

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

SARAH WEBSTER - DECEMBER 2020



# FISHERY REVIEW THROUGH 2020

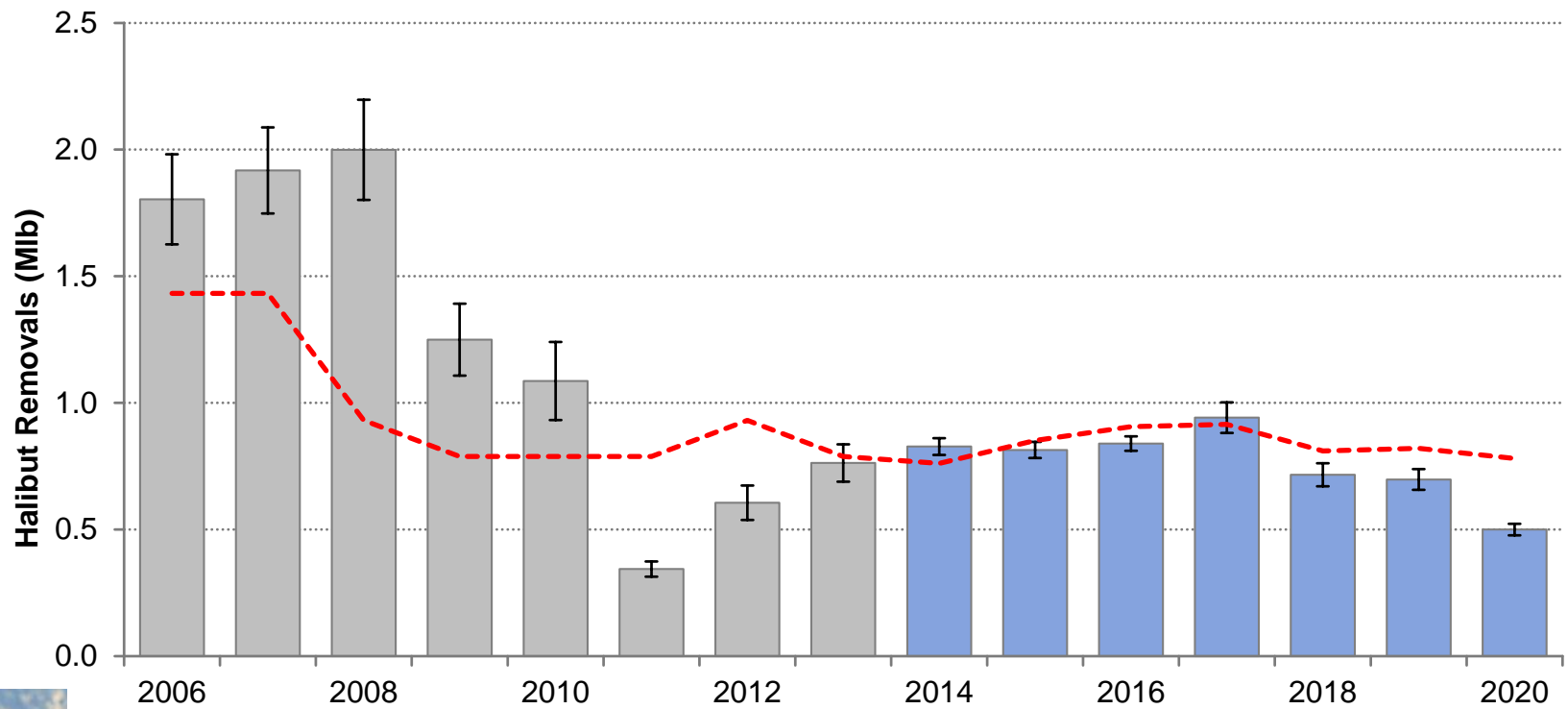


# PRELIMINARY CHARTER ESTIMATES FOR 2020

Area	Mean Weight (lb)	Harvest (no. fish)	Yield (lb)	Release Mortality (lb)	Total Removals (lb)	Allocation (lb)	Underage (lb)	Underage %
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%

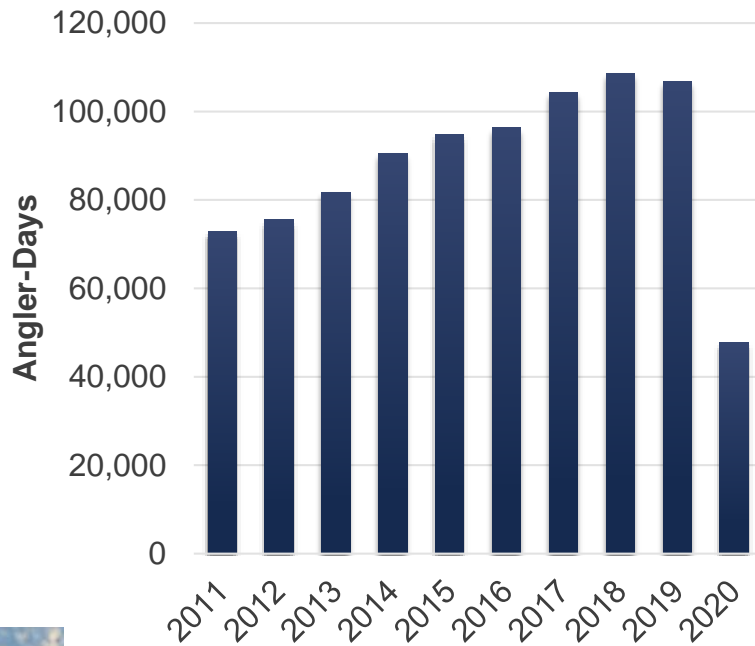


# 2C – CHARTER HALIBUT REMOVALS



# 2C – EFFORT

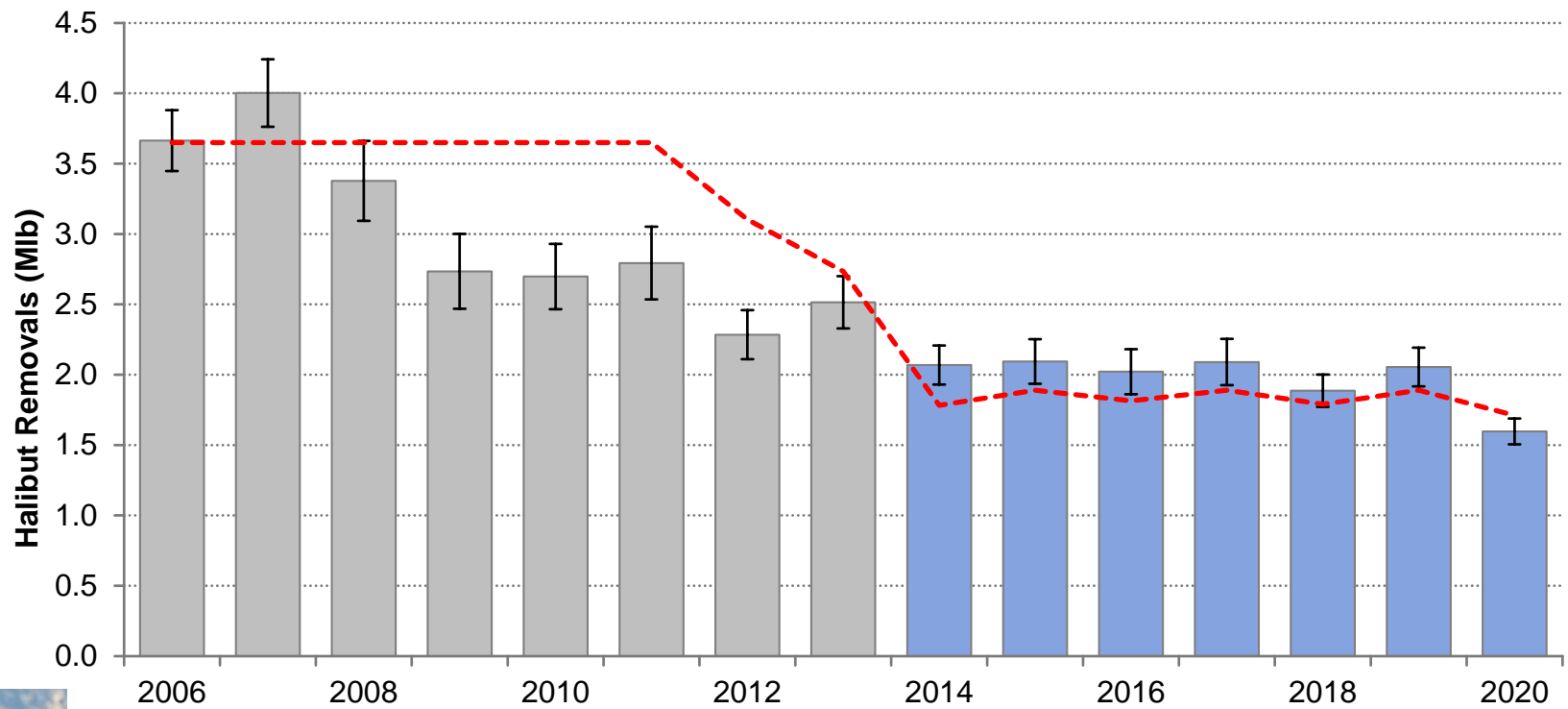
## Effort



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

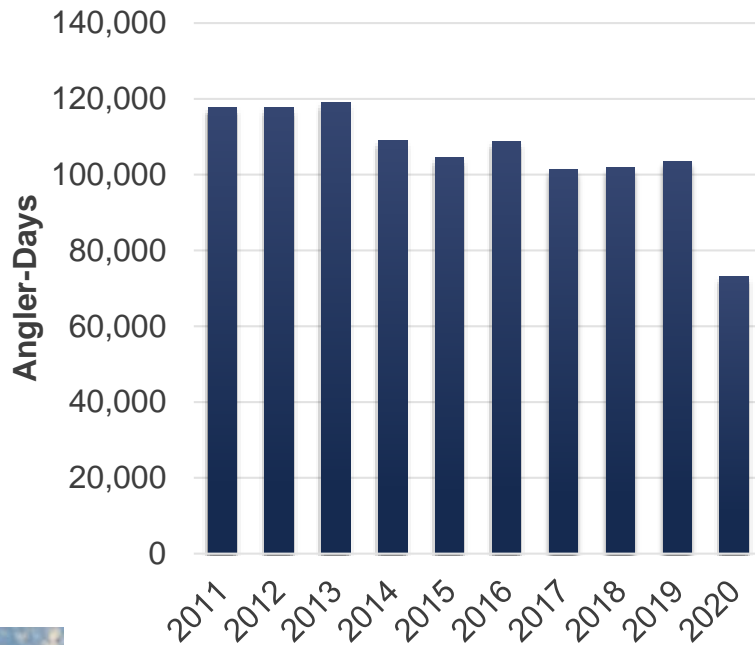


# 3A – CHARTER HALIBUT REMOVALS



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

## 3A

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

<b>Status Quo Regulations Projection</b>	<b>1.03</b>
<b>Original 2020 Regulations Projection</b>	<b>0.89</b>



## 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 (Table 6)
- 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 (Tables 7 & 8)
- 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 (Table 9)
- 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 (Table 10)



## 2C – SUPPLEMENTAL ANALYSES

- 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 (Tables 7 & 11)
- 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 (Tables 12 – 15)
- 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 (Tables 16 & 17)



# 2C – FORECASTS UNDER REFERENCE TCEY

Management Measures	Options Below Reference TCEY?	Options Below Reference TCEY with 35% COVID Buffer?
Status quo	NO	NO
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	NO	YES
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	NO	NO
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	NO	MAYBE
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	NO	MAYBE
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	NO	YES
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	NO	YES
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	YES	YES



## 2C – IMPLEMENTATION CONSIDERATIONS

- Angler selectivity (high-grading)
- Harvest distribution throughout year
  - Important to maintain for reliable preliminary harvest estimates using partial year logbook data and for forecasting alternative management measures
- Day of the week closures assume all harvest is eliminated
- Regulations with annual limits need recording requirements
- Impacts of COVID-19 may not be uniform among subareas





# 2C – PROJECTIONS FOR COMMITTEE RECOMMENDATIONS

Reverse Slot Limit (in)	Projection (Mlb)	Projection with 35% Effort Adjustment for COVID Impacts (Mlb)
U44 O80	0.993	0.645
U45 O80	1.026	0.667
U46 O80	1.048	0.681
U47 O80	1.077	0.700
U48 O80	1.097	0.713
U49 O80	1.131	0.735
U50 O80	1.155	0.751
U50 O78	1.166	0.758
U50 O76	1.168	0.759
U50 O74	1.182	0.768
U50 O72	1.209	0.786



# 2C – ERRATUM TO APPENDIX II

- Erratum – Update to second to last column (red) in Appendix II, Table A2-1

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	0.039	74.9%
B	0.186	0.167	0.112	0.108	42.2%
C	0.046	0.042	0.028	0.031	33.4%
D	0.394	0.354	0.236	0.214	45.5%
EF	0.107	0.096	0.064	0.033	68.8%
G2C	0.139	0.125	0.083	0.071	49.3%
Area 2C	1.026	0.923	0.616	0.495	54.4%



# 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

<b>Status Quo Regulations Projection</b>	<b>2.92</b>
<b>Original 2020 Regulations Projection</b>	<b>1.75</b>



# 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 (Table 19)
- Status quo with annual limits of 2 – 6 fish (Tables 20, 21, & 26)
- Status quo with addition of closed Wednesdays (1 – 13, all Wednesdays closed; Tables 22)
- Status quo with all Wednesdays closed and addition of closed Tuesdays (1 – 13, all Tuesdays closed; Tables 23)
- Status quo with a combination of closed days and annual limits (Tables 24 & 25 – rows with 32-inch size limit)
- Status quo with a combination of closed days and changes to the size limit (Tables 24b & 25b)
- Status quo with a combination of annual limits and changes to the size limit (Table 24 – column with 0 Wednesdays closed)
- Status quo with a combination of closed days, annual limits, and changes to the size limit (Tables 24 & 25)



# 3A – FORECASTS UNDER REFERENCE TCEY

Management Measures	Options Below Reference TCEY?	Options Below Reference TCEY with 25% COVID Buffer?
Status quo	NO	NO
Changes to maximum size limits ranging from 26 inches to 33 inches	NO	NO
Addition of annual limits of 2 – 6 fish	NO	YES
Addition of closed Wednesdays (1 – 13, all Wednesdays closed)	NO	YES
All Wednesdays closed and addition of closed Tuesdays (1 – 13, all Tuesdays closed)	NO	YES
Addition of closed days and annual limits	YES	YES
Addition of closed days and changes to the size limit	NO	YES
Addition of annual limits and changes to the size limit	YES	YES
Addition of closed days, annual limits, and changes to the size limit	YES	YES



## 3A – IMPLEMENTATION CONSIDERATIONS

- Day of the week closures assume all harvest was and will be eliminated
- Regulations with annual limits need recording requirements
- Impacts of COVID-19 may not be uniform among subareas



# 3A – PROJECTIONS FOR COMMITTEE RECOMMENDATIONS

- Two fish bag limit: one any size, one with maximum size limit
- All Wednesdays closed to retention of halibut
- One trip per vessel per day and one trip per charter halibut permit per day

Size Limit (in)	Projection (Mlb)	Projection with 25% Effort Adjustment for COVID Impacts (Mlb)
30	2.378	1.784
31	2.418	1.814
32	2.470	1.853





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