

Supplemental Analyses of Management Options for the Area 3A Charter Halibut Fishery for 2020



For the North Pacific Fishery Management Council
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Charter Allocations for 2020

- ▶ Wide range of possibilities; depends on TCEY
 - ▶ Reference coastwide TCEY
 - ▶ Status quo coastwide TCEY
- ▶ Additional uncertainty from distribution procedures
 - ▶ 2019 AM-095 procedures
 - ▶ 2019 IM-095 U26 bycatch mitigation
 - ▶ Setline survey distribution

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Area	2019 Allocations	2020 Charter Allocation (Mlb)	
		Reference TCEY	Status Quo TCEY
3A	1.89	1.24	1.66

3A – Status Quo Management Measures

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

	2020 Forecast
Harvest (number of fish)	132,453
Average Weight (lbs)	14.48
Removals (Mlb)	1.938

Area 3A Management Measures for 2020

All options include status quo management measures unless otherwise noted

Status quo: 2-fish bag limit, one fish any size, one fish \leq 28 inches; 4-fish annual limit; one trip per vessel per day; one trip per CHP per day;

Wednesdays closed all year; five Tuesdays closed

- ▶ Change maximum size limit and day of week closures (Tuesday, Monday, Thursday)
- ▶ Change annual limits with changes to size limit and day of week closures
- ▶ Reverse slot limit on “first” fish, 26” or 28” size limit on “second” fish, and additional day of week closures
- ▶ 1-fish bag limit
- ▶ 1-fish bag limit with reverse slot limit and additional day of the week closures
- ▶ Open halibut fishing season from May 16 – July 31 or June 1 – July 31 with all days of the week open during the fishing season

Change in Maximum Size Limit with Tuesday Closures

Table 1, p. 15

Size limit	Total number of closed Tuesdays									
	5	6	7	8	9	10	11	12	13	48
26	1.874	1.846	1.821	1.799	1.783	1.761	1.757	1.738	1.732	1.696
27	1.899	1.871	1.845	1.823	1.807	1.784	1.780	1.762	1.755	1.719
28	1.938	1.909	1.883	1.861	1.844	1.821	1.817	1.798	1.791	1.754
29	1.964	1.934	1.908	1.885	1.869	1.845	1.841	1.822	1.815	1.777
30	2.003	1.972	1.946	1.923	1.906	1.882	1.878	1.858	1.851	1.813

Changes in Maximum Size Limit with All Tuesdays Closed and Monday Closures

Table 3, p. 17

Size limit	Total number of closed Mondays														
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	ALL
26	1.695	1.667	1.641	1.619	1.588	1.563	1.537	1.510	1.503	1.488	1.469	1.460	1.444	1.437	1.405
27	1.718	1.689	1.663	1.641	1.610	1.584	1.558	1.530	1.524	1.508	1.489	1.480	1.464	1.456	1.423
28	1.754	1.724	1.698	1.675	1.643	1.617	1.590	1.562	1.555	1.539	1.520	1.510	1.494	1.486	1.453
29	1.777	1.747	1.720	1.697	1.664	1.638	1.611	1.582	1.575	1.559	1.540	1.530	1.514	1.505	1.472
30	1.812	1.781	1.754	1.731	1.697	1.670	1.643	1.614	1.607	1.590	1.570	1.560	1.544	1.535	1.501

Changes in Maximum Size Limit with Changes in Annual Limits

Table 6, p. 20

Projected Harvest			
	Annual Limit		
	2	3	4
Number of fish	119,660	127,656	132,453

Table 7, p. 21

Projected Yield			
Size limit	Annual Limit		
	2	3	4
26	1.700	1.814	1.874
27	1.722	1.838	1.899
28	1.758	1.876	1.938
29	1.781	1.900	1.964
30	1.816	1.938	2.003

Changes in Maximum Size Limit with 3-fish Annual Limit and Tuesday Closures

Table 8, p. 22

Size limit	Total number of closed Tuesdays									
	5	6	7	8	9	10	11	12	13	48
26	1.814	1.787	1.762	1.742	1.726	1.704	1.701	1.683	1.676	1.642
27	1.838	1.811	1.786	1.765	1.749	1.727	1.723	1.705	1.699	1.664
28	1.876	1.848	1.823	1.801	1.785	1.763	1.759	1.741	1.734	1.698
29	1.900	1.872	1.846	1.825	1.808	1.786	1.782	1.763	1.756	1.720
30	1.938	1.909	1.883	1.861	1.844	1.821	1.817	1.798	1.791	1.754

Reverse Slot Limit on “First” Fish

- ▶ 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, no increase in harvest of second fish, no increase in size of second fish
 - ▶ High harvest scenario – same HPUE as 2013, increased proportion of second fish, increased size of second fish
- ▶ Used weight data from 2013 for average weights of “first” fish
 - ▶ Corrected to current conditions
- ▶ Used 4% release mortality inflation

Reverse Slot – Low Harvest Scenario

- ▶ Low harvest scenario: 132,453 fish
 - ▶ No projected removals below Reference TCEY allocation
 - ▶ Several options ranging from U38O60 to U44O80 below Status Quo TCEY allocation
 - ▶ Removals range from 1.461 – 1.994 Mlb

Table 10a, p. 24

		Upper Length Limit (in)										
		60	62	64	66	68	70	72	74	76	78	80
Lower Length Limit (in)	35	1.559	1.540	1.517	1.498	1.488	1.482	1.477	1.474	1.471	1.467	1.461
	36	1.600	1.580	1.557	1.538	1.528	1.523	1.518	1.515	1.512	1.508	1.502
	37	1.620	1.600	1.578	1.559	1.549	1.543	1.538	1.535	1.532	1.528	1.522
	38	1.647	1.628	1.605	1.586	1.576	1.571	1.566	1.563	1.559	1.556	1.550
	39	1.671	1.652	1.629	1.610	1.600	1.595	1.590	1.587	1.584	1.580	1.574
	40	1.689	1.670	1.647	1.629	1.619	1.613	1.608	1.605	1.602	1.598	1.593
	41	1.707	1.688	1.665	1.647	1.637	1.631	1.626	1.623	1.620	1.617	1.611
	42	1.720	1.701	1.679	1.660	1.650	1.645	1.640	1.637	1.634	1.630	1.625
	43	1.742	1.723	1.700	1.682	1.672	1.667	1.662	1.659	1.656	1.652	1.646
	44	1.753	1.734	1.712	1.693	1.683	1.678	1.673	1.670	1.667	1.663	1.658
	45	1.767	1.748	1.726	1.708	1.698	1.693	1.688	1.685	1.682	1.678	1.672
	46	1.777	1.758	1.736	1.718	1.708	1.702	1.697	1.694	1.691	1.688	1.682
	47	1.794	1.775	1.753	1.735	1.725	1.720	1.715	1.712	1.709	1.705	1.700
	48	1.805	1.786	1.764	1.746	1.737	1.731	1.726	1.723	1.720	1.717	1.711
	49	1.825	1.806	1.785	1.767	1.757	1.752	1.747	1.744	1.741	1.737	1.731
	50	1.841	1.823	1.802	1.784	1.774	1.769	1.764	1.761	1.758	1.754	1.749
	51	1.857	1.839	1.817	1.800	1.790	1.784	1.780	1.777	1.774	1.770	1.765
	52	1.874	1.856	1.835	1.817	1.807	1.802	1.797	1.794	1.791	1.788	1.782
	53	1.885	1.867	1.846	1.828	1.818	1.813	1.808	1.805	1.802	1.799	1.793
	54	1.905	1.887	1.866	1.848	1.839	1.833	1.828	1.825	1.823	1.819	1.814
55	1.914	1.896	1.875	1.857	1.848	1.842	1.838	1.835	1.832	1.828	1.823	
56	1.929	1.912	1.891	1.873	1.864	1.858	1.853	1.851	1.848	1.844	1.839	
57	1.946	1.928	1.907	1.890	1.880	1.875	1.870	1.867	1.865	1.861	1.856	
58	1.961	1.944	1.923	1.906	1.896	1.891	1.886	1.883	1.880	1.877	1.872	
59	1.976	1.959	1.938	1.921	1.912	1.906	1.902	1.899	1.896	1.892	1.887	
60	1.994	1.977	1.956	1.939	1.930	1.925	1.920	1.917	1.914	1.910	1.905	

Reverse Slot – High Harvest Scenario

- ▶ High harvest scenario: 174,415 fish
 - ▶ No workable size limits
 - ▶ Removals range from 1.891 – 2.456 Milb

Table 10b, p. 25

		Upper Length Limit (in)										
		60	62	64	66	68	70	72	74	76	78	80
Lower Length Limit (in)	35	1.992	1.973	1.949	1.930	1.919	1.912	1.907	1.904	1.901	1.897	1.891
	36	2.036	2.017	1.992	1.974	1.962	1.956	1.951	1.948	1.944	1.941	1.935
	37	2.057	2.038	2.014	1.995	1.984	1.978	1.973	1.969	1.966	1.962	1.956
	38	2.086	2.067	2.043	2.025	2.013	2.007	2.002	1.999	1.995	1.992	1.986
	39	2.112	2.093	2.069	2.050	2.039	2.033	2.028	2.025	2.021	2.018	2.012
	40	2.131	2.112	2.088	2.070	2.059	2.053	2.047	2.044	2.041	2.037	2.031
	41	2.150	2.131	2.107	2.089	2.078	2.072	2.066	2.063	2.060	2.056	2.050
	42	2.164	2.145	2.121	2.103	2.092	2.086	2.081	2.078	2.074	2.071	2.065
	43	2.186	2.168	2.144	2.126	2.115	2.109	2.104	2.100	2.097	2.093	2.088
	44	2.198	2.180	2.156	2.138	2.127	2.121	2.116	2.113	2.109	2.106	2.100
	45	2.213	2.195	2.171	2.153	2.142	2.136	2.131	2.128	2.125	2.121	2.115
	46	2.224	2.206	2.182	2.164	2.153	2.147	2.142	2.138	2.135	2.132	2.126
	47	2.242	2.224	2.201	2.183	2.172	2.166	2.161	2.157	2.154	2.151	2.145
	48	2.253	2.236	2.212	2.194	2.183	2.177	2.172	2.169	2.166	2.162	2.156
	49	2.275	2.257	2.234	2.216	2.205	2.199	2.194	2.191	2.188	2.184	2.178
	50	2.293	2.275	2.252	2.234	2.223	2.217	2.212	2.209	2.206	2.202	2.196
	51	2.310	2.292	2.269	2.252	2.241	2.234	2.230	2.226	2.223	2.220	2.214
	52	2.327	2.310	2.287	2.270	2.259	2.253	2.248	2.245	2.242	2.238	2.232
	53	2.340	2.322	2.299	2.282	2.271	2.265	2.260	2.257	2.254	2.250	2.245
	54	2.361	2.344	2.321	2.304	2.293	2.287	2.282	2.279	2.276	2.272	2.266
55	2.370	2.353	2.330	2.313	2.302	2.296	2.291	2.288	2.285	2.282	2.276	
56	2.386	2.369	2.347	2.330	2.319	2.313	2.308	2.305	2.302	2.298	2.293	
57	2.404	2.387	2.365	2.348	2.337	2.331	2.326	2.323	2.320	2.316	2.311	
58	2.420	2.404	2.381	2.364	2.353	2.347	2.343	2.339	2.337	2.333	2.327	
59	2.437	2.420	2.398	2.381	2.370	2.364	2.359	2.356	2.353	2.350	2.344	
60	2.456	2.439	2.417	2.400	2.390	2.384	2.379	2.376	2.373	2.369	2.364	

Reverse Slot Limit on First Fish with Variable Day of the Week Closures and Max. Size on 2nd Fish

- ▶ Used single harvest scenario to aid decision making process
 - ▶ Still uncertainty in estimates
- ▶ Used status quo HPUE forecast, then applied proportion of second fish retained in 2013
- ▶ Used weight data from 2013 for reverse slot and U26 and U28 fish
- ▶ Used 2017 proportion of fish harvested on each closed date
- ▶ Used 4% release mortality inflation

Reverse Slot Limit on First Fish with Tuesday Closures and 28" Max. Size on 2nd Fish

Harvest	Number of Tuesday Closures														
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	All
	170,602	168,406	165,716	163,576	161,171	158,674	156,237	154,112	152,368	150,937	149,178	148,843	147,353	146,658	143,622

Options below Status Quo TCEY allocation (1.66 Mlb)

Table 11, p. 26

Lower Length Limit (in)	Upper Length Limit (in)											
	60	62	64	66	68	70	72	74	76	78	80	
35	All	All	12	10	10	10	9	9	9	9	8	
36	Over	Over	All	All	13	12	12	12	12	12	11	
37	Over	Over	Over	All	All	All	All	All	All	13	13	
38	Over	Over	Over	Over	Over	Over	All	All	All	All	All	
39	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	
40	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	
41	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	
42	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	
43	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	
44	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	
45	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	
46	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	
47	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	
48	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	
49	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	
50	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	
51	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	
52	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	
53	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	
54	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	
55	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	
56	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	
57	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	
58	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	
59	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	
60	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	

Reverse Slot Limit on First Fish with Tuesday Closures and 26" Max. Size on 2nd Fish

Harvest	Number of Tuesday Closures														
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	All
	170,602	168,406	165,716	163,576	161,171	158,674	156,237	154,112	152,368	150,937	149,178	148,843	147,353	146,658	143,622

Options below Status Quo TCEY allocation (1.66 Mlb)

Table 12, p. 27

Lower Length Limit (in)	Upper Length Limit (in)										
	60	62	64	66	68	70	72	74	76	78	80
35	8	7	6	5	5	5	4	4	4	4	4
36	10	9	8	7	6	6	6	6	6	6	5
37	12	10	9	8	7	7	7	7	7	6	6
38	All	12	10	9	9	8	8	8	8	8	7
39	Over	All	12	10	10	10	9	9	9	9	8
40	Over	Over	All	12	12	11	10	10	10	10	10
41	Over	Over	All	All	13	12	12	12	12	12	10
42	Over	Over	Over	Over	All	All	13	13	12	12	12
43	Over	Over	Over	Over	Over	All	All	All	All	All	All
44	Over	Over	Over	Over	Over	Over	Over	Over	Over	All	All
45	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
46	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
47	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
48	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
49	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
50	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
51	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
52	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
53	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
54	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
55	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
56	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
57	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
58	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
59	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
60	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over

Reverse Slot Limit on First Fish with Monday Closures and 26" Max. Size on 2nd Fish

Number of Monday Closures

Harvest	0	1	2	3	4	5	6	7	8	9	10	11	12	13	All
Harvest	143,622	141,106	138,952	137,124	134,440	132,306	130,152	127,835	127,260	125,968	124,348	123,585	122,303	121,555	118,989

Options below Reference TCEY allocation (1.24 Mlb)

Lower Length Limit (in)	Upper Length Limit (in)										
	60	62	64	66	68	70	72	74	76	78	80
35	Over	Over	Over	All	All	All	All	All	All	All	13
36	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
37	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
38	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
39	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
40	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
41	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
42	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
43	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
44	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
45	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
46	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
47	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
48	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
49	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
50	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
51	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
52	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
53	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
54	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
55	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
56	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
57	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
58	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
59	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
60	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over

Options below Status Quo TCEY allocation (1.66 Mlb)

Lower Length Limit (in)	Upper Length Limit (in)										
	60	62	64	66	68	70	72	74	76	78	80
35	0	0	0	0	0	0	0	0	0	0	0
36	0	0	0	0	0	0	0	0	0	0	0
37	0	0	0	0	0	0	0	0	0	0	0
38	0	0	0	0	0	0	0	0	0	0	0
39	0	0	0	0	0	0	0	0	0	0	0
40	1	0	0	0	0	0	0	0	0	0	0
41	1	1	0	0	0	0	0	0	0	0	0
42	2	1	0	0	0	0	0	0	0	0	0
43	2	2	1	1	0	0	0	0	0	0	0
44	3	2	1	1	1	0	0	0	0	0	0
45	3	3	2	1	1	1	1	1	1	0	0
46	4	3	2	2	1	1	1	1	1	1	1
47	4	4	3	2	2	2	2	1	1	1	1
48	4	4	3	3	2	2	2	2	2	2	1
49	5	4	4	3	3	3	3	3	2	2	2
50	6	5	4	4	4	4	3	3	3	3	3
51	6	6	5	4	4	4	4	4	4	4	3
52	7	6	5	5	5	4	4	4	4	4	4
53	7	6	6	5	5	5	5	4	4	4	4
54	7	7	6	6	6	5	5	5	5	5	5
55	8	7	7	7	6	6	5	5	5	5	5
56	9	8	7	7	6	6	6	6	6	6	6
57	10	9	7	7	7	7	6	6	6	6	6
58	10	10	9	7	7	7	7	7	7	7	7
59	11	10	10	9	8	7	7	7	7	7	7
60	12	11	10	10	9	9	9	9	8	8	7

Table 13, p. 28



Reverse Slot Limit on First Fish with Thursday Closures and 26" Max. Size on 2nd Fish

Number of Thursday Closures

Harvest	0	1	2	3	4	5	6	7	8	9	10	11	12	13	All
	143,622	141,113	138,588	136,950	134,381	132,267	129,982	128,854	127,016	125,076	123,273	122,556	121,372	120,552	117,081

Options below Reference TCEY allocation (1.24 Mlb)

Lower Length Limit (in)	Upper Length Limit (in)										
	60	62	64	66	68	70	72	74	76	78	80
35	Over	Over	All	All	All	All	13	13	13	12	12
36	Over	Over	Over	Over	Over	All	All	All	All	All	All
37	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	All
38	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
39	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
40	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
41	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
42	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
43	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
44	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
45	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
46	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
47	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
48	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
49	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
50	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
51	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
52	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
53	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
54	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
55	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
56	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
57	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
58	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
59	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
60	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over

Options below Status Quo TCEY allocation (1.66 Mlb)

Lower Length Limit (in)	Upper Length Limit (in)										
	60	62	64	66	68	70	72	74	76	78	80
35	0	0	0	0	0	0	0	0	0	0	0
36	0	0	0	0	0	0	0	0	0	0	0
37	0	0	0	0	0	0	0	0	0	0	0
38	0	0	0	0	0	0	0	0	0	0	0
39	0	0	0	0	0	0	0	0	0	0	0
40	1	0	0	0	0	0	0	0	0	0	0
41	1	1	0	0	0	0	0	0	0	0	0
42	2	1	0	0	0	0	0	0	0	0	0
43	2	2	1	1	0	0	0	0	0	0	0
44	3	2	1	1	1	0	0	0	0	0	0
45	3	3	2	1	1	1	1	1	1	0	0
46	4	3	2	2	1	1	1	1	1	1	1
47	4	4	3	2	2	2	2	1	1	1	1
48	4	4	3	2	2	2	2	2	2	2	1
49	5	4	4	3	3	3	2	2	2	2	2
50	6	5	4	4	4	3	3	3	3	3	3
51	6	6	5	4	4	4	4	4	4	4	3
52	7	6	5	5	5	4	4	4	4	4	4
53	7	6	6	5	5	5	5	4	4	4	4
54	8	7	6	6	6	5	5	5	5	5	5
55	8	8	7	6	6	6	6	5	5	5	5
56	9	8	8	7	6	6	6	6	6	6	6
57	9	9	8	7	7	7	6	6	6	6	6
58	10	9	9	8	8	8	7	7	7	7	6
59	10	10	9	9	8	8	8	8	8	8	7
60	11	10	10	9	9	9	8	8	8	8	8

Table 14, p. 30



One Fish Bag Limit

- ▶ Harvest forecast: 84,166 fish (63% of status quo)
- ▶ Uncertainty in average weight
- ▶ Explored several options
 - ▶ Average weight of fish in 2019 + 36%
 - ▶ Average weight of fish over 28 inches in 2019
 - ▶ Average weight of fish over 28 inches in 2019 + 20%
- ▶ Used 2% release mortality inflation

Table 15, p. 32

Harvest (no. fish)	Size	Mean weight	Removals
84,166	2019 All+36%	21.14	1.815
84,166	2019 O28	21.46	1.842
84,166	2019 O28+20%	25.75	2.211

One Fish Bag Limit with Reverse Slot Limit and Tuesday Closures

- ▶ Harvest forecast: 84,166 fish
- ▶ Used weight data from 2013 corrected to current conditions
- ▶ Used 2017 proportion of fish harvested on each closed date
- ▶ Used 4% release mortality inflation

One Fish Bag Limit with Reverse Slot Limit and Tuesday Closures

Number of Tuesday Closures

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	All
Harvest	90,492	89,323	87,894	86,755	85,485	84,166	82,880	81,754	80,823	80,069	79,129	78,948	78,157	77,795	76,174

Options below Reference TCEY allocation (1.24 Mlb)

Lower Length Limit (in)	Upper Length Limit (in)										
	60	62	64	66	68	70	72	74	76	78	80
35	Over	All	12	10	9	8	8	8	7	7	7
36	Over	Over	Over	All	All	13	12	12	12	10	10
37	Over	Over	Over	Over	All	All	All	All	All	All	13
38	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	All
39	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
40	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
41	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
42	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
43	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
44	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
45	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
46	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
47	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
48	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
49	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
50	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
51	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
52	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
53	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
54	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
55	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
56	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
57	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
58	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
59	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
60	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over

Options below Status Quo TCEY allocation (1.66 Mlb)

Lower Length Limit (in)	Upper Length Limit (in)										
	60	62	64	66	68	70	72	74	76	78	80
35	0	0	0	0	0	0	0	0	0	0	0
36	0	0	0	0	0	0	0	0	0	0	0
37	0	0	0	0	0	0	0	0	0	0	0
38	0	0	0	0	0	0	0	0	0	0	0
39	0	0	0	0	0	0	0	0	0	0	0
40	0	0	0	0	0	0	0	0	0	0	0
41	1	0	0	0	0	0	0	0	0	0	0
42	1	0	0	0	0	0	0	0	0	0	0
43	2	2	0	0	0	0	0	0	0	0	0
44	3	2	1	0	0	0	0	0	0	0	0
45	4	3	2	1	0	0	0	0	0	0	0
46	4	3	2	1	1	0	0	0	0	0	0
47	5	4	3	2	2	1	1	1	1	1	0
48	6	5	4	3	2	2	2	2	1	1	1
49	6	6	5	4	3	3	3	2	2	2	2
50	7	6	5	5	4	4	4	3	3	3	3
51	8	7	6	5	5	5	4	4	4	4	4
52	9	8	7	6	6	5	5	5	5	5	4
53	10	9	7	7	6	6	6	6	5	5	5
54	12	10	9	8	7	7	7	6	6	6	6
55	12	10	9	8	8	7	7	7	7	7	6
56	All	12	10	9	8	8	8	8	8	7	7
57	All	All	12	10	10	9	9	9	9	8	8
58	Over	All	All	12	10	10	10	10	10	9	9
59	Over	Over	All	13	12	12	12	11	10	10	10
60	Over	Over	Over	All	All	All	13	13	12	12	12

Table 16, p. 33



Length of Fishing Season

- ▶ Open season of May 16 – July 31 or June 1 – July 31
- ▶ All days of the week open during fishing season
- ▶ Status quo size limits, annual limits, trip limits
- ▶ Explored several options
 - ▶ High Harvest – Proportion of fish caught during open dates in 2014
 - ▶ Low Harvest – Proportion of fish caught during open dates in 2016
 - ▶ Recent Harvest – Proportion of fish caught during open dates in 2018

Table 17, p. 35

May 16 – July 31		
Base Year for Proportion of Harvest	Harvest	Removals (Mlb)
2014 (High Harvest)	116,744	1.711
2016 (Low Harvest)	108,763	1.596
2018 (Most Recent Harvest)	112,676	1.628
June 1 – July 31		
Base Year for Proportion of Harvest	Harvest	Removals (Mlb)
2014 (High Harvest)	108,644	1.592
2016 (Low Harvest)	98,147	1.442
2018 (Most Recent Harvest)	103,786	1.503

Management Measures with Options At or Below 1.66 MIb

- ▶ 4-fish annual limit, all Tuesdays closed
 - ▶ Monday closures, changes to maximum size limit on one fish
 - ▶ Thursday closures, changes to maximum size limit on one fish
- ▶ 3-fish annual limit, all Tuesdays closed, maximum size limit of 26" on one fish
- ▶ 2-fish annual limit
 - ▶ Closure of 7+ Tuesdays, changes to maximum size limit
- ▶ Reverse slot limit on one fish
 - ▶ Maximum size 28 inches, closure of 8+ Tuesdays, Reverse slots U35-38 and O60-80
 - ▶ Maximum size 26 inches, closure of 4+ Tuesdays, Reverse slots U35-44 and O60-80
- ▶ Reverse slot limit on one fish, all Tuesdays closed
 - ▶ Maximum size 26 inches, closure of 0 – 12 Mondays, Reverse slots U39-60 and O60-80
 - ▶ Maximum size 26 inches, closure of 0 – 11 Thursdays, Reverse slots U39-60 and O60-80
- ▶ 1-fish bag limit with reverse slot limit
 - ▶ 0 – All Tuesdays closed, Reverse slots U40-60 and O60-80
- ▶ All days open, shorter fishing season
 - ▶ Fishing Season May 16 – July 31 (might work)
 - ▶ Fishing season June 1 – July 31

Management Measures with Options At or Below 1.24 MIb

- ▶ Reverse slot limit on one fish, all Tuesdays closed, maximum size 26 inches
 - ▶ Closure of 13 or All Mondays, Reverse slots U35 and O66-80
 - ▶ Closure of 12, 13 or All Thursdays, Reverse slots U35-37 and O64-80
- ▶ 1-fish bag limit with reverse slot
 - ▶ 7+ Tuesdays closed, Reverse slots U35-38 and O62-80

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 - Fish and Game Fund

