

C1: ANALYSIS OF MANAGEMENT MEASURES FOR THE AREA 2C AND 3A CHARTER HALIBUT FISHERIES FOR 2021

SARAH WEBSTER - DECEMBER 2020



FISHERY REVIEW THROUGH 2020

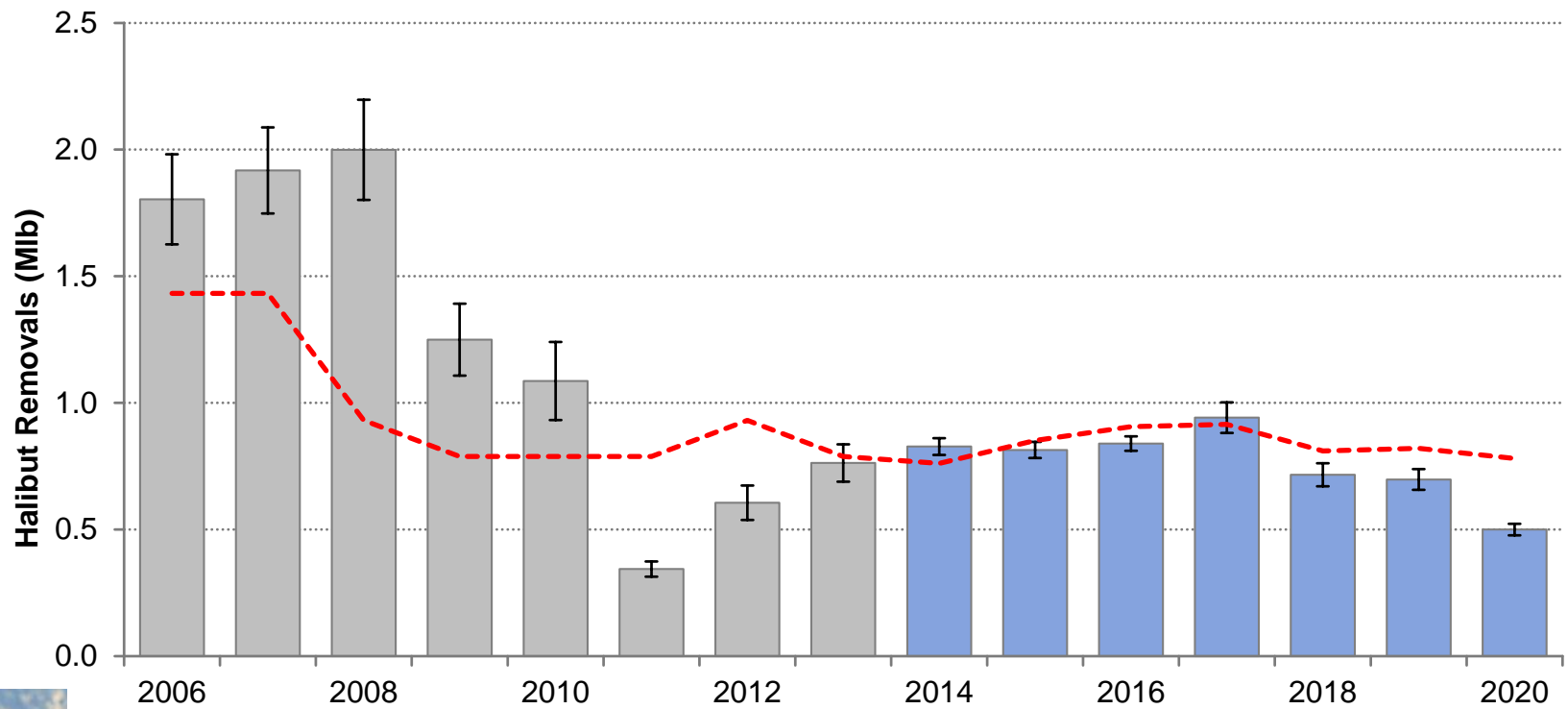


PRELIMINARY CHARTER ESTIMATES FOR 2020

Area	Mean Weight (lb)	Harvest (no. fish)	Yield (lb)	Release Mortality (lb)	Total Removals (lb)	Allocation (lb)	Overage (lb)	Overage %
2C	12.75	37,415	477,208	22,327	499,535	780,000	-280,465	-36.0%
3A	14.60	108,379	1,582,853	13,843	1,596,697	1,710,000	-113,303	-6.6%

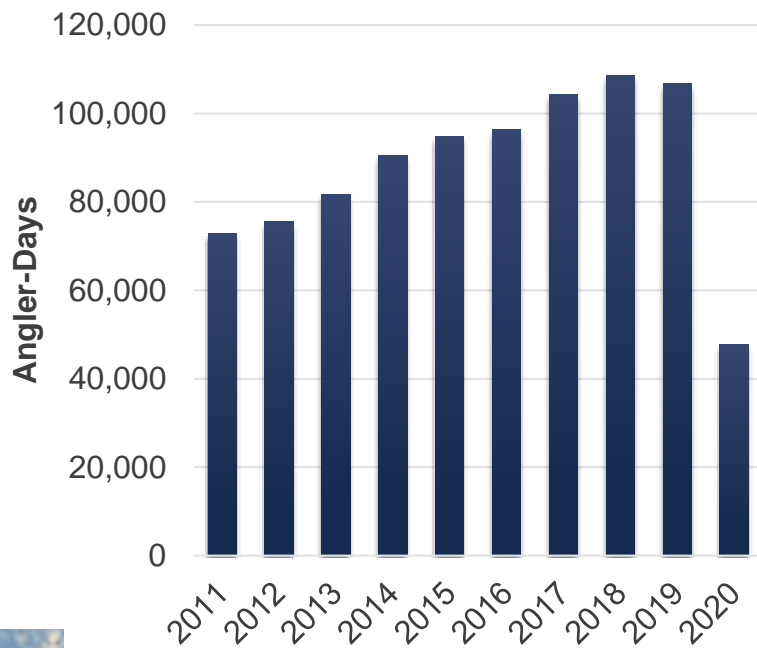


2C CHARTER HALIBUT REMOVALS



2C EFFORT

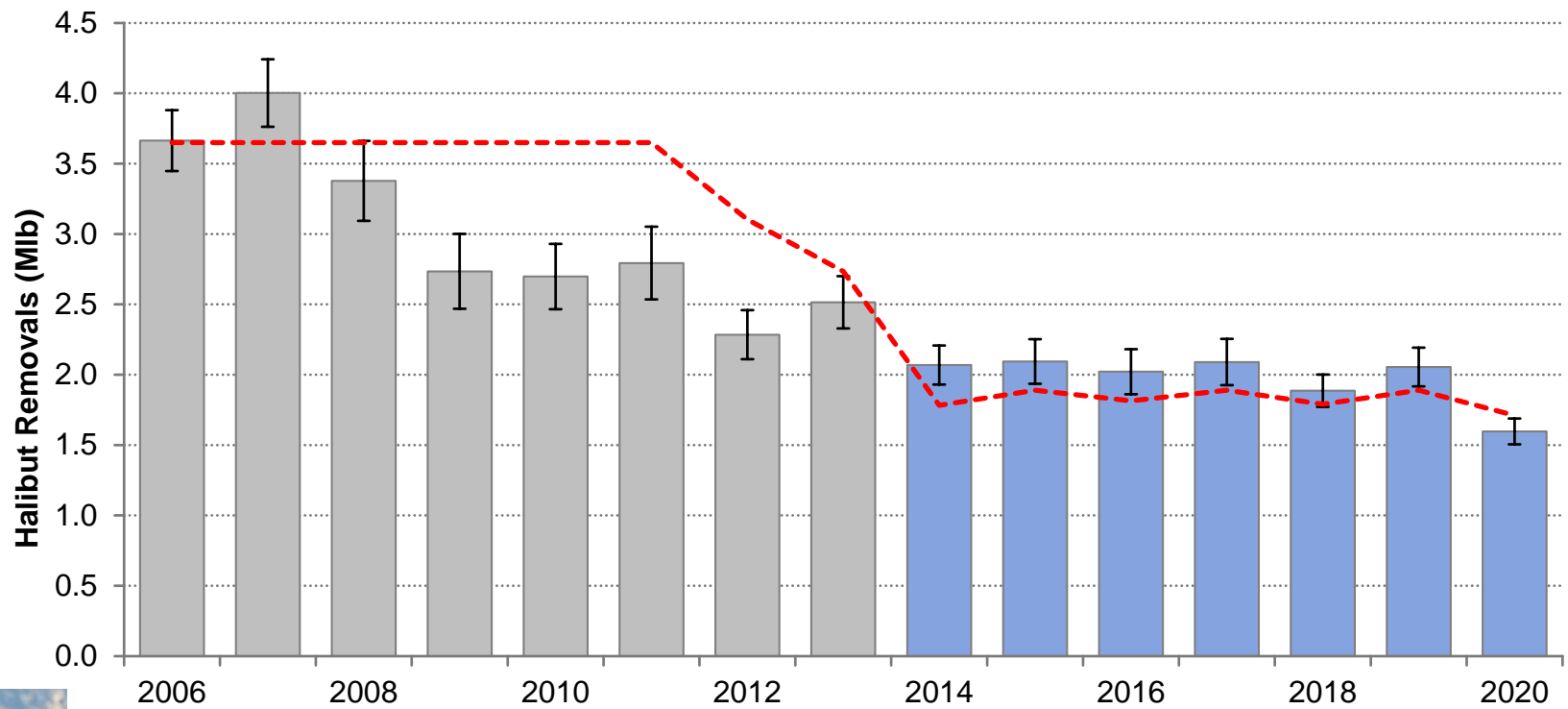
Effort



- 55% decrease in angler days from 2019 to 2020
- 54% below effort projection for 2020 – ranged from 33% - 75% below projection among subareas

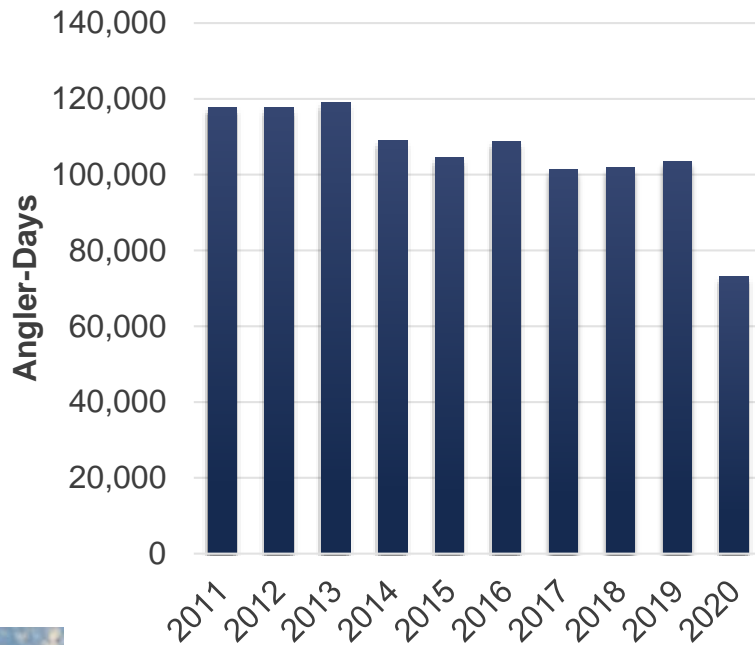


3A CHARTER HALIBUT REMOVALS



3A EFFORT

3A Effort



- 29% decrease in angler days from 2019 to 2020
- 47% below effort projection for 2020
 - Accounts for regulation changes that were designed to impact effort – closed days, annual limits
 - Ranged from 37% to 62% among subareas



BUSINESSES AND VESSELS HARVESTING HALIBUT

2C

	Businesses	Vessels
2011	264	505
2012	255	498
2013	250	501
2014	246	520
2015	241	515
2016	248	532
2017	248	537
2018	244	534
2019	255	545
2020	191	384

3A

	Businesses	Vessels
2011	324	444
2012	284	405
2013	255	386
2014	259	399
2015	250	407
2016	240	388
2017	227	374
2018	232	391
2019	226	399
2020	197	337



ANALYSIS OF MANAGEMENT MEASURES FOR 2021



CHARTER ALLOCATION FOR 2021

- Allocations are currently unknown
- Reference TCEY allocations based on IPHC's interim management procedure
- Should have contingencies for higher or lower allocations

	Reference TCEY	2020 Allocation
2C	0.65	0.78
3A	1.93	1.71



2C MANAGEMENT MEASURES FOR 2021

- **Status quo (one fish bag limit with reverse slot limit allowing harvest of a fish less than or equal to 45 inches or greater than or equal to 80 inches)**
- Additional reverse slot limits, with lower limits of the protected slot ranging from 40 to 50 inches and upper limits ranging from 50 to 80 inches
- One fish any size annually, and a reverse slot for all other harvest with lower limits of the protected slot ranging from 40 to 50 inches and an upper limit of 80 inches and annual limits ranging from 2 – 5 fish or no limit
- One fish any size through June 15, June 30, or July 15 and a reverse slot for the balance of the season with lower limits of the protected slot ranging from 40 to 45 inches and an upper limit of 80 inches
- Reverse slot limit with a lower limit of the protected slot of 45 inches and an upper limit of 80 inches prior to July 1, July 7, July 15, July 22, or August 1, and a reverse slot for the balance of the season with a lower limit of 40 inches and with an upper limit of 80 inches



2C – STATUS QUO FORECAST

- All forecasts under “normal” conditions
 - Did not attempt to account for COVID-19 related decreases in effort
 - Appendix II shows status quo forecasts with effort reductions
- 79,087 halibut
 - 95% confidence interval 70,304 – 87,870 halibut
 - Effort used data through 2019, forecast to 2021
 - HPUE used data through 2020, forecast to 2021
 - Figure 2



2C – STATUS QUO FORECAST

Status Quo Regulations:

- One fish bag limit
- Reverse slot limit of less than or equal to 45 or greater than or equal to 80 inches

Original 2020 Regulations:

- One fish bag limit
- Reverse slot limit of less than or equal to 40 or greater than or equal to 80 inches

Status Quo Regulations Projection	1.03
Original 2020 Regulations Projection	0.89



2C – REVERSE SLOT LIMIT

- Table 6
- Harvest forecast 79,087 halibut
- Average weights corrected for bias using recent years' data
- Include release mortality inflation factor based on lower limit of reverse slot
- Removal estimates range from 0.893 MIb to 1.709 MIb
- No estimates below reference TCEY allocation (0.650 MIb)



2C – 1 FISH ANY SIZE ANNUALLY, REVERSE SLOT ON ADDITIONAL FISH WITH ANNUAL LIMITS

- Tables 7 and 8
- Annual limit of 5 would affect 0.5% of anglers and reduce harvest by 0.3%, annual limit of 2 would affect 31.1% of anglers and reduce harvest by 21.1%
- Harvest of 41,371 fish of any size
 - Remaining fish under each annual limit (or no limit) assigned to reverse slot
- Two scenarios for fish of any size to account for potential increase in angler selectivity
 - Highlight uncertainty in estimates
- Removal estimates range from 1.116 to 1.432 Mlb in low removal scenario, and 1.481 to 1.738 Mlb in high removal scenario
- No estimates below reference TCEY allocation (0.650 Mlb)
- Would require a recording requirement



2C – ONE FISH ANY SIZE BAG LIMIT AT BEGINNING OF SEASON, THEN REVERSE SLOT LIMIT FOR REMAINDER OF SEASON

- Table 9
- Uncertainty in whether more liberal regulations would result in increased effort early in season
 - Three scenarios for early season effort provide examples to characterize uncertainty
- Management measures could affect proportion of harvest occurring in early season
 - Could affect ability to reliably provide preliminary estimates using partial year logbook data
 - Could affect ability to reliably forecast harvest
- Removal estimates range from 0.997 to 1.323 Mlb in status quo effort scenario, 1.040 to 1.470 Mlb in 20% increase in early season effort scenario
- No estimates below reference TCEY allocation (0.650 Mlb)



2C – REVERSE SLOT LIMIT U45O80 AT BEGINNING OF SEASON, THEN U40O80 FOR REMAINDER OF SEASON

- Table 10
- Same as previous analysis, but uses two defined reverse slots
- Uncertainty in whether more liberal regulations would result in increased effort early in season
- Management measures could impact ability to provide reliable preliminary harvest estimates and forecasts
- Removal estimates range from 0.929 to 0.976 Mlb in status quo effort scenario, 1.115 to 1.171 Mlb in 20% increase in early season effort scenario
- No estimates below reference TCEY allocation (0.650 Mlb)



2C - SUPPLEMENTAL ANALYSES

- None of requested analyses were below the reference TCEY allocation
- Provided additional analyses to aid in decision making
 - Reverse slot limits of with lower limits ranging from 40 to 50 inches and upper limits ranging from 50 to 80 inches with annual limits of 2 – 5 fish
 - Reverse slot limits with lower limits of the protected slot ranging from 40 to 50 inches and an upper limit of 80 inches with 1 – 17 Wednesdays or Sundays closed throughout the season, or a Wednesday or Sunday closure for the entire year
 - Reverse slot limits with lower limits of the protected slot ranging from 40 to 50 inches and an upper limit of 80 inches with 1 – 17 Wednesdays or Sundays closed throughout the season, or a Wednesday or Sunday closure for the entire year, combined with annual limits of 2 – 5 fish



2C – REVERSE SLOT LIMIT WITH ANNUAL LIMIT

- Table 11a-d
- Same as reverse slot analysis, but with annual limits of 2 – 5 fish
- Removal estimates range from 0.730 Mlb (2-fish annual limit, U40O80) to 1.704 Mlb (5-fish annual limit, no size limit)
- No estimates below reference TCEY allocation (0.650 Mlb), some options below 2020 allocation (0.78 Mlb)
- Would require a recording requirement



2C – REVERSE SLOT WITH CLOSURE DAYS

- Tables 12 – 15
- All upper limits of reverse slot at 80 inches
- Evaluated Wednesdays and Sundays
 - Slightly more savings with closed Wednesdays
- Closed days starting with the end of season
 - Assumed all harvest would be eliminated on closed days
- Could affect proportion of harvest occurring in early season in unpredictable ways and therefore impact ability to provide reliable preliminary harvest estimates and forecasts
- Removal estimates range from 0.765 Mlb (all Wednesdays closed, U40O80) to 1.151 Mlb (one day closed, U50O80)
- No estimates below reference TCEY allocation (0.650 Mlb), some options below 2020 allocation (0.78 Mlb)



2C – REVERSE SLOT WITH ANNUAL LIMITS AND CLOSURE DAYS

- Tables 16a-d
- All upper limits of reverse slot at 80 inches
- Annual limits of 2 – 5 fish
- Evaluated Wednesday and Sunday closures
- Closed days starting with the end of season
 - Assumed all harvest would be eliminated on closed days
- Could affect proportion of harvest occurring in early season in unpredictable ways and therefore impact ability to provide reliable preliminary harvest estimates and forecasts
- Removal estimates range from 0.603 Mlb (all Wednesdays closed, 2-fish annual limit, U40O80) to 1.147 Mlb (one Sunday closed, 5-fish annual limit, U50O80)
- Includes options below reference TCEY allocation (0.650 Mlb)



2C SUMMARY

- No requested analyses below reference TCEY (0.65 Mlb)
- Some options combining reverse slot limit, annual limit, and closure days below reference TCEY
- Effort in 2020 down 55% from 2019 and 54% from projection – variable by subarea

Subarea	Status Quo Effort	10% Effort Reduction	40% Effort Reduction	Reduction based on 2020 projected vs. observed	Estimated reduction from 2020 projection
A	0.155	0.139	0.093	0.057	74.9%
B	0.186	0.167	0.112	0.093	42.2%
C	0.046	0.042	0.028	0.038	33.4%
D	0.394	0.354	0.236	0.177	45.5%
EF	0.107	0.096	0.064	0.037	68.8%
G2C	0.139	0.125	0.083	0.067	49.3%
Area 2C	1.026	0.923	0.616	0.468	54.4%



3A MANAGEMENT MEASURES FOR 2021

- **Status quo (two-fish bag limit with a maximum size limit of 32 inches on one fish, one trip per vessel per day, and one trip per permit per day)**
- Status quo with change to maximum size limits ranging from 26 inches to 33 inches
- Status quo with Annual limits (2 – 6 fish)
- Status quo with addition of closed Wednesdays (1 – 13, all Wednesdays closed)
- Status quo with all Wednesdays closed and addition of closed Tuesdays (1 – 13, all Tuesdays closed)
- Status quo with a combination of closed days and annual limits
- Status quo with a combination of closed days and changes to the size limit
- Status quo with a combination of annual limits and changes to the size limit
- Status quo with a combination of closed days, annual limits, and changes to the size limit



3A – STATUS QUO FORECAST

- All forecasts under “normal” conditions
 - Did not attempt to account for COVID-19 related decreases in effort
 - Appendix II shows status quo forecasts with effort reductions
- 204,032 halibut
 - 95% confidence interval 196,919 – 211,145 halibut
 - Used 2019 effort corrected for open days and removal of annual limit
 - Additional uncertainty in effort gained from opening days (relative to 2019)
 - HPUE used data through 2020, forecast to 2021
 - Figure 3



3A – STATUS QUO FORECAST

Status Quo Regulations:

- Two fish bag limit: one any size, one less than or equal to 32 inches
- One trip per vessel per day and per charter halibut permit per day

Original 2020 Regulations:

- Two fish bag limit: one any size, one less than or equal to 26 inches
- 4-fish annual limit
- Tuesdays and Wednesdays closed to retention of halibut
- One trip per vessel per day and per charter halibut permit per day

Status Quo Regulations Projection	2.92
Original 2020 Regulations Projection	1.75



3A – CHANGES TO MAXIMUM SIZE LIMIT

- Table 19
- Assumes all other status quo management measure (two fish bag limit, one fish any size, trip limits, no annual limit, no closure days)
- Average weights corrected for bias using recent years data
- Includes release mortality inflation factor of 1.4%
- Projected for 26 to 33 inch size limits on one fish
- Removal estimates range from 2.580 Mlb with a 26 inch size limit on one fish to 2.955 Mlb with a 33 inch size limit on one fish
- No estimates below reference TCEY allocation (1.930 Mlb)



3A – ADDITION OF ANNUAL LIMITS

- Tables 20, 21, & 26
- Assumes all other status quo management measure (32 inch size limit on one of two fish, trip limits, no closure days)
- Annual limits of 2 – 6 fish could reduce harvest projections by 14.8% to 1.7%, respectively
- Removal estimates range from 2.497 Mlb with a 2-fish annual limit to 2.873 Mlb with a 6-fish annual limit
- No estimates below reference TCEY allocation (1.930 Mlb)
- Would require a recording requirement
- Past violations of annual limits have included 0.2 – 1.0% of anglers



3A – DAY OF THE WEEK CLOSURES

- Tables 22 & 23
- Assume all other status quo management measures (32 inch size limit on one of two fish, trip limits, no annual limit)
- Projected under various numbers of closed days throughout year with approximately 2/3 prior to July 31
 - Important to maintain this proportion for reliability of preliminary harvest estimates and forecasts
- Projected removals assume opening or closing days will have maximum effect, no shifting of effort to other days
- Removal estimates range from 2.078 Mlb with all Tuesdays and Wednesdays closed to 2.875 Mlb with one Wednesday closed
- No estimates below reference TCEY allocation (1.930 Mlb)



3A – DAY OF THE WEEK CLOSURES COMBINED WITH ANNUAL LIMITS

- Tables 24 & 25 – Use rows with 32 inch size limit
- Assume all other status quo management measures (32 inch size limit on one of two fish, trip limits)
- Removal estimates range from 1.780 Mlb with all Tuesdays and Wednesdays closed and an annual limit of 2-fish to 2.831 Mlb with one Wednesday closed and an annual limit of 6-fish
- Several options below reference TCEY allocation (1.930 Mlb)



3A – MAXIMUM SIZE LIMITS COMBINED WITH ANNUAL LIMITS

- Table 24 – Use first column with 0 Wednesdays closed
- Assume all other status quo management measures (trip limits, no closure days)
- Removal estimates range from 2.209 Mlb with a 26-inch size limit and an annual limit of 2-fish to 2.910 Mlb with a 33-inch size limit and an annual limit of 6-fish
- No estimates below reference TCEY allocation (1.930 Mlb)



3A – DAY OF THE WEEK CLOSURES COMBINED WITH MAXIMUM SIZE LIMITS

- Tables 24b & 25b
- Assume all other status quo management measures (trip limits, no annual limit)
- Removal estimates range from 1.837 Mlb with all Tuesdays and Wednesdays closed and a 26-inch size limit to 2.912 Mlb with one Wednesday closed and a 33-inch size limit
- Several options below reference TCEY allocation (1.930 Mlb)



3A – DAY OF THE WEEK CLOSURES COMBINED WITH MAXIMUM SIZE LIMITS AND ANNUAL LIMITS

- Tables 24 & 25
- Assume other status quo management measures (trip limits)
- Removal estimates range from 1.575 Mlb to 2.867 Mlb
- Several options below reference TCEY allocation (1.930 Mlb)



3A SUMMARY

- Some options below reference TCEY allocation
 - Requires combination of closure days, annual limits, and adjusting size limit
- Effort in 2020 down 29% from 2019 despite change in regulations and 47% from projection – variable by subarea

Subarea	Status Quo Effort	10% Effort Reduction	40% Effort Reduction	Reduction based on 2020 proj. vs. obs.	Est. reduction from 2020 proj.
CCI	0.525	0.472	0.315	0.289	44.9%
EPWS	0.213	0.192	0.128	0.130	39.3%
G3A	0.081	0.073	0.049	0.031	61.8%
H	0.204	0.184	0.123	0.087	57.2%
LCI	0.814	0.733	0.488	0.476	41.5%
NG	0.692	0.623	0.415	0.359	48.1%
QR	0.233	0.209	0.140	0.087	62.4%
WPWS	0.156	0.140	0.094	0.098	37.2%
Area 3A	2.918	2.626	1.751	1.557	47.0%



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- Martin Schuster and Marian Ford – Southcentral data
- Countless technicians – halibut measurements and angler interviews
- Jim Armstrong – Council Staff

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 - State of Alaska General Funds
 - DJ-WB Federal Aid in Fish Restoration
 - Fish and Game Fund



EXTRA SLIDES



2C – REVERSE SLOT LIMIT

Lower Limit (in)	Upper Length Limit (in)															
	50	52	54	56	58	60	62	64	66	68	70	72	74	76	78	80
40	1.537	1.450	1.384	1.308	1.254	1.206	1.136	1.069	1.030	1.000	0.970	0.950	0.922	0.906	0.904	0.893
41	1.559	1.474	1.408	1.334	1.281	1.233	1.164	1.097	1.059	1.030	1.000	0.980	0.951	0.936	0.934	0.922
42	1.572	1.488	1.423	1.349	1.297	1.249	1.181	1.115	1.077	1.048	1.018	0.998	0.970	0.955	0.953	0.941
43	1.587	1.504	1.440	1.367	1.315	1.268	1.201	1.135	1.098	1.069	1.039	1.019	0.991	0.976	0.974	0.963
44	1.609	1.528	1.465	1.394	1.342	1.296	1.229	1.164	1.127	1.098	1.069	1.049	1.021	1.006	1.005	0.993
45	1.634	1.555	1.493	1.422	1.372	1.326	1.260	1.196	1.159	1.130	1.101	1.082	1.054	1.039	1.038	1.026
46	1.649	1.571	1.510	1.440	1.391	1.345	1.280	1.216	1.180	1.151	1.122	1.103	1.076	1.061	1.059	1.048
47	1.670	1.594	1.535	1.466	1.417	1.372	1.307	1.244	1.208	1.180	1.151	1.132	1.105	1.090	1.089	1.077
48	1.684	1.609	1.551	1.483	1.434	1.390	1.326	1.263	1.227	1.199	1.171	1.152	1.125	1.110	1.108	1.097
49	1.709	1.636	1.579	1.512	1.464	1.420	1.357	1.295	1.260	1.232	1.204	1.185	1.158	1.144	1.142	1.131
50	x	1.654	1.598	1.532	1.485	1.442	1.379	1.318	1.283	1.255	1.227	1.209	1.182	1.168	1.166	1.155



2C – 1 FISH ANY SIZE ANNUALLY, REVERSE SLOT ON ADDITIONAL FISH WITH ANNUAL LIMITS

Lower Slot Limit	Annual Limit Options				
	2	3	4	5	None
Low Removal Scenario					
40	1.116	1.254	1.293	1.303	1.305
41	1.123	1.266	1.306	1.316	1.319
42	1.129	1.274	1.316	1.326	1.329
43	1.134	1.283	1.326	1.336	1.339
44	1.143	1.296	1.340	1.350	1.354
45	1.151	1.310	1.355	1.366	1.369
46	1.157	1.319	1.365	1.377	1.380
47	1.165	1.331	1.379	1.390	1.394
48	1.170	1.339	1.388	1.399	1.403
49	1.179	1.354	1.404	1.416	1.420
50	1.186	1.364	1.415	1.428	1.432

Lower Slot Limit	Annual Limit Options				
	2	3	4	5	None
High Removal Scenario					
40	1.481	1.620	1.659	1.668	1.671
41	1.484	1.627	1.667	1.677	1.680
42	1.495	1.641	1.682	1.692	1.695
43	1.497	1.646	1.689	1.699	1.702
44	1.495	1.648	1.692	1.702	1.706
45	1.495	1.654	1.699	1.710	1.713
46	1.500	1.662	1.708	1.720	1.723
47	1.502	1.668	1.716	1.727	1.731
48	1.499	1.668	1.716	1.728	1.731
49	1.486	1.660	1.710	1.722	1.726
50	1.492	1.671	1.722	1.734	1.738



2C – ONE FISH ANY SIZE BAG LIMIT AT BEGINNING OF SEASON, THEN REVERSE SLOT LIMIT FOR REMAINDER OF SEASON

Status Quo Effort		Regulation Change Date		
		15-Jun	30-Jun	15-Jul
Lower Length Limit (in)	40	0.997	1.114	1.247
	41	1.023	1.136	1.264
	42	1.040	1.150	1.275
	43	1.058	1.166	1.287
	44	1.084	1.187	1.304
	45	1.113	1.211	1.323
10% Increase Effort Before Change		Regulation Change Date		
		15-Jun	30-Jun	15-Jul
Lower Length Limit (in)	40	1.018	1.160	1.321
	41	1.045	1.182	1.338
	42	1.061	1.196	1.348
	43	1.079	1.211	1.361
	44	1.105	1.233	1.378
	45	1.134	1.257	1.396
20% Increase Effort Before Change		Regulation Change Date		
		15-Jun	30-Jun	15-Jul
Lower Length Limit (in)	40	1.040	1.205	1.394
	41	1.066	1.227	1.411
	42	1.082	1.241	1.422
	43	1.101	1.257	1.434
	44	1.127	1.279	1.451
	45	1.155	1.302	1.470



2C – REVERSE SLOT LIMIT U45O80 AT BEGINNING OF SEASON, THEN U40O80 FOR REMAINDER OF SEASON

	Regulation Change Dates				
	Thru June 30	Thru July 7	Thru July 15	Thru July 22	Thru July 31
Status Quo	0.929	0.937	0.950	0.961	0.976
10% Increase Effort Before Change	1.022	1.031	1.045	1.057	1.073
20% Increase Effort Before Change	1.115	1.124	1.140	1.153	1.171



2C – 2-FISH ANNUAL LIMIT WITH REVERSE SLOT

Lower Limit (in)	Upper Length Limit (in)															
	50	52	54	56	58	60	62	64	66	68	70	72	74	76	78	80
40	1.203	1.134	1.082	1.023	0.982	0.945	0.891	0.838	0.808	0.785	0.762	0.747	0.725	0.713	0.712	0.703
41	1.221	1.153	1.102	1.044	1.004	0.967	0.913	0.861	0.831	0.808	0.786	0.770	0.748	0.737	0.735	0.727
42	1.231	1.164	1.113	1.056	1.016	0.980	0.926	0.875	0.845	0.822	0.800	0.785	0.763	0.751	0.750	0.741
43	1.242	1.176	1.126	1.070	1.030	0.994	0.941	0.890	0.861	0.838	0.816	0.801	0.779	0.768	0.766	0.758
44	1.260	1.196	1.147	1.091	1.052	1.016	0.964	0.913	0.884	0.862	0.840	0.825	0.803	0.792	0.791	0.782
45	1.280	1.217	1.168	1.114	1.075	1.040	0.988	0.938	0.910	0.887	0.865	0.851	0.829	0.818	0.816	0.808
46	1.291	1.230	1.182	1.128	1.090	1.055	1.004	0.954	0.926	0.904	0.882	0.867	0.846	0.835	0.833	0.825
47	1.309	1.248	1.202	1.148	1.111	1.077	1.026	0.977	0.949	0.927	0.905	0.891	0.869	0.858	0.857	0.848
48	1.320	1.261	1.215	1.162	1.125	1.091	1.041	0.992	0.964	0.942	0.921	0.906	0.885	0.874	0.873	0.864
49	1.340	1.281	1.236	1.184	1.148	1.115	1.065	1.017	0.989	0.968	0.946	0.932	0.911	0.900	0.899	0.890
50	x	1.295	1.251	1.200	1.164	1.131	1.082	1.034	1.007	0.986	0.965	0.950	0.929	0.919	0.917	0.909



2C – REVERSE SLOT WITH WEDNESDAY CLOSURES

Lower Limit (in)	Number of Wednesday Closures																		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	All
40	0.893	0.890	0.886	0.879	0.872	0.861	0.850	0.838	0.829	0.818	0.807	0.798	0.788	0.780	0.775	0.770	0.767	0.765	0.765
41	0.922	0.920	0.916	0.908	0.901	0.889	0.878	0.865	0.856	0.845	0.833	0.825	0.815	0.806	0.800	0.796	0.793	0.791	0.790
42	0.941	0.939	0.935	0.927	0.919	0.908	0.897	0.883	0.874	0.863	0.851	0.842	0.831	0.822	0.817	0.812	0.809	0.807	0.806
43	0.963	0.960	0.956	0.948	0.940	0.928	0.917	0.903	0.894	0.882	0.870	0.861	0.850	0.841	0.835	0.830	0.827	0.825	0.824
44	0.993	0.990	0.986	0.978	0.970	0.957	0.946	0.931	0.922	0.910	0.897	0.888	0.877	0.867	0.861	0.857	0.853	0.851	0.850
45	1.026	1.023	1.018	1.010	1.002	0.989	0.977	0.962	0.952	0.940	0.927	0.917	0.906	0.896	0.890	0.885	0.881	0.879	0.878
46	1.048	1.045	1.040	1.032	1.023	1.010	0.998	0.983	0.972	0.960	0.946	0.937	0.925	0.915	0.909	0.904	0.900	0.898	0.897
47	1.077	1.074	1.069	1.061	1.052	1.038	1.026	1.010	1.000	0.987	0.973	0.963	0.951	0.941	0.934	0.929	0.925	0.923	0.922
48	1.097	1.094	1.089	1.080	1.071	1.058	1.045	1.029	1.018	1.005	0.991	0.981	0.969	0.958	0.952	0.946	0.942	0.940	0.939
49	1.131	1.127	1.122	1.113	1.104	1.090	1.076	1.060	1.049	1.036	1.021	1.011	0.998	0.987	0.980	0.975	0.971	0.968	0.967
50	1.155	1.151	1.146	1.137	1.127	1.113	1.099	1.083	1.071	1.058	1.043	1.032	1.019	1.008	1.001	0.995	0.991	0.989	0.988



2C – REVERSE SLOT WITH WEDNESDAY CLOSURES AND 2-FISH ANNUAL LIMIT

Lower Limit (in)	Number of Wednesday Closures																		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	All
40	0.703	0.701	0.698	0.692	0.687	0.678	0.670	0.660	0.653	0.645	0.636	0.629	0.622	0.615	0.611	0.607	0.605	0.604	0.603
41	0.727	0.725	0.721	0.716	0.710	0.701	0.692	0.682	0.675	0.667	0.657	0.650	0.643	0.636	0.631	0.628	0.625	0.624	0.623
42	0.741	0.739	0.736	0.730	0.724	0.715	0.706	0.696	0.689	0.680	0.670	0.663	0.655	0.648	0.644	0.640	0.638	0.636	0.636
43	0.758	0.756	0.752	0.746	0.740	0.731	0.722	0.711	0.704	0.695	0.685	0.678	0.670	0.663	0.658	0.654	0.652	0.650	0.649
44	0.782	0.780	0.776	0.770	0.764	0.754	0.745	0.734	0.722	0.717	0.707	0.700	0.691	0.684	0.679	0.675	0.673	0.671	0.670
45	0.808	0.806	0.802	0.796	0.789	0.779	0.770	0.758	0.750	0.741	0.730	0.723	0.714	0.706	0.702	0.698	0.695	0.693	0.692
46	0.825	0.823	0.819	0.812	0.806	0.796	0.786	0.774	0.766	0.757	0.746	0.738	0.729	0.721	0.716	0.712	0.710	0.708	0.707
47	0.848	0.846	0.842	0.836	0.829	0.818	0.808	0.796	0.788	0.778	0.767	0.759	0.750	0.742	0.737	0.733	0.730	0.728	0.727
48	0.864	0.862	0.858	0.851	0.844	0.834	0.824	0.811	0.803	0.793	0.782	0.774	0.764	0.756	0.751	0.747	0.744	0.742	0.741
49	0.890	0.888	0.884	0.877	0.869	0.859	0.848	0.836	0.827	0.816	0.805	0.797	0.787	0.778	0.773	0.769	0.766	0.764	0.763
50	0.909	0.906	0.902	0.895	0.888	0.877	0.866	0.853	0.844	0.833	0.822	0.813	0.803	0.795	0.789	0.785	0.781	0.779	0.779



3A – CHANGES TO MAXIMUM SIZE LIMIT

Size Limit	Removal (Mlb)
26	2.580
27	2.626
28	2.695
29	2.741
30	2.810
31	2.857
32	2.918
33	2.955



3A – ADDITION OF ANNUAL LIMITS

Annual Limit	Subarea CCI	EPWS	GlacBay	Yak	LCI	NGulf	Kod	WPWS	Area 3A
Estimated percent change in harvest relative to no annual limit:									
2	-16.8%	-7.4%	-12.6%	-18.3%	-14.1%	-9.1%	-37.2%	-3.1%	-14.8%
3	-10.4%	-3.1%	-2.3%	-7.2%	-8.5%	-4.9%	-24.0%	-0.9%	-8.7%
4	-5.9%	-1.3%	-0.3%	-3.6%	-4.5%	-3.1%	-17.4%	-0.3%	-5.1%
5	-3.8%	-0.5%	0.0%	-1.4%	-2.8%	-1.7%	-11.1%	0.0%	-3.2%
6	-2.0%	-0.2%	0.0%	-0.7%	-1.3%	-0.9%	-6.8%	0.0%	-1.7%
Projected harvest (number of halibut):									
2	32,376	7,396	1,940	5,034	65,560	43,789	10,572	7,185	173,852
3	34,856	7,744	2,170	5,714	69,884	45,808	12,801	7,356	186,334
4	36,633	7,886	2,215	5,939	72,890	46,680	13,914	7,396	193,555
5	37,428	7,947	2,221	6,070	74,223	47,314	14,974	7,417	197,593
6	38,115	7,974	2,221	6,113	75,369	47,740	15,697	7,419	200,648
None	38,910	7,990	2,221	6,158	76,339	48,152	16,843	7,419	204,032



3A – ADDITION OF ANNUAL LIMITS

Annual Limit					
2	3	4	5	6	None
2.497	2.681	2.778	2.833	2.873	2.918



3A – DAY OF THE WEEK CLOSURES (TUESDAY)

Number of Closed Tuesdays	Beginning and Ending Dates	Percentage change in harvest relative to status quo	Projected Harvest (no. Fish)	Projected Removals (Mlb)
0		-15.3%	172,845	2.470
1	July 27	-16.4%	170,606	2.438
2	July 27 - August 03	-17.7%	167,886	2.398
3	July 20 - August 03	-18.8%	165,721	2.366
4	July 13 - August 03	-20.0%	163,240	2.332
5	July 13 - August 10	-21.3%	160,663	2.297
6	July 06 - August 10	-22.5%	158,189	2.262
7	June 29 - August 10	-23.5%	156,032	2.231
8	June 29 - August 17	-24.4%	154,276	2.205
9	June 22 - August 17	-25.1%	152,821	2.185
10	June 15 - August 17	-26.0%	151,060	2.159
11	June 15 - August 24	-26.1%	150,709	2.154
12	June 08 - August 24	-26.9%	149,217	2.132
13	June 01 - August 24	-27.2%	148,500	2.123
48 (all season)	February 01 - December 31	-28.7%	145,422	2.078



3A – TUESDAY CLOSURES COMBINED WITH 2-FISH ANNUAL LIMIT

Size limit	Number of Tuesday Closures														
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	All
26	1.870	1.846	1.816	1.792	1.767	1.740	1.714	1.691	1.671	1.656	1.635	1.632	1.615	1.608	1.575
27	1.903	1.879	1.848	1.823	1.798	1.771	1.744	1.720	1.700	1.685	1.664	1.660	1.643	1.637	1.602
28	1.953	1.928	1.897	1.871	1.845	1.818	1.790	1.766	1.745	1.729	1.708	1.704	1.687	1.680	1.645
29	1.986	1.961	1.929	1.903	1.876	1.848	1.820	1.795	1.774	1.758	1.737	1.733	1.715	1.708	1.672
30	2.037	2.010	1.978	1.951	1.924	1.895	1.866	1.841	1.819	1.803	1.781	1.777	1.758	1.751	1.715
31	2.070	2.044	2.011	1.983	1.956	1.926	1.897	1.871	1.849	1.833	1.810	1.806	1.788	1.780	1.743
32	2.114	2.087	2.053	2.025	1.997	1.967	1.937	1.911	1.888	1.871	1.848	1.844	1.825	1.818	1.780
33	2.141	2.113	2.079	2.051	2.022	1.992	1.961	1.935	1.912	1.895	1.872	1.868	1.848	1.841	1.802



3A – WEDNESDAY CLOSURES COMBINED WITH MAXIMUM SIZES, NO ANNUAL LIMIT

Size limit	Number of Wednesday Closures														
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	All
26	2.580	2.542	2.527	2.510	2.492	2.473	2.446	2.421	2.390	2.354	2.335	2.296	2.260	2.225	2.183
27	2.626	2.587	2.572	2.555	2.537	2.518	2.490	2.464	2.433	2.396	2.377	2.338	2.301	2.265	2.222
28	2.695	2.656	2.640	2.623	2.604	2.584	2.556	2.530	2.497	2.459	2.440	2.399	2.361	2.325	2.281
29	2.741	2.700	2.684	2.667	2.648	2.628	2.599	2.572	2.539	2.501	2.481	2.440	2.401	2.364	2.320
30	2.810	2.769	2.752	2.734	2.715	2.694	2.665	2.637	2.604	2.564	2.544	2.502	2.462	2.424	2.378
31	2.857	2.815	2.798	2.780	2.761	2.740	2.709	2.682	2.647	2.607	2.586	2.544	2.503	2.464	2.418
32	2.918	2.875	2.858	2.839	2.820	2.798	2.767	2.739	2.704	2.663	2.641	2.598	2.556	2.517	2.470
33	2.955	2.912	2.894	2.876	2.856	2.834	2.803	2.774	2.738	2.697	2.675	2.631	2.589	2.549	2.501

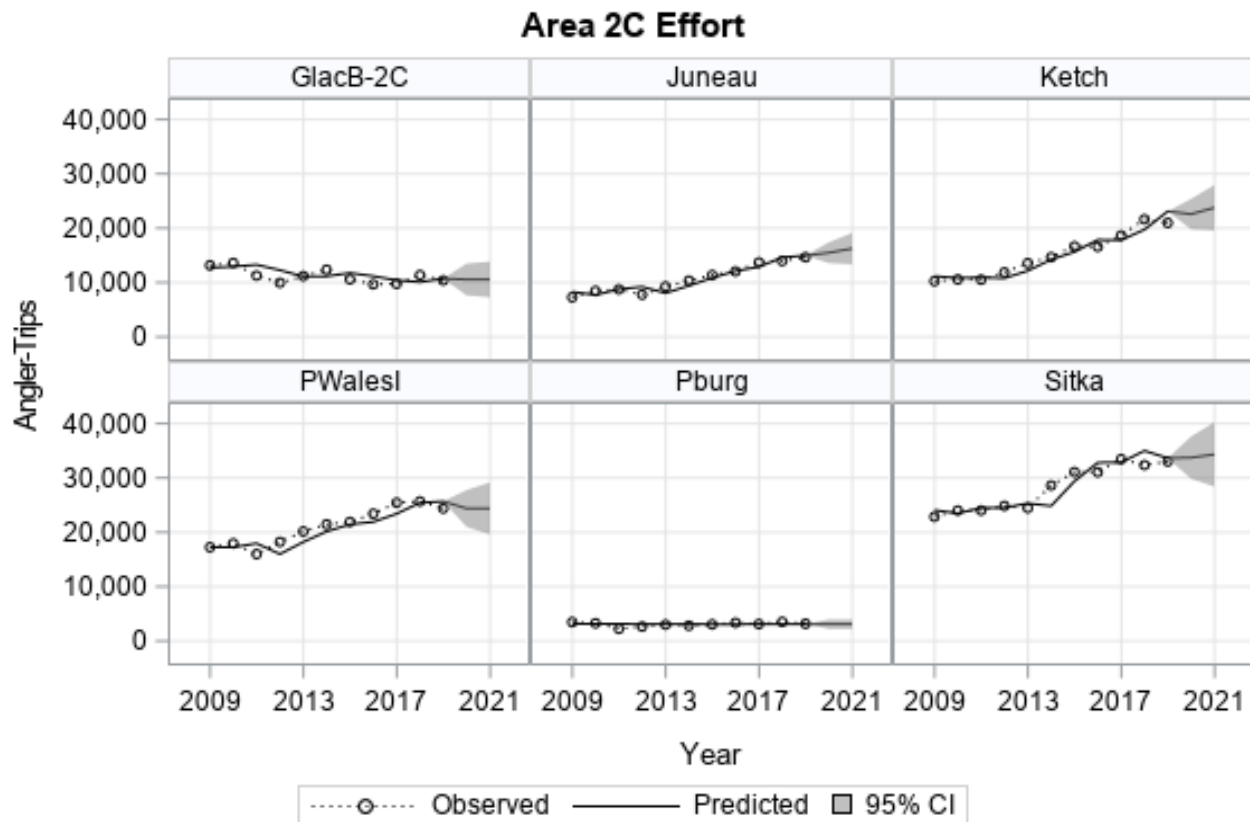


3A – TUESDAY CLOSURES COMBINED WITH MAXIMUM SIZES, NO ANNUAL LIMIT

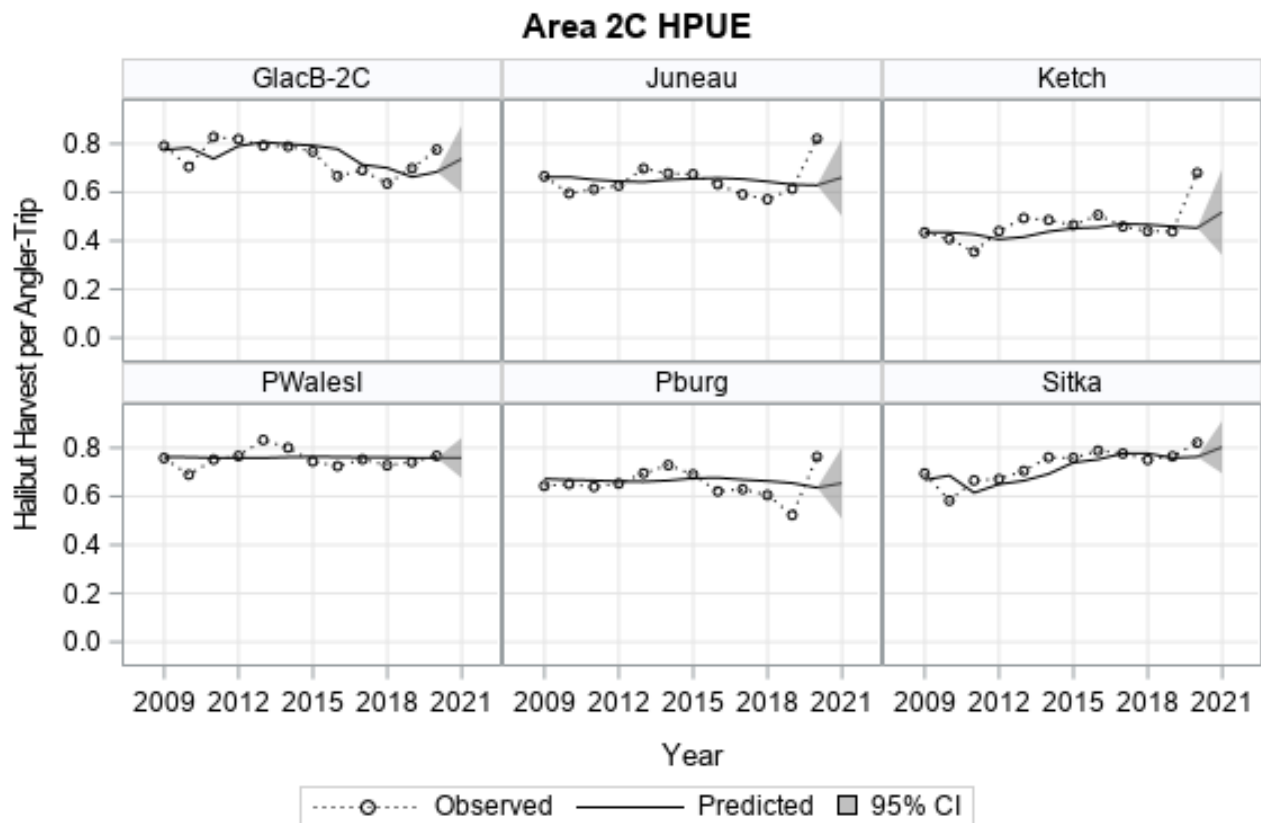
Size limit	Number of Tuesday Closures														
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	All
26	2.183	2.155	2.120	2.092	2.062	2.031	2.001	1.973	1.950	1.933	1.909	1.904	1.885	1.877	1.837
27	2.222	2.194	2.158	2.129	2.099	2.067	2.036	2.009	1.985	1.967	1.943	1.938	1.919	1.911	1.870
28	2.281	2.252	2.215	2.185	2.154	2.122	2.090	2.061	2.037	2.019	1.994	1.989	1.969	1.961	1.919
29	2.320	2.290	2.252	2.222	2.191	2.157	2.125	2.096	2.072	2.053	2.028	2.023	2.002	1.994	1.951
30	2.378	2.348	2.309	2.278	2.246	2.212	2.179	2.149	2.124	2.105	2.079	2.074	2.053	2.044	2.001
31	2.418	2.387	2.348	2.317	2.284	2.249	2.215	2.185	2.160	2.140	2.114	2.109	2.087	2.079	2.034
32	2.470	2.438	2.398	2.366	2.332	2.297	2.262	2.231	2.205	2.185	2.159	2.154	2.132	2.123	2.078
33	2.501	2.469	2.429	2.396	2.362	2.326	2.291	2.260	2.233	2.213	2.186	2.181	2.159	2.150	2.104



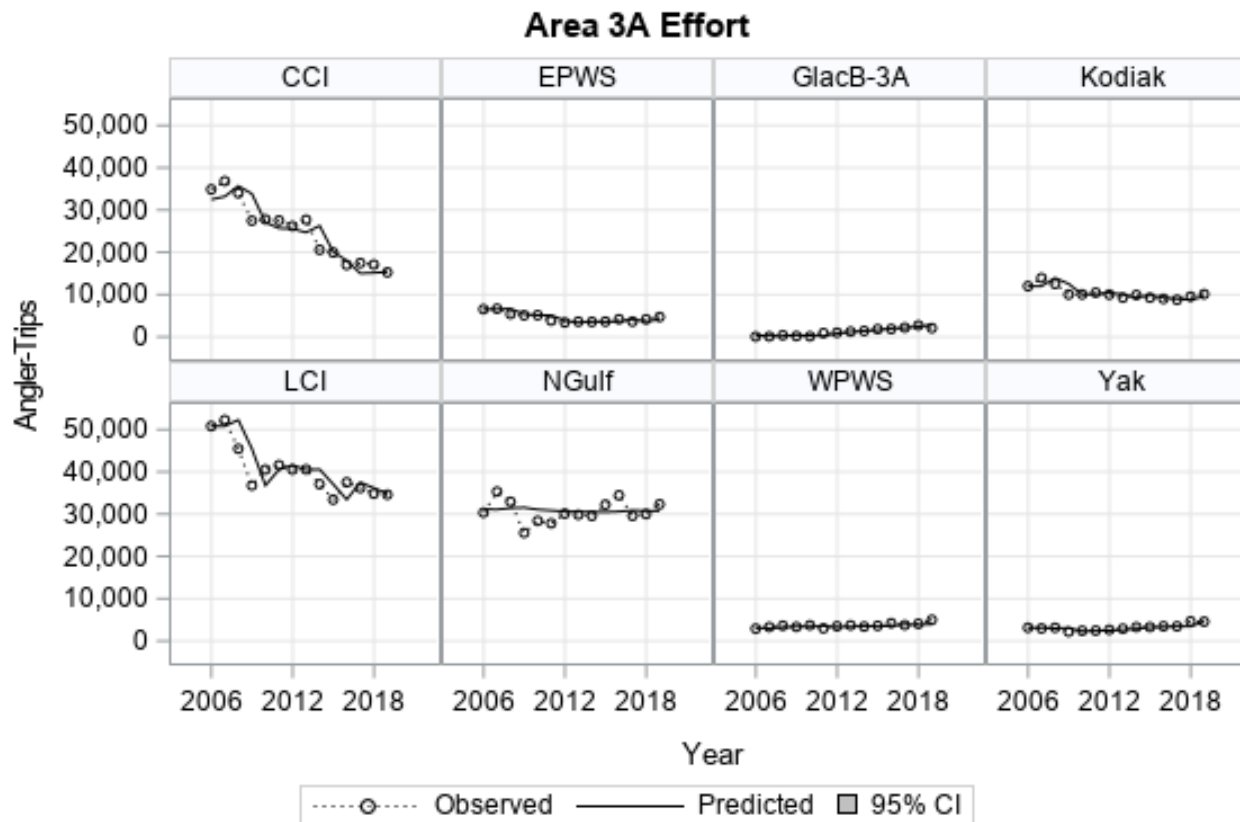
2C EFFORT FORECASTS



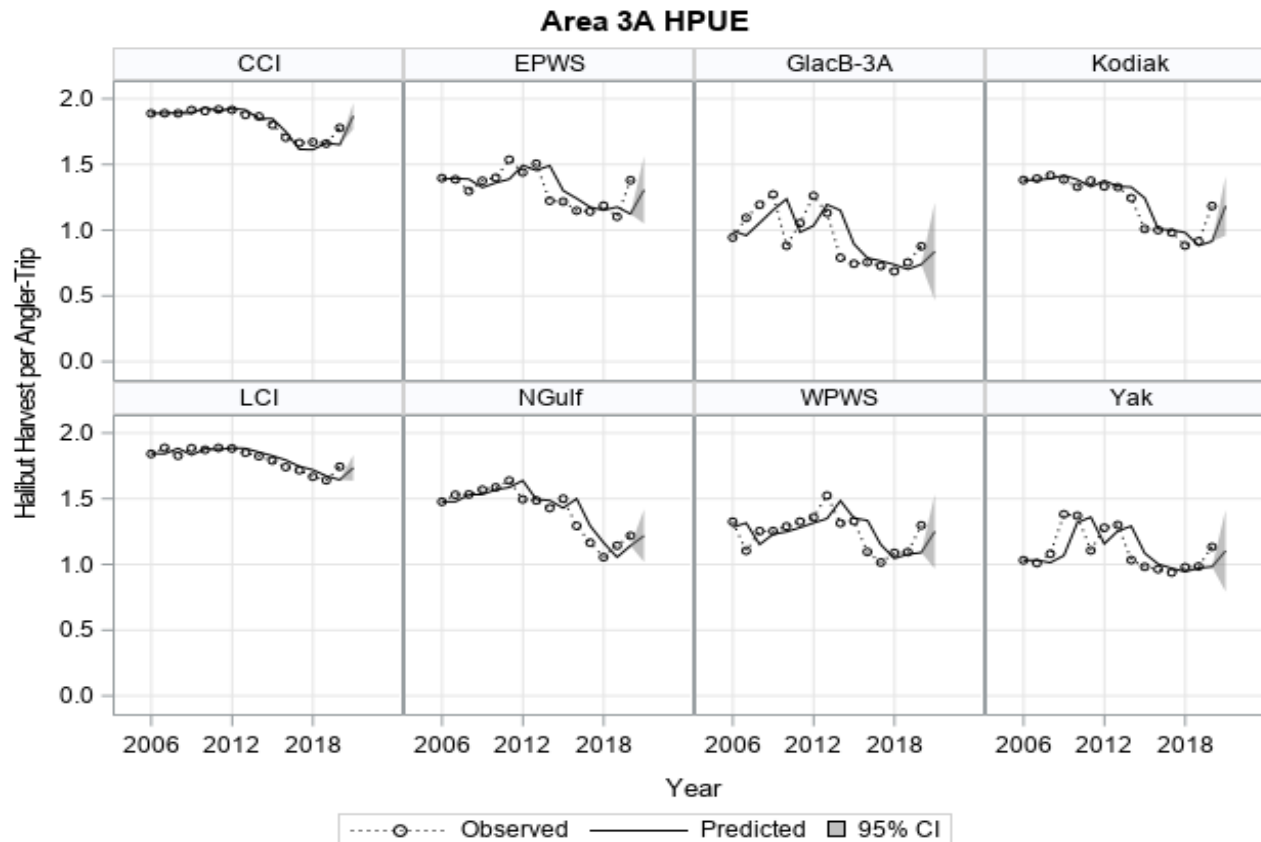
2C HPUE FORECASTS



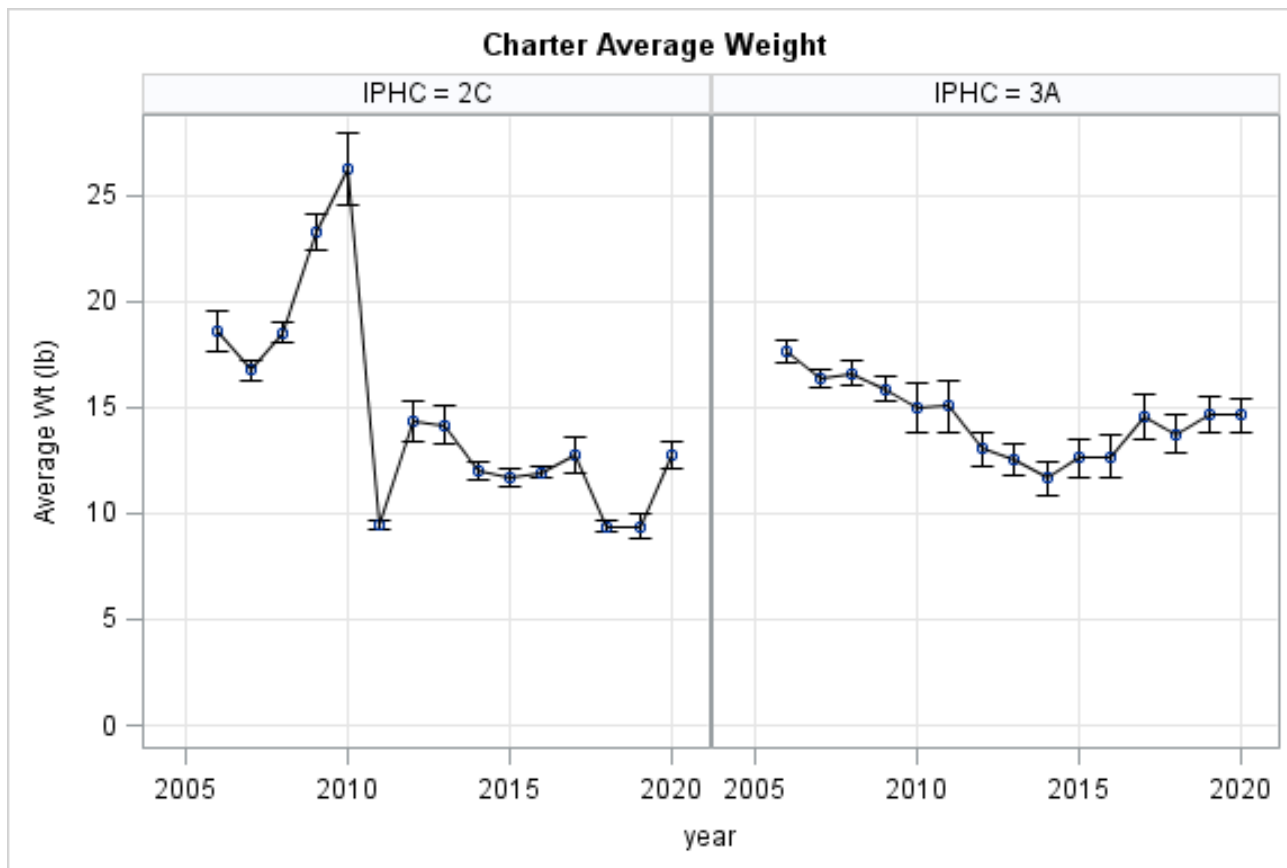
3A EFFORT FORECASTS



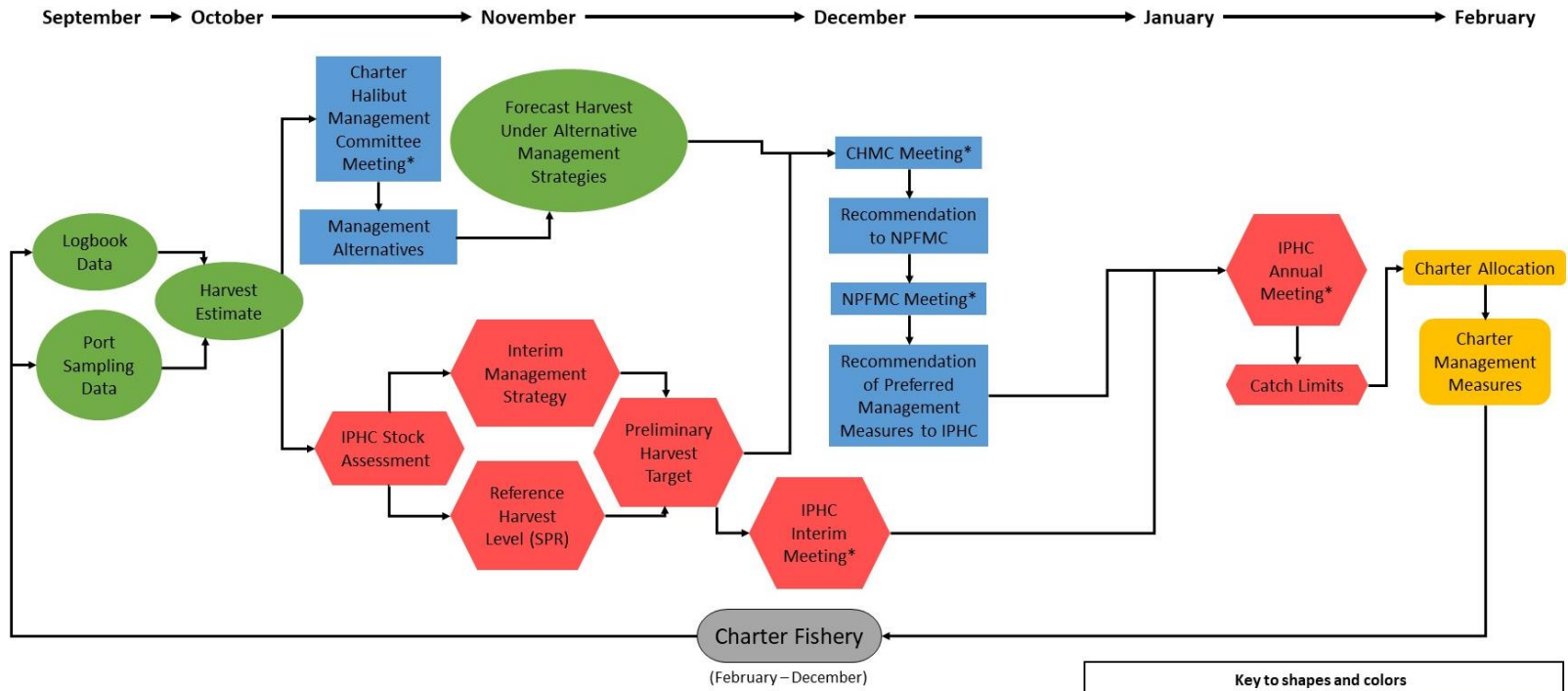
3A HPUE FORECASTS



ESTIMATED MEAN WEIGHTS



CHARTER HALIBUT MANAGEMENT PROCESS



Key to shapes and colors

- ADFG (Green oval)
- NPFMC (Blue rectangle)
- IPHC (Red hexagon)
- NOAA Fisheries (Yellow rectangle)

*Indicates opportunity for public comment

