

Alaska Recreational Halibut Fisheries



**For the International Pacific Halibut Commission
2019 Annual Meeting**

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Alaska Department of Fish and Game – Division of Sport Fish

Overview

- ▶ Alaska recreational fisheries review through 2018
- ▶ Analysis of charter management measures for 2019
 - ▶ Area 2C
 - ▶ Area 3A

Fishery Review Through 2018



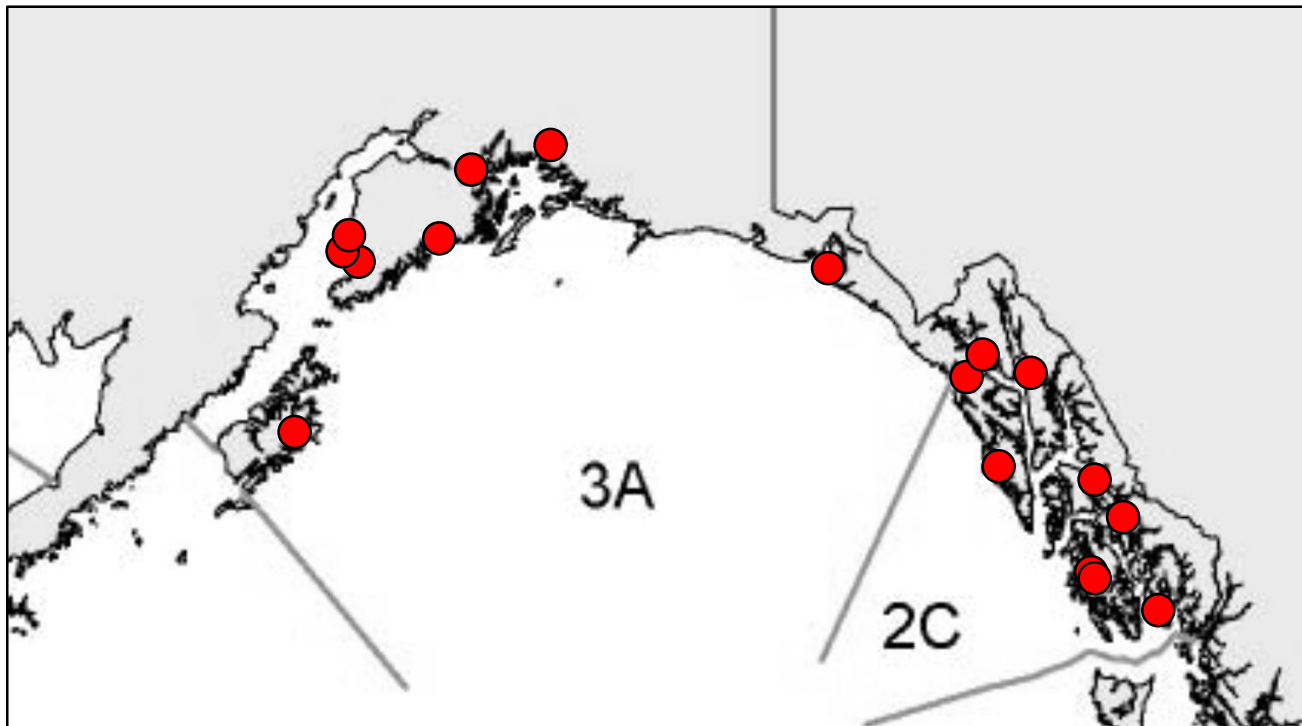
Photo: Eric Lehm

What estimates does ADF&G provide to IPHC?

- ▶ Numbers of halibut harvested & released
- ▶ Average weight of harvest
- ▶ Yield and release mortality in pounds
- ▶ Harvest prior to the IPHC survey in 2C, 3A
- ▶ Length composition (2C & 3A; on request)
- ▶ Age and sex composition (3A only; on request)

Data Sources

- ▶ Charter logbook (statewide, mandatory)
- ▶ Statewide harvest survey (mail)
- ▶ Creel surveys at major ports in 2C, 3A



Charter Information (2017)

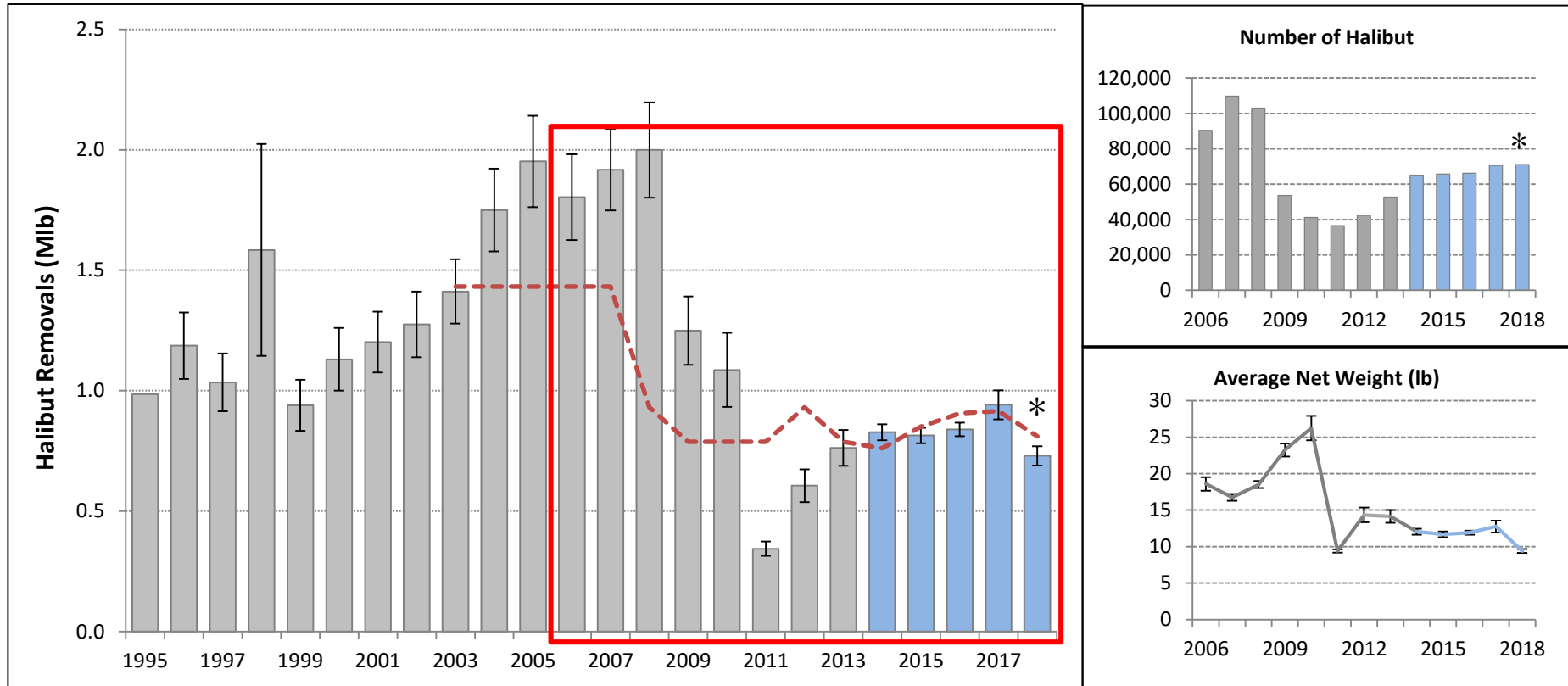
► Businesses that harvested halibut

Area Fished	No. Businesses
2C	240
3A	220
2C and 3A	8
3B	3
4A	1

► Charter vessels that harvested halibut

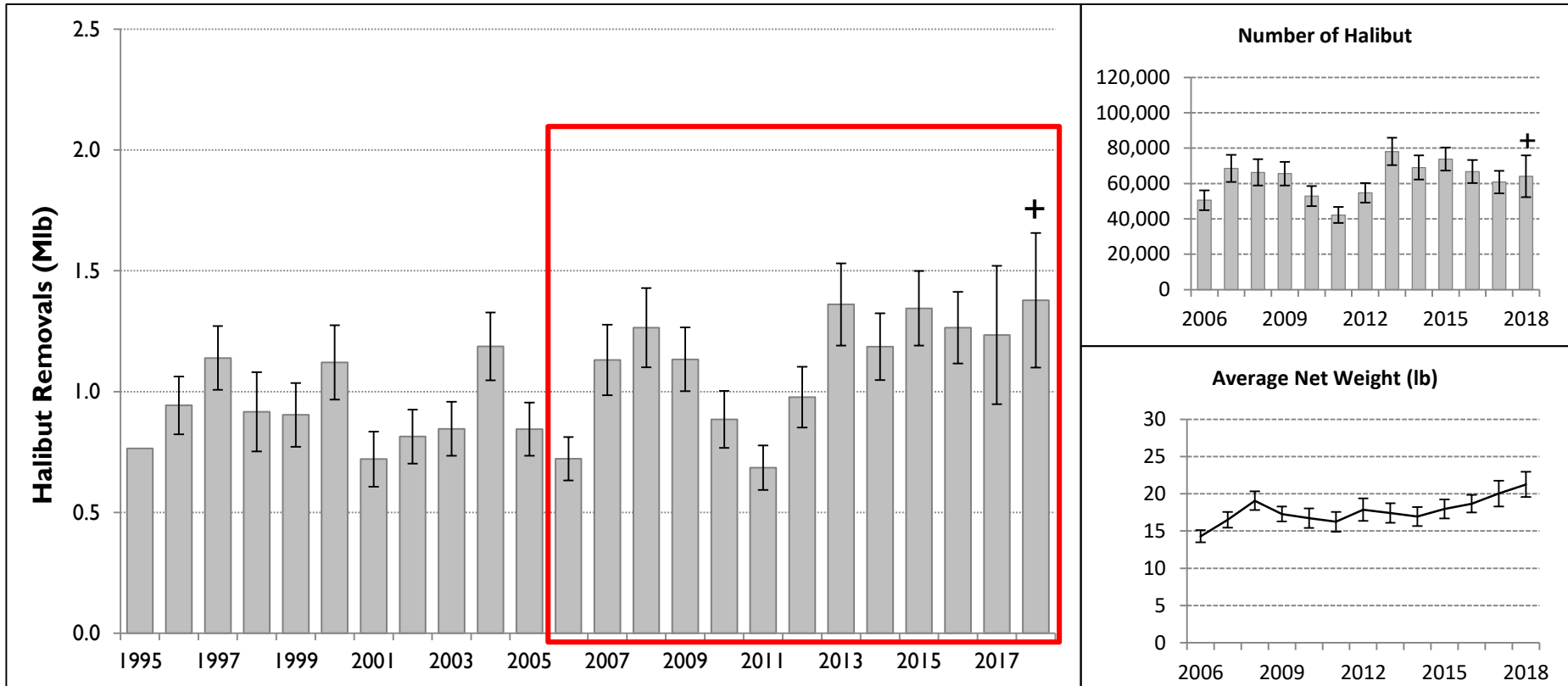
Area Fished	No. Vessels
2C	513
3A	350
2C and 3A	25
3B	3
4A	1

Area 2C Charter



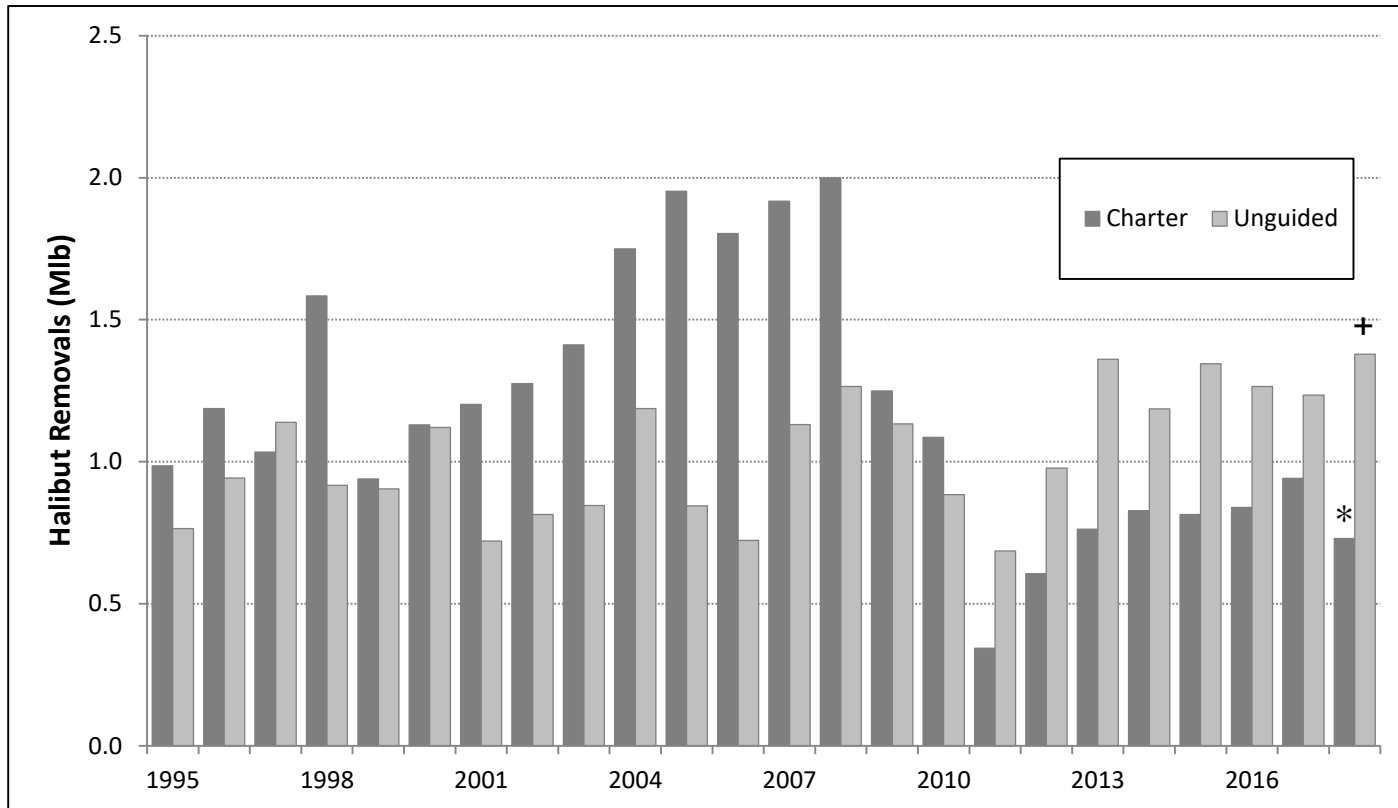
* Projection based on data through July 31

Area 2C Unguided



+ Time series forecast

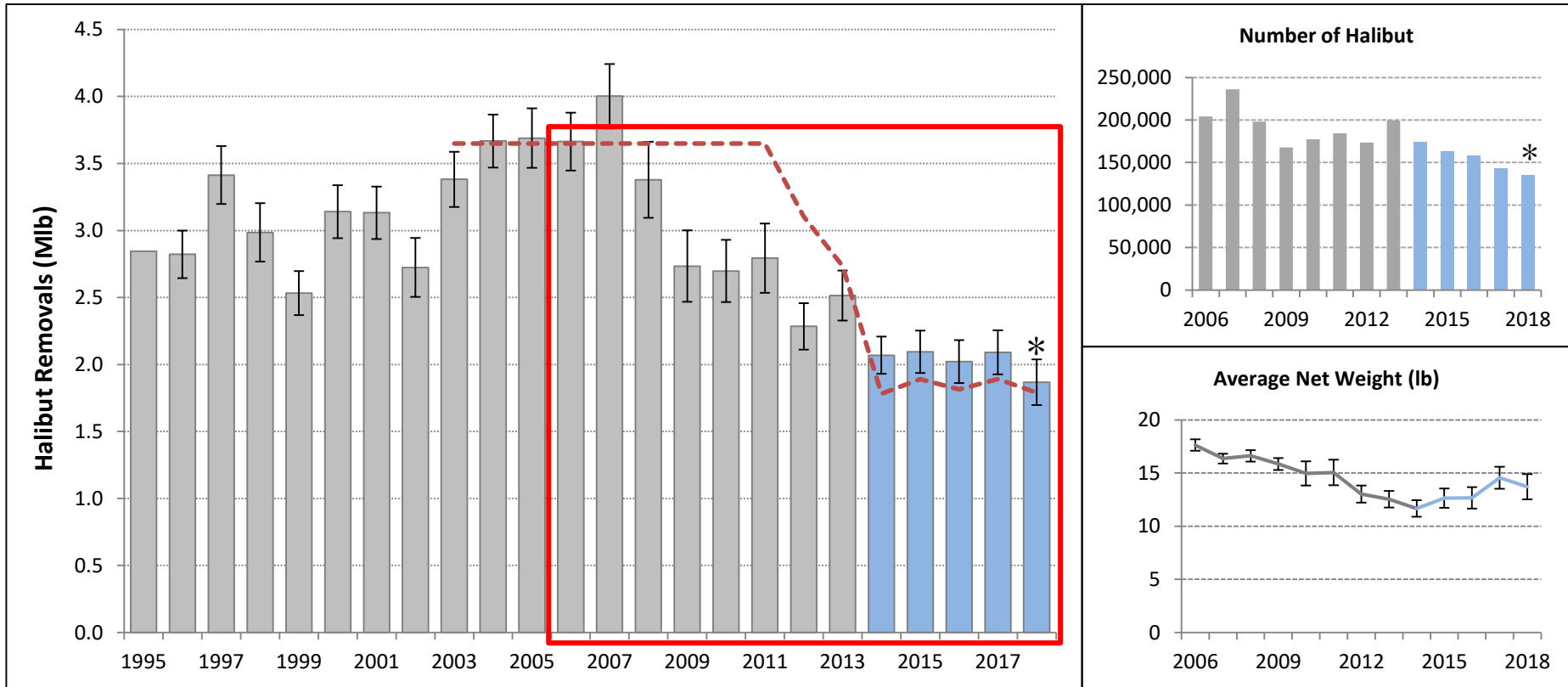
Area 2C Charter and Unguided



* Projection based on data through July 31

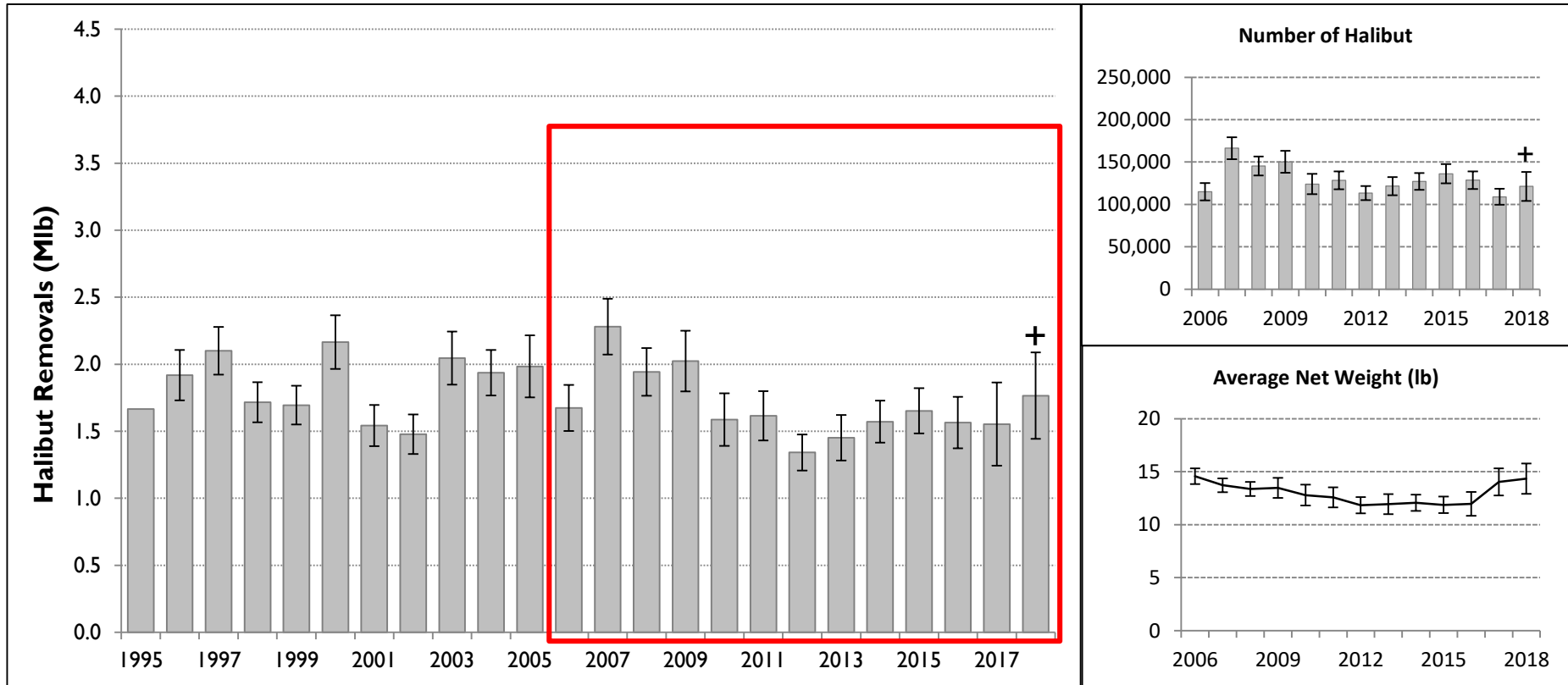
+ Time series forecast

Area 3A Charter



* Projection based on data through July 31

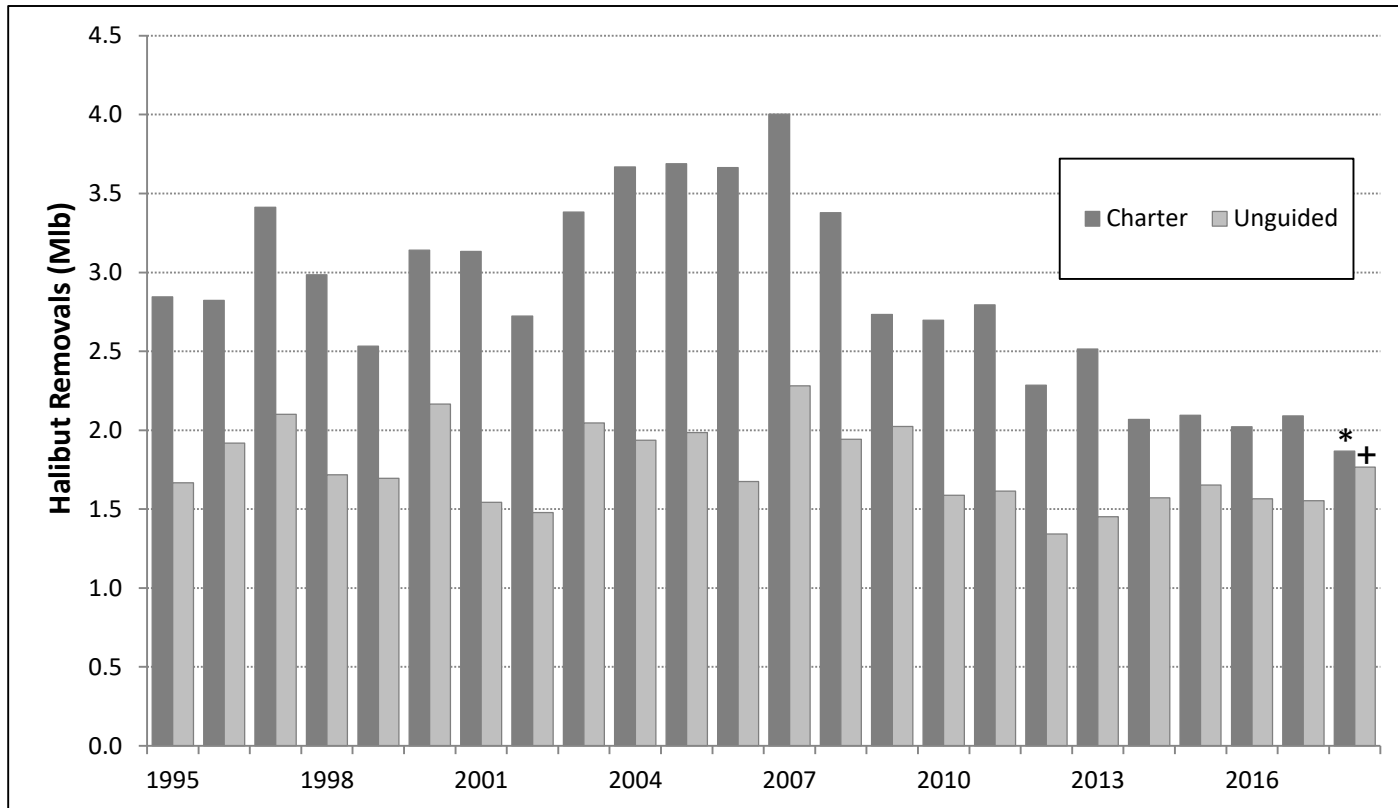
Area 3A Unguided



+ Time series forecast



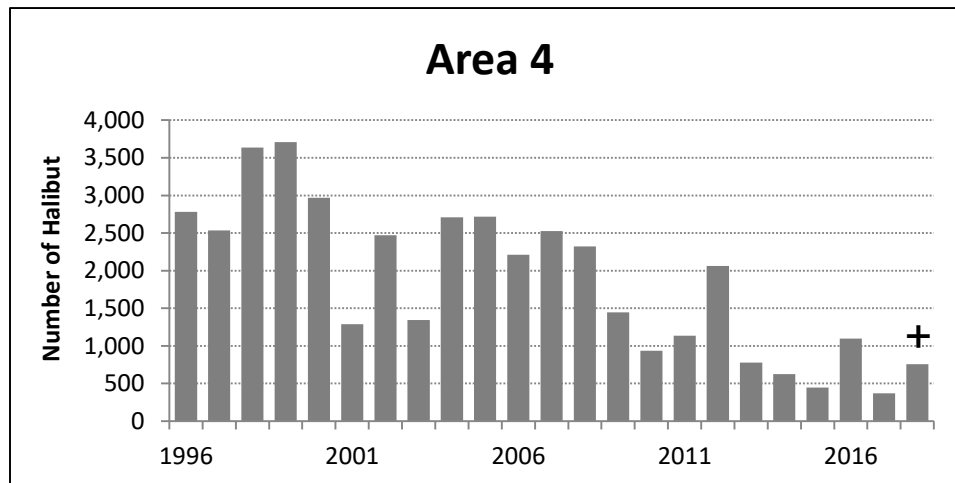
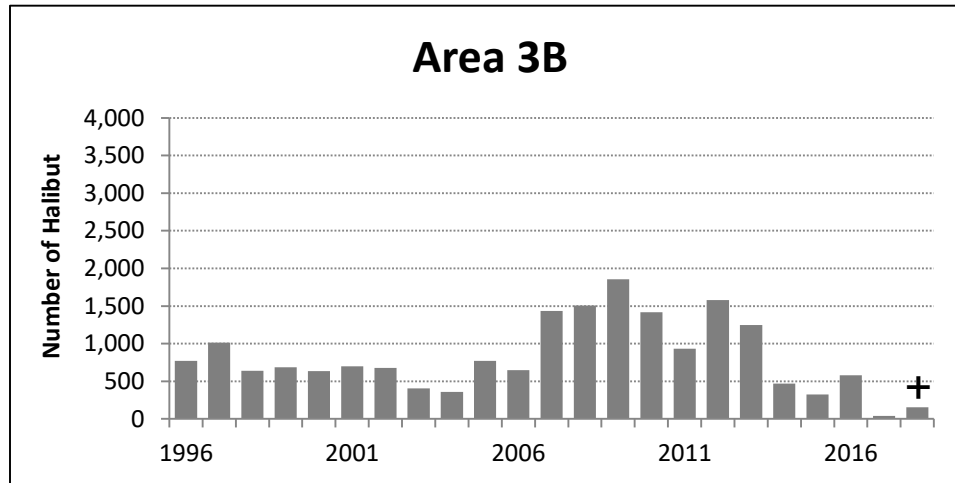
Area 3A – Charter and Unguided



* Projection based on data through July 31

+ Time series forecast

Areas 3B and 4 – Total Recreational Harvest



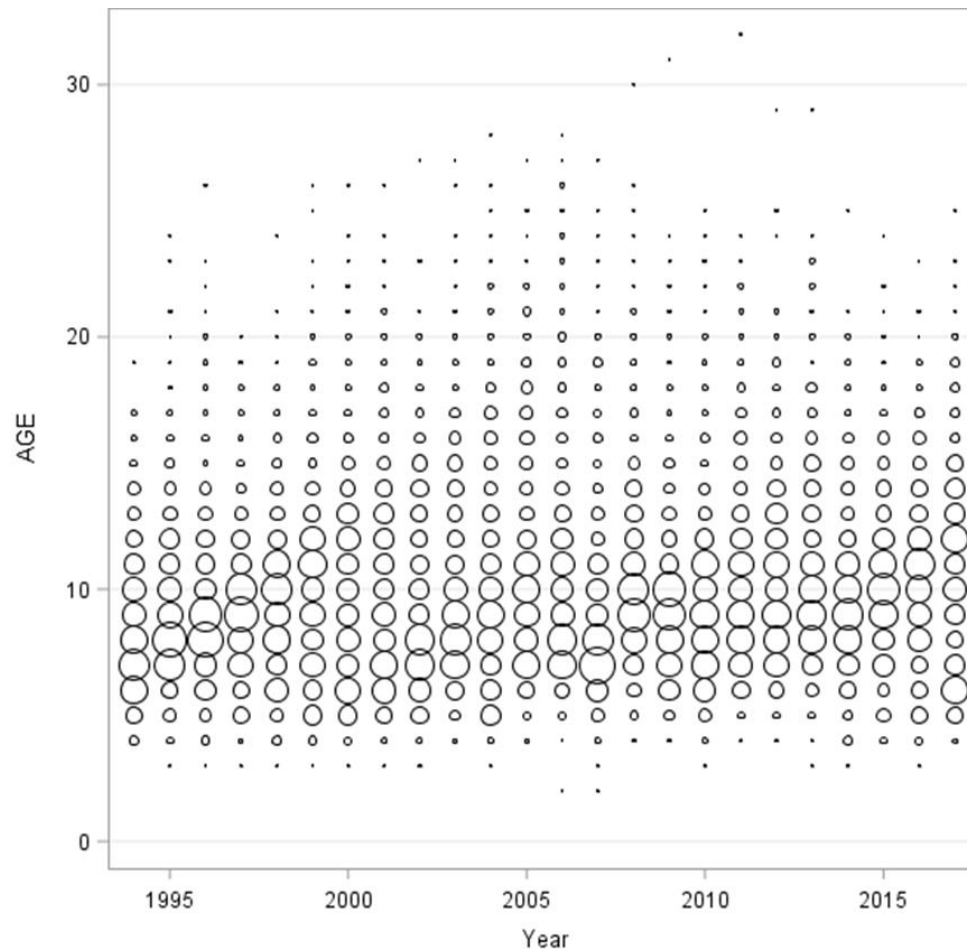
+ Time series forecast

Recreational Fishery Release Mortality (Mlb)

Area	Year	Yield	Total RelMort	% of Removals
2C	2014	1.954	0.062	3.1%
	2015	2.094	0.065	3.0%
	2016	2.035	0.071	3.4%
	2017	2.120	0.057	2.6%
	2018	<i>2.029</i>	<i>0.078</i>	3.7%
3A	2014	3.567	0.070	1.9%
	2015	3.682	0.073	1.9%
	2016	3.542	0.056	1.6%
	2017	3.606	0.045	1.2%
	2018	<i>3.588</i>	<i>0.044</i>	1.2%
3B	2014	0.007	0.000	0.0%
	2015	0.005	0.000	0.0%
	2016	0.008	0.000	0.0%
	2017	0.001	0.000	0.0%
	2018	<i>0.002</i>	<i>0.000</i>	0.0%
4	2014	0.009	0.000	0.0%
	2015	0.007	0.000	0.0%
	2016	0.015	0.000	0.0%
	2017	0.006	0.000	0.0%
	2018	<i>0.011</i>	<i>0.000</i>	0.0%

Red italics = preliminary estimates.

Age Composition (Area 3A)



Analysis of Charter Management Measures for 2019



General Methods

$$\text{Effort} \times \text{HPUE} = \text{Harvest}$$

$$\text{Harvest} \times \text{Average Weight} = \text{Yield}$$

$$\text{Yield} + \text{Release Mortality} = \text{Removals}$$

2C – Status Quo

- ▶ One fish bag limit, U38O80 reverse slot size limit

	2018 Prelim Estimates	2019 Forecast
Harvest (number of fish)	71,107	75,988
Average Weight (lbs)	9.39	10.06
Removals (Mlb)	0.729	0.833

Area 2C – Reverse Slot Limit

- ▶ Management measure selected by NPFMC
 - ▶ If the 2C charter allocation is 0.81Mlb, use status quo management measures
 - ▶ If the allocation is above or below 0.81Mlb, adjust the lower slot to keep the 2C charter sector within their allocation

No annual limit

Lower Limit (in)	Upper Length Limit (in)															
	50	52	54	56	58	60	62	64	66	68	70	72	74	76	78	80
35	1.410	1.316	1.246	1.167	1.111	1.059	0.986	0.916	0.877	0.845	0.813	0.792	0.763	0.746	0.744	0.731
36	1.440	1.349	1.280	1.203	1.147	1.096	1.024	0.956	0.917	0.885	0.853	0.833	0.804	0.787	0.785	0.772
37	1.456	1.366	1.298	1.222	1.167	1.117	1.046	0.977	0.939	0.908	0.876	0.856	0.828	0.811	0.809	0.796
38	1.482	1.394	1.328	1.254	1.200	1.150	1.080	1.013	0.975	0.944	0.913	0.893	0.865	0.848	0.846	0.822
39	1.500	1.413	1.348	1.275	1.222	1.172	1.103	1.037	0.999	0.969	0.938	0.918	0.890	0.874	0.872	0.859
40	1.512	1.427	1.363	1.291	1.238	1.190	1.121	1.056	1.019	0.989	0.958	0.938	0.911	0.894	0.892	0.880
41	1.529	1.446	1.384	1.312	1.261	1.213	1.145	1.081	1.044	1.014	0.984	0.964	0.937	0.921	0.919	0.906
42	1.537	1.455	1.394	1.324	1.273	1.226	1.159	1.095	1.059	1.029	0.999	0.980	0.953	0.936	0.935	0.922
43	1.547	1.467	1.406	1.337	1.287	1.240	1.174	1.111	1.075	1.046	1.016	0.997	0.970	0.954	0.952	0.940
44	1.563	1.485	1.426	1.358	1.309	1.263	1.198	1.135	1.100	1.071	1.041	1.022	0.996	0.980	0.978	0.966
45	1.582	1.506	1.448	1.381	1.333	1.288	1.223	1.162	1.127	1.098	1.069	1.050	1.024	1.008	1.006	0.994
46	1.592	1.517	1.460	1.394	1.346	1.302	1.238	1.178	1.143	1.115	1.086	1.067	1.041	1.026	1.024	1.012
47	1.608	1.535	1.479	1.414	1.367	1.324	1.261	1.201	1.167	1.139	1.110	1.092	1.066	1.051	1.049	1.037
48	1.616	1.544	1.489	1.426	1.380	1.336	1.274	1.215	1.181	1.154	1.125	1.107	1.081	1.066	1.064	1.052
49	1.636	1.566	1.512	1.450	1.405	1.362	1.301	1.243	1.209	1.182	1.154	1.136	1.111	1.096	1.094	1.082
50	1.646	1.578	1.526	1.464	1.420	1.378	1.318	1.260	1.227	1.200	1.173	1.155	1.130	1.115	1.113	1.101

2C – Charter Halibut Management

- ▶ The following options were not selected by the NPFMC:
 - ▶ Annual limits of 1 – 5 halibut
 - ▶ Trip limit of 1 trip per permit and per vessel per day
 - ▶ Closure of one day per week
 - ▶ A combination of an annual limit and a trip limit

3A – Status Quo

- ▶ Status quo
 - ▶ 2-fish bag limit/ one any size, one \leq 28 inches
 - ▶ Annual limit 4 fish
 - ▶ One trip per vessel per day and per CHP per day
 - ▶ Wednesdays closed all year, six Tuesdays closed

	2018 Prelim Estimate	2019 Forecast
Harvest (number of fish)	135,031	127,778
Average Weight (lbs)	13.79	14.14
Removals (Mlb)	1.867	1.834

Area 3A – Status Quo with Tuesday Closures June - August

- ▶ Management measure selected by NPFMC
 - ▶ Adjust the number of closed Tuesdays to keep the 3A charter sector within their allocation

Number of Closed Tuesdays	Beginning and Ending Dates	Percentage change in harvest relative to status quo	Projected Harvest (no. Fish)	Projected Removals (Mlb)
0		10.4%	141,083	2.023
1	Jul 30	8.8%	138,966	1.994
2	Jul 30 – Aug 6	7.2%	136,950	1.967
3	Jul 23 – Aug 6	5.8%	135,198	1.940
4	Jul 16 – Aug 6	4.1%	132,976	1.907
5	Jul 16 – Aug 13	2.7%	131,223	1.882
6 (status quo)	Jul 9 - Aug 13	0.0%	127,778	1.834
7	Jul 02 - Aug 13	-1.4%	126,004	1.808
8	Jul 02 - Aug 20	-2.5%	124,615	1.787
9	Jun 25 - Aug 20	-3.4%	123,371	1.770
10	Jun 18 - Aug 20	-4.6%	121,956	1.748
11	Jun 18 - Aug 27	-4.8%	121,673	1.744
12	Jun 11 - Aug 27	-5.7%	120,445	1.726
13	Jun 04 - Aug 27	-6.2%	119,814	1.718

3A Status Quo with Tuesday Closures and Range of Maximum Size on 2nd Fish

- ▶ Management measure selected by NPFMC
 - ▶ If the 3A charter allocation is greater than 2.023Mlb, adjust the size of the second fish up to a maximum of 30 inches

Projected Charter Removals (Mlb)

Size limit	Number of Tuesday Closures													
	0	1	2	3	4	5	6	7	8	9	10	11	12	13
26	1.956	1.929	1.903	1.877	1.845	1.820	1.773	1.749	1.730	1.712	1.693	1.689	1.672	1.663
27	1.983	1.955	1.928	1.902	1.869	1.845	1.797	1.772	1.753	1.735	1.715	1.712	1.694	1.685
28	2.023	1.994	1.967	1.940	1.907	1.882	1.834	1.808	1.788	1.771	1.750	1.746	1.729	1.719
29	2.049	2.019	1.992	1.965	1.932	1.906	1.857	1.831	1.811	1.793	1.772	1.768	1.750	1.741
30	2.088	2.059	2.031	2.003	1.969	1.943	1.893	1.867	1.846	1.828	1.807	1.803	1.784	1.775

3A – Charter Halibut Management

- ▶ The following options were not selected by the NPFMC:
 - ▶ Status quo with Tuesdays closed June – August and additional day of the week closures
 - ▶ Status quo with reverse slot limit on one fish

Acknowledgements

- ▶ Bob Powers – logbook data
 - ▶ Diana Tersteeg, Mike Jaenicke – Southeast data
 - ▶ Martin Schuster – Southcentral data
 - ▶ Mike Martz, Bill Romberg – SWHS
 - ▶ Steve MacLean – NPFMC staff
 - ▶ Charter Halibut Management Committee
 - ▶ Numerous technicians – halibut measurements and angler interviews
 - ▶ Cooperating anglers and charter operators
-
- ▶ Funding:
 - State of Alaska General Funds
 - DJ-WB Federal Aid in Fish Restoration
 - Fish & Game Funds



Photo: Crackerjack Charters

Extra slides



General information (2017)

► Licenses sold

Type	Number	Percent
Resident	162,513	35%
Nonresident	298,151	65%
Total	460,664	

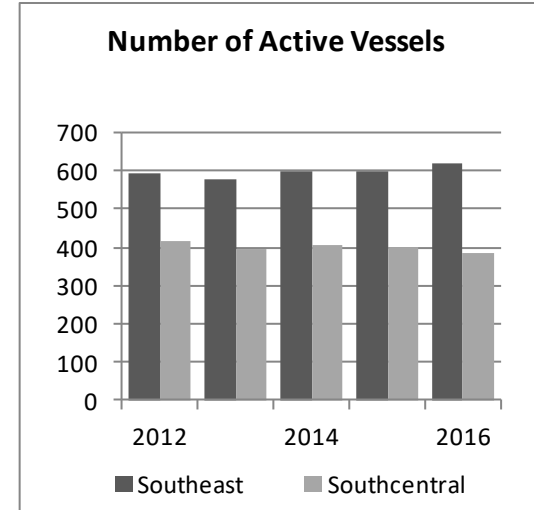
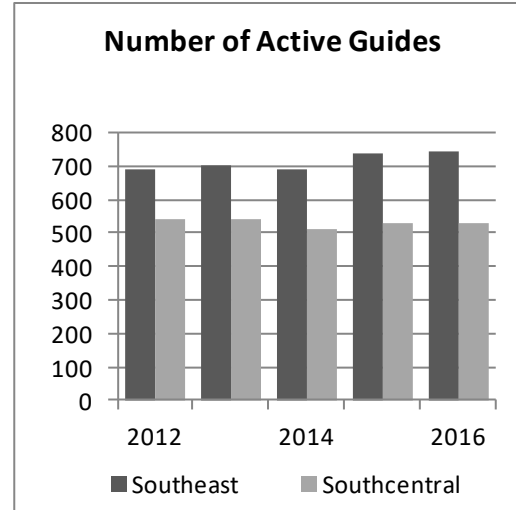
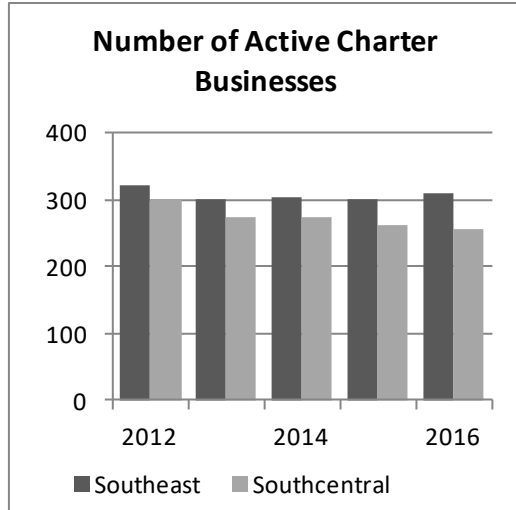
► Saltwater effort (angler-days for all finfish, SWHS)

Area	Angler-Days
2C	457,731
3A	433,191
3B,4	3,106
Statewide	894,028

Charter information (2016)

► Active Charter Businesses and Guides

Measure	Southeast	Southcentral	Total
Active Businesses	309	256	564
Active Guides	746	531	1,235
Active Vessels	617	384	1,000
Columns not additive due to activity in both regions.			



Management measures in 2C, 3A

Area	Year	Management measure	Mgmt Type	Allocation (Mlb)	Removals (Mlb)	Overage (Mlb)	Overage Percent
2C	2012	One fish, U45-O68 rev. slot	GHL	0.931	0.605	-0.326	-35%
	2013	One fish, U45-O68 rev. slot	GHL	0.788	0.762	-0.026	-3%
	2014	One fish, U44-O76 rev. slot	CSP	0.761	0.827	0.066	9%
	2015	One fish, U42-O80 rev slot	CSP	0.851	0.814	-0.037	-4%
	2016	One fish, U43-O80 rev slot	CSP	0.906	0.839	-0.067	-7%
	2017	One fish, U44-O80 rev slot	CSP	0.915	0.943	0.028	3%
	2018	One fish, U38-O80 rev slot	CSP	0.810	<i>0.729</i>	<i>-0.081</i>	<i>-10%</i>
3A	2012	Two fish any size	GHL	3.103	2.284	-0.819	-26%
	2013	Two fish any size	GHL	2.734	2.514	-0.220	-8%
	2014	Two fish, one $\leq 29"$, one trip/day with halibut harvest	CSP	1.782	2.068	0.286	16%
	2015	Two fish, one $\leq 29"$, Thursday closed Jun 15-Aug 31, annual limit 5 halibut, one trip/day with halibut harvest	CSP	1.890	2.094	0.204	11%
	2016	Two fish, one $\leq 28"$, Wednesday closed all year, annual limit 4 halibut, one trip/day with halibut harvest	CSP	1.814	2.021	0.207	11%
	2017	Two fish, one $\leq 28"$, Wednesday closed all year, three Tuesdays closed, annual limit 4 halibut, one trip/day with halibut harvest	CSP	1.890	2.089	0.199	11%
	2018	Two fish, one $\leq 28"$, Wednesday closed all year, six Tuesdays closed, annual limit 4 halibut, one trip/day with halibut harvest	CSP	1.790	<i>1.867</i>	<i>0.077</i>	<i>4%</i>

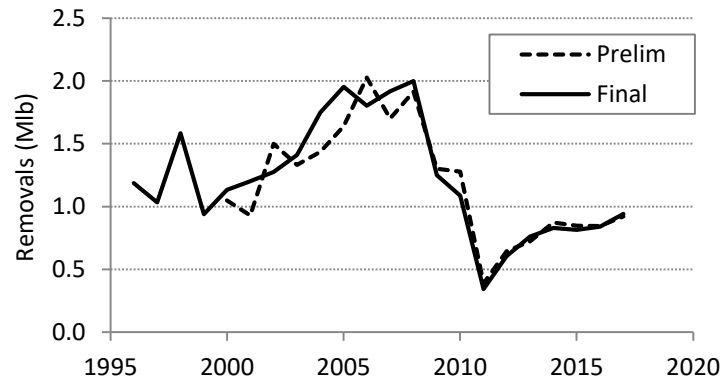
Red italics are preliminary estimates

Compliance with annual limits in Area 3A

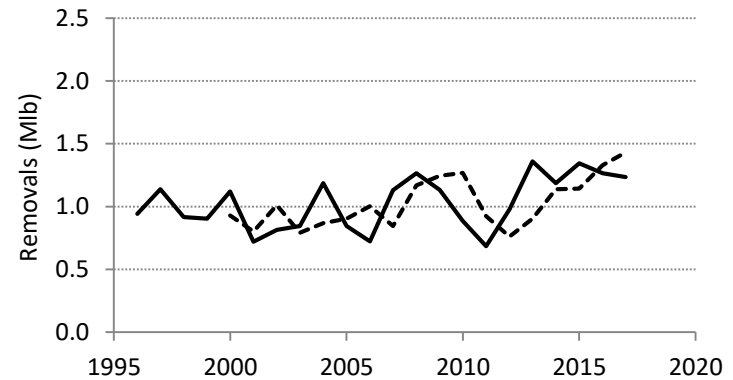
Year	Annual Limit	Licensed Anglers that Kept Halibut	Total Halibut Kept	Anglers that Exceeded Annual Limit	Percent of Anglers that Exceeded Annual Limit	"Excess" Halibut Harvested	Excess Halibut Portion of Total Harvest
2015	5	68,775	154,428	659	1.0%	875	0.6%
2016	4	71,192	148,826	352	0.5%	516	0.3%
2017	4	67,021	134,308	165	0.2%	228	0.2%

Compare preliminary and final estimates of sport removals

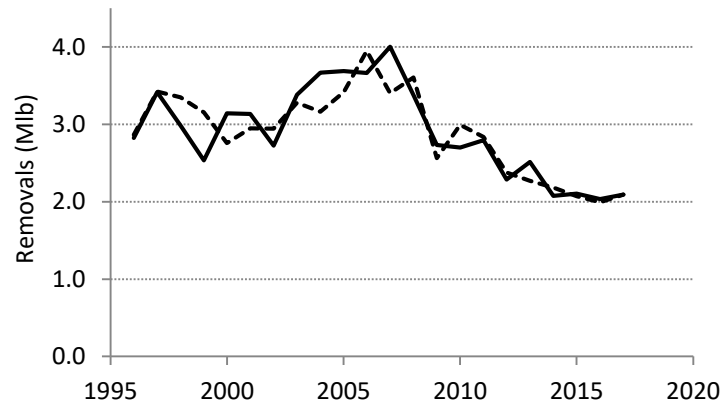
Area 2C - Charter



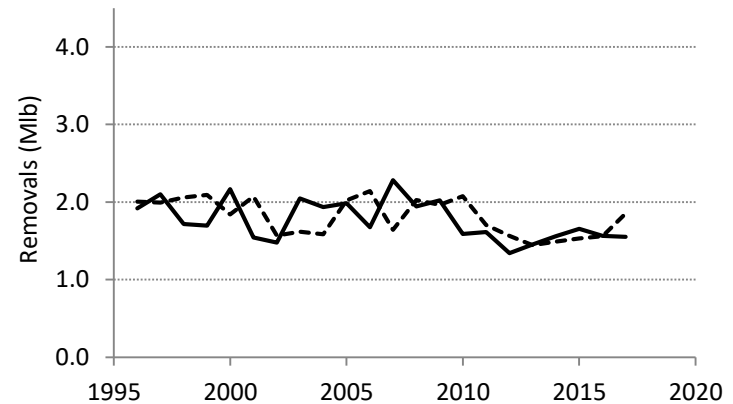
Area 2C - Unguided



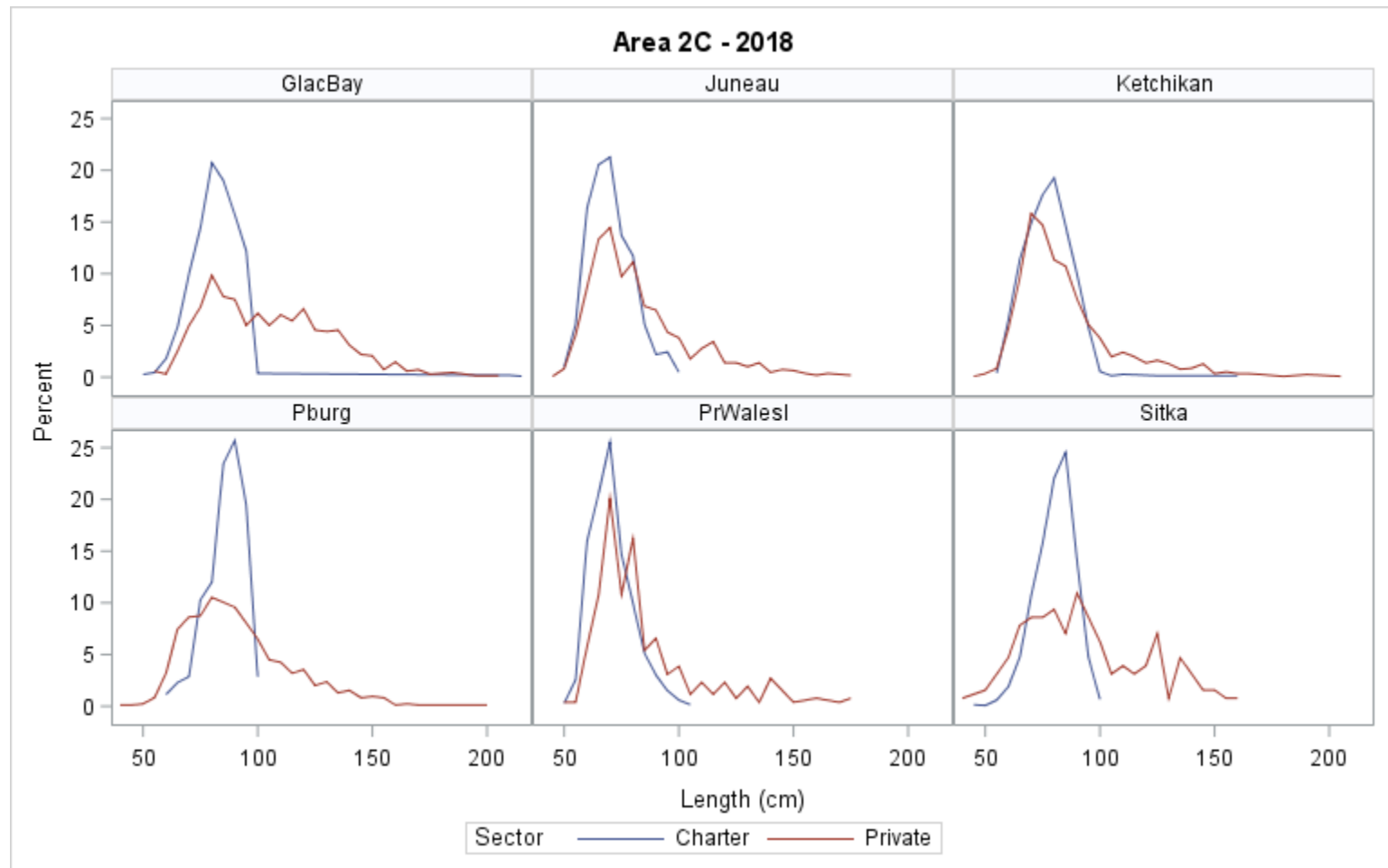
Area 3A - Charter



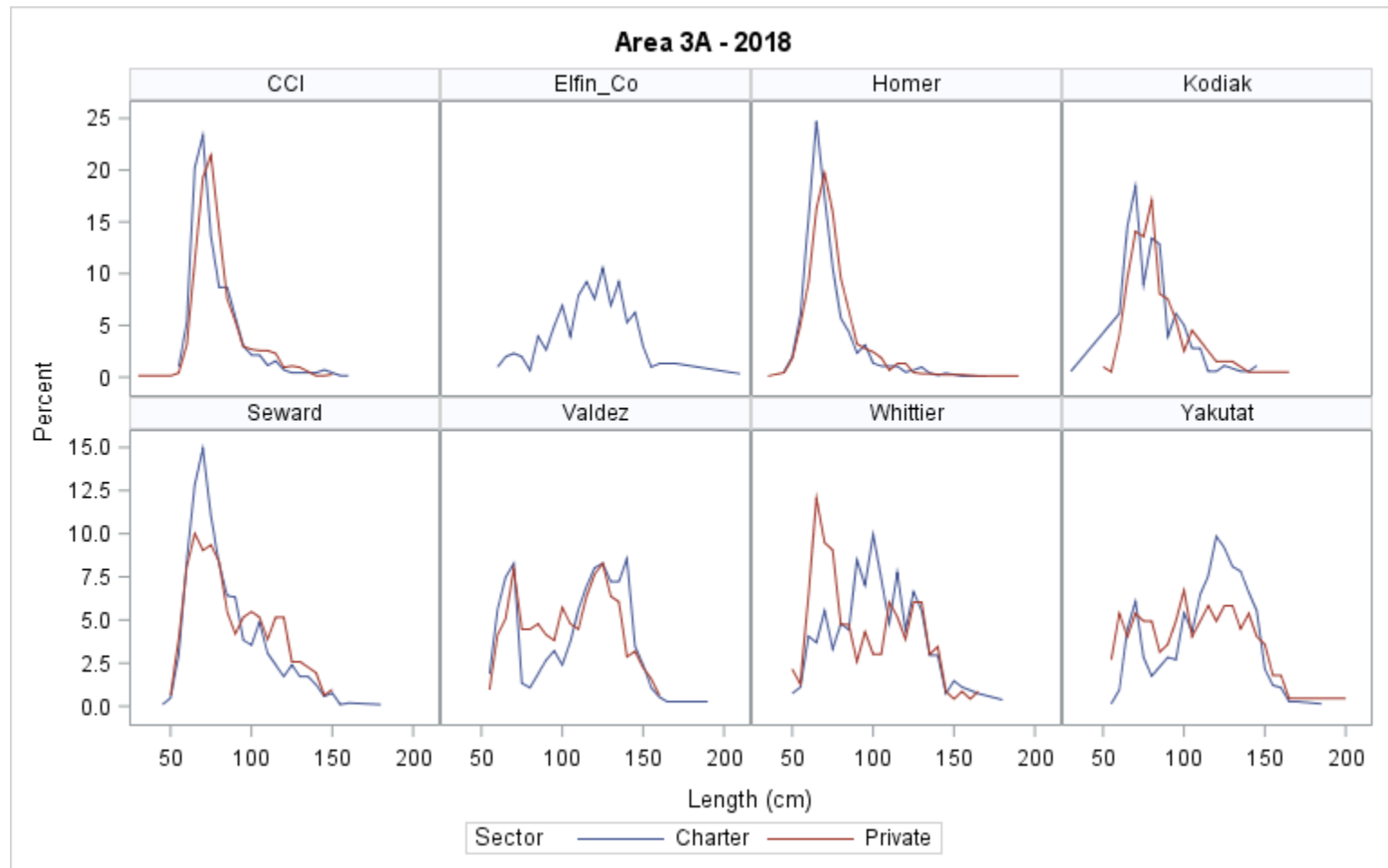
Area 3A - Unguided



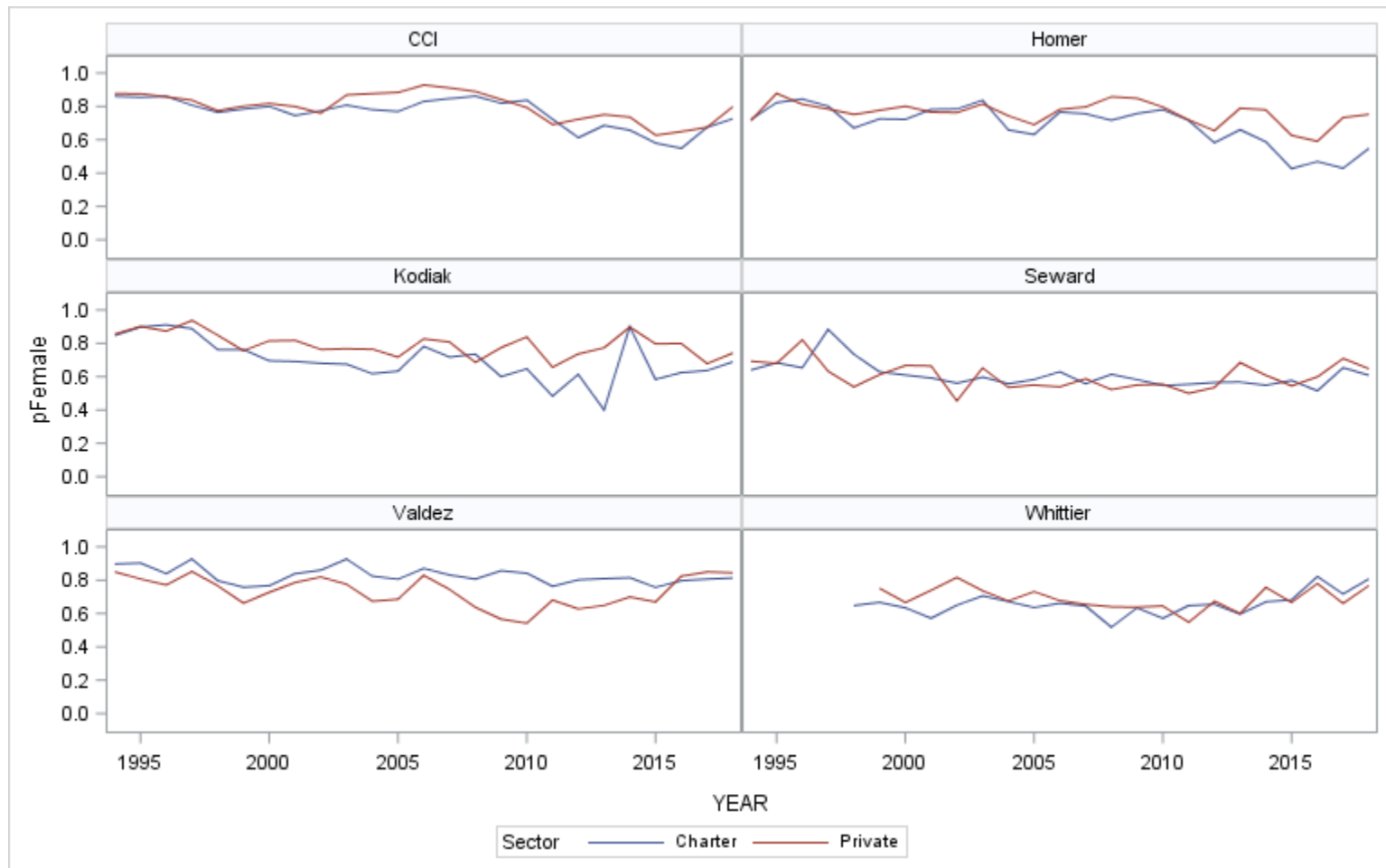
Length composition



Length composition



Sex composition (Area 3A only)

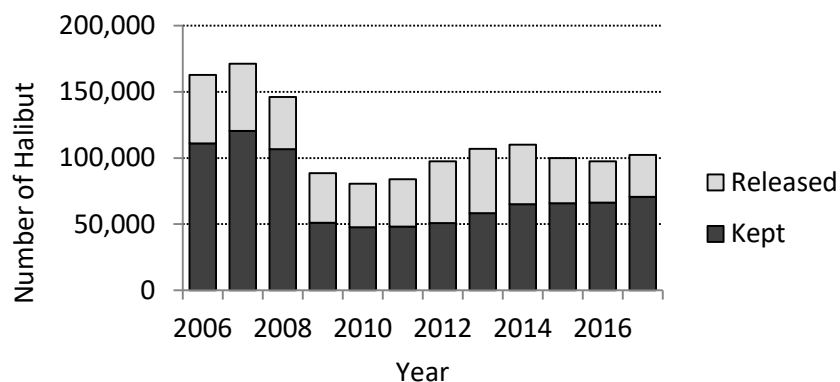


Estimation of release mortality

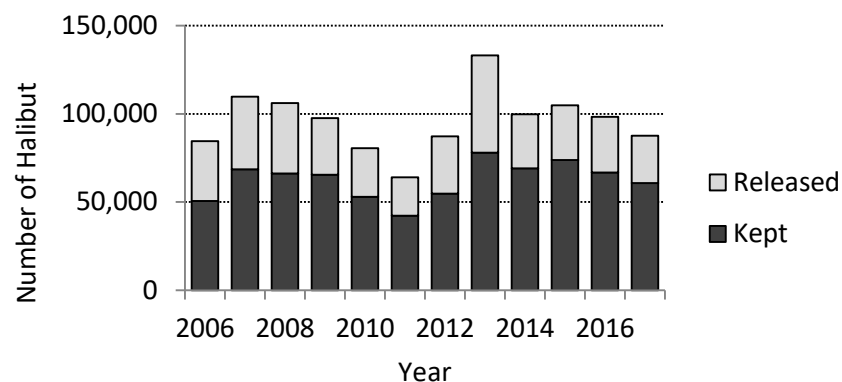
- ▶ Numbers of released fish from logbook (charter) or SWHS (unguided fishery)
- ▶ Assumed mortality rates are weighted average of assumed rates by hook type (C = 3.5%, Other = 10%)
 - ▶ Charter – 6% in 2C, 5% in 3A
 - ▶ Unguided – 7% in 2C, 6% in 3A
- ▶ Average weight of released fish estimated through modeling of length composition

Estimation of release mortality

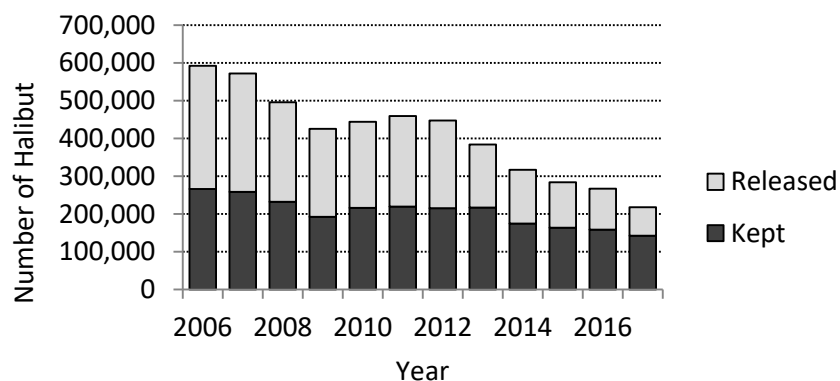
Area 2C - Charter



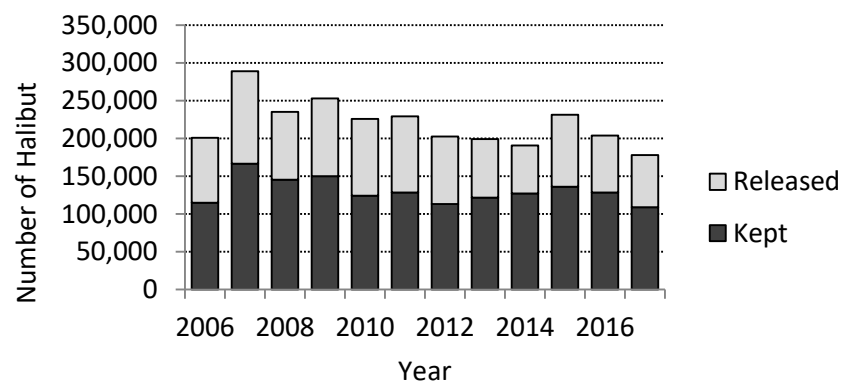
Area 2C - Unguided



Area 3A - Charter



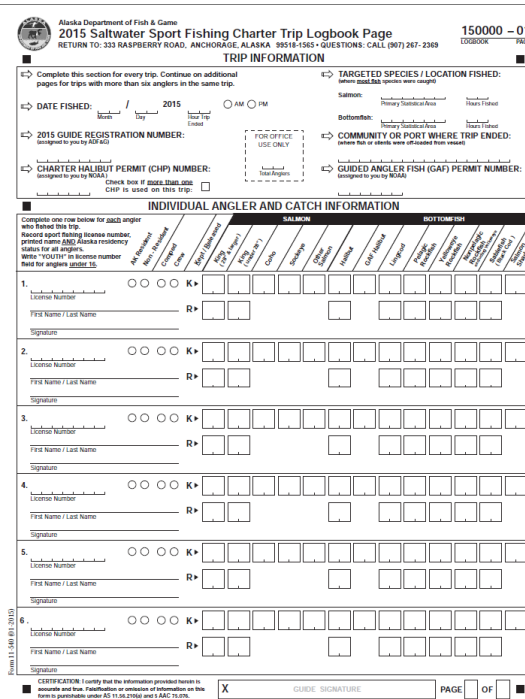
Area 3A - Unguided



Estimation of release mortality in recreational fishery

$$RM_{lb} = N_{released} \times RMR \times \hat{w}_{lb}$$



$$RM_{lb} = N_{released} \times RMR \times \hat{w}_{lb}$$


ADF&G
saltwater
logbook

Estimation of release mortality in recreational fishery

$$RM_{lb} = N_{released} \times RMR \times \hat{w}_{lb}$$

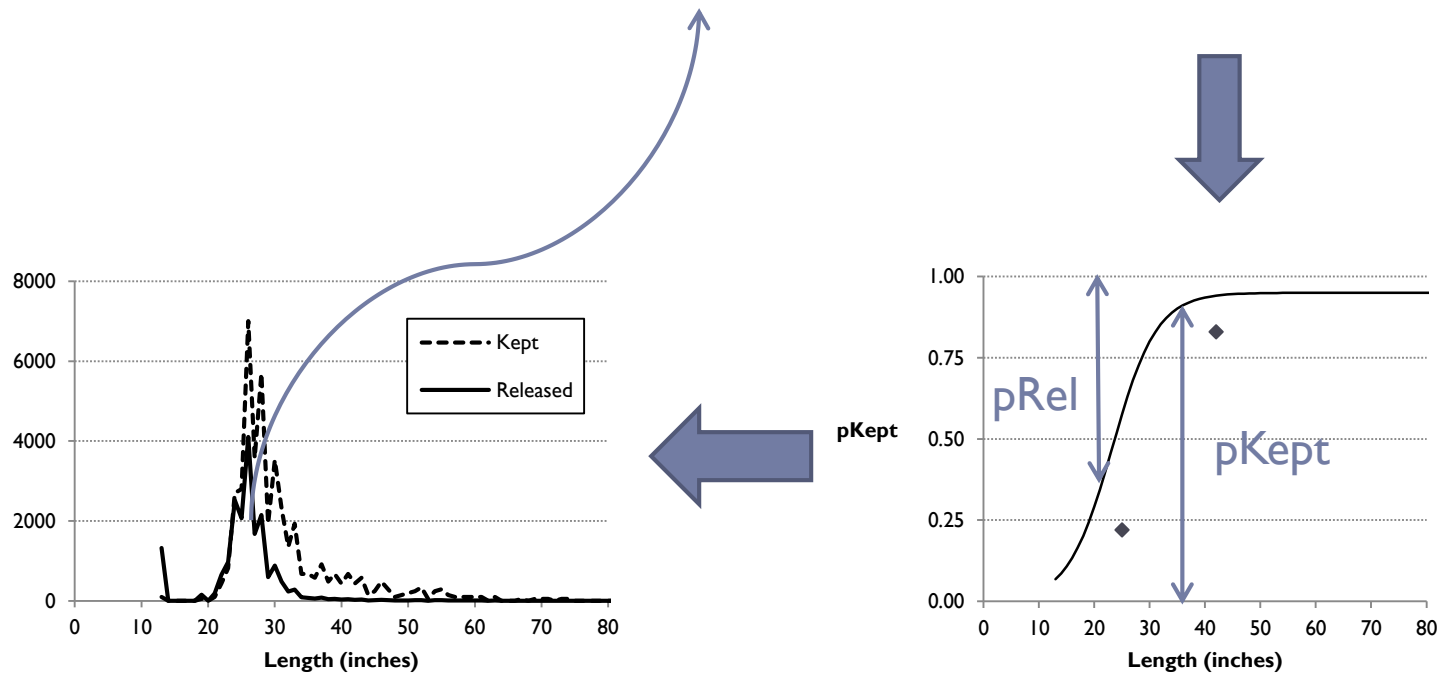


Weighted average 5-7%

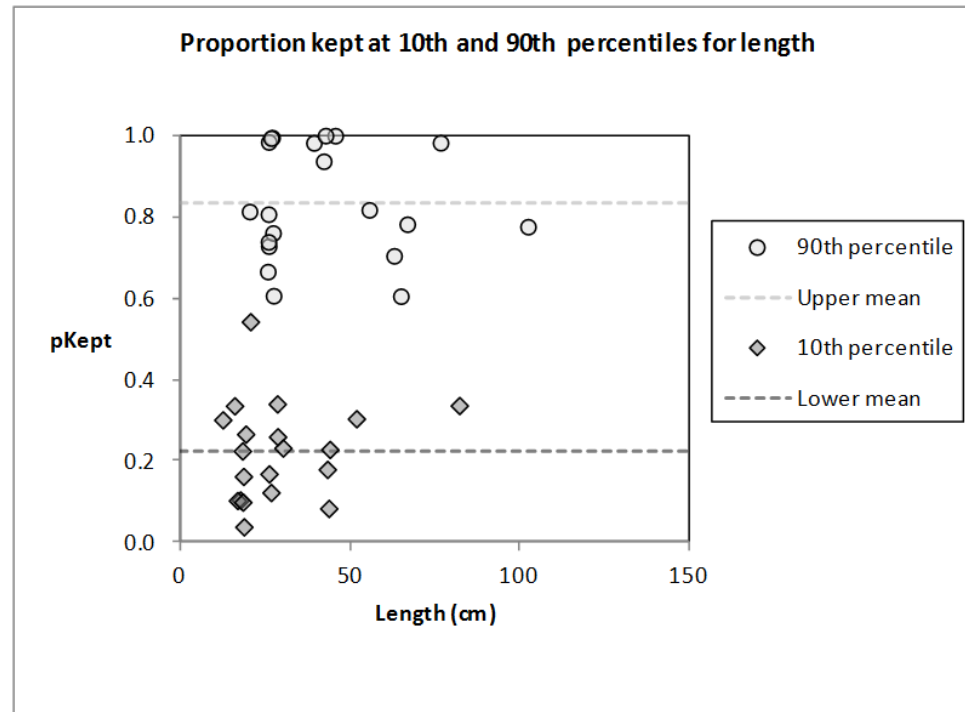
{ Assume 3.5% for circle hooks
Assume 10% for other hooks

Estimation of release mortality in recreational fishery

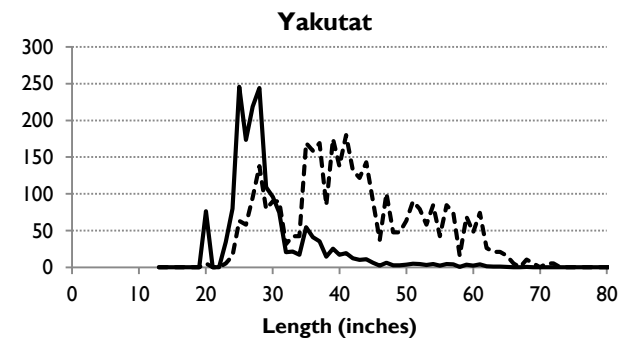
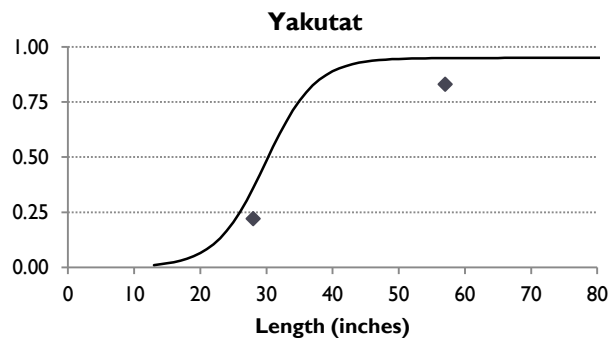
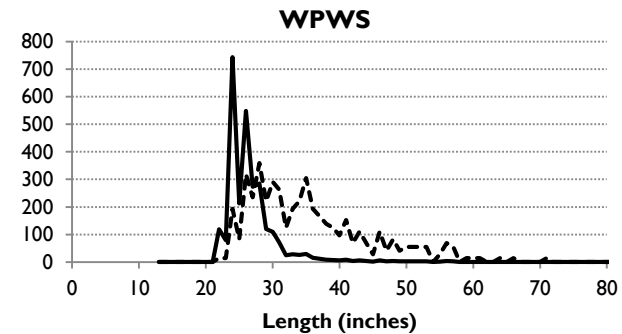
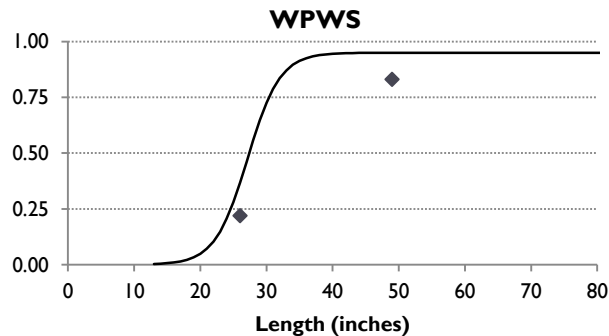
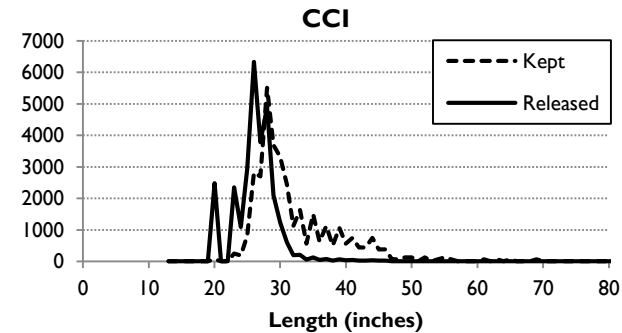
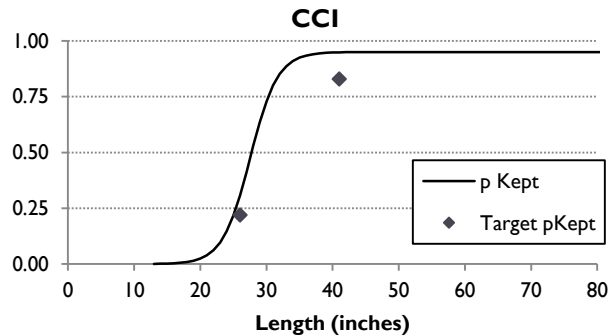
$$RM_{lb} = N_{released} \times RMR \times \hat{w}_{lb}$$



Discard mortality – estimation of mean weight



Estimation of release mortality in sport fishery

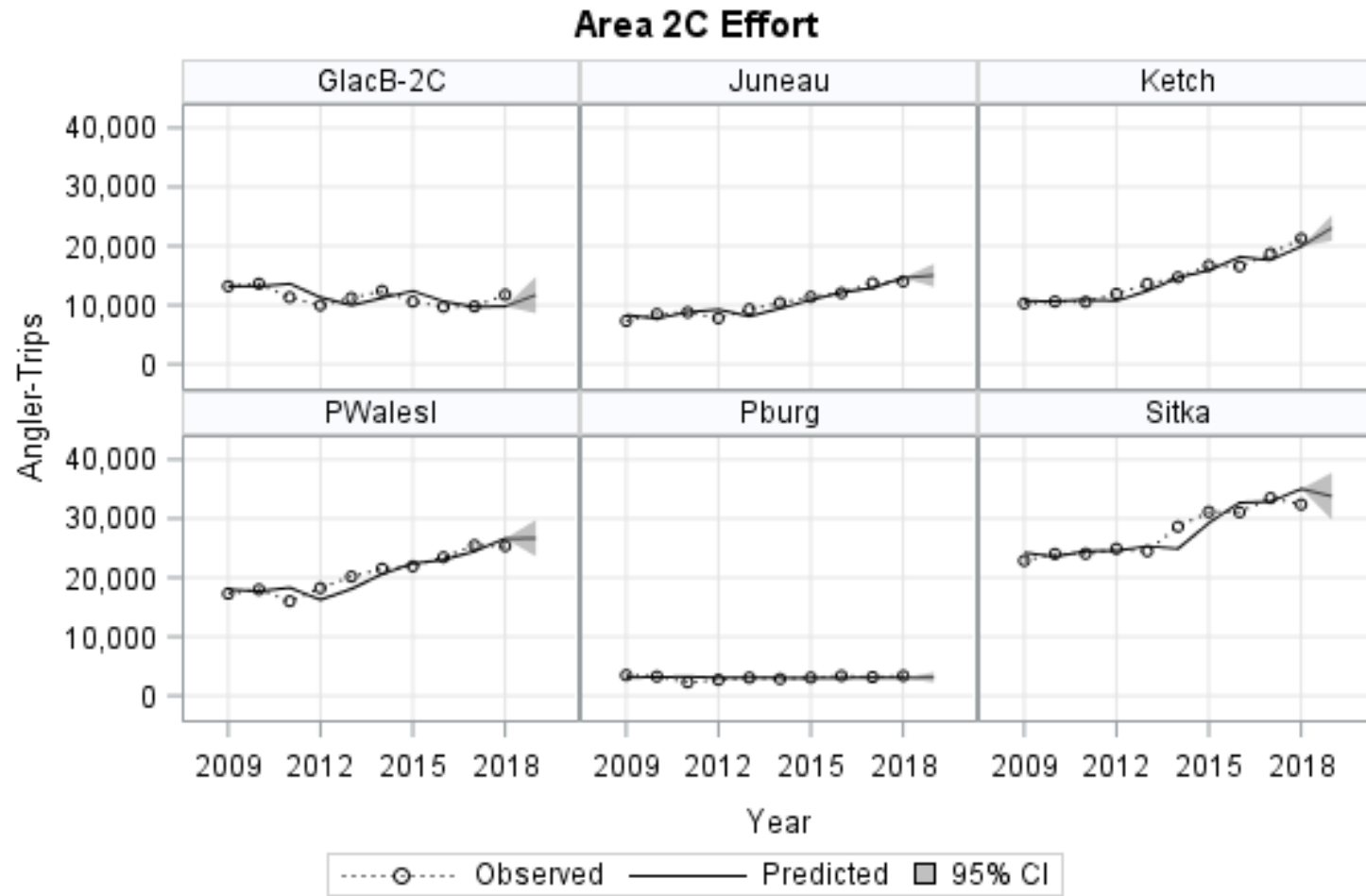


Analysis of management measures for 2019

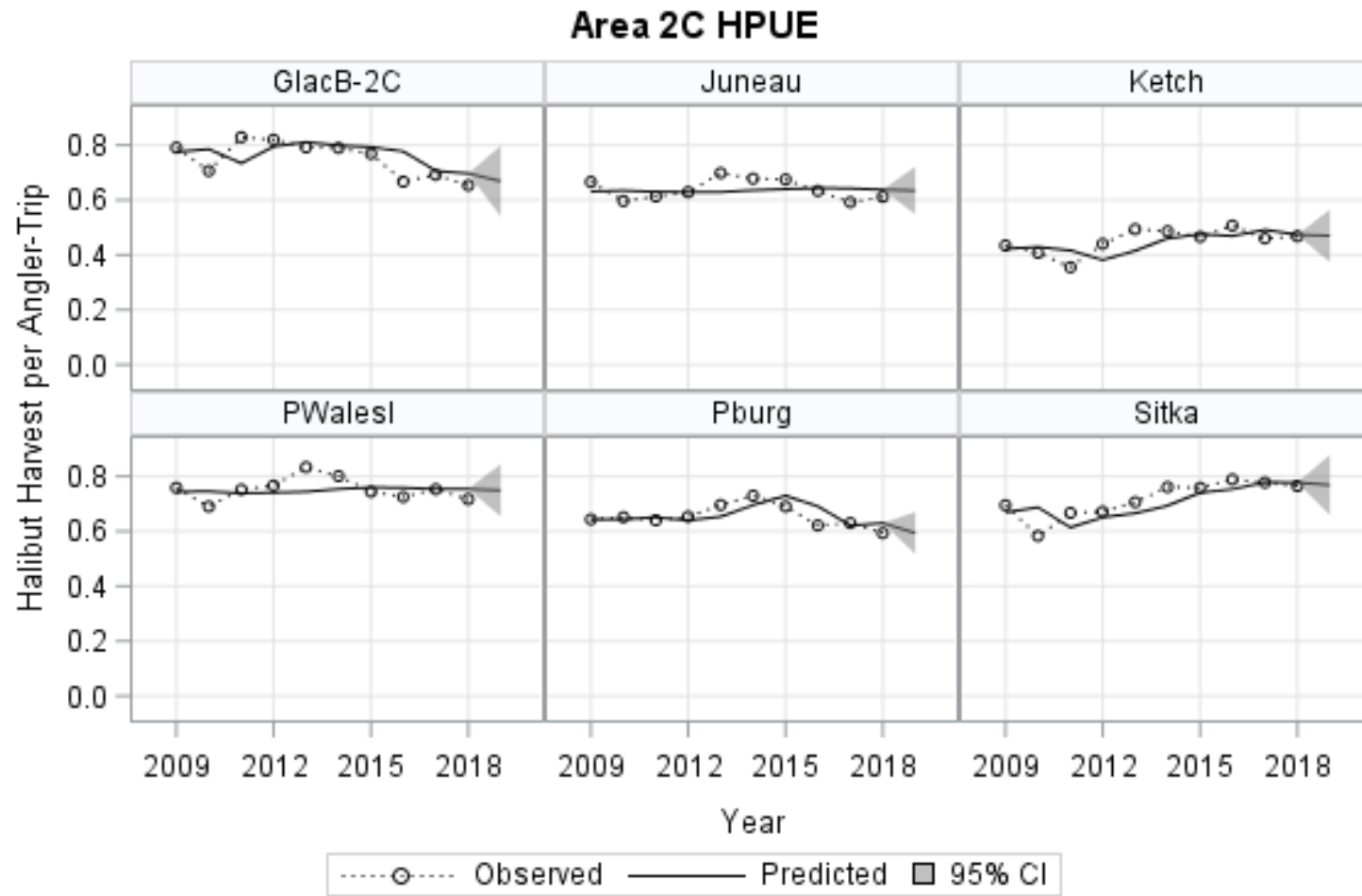


Photo: Kenai Riverfront Lodge

Area 2C Effort Forecasts



Area 2C HPUE Forecasts



2C – Charter Halibut Management

- ▶ The following options were not selected by the NPFMC:
 - ▶ Reverse slot limit with annual limits of 1 – 5 halibut
 - ▶ Little harvest reduction at 5 & 4 fish limits
 - ▶ 6 – 50% harvest reductions at 3 – 1 fish annual limits
 - ▶ Reverse slot limit with trip limits of 1 trip per permit per vessel per day
 - ▶ 2.1% harvest reduction (maximum)
 - ▶ Reverse slot limit with a closure of one day per week
 - ▶ 13-15% harvest reduction (maximum)
 - ▶ Reverse slot limit with a combination of an annual limit and a trip limit
 - ▶ Effect of annual limit plus 2.1% harvest reduction
 - ▶ Less effect of trip limit at lower annual limits

Area 2C – effect of annual limits

Table 7; Page 23

Table 7, Page 2

Annual Limit	Subarea						Area 2C
	Ketch	PWI	Pburg	Sitka	Jun	GlacB	
Estimated percent of anglers affected by the annual limit:							
1	25.1%	73.4%	45.6%	72.7%	39.8%	50.1%	57.3%
2	10.0%	47.8%	21.7%	42.8%	25.0%	29.3%	34.0%
3	2.4%	11.3%	8.2%	9.8%	12.3%	15.1%	9.6%
4	0.7%	2.1%	1.6%	1.7%	4.6%	4.4%	2.3%
5	0.2%	0.7%	0.2%	0.4%	1.2%	0.7%	0.5%
Estimated percent change in harvest relative to no annual limit:							
1	-27.8%	-57.6%	-43.6%	-56.1%	-45.6%	-50.0%	-50.2%
2	-9.7%	-26.4%	-17.9%	-24.2%	-24.0%	-25.0%	-22.6%
3	-2.4%	-6.1%	-5.6%	-5.4%	-10.4%	-10.3%	-6.3%
4	-0.7%	-1.4%	-1.0%	-1.1%	-3.7%	-2.8%	-1.6%
5	-0.2%	-0.5%	-0.1%	-0.3%	-1.1%	-0.6%	-0.5%
Projected harvest (number of halibut):							
1	7,827	8,484	1,038	11,393	5,182	3,915	37,840
2	9,790	14,708	1,512	19,674	7,244	5,876	58,804
3	10,575	18,760	1,737	24,552	8,540	7,022	71,187
4	10,766	19,717	1,823	25,672	9,179	7,611	74,769
5	10,822	19,894	1,839	25,871	9,420	7,785	75,631
No Limit	10,839	19,988	1,841	25,961	9,529	7,830	75,988

Area 2C – trip limit of one trip per vessel per permit per day

Table 9; Page 27

Year	Businesses			Vessels			Bottomfish Trips		
	Number of businesses that reported more than one bottomfish trip per vessel per day	Total businesses that reported bottomfish effort	Percent of businesses that reported more than one bottomfish trip per day	Number of vessels that reported more than one bottomfish trip per day	Total number of vessels that reported bottomfish effort	Percent of vessels that reported more than one bottomfish trip per day	Bottomfish trips in excess of one trip per vessel per day (2nd, 3rd, or 4th trip)	Total number of bottomfish trips	Percent of bottomfish trips in excess of one trip per day
2007	126	404	31.2%	232	727	31.9%	903	27,456	3.3%
2008	114	404	28.2%	215	719	29.9%	823	26,221	3.1%
2009	109	366	29.8%	184	636	28.9%	623	19,333	3.2%
2010	75	349	21.5%	133	604	22.0%	613	19,985	3.1%
2011	84	288	29.2%	149	542	27.5%	1,311	19,170	6.8%
2012	82	272	30.1%	157	527	29.8%	1,131	19,853	5.7%
2013	78	259	30.1%	161	517	31.1%	1,318	21,074	6.3%
2014	81	256	31.6%	164	540	30.4%	1,557	23,173	6.7%
2015	80	256	31.3%	179	545	32.8%	1,218	23,892	5.1%
2016	99	264	37.5%	200	557	35.9%	948	24,083	3.9%
2017	97	268	36.2%	203	570	35.6%	1,192	26,093	4.6%

Area 2C – trip limit of one trip per vessel per permit per day

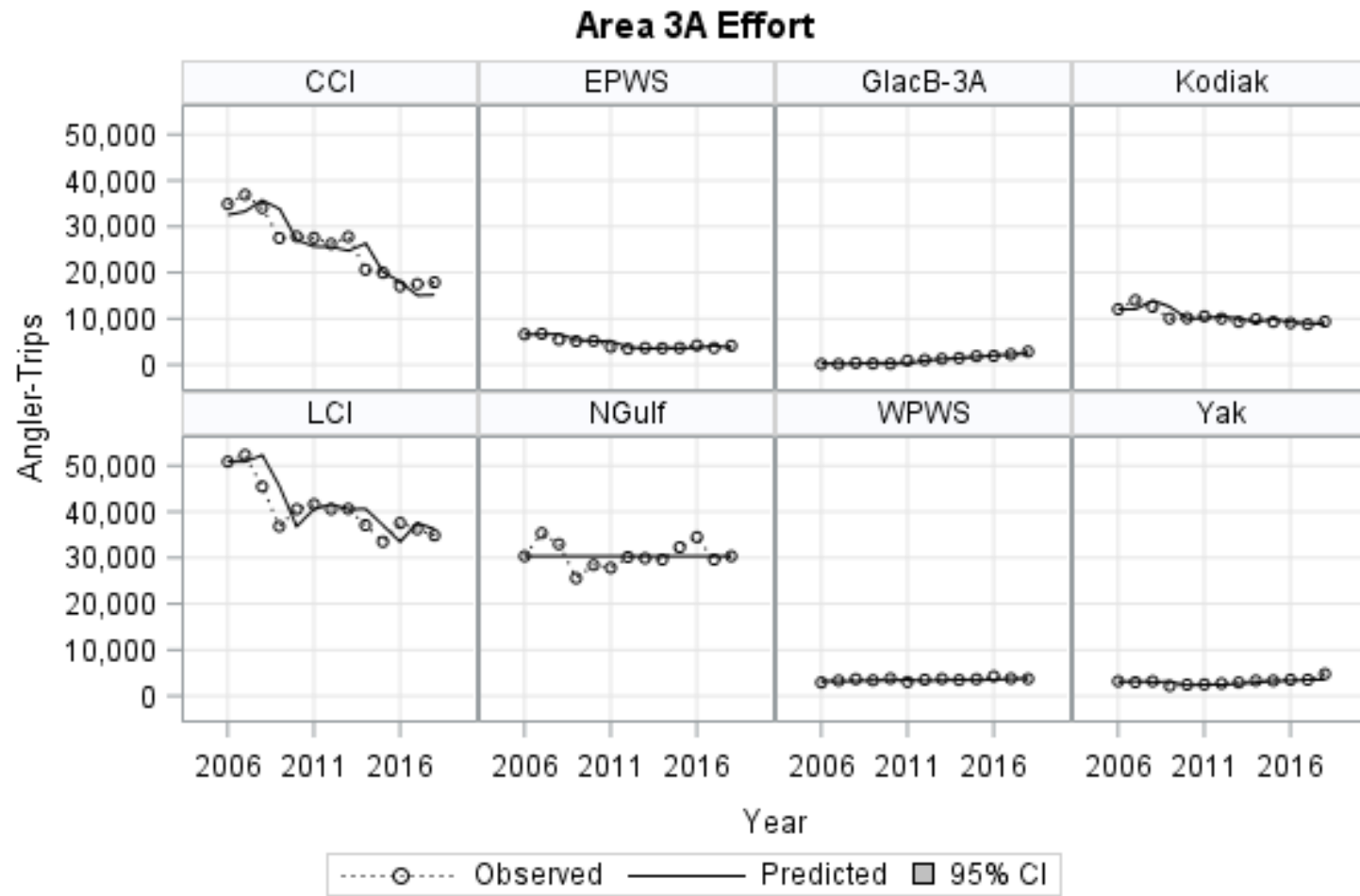
Year	Subarea							Area 2C	Table 10; Page 28
		Ketch	PWI	Pburg	Sitka	Jun	GlacB		
2007	First	11,550	39,994	5,862	33,775	9,124	16,222	116,527	
	After First	169	2,050	50	281	201	1,029	3,780	
	% After First	1.4%	4.9%	0.8%	0.8%	2.2%	6.0%	3.1%	
2008	First	8,486	36,070	5,406	29,267	7,900	16,421	103,550	
	After First	109	1,977	46	187	104	595	3,018	
	% After First	1.3%	5.2%	0.8%	0.6%	1.3%	3.5%	2.8%	
2009	First	4,419	12,622	2,225	15,800	4,659	10,116	49,841	
	After First	52	475	21	95	214	317	1,174	
	% After First	1.2%	3.6%	0.9%	0.6%	4.4%	3.0%	2.3%	
2010	First	4,274	11,974	2,128	13,983	4,807	9,403	46,569	
	After First	48	429	10	27	244	209	967	
	% After First	1.1%	3.5%	0.5%	0.2%	4.8%	2.2%	2.0%	
2011	First	3,668	11,677	1,436	15,917	5,019	9,151	46,868	
	After First	78	368	8	83	352	214	1,103	
	% After First	2.1%	3.1%	0.6%	0.5%	6.6%	2.3%	2.3%	
2012	First	5,124	13,425	1,736	16,642	4,788	7,964	49,679	
	After First	110	560	12	69	115	211	1,077	
	% After First	2.1%	4.0%	0.7%	0.4%	2.3%	2.6%	2.1%	
2013	First	6,521	16,028	2,104	17,178	6,267	8,767	56,865	
	After First	190	782	3	87	220	113	1,395	
	% After First	2.8%	4.7%	0.1%	0.5%	3.4%	1.3%	2.4%	
2014	First	6,914	16,397	2,063	21,705	6,769	9,613	63,461	
	After First	224	817	8	93	265	168	1,575	
	% After First	3.1%	4.7%	0.4%	0.4%	3.8%	1.7%	2.4%	
2015	First	7,451	15,957	2,105	23,514	7,389	7,914	64,330	
	After First	311	365	16	97	298	239	1,326	
	% After First	4.0%	2.2%	0.8%	0.4%	3.9%	2.9%	2.0%	
2016	First	8,147	16,620	2,072	24,405	7,363	6,190	64,797	
	After First	270	379	23	123	279	279	1,353	
	% After First	3.2%	2.2%	1.1%	0.5%	3.7%	4.3%	2.0%	
2017	First	8,220	18,684	1,955	25,880	7,769	6,520	69,028	
	After First	378	488	20	138	354	249	1,627	
	% After First	4.4%	2.5%	1.0%	0.5%	4.4%	3.7%	2.3%	

Area 2C – closure of one day per week

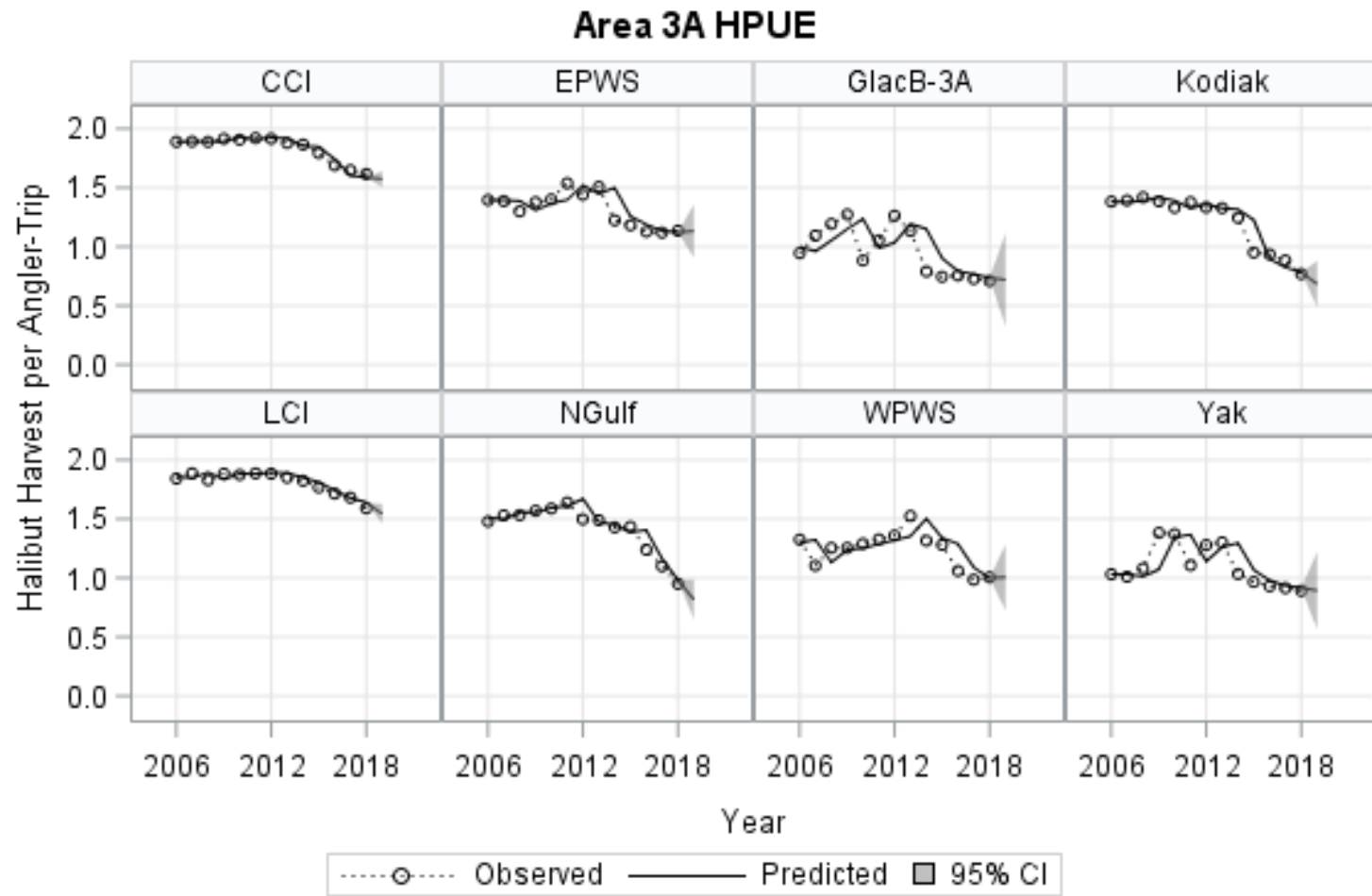
Table 12; Page 30

Annual Limit	Subarea						Area 2C
	Ketch	PWI	Pburg	Sitka	Jun	GlacB	
Estimated percent change in harvest relative to no closed days:							
Sunday	-12.6%	-14.1%	-12.2%	-13.6%	-15.0%	-7.7%	-13.1%
Monday	-15.4%	-14.9%	-15.8%	-14.8%	-14.0%	-14.3%	-14.8%
Tuesday	-14.5%	-14.3%	-14.0%	-14.5%	-14.5%	-19.2%	-14.9%
Wednesday	-13.8%	-14.3%	-15.0%	-14.3%	-14.7%	-19.3%	-14.8%
Thursday	-15.1%	-14.8%	-16.7%	-14.9%	-14.3%	-14.5%	-14.8%
Friday	-15.6%	-14.4%	-15.9%	-14.6%	-13.5%	-14.0%	-14.5%
Saturday	-13.1%	-13.2%	-10.5%	-13.2%	-13.9%	-11.0%	-13.0%
Projected harvest (number of halibut):							
Sunday	9,477	17,162	1,616	22,434	8,096	7,230	66,016
Monday	9,173	17,014	1,551	22,128	8,194	6,712	64,773
Tuesday	9,267	17,135	1,583	22,188	8,147	6,329	64,650
Wednesday	9,348	17,130	1,565	22,236	8,132	6,317	64,729
Thursday	9,198	17,032	1,534	22,086	8,164	6,696	64,710
Friday	9,147	17,111	1,548	22,163	8,239	6,731	64,938
Saturday	9,423	17,344	1,649	22,530	8,202	6,965	66,113

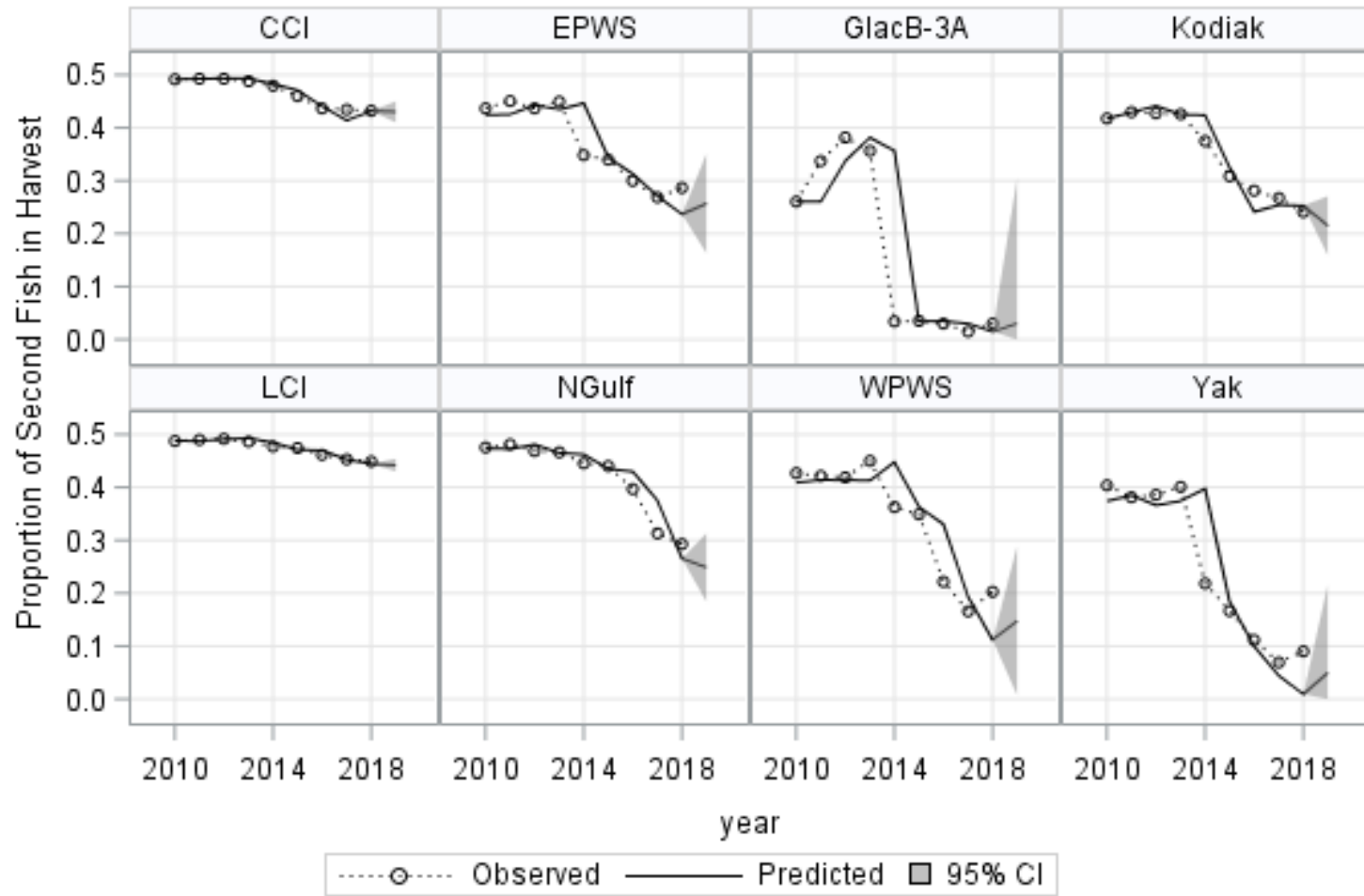
Area 3A effort



Area 3A HPUE



Area 3A – Proportions of second fish



3A – Charter Halibut Management

- ▶ The following options were not selected by the NPFMC:
 - ▶ Status quo with Tuesdays closed June – August and additional day of the week closures
 - ▶ Overall effect is 0.5 – 2.0% per closed day (maximum)
 - ▶ Status quo with reverse slot limit on one fish
 - ▶ Low harvest scenario: 127,778 fish; 1.364 – 1.879 Mlb
 - ▶ High harvest scenario: 176,891 fish; 1.858 – 2.418 Mlb

Area 3A – Additional closed days June - August

- Assumes all Tuesdays (13 total) are closed June - August

Table 16; Page 37

Number of Closed Days	Sunday		Monday		Thursday		Friday		Saturday	
	Proportional Reduction in Harvest	Projected Removals (Mlb)	Proportional Reduction in Harvest	Projected Removals (Mlb)	Proportional Reduction in Harvest	Projected Removals (Mlb)	Proportional Reduction in Harvest	Projected Removals (Mlb)	Proportional Reduction in Harvest	Projected Removals (Mlb)
0	0.0%	1.718	0.0%	1.718	0.0%	1.718	0.0%	1.718	0.0%	1.718
1	-1.8%	1.689	-1.9%	1.687	-1.9%	1.687	-1.9%	1.688	-1.9%	1.688
2	-3.2%	1.664	-3.5%	1.659	-3.7%	1.656	-3.6%	1.660	-3.6%	1.659
3	-4.9%	1.637	-4.8%	1.636	-5.0%	1.634	-5.4%	1.627	-5.5%	1.627
4	-6.8%	1.606	-6.9%	1.601	-7.0%	1.600	-7.3%	1.595	-7.4%	1.593
5	-7.1%	1.597	-8.5%	1.574	-8.6%	1.574	-8.7%	1.572	-8.7%	1.572
6	-8.6%	1.571	-10.1%	1.546	-10.3%	1.545	-10.4%	1.543	-10.4%	1.542
7	-10.4%	1.540	-11.8%	1.516	-11.2%	1.530	-11.6%	1.525	-12.0%	1.515
8	-11.2%	1.527	-12.3%	1.509	-12.6%	1.507	-12.8%	1.503	-13.1%	1.497
9	-12.1%	1.509	-13.3%	1.492	-14.0%	1.481	-14.1%	1.481	-14.4%	1.475
10	-13.4%	1.487	-14.5%	1.471	-15.4%	1.458	-15.3%	1.461	-15.3%	1.458
11	-14.2%	1.472	-15.1%	1.460	-16.0%	1.449	-15.9%	1.450	-16.3%	1.441
12	-15.1%	1.456	-16.1%	1.442	-16.9%	1.433	-16.9%	1.434	-17.4%	1.423
13	-15.9%	1.444	-16.7%	1.433	-17.5%	1.423	-17.5%	1.424	-18.0%	1.410

Area 3A – Status quo + reverse slot limit

- ▶ Equivalent to different max size limits on both fish, but opportunity to harvest exceptional fish
- ▶ Size limit on first fish could increase retention of second fish
- ▶ Two harvest scenarios bracket likely range of harvest
 - ▶ Low harvest scenario – same HPUE as status quo, assumes no increase in harvest or size of second fish
 - ▶ High harvest scenario – assumes HPUE and weights of U28 fish are similar to 2013.

Area 3A – Status quo + reverse slot limit

- ▶ Low harvest scenario: 127,778 fish
 - ▶ No slot limit needed under reference level catch allocation
 - ▶ Harvest ranges from 1.364 – 1.879 Mlb
- ▶ High harvest scenario: 176,891 fish
 - ▶ Workable size limits from U38O50 to U50O64
 - ▶ Harvest ranges from 1.858 – 2.418 Mlb