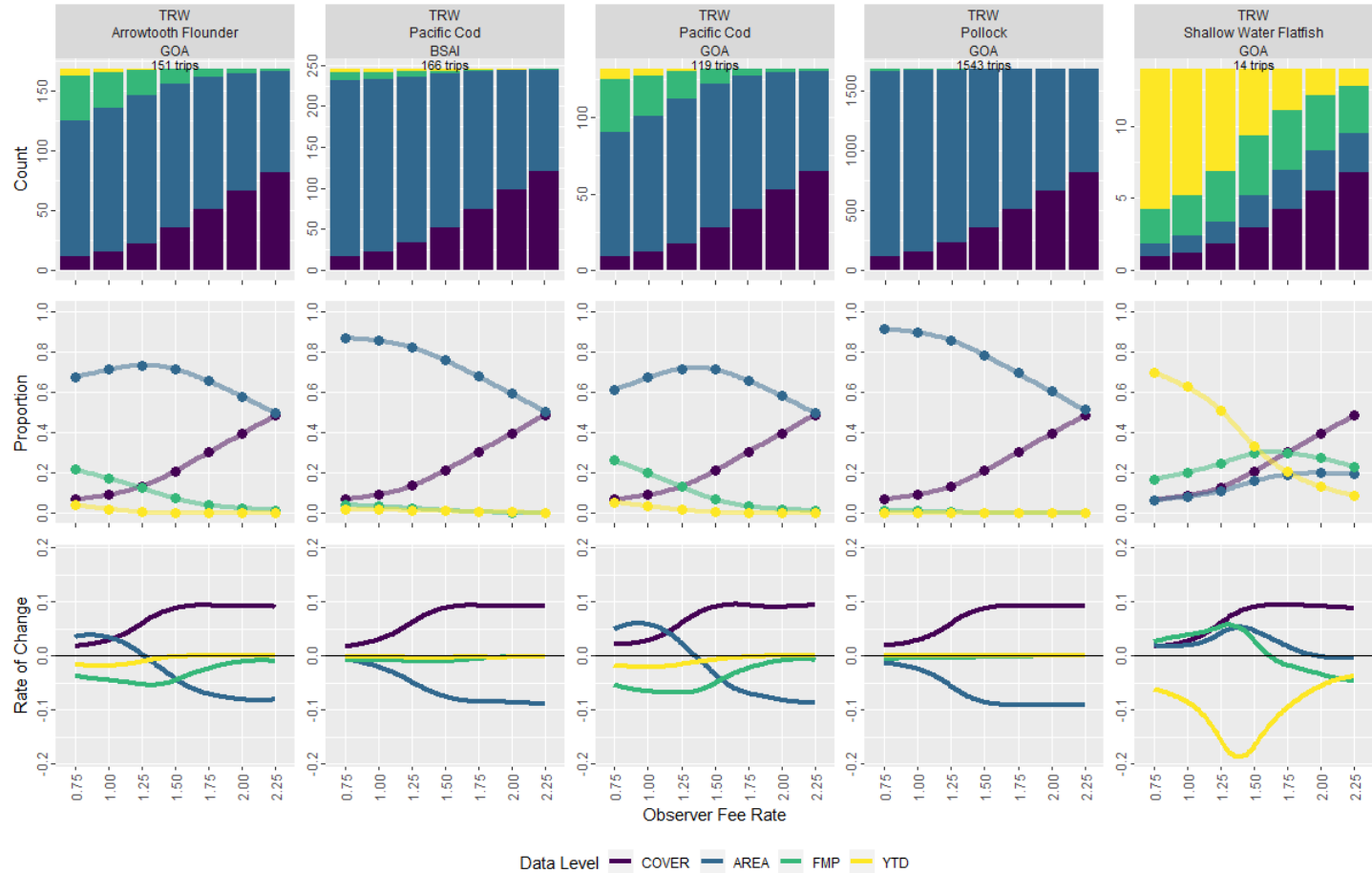
Hook and Line

- For most gear - target combinations, YTD/FMP level gaps are minimized at fee rate of ~1.5%
- Groups with low effort (BSAI cod and sablefish) continue to benefit from higher budget/fee rate.
- Effort is not very concentrated in space (NMFS areas) or time, especially in BSAI.



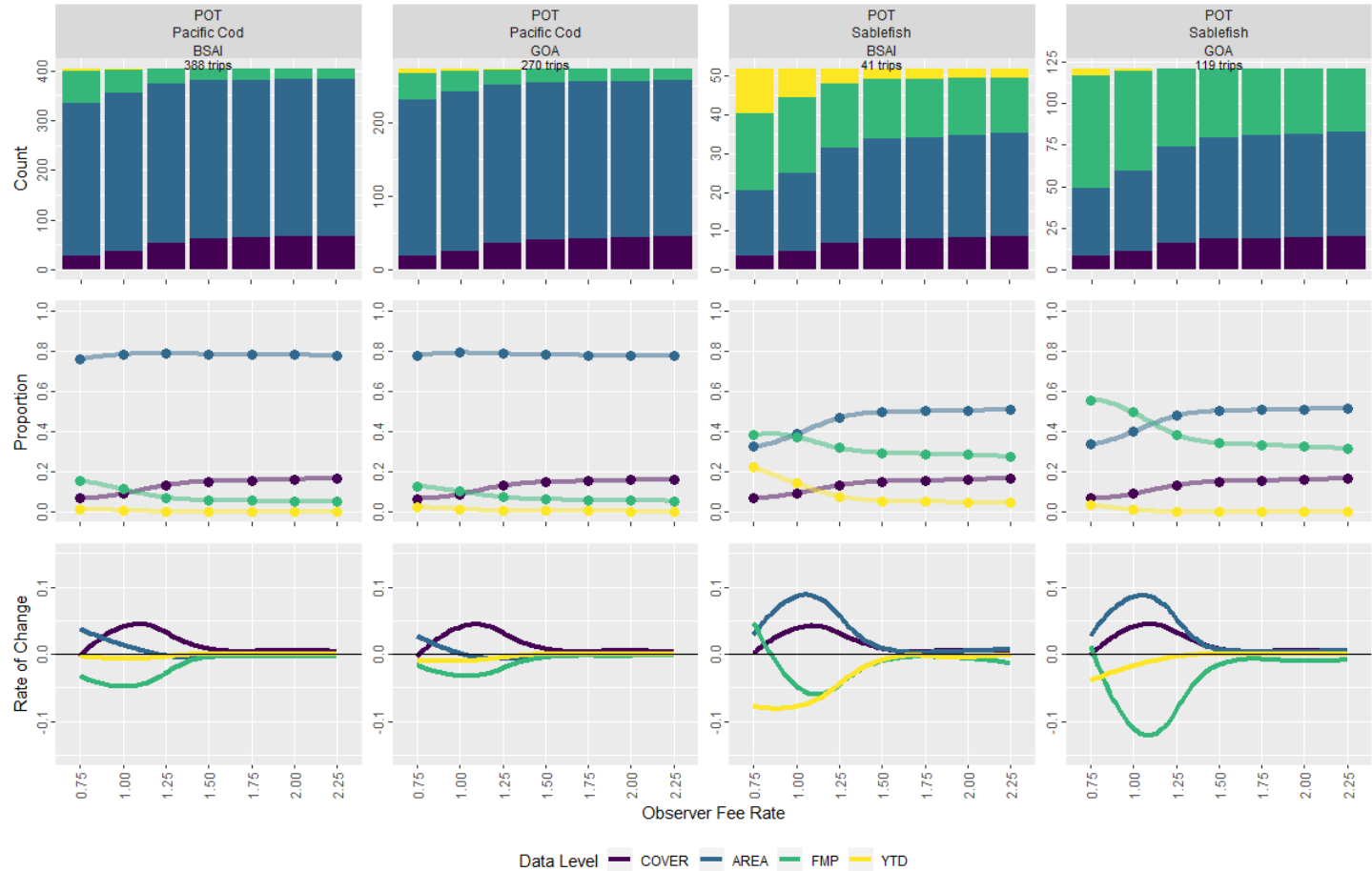
Trawl

- Trawl generally has high effort that is also concentrated spatiotemporally. Therefore, YTD/FMP gaps in discards are generally minimized even at low fee rate/budget scenarios.



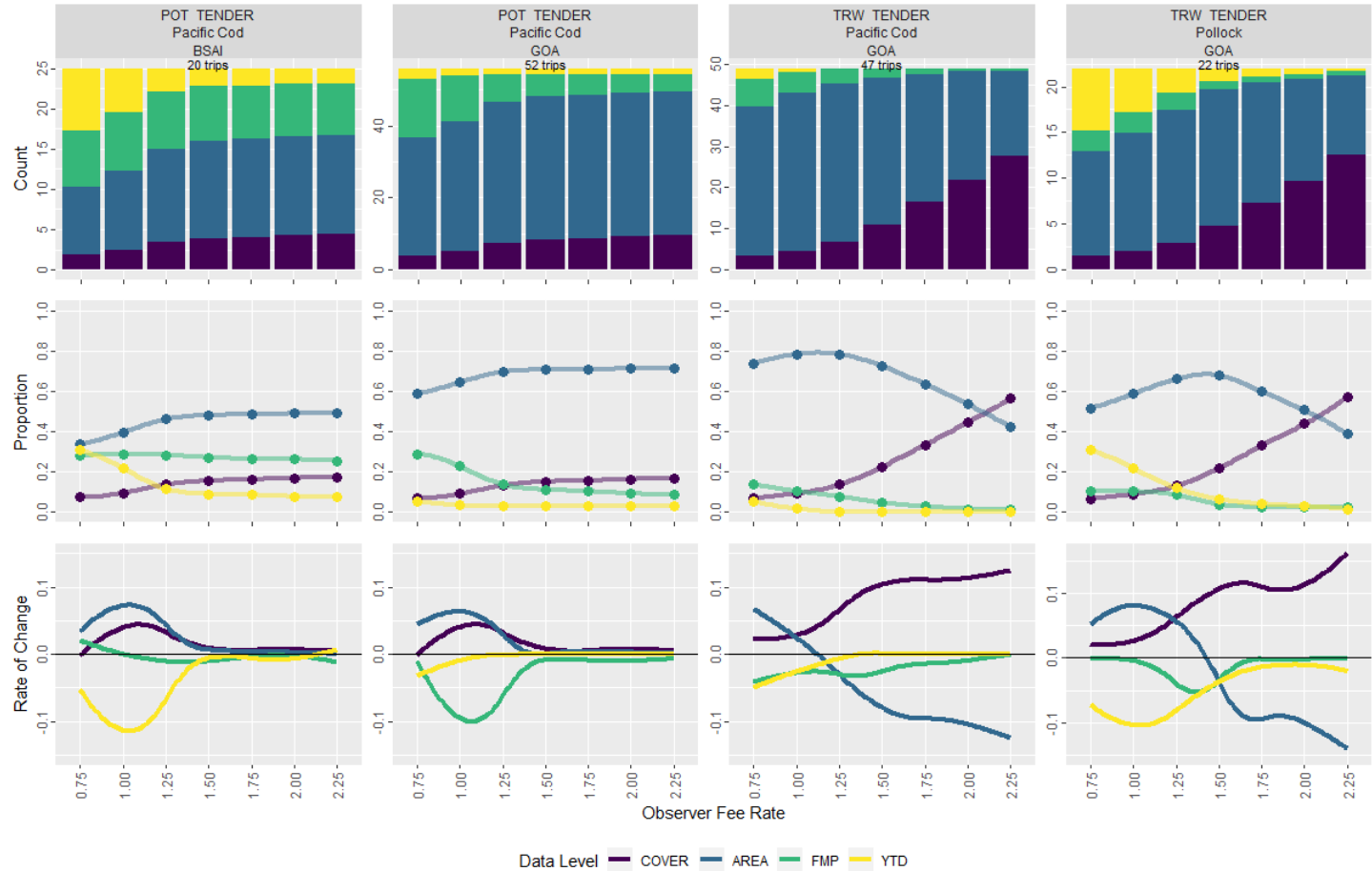
Pot

- Effort for *P. cod* is concentrated, so gaps are few and minimized quickly with increasing funds.
- Effort for sablefish is not as concentrated, but gaps are minimized at fee rate of ~1.5%.



Tender

- For Pot Tender, BSAI effort is concentrated in time but not in space. Most gaps minimized ~1.5%.
- Trawl Tender similar to TRW



Interpreting the Results

- Most FMP and YTD-level data gaps were greatly reduced with fee rates greater than or equal to ~1.3% (hurdle rate of 15%) and minimized at ~1.5%
 - Supports the [2015 SEA](#)'s findings that 'most data gaps at the FMP-level disappeared for were severely minimized at deployment rates greater than or equal to 15%'
- Remember, with 2017 fishing effort and 2009-2017 revenues, the 15% hurdle could be funded with a fee rate of ~1.3%.
 - Effort for 2018 was less than for 2017, so the 15% hurdle could be met with a lower budget/fee rate; analysis with 2018 effort is underway
 - However, mean revenues of 2013-2017 are much lower but may be more realistic ([Appendix D](#)), suggesting a higher fee rate is needed.
 - Observer fees will also fund EM

Biological Data

- Compared expected number of PC observed trips (given the deployment rates at each fee percentage) to the number of trips in EM and zero-selection pools in a target and area-specific manner
- HAL – BSAI
 - P. cod and sablefish effort is low and area-specific biological data cannot be guaranteed by PC observers; Halibut is likely to have area-specific biological data
- HAL – GOA
 - The effort in the PC observer pool is generally high enough that area-specific biological data is likely to be collected for all area/target where EM/no-selection effort exists
- POT – BSAI & GOA
 - PC observer effort coincides with zero-selection and EM pool (NMFS area-specific).