

C1: ANALYSIS OF MANAGEMENT MEASURES FOR THE AREA 2C AND 3A CHARTER HALIBUT FISHERIES FOR 2022

SARAH WEBSTER - DECEMBER 2022



FISHERY REVIEW THROUGH 2021

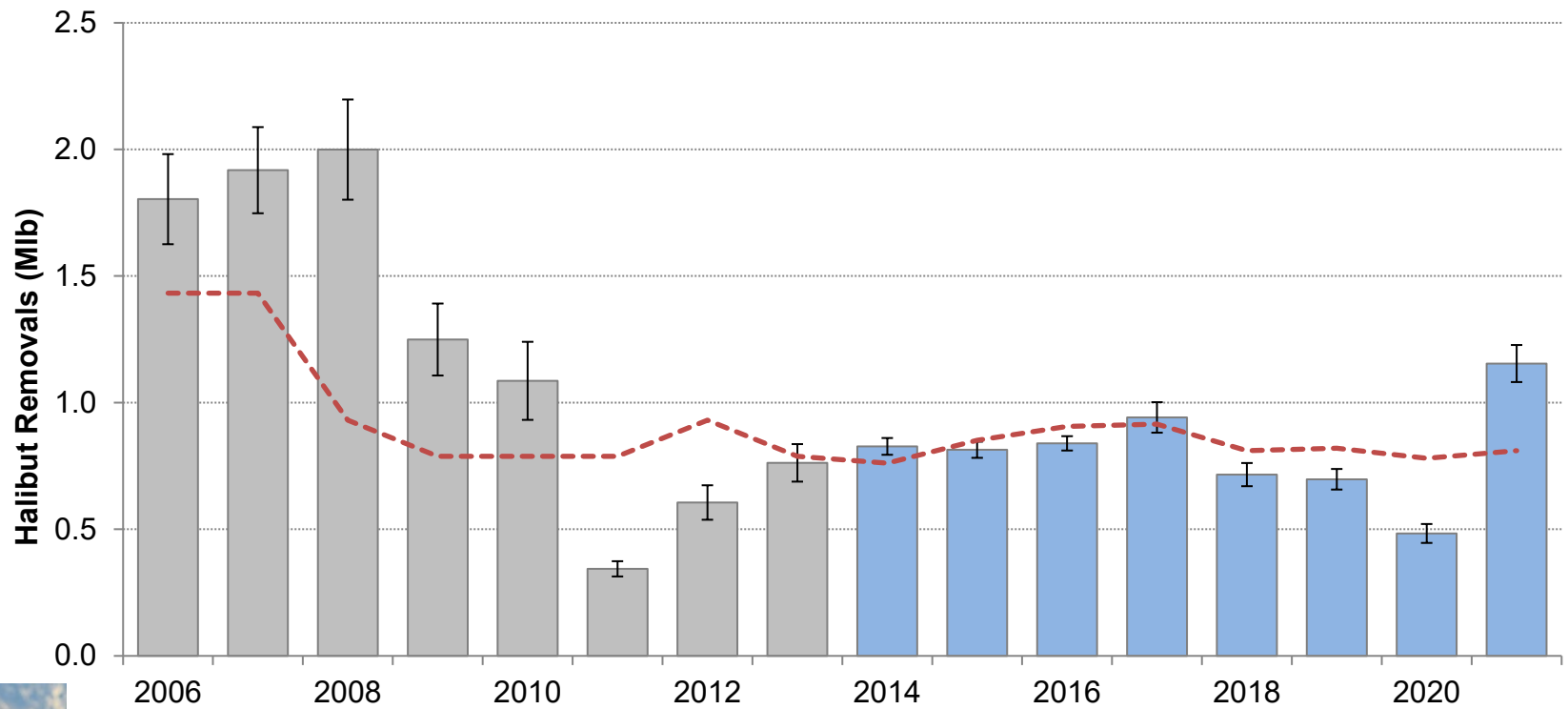


PRELIMINARY CHARTER ESTIMATES FOR 2021

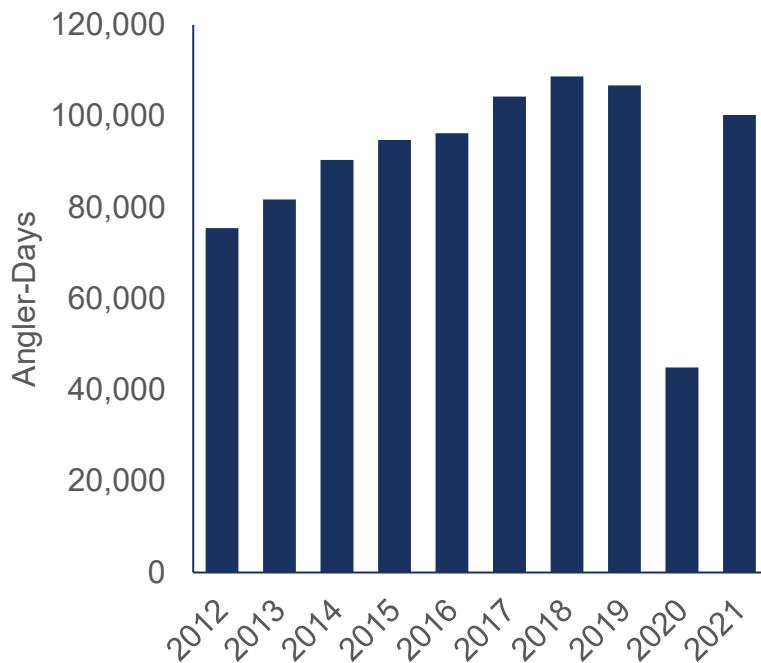
Area	Mean Weight (lb)	Harvest (no. fish)	Yield (lb)	Release Mortality (lb)	Total Removals (lb)	Allocation (lb)	Overage (lb)	Overage %
2C	14.48	77,287	1,119,442	34,737	1,154,179	810,000	344,179	42.5%
3A	13.23	184,160	2,436,779	17,622	2,454,401	1,950,000	504,401	25.9%



2C CHARTER HALIBUT REMOVALS



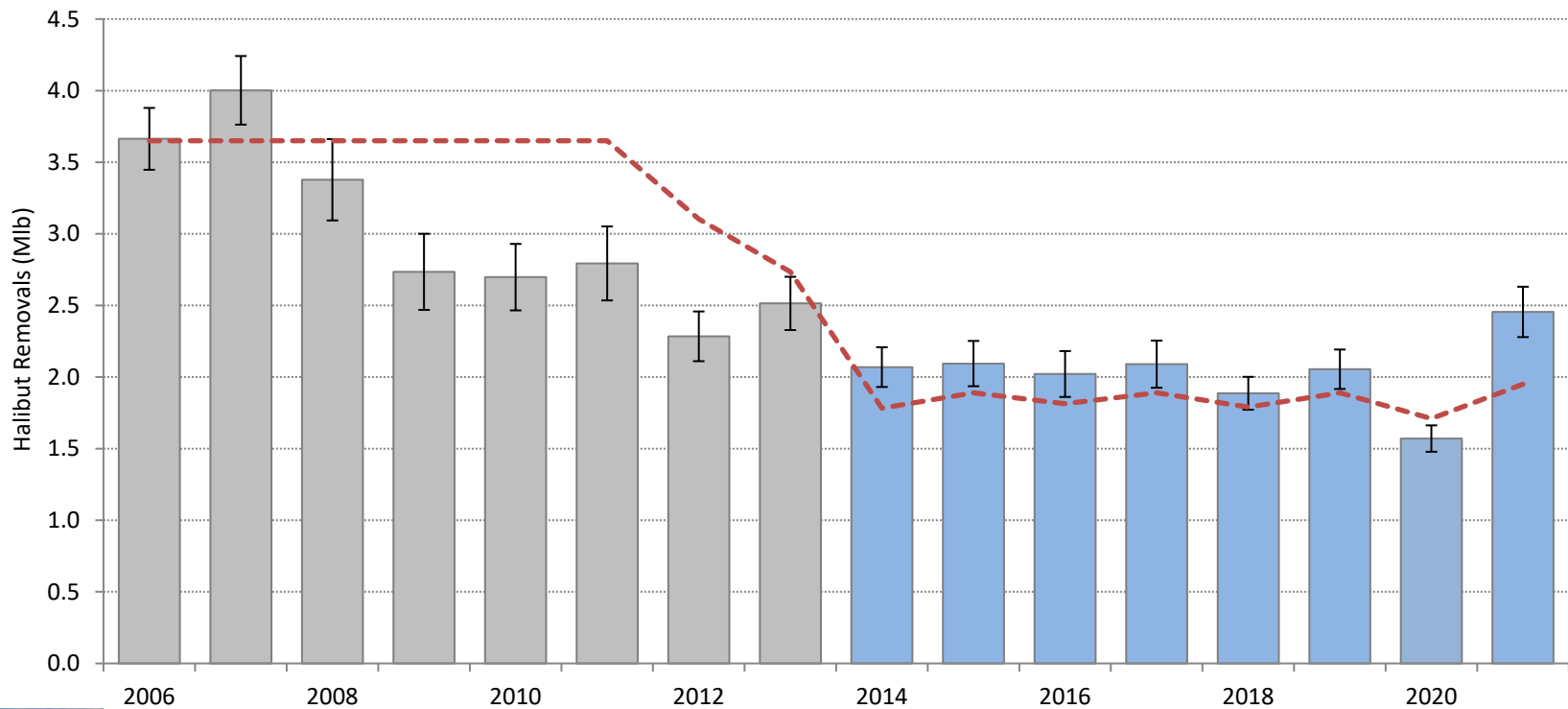
2C EFFORT



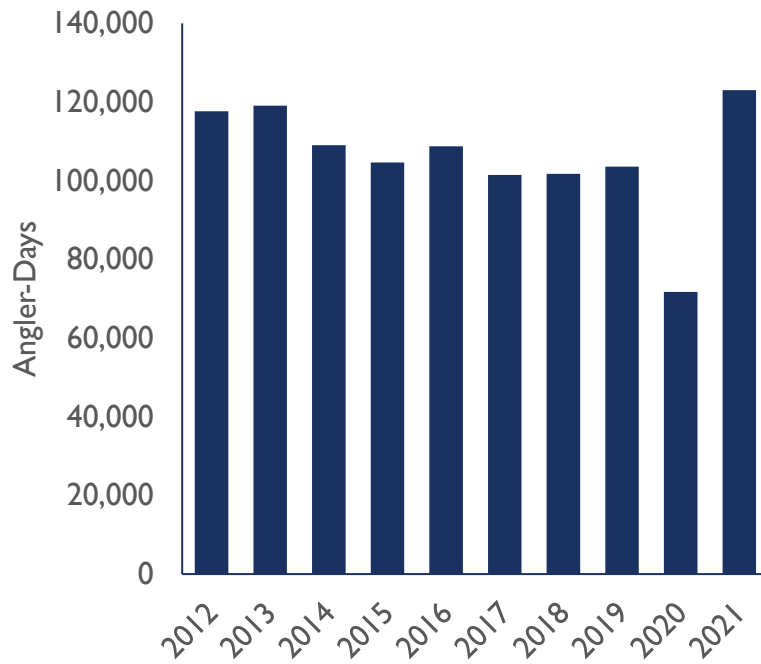
- 123% increase in angler-days from 2020 to 2021
- Variable by subarea – some still considerably below 2019, others similar to 2019



3A CHARTER HALIBUT REMOVALS



3A EFFORT



- 72% increase in effort from 2020 to 2021
- Up from 2019 in most Subareas; some Subareas saw substantial increases



BUSINESSES AND VESSELS HARVESTING HALIBUT

2C

	Businesses	Vessels
2012	255	498
2013	250	501
2014	246	520
2015	241	515
2016	248	532
2017	248	537
2018	244	534
2019	256	545
2020	192	386
2021	227	492

3A

	Businesses	Vessels
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	203	343
2021	225	384



ANALYSIS OF MANAGEMENT MEASURES FOR 2022



CHARTER ALLOCATION FOR 2022

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

	Reference Allocation	2021 Allocation
2C	0.60	0.81
3A	2.05	1.95



2C MANAGEMENT MEASURES FOR 2022

- **Status quo (one fish bag limit with reverse slot limit allowing harvest of a fish less than or equal to 50 inches or greater than or equal to 72 inches)**
- Additional reverse slot limits, with lower limits of the protected slot ranging from 35 to 50 inches and upper limits ranging from 50 to 80 inches
- Additional reverse slot limits with lower limits of the protected slot ranging from 35 to 50 inches and an upper limit of 80 inches with a closed day of the week starting on September 17th and adding closed days to May 15th or for the entire season, analyzed for each day of the week.
- Additional reverse slot limit with lower limits of the protected slot ranging from 35 to 50 inches and an upper limit of 80 inches with a closed day of the week for the entire season (analyzed for each day of the week) and an additional closed day of the week starting on September 17th and adding closed days to May 15th or for the entire season, analyzed for each day of the week.
- Annual limits of two to four fish, in combination with each of the above options



2C – STATUS QUO FORECAST

- All forecasts under “normal” conditions
 - Did not attempt to account for COVID-19 related decreases in effort
- 72,865 halibut
 - 95% confidence interval 60,075 – 81,655 halibut
 - Effort used data from 2009 – 2019 and 2021
 - Except for Juneau and Ketchikan where 2021 was excluded
 - 2020 excluded from all forecasts
 - HPUE used data through 2019
 - Substantial increases in 2020 and 2021, likely related to changes in size limits and changes to fleet dynamics due to COVID-19
 - Including these years increases projection to 81,800 halibut \pm 8,766 fish
- Figure 2



2C – STATUS QUO FORECAST

Status Quo Regulations:

- One fish bag limit
- Reverse slot limit of less than or equal to 50 or greater than or equal to 72 inches

**Status Quo
Regulations
Projection**

1.095 Mlb



2C – REVERSE SLOT LIMIT

- Table 6
- Lower limits of 35 – 50 inches, upper limits of 50 – 80 inches
- Removal estimates range from 0.670 Mlb to 1.566 Mlb

Options Below Reference Allocation (0.60 Mlb)?	Options Below 2021 Allocation (0.81 Mlb)?
No	Yes



2C – REVERSE SLOT LIMIT WITH ANNUAL LIMIT

- Table 8a-c
- Same as reverse slot analysis, but with annual limits of two to four fish
- Annual limits of two to four fish could reduce harvest projections by 21.1% to 1.3%, respectively (Table 21)
- Removal estimates range from 0.524 Mlb to 1.543 Mlb
- 2-fish annual limit needed to be below reference allocation
- Would require a recording requirement

**Options Below
Reference Allocation
(0.60 Mlb)?**

Yes

**Options Below 2021
Allocation (0.81 Mlb)?**

Yes



2C – REVERSE SLOT WITH CLOSURE DAYS

- Table 9a-g
- Lower limits of reverse slot 35 – 50 inches, upper limit of 80 inches
- Evaluated each day of the week
 - Mondays have most savings for season closure (Table 10)
- Closed days starting with the end of season (after September 17th)
 - Assumed all harvest would be eliminated on closed days
- Removal estimates range from 0.567 Mlb to 1.043 Mlb

**Options Below
Reference Allocation
(0.60 Mlb)?**

Yes

**Options Below 2021
Allocation (0.81 Mlb)?**

Yes



2C – REVERSE SLOT WITH 2ND CLOSURE DAY

- Closes one day for the entire season (Table 10) and savings from additional days closed throughout the season (Table 11)
- Lower limits of reverse slot 35 – 50 inches, upper limit of 80 inches
- Evaluated each day of the week
- Example:

Options Below Reference Allocation (0.60 Mlb)?	Options Below 2021 Allocation (0.81 Mlb)?
Yes	Yes

Lower Limit	Monday (all Season)		Lower Limit	Tuesday (starting July 19)		Lower Limit	Mondays all Season and Tuesday (starting July 19)
35	0.567		35	0.061		35	0.506
36	0.600		36	0.064		36	0.536
37	0.620		37	0.066		37	0.554
38	0.650		38	0.069		38	0.581
39	0.671		39	0.072		39	0.599
40	0.689	Minus	40	0.074	Equals	40	0.615
41	0.711		41	0.076		41	0.635
42	0.725		42	0.078		42	0.647
43	0.741		43	0.079		43	0.662
44	0.763		44	0.082		44	0.681
45	0.788		45	0.084		45	0.704
46	0.804		46	0.086		46	0.718
47	0.825		47	0.088		47	0.737
48	0.840		48	0.090		48	0.750
49	0.866		49	0.093		49	0.773
50	0.884		50	0.095		50	0.789



2C – REVERSE SLOT WITH ANNUAL LIMITS AND CLOSURE DAYS

- Tables 12 - 14
- Lower limits of reverse slot 35 – 50 inches, upper limit of 80 inches
- Annual limits of 2 – 4 fish
- Evaluated all days of the week
- Closed days starting with the end of season
 - Assumed all harvest would be eliminated on closed days
- Removal estimates range from 0.443 Mlb to 1.028 Mlb

**Options Below
Reference Allocation
(0.60 Mlb)?**

Yes

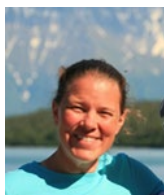
**Options Below 2021
Allocation (0.81 Mlb)?**

Yes



2C SUMMARY

Management Measures	Options Below Reference Allocation (0.60 Milb)?	Options Below 2021 Allocation (0.81 Milb)?
Status Quo (reverse slot with lower limit of 50 inches and upper limit of 72 inches)	No	No
Additional reverse slot limits, with lower limits of the protected slot ranging from 35 to 50 inches and upper limits ranging from 50 to 80 inches	No	Yes
Additional reverse slot limits with lower limits of the protected slot ranging from 35 to 50 inches and an upper limit of 80 inches with a closed day of the week starting on September 17th and adding closed days to May 15th or for the entire season, analyzed for each day of the week.	Yes	Yes
Additional reverse slot limit with lower limits of the protected slot ranging from 35 to 50 inches and an upper limit of 80 inches with a closed day of the week for the entire season (analyzed for each day of the week) and an additional closed day of the week starting on September 17th and adding closed days to May 15th or for the entire season, analyzed for each day of the week.	Yes	Yes
Additional reverse slot limits, with lower limits of the protected slot ranging from 35 to 50 inches and upper limits ranging from 50 to 80 inches with annual limits of two to four fish	Yes	Yes
Additional reverse slot limits with lower limits of the protected slot ranging from 35 to 50 inches and an upper limit of 80 inches with a closed day of the week starting on September 17th and adding closed days to May 15th or for the entire season, analyzed for each day of the week, with annual limits of two to four fish	Yes	Yes



2C SUMMARY

- Many options available below both the reference allocation and the 2021 allocation
- A lot of uncertainty due to exclusion of 2020 and 2021 HPUE data and continued uncertainty about effort
- Management measures will need to be more restrictive than 2021



3A MANAGEMENT MEASURES FOR 2022

- **Status quo (two-fish bag limit with a 32-inch maximum size limit on one fish, one trip per vessel and one trip per CHP per day, and a Wednesday closure all year)**
- Additional size limits on one fish ranging from 26 to 32 inches combined with one or more Tuesday closures from June 1st to August 31st or for the entire season
- Additional size limits on one fish ranging from 26 to 32 inches with Tuesdays closed for the entire season combined with one or more Monday or Thursday closures from June 1st to August 31st or for the entire season
- Additional size limits on one fish ranging from 26 to 32 inches combined with annual limits of two to four fish
- Additional size limits on one fish ranging from 26 to 32 inches combined with annual limits of two to four fish and one or more Tuesday closures from June 1st to August 31st or for the entire season
- A one-fish bag limit with no size limit with or without a Wednesday closure for the entire season
- A one-fish bag limit with reverse slot limits with lower limits of the protected slot ranging from 35 to 60 inches and upper limits ranging from 60 to 80 inches combined with one or more Wednesday closures from June 1st to August 31st or for the entire season or all Wednesdays closed with one or more Tuesday closures from June 1st to August 31st or for the entire season
- A seasonal closure prior to May 16th and after July 31st or prior to June 1st and after July 31st with all days of the week open and other status quo management measures



3A – STATUS QUO FORECAST

- All forecasts under “normal” conditions
 - Did not attempt to account for COVID-19 related decreases in effort
- 164,382 halibut
 - 95% confidence interval 136,222 – 192,542 halibut
 - Used 2021 effort for forecasts
 - HPUE used data through 2019
 - Substantial increases in 2020 and 2021, likely related to changes in size limits and may also have been impacted by removal of annual limit
 - Including these years increases projection to 184,254 halibut \pm 11,027 fish
 - 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
- Wednesdays closed to retention of halibut

**Status Quo
Regulations
Projection**

2.302



3A – CHANGES TO MAXIMUM SIZE LIMIT COMBINE WITH TUESDAY CLOSURES

- Table 17
- Assumes all other status quo management measure
- Projected for 26 to 32 inch size limits on one fish
- Projected under various numbers of closed Tuesdays throughout year
 - Specific dates in Table 16
- Projected removals assume closing days will have maximum effect, no shifting of effort to other days
- Removal estimates range from 1.730 Mlb to 2.302 Mlb

**Options Below
Reference Allocation
(2.05 Mlb)?**

Yes

**Options Below 2021
Allocation (1.95 Mlb)?**

Yes



3A – CHANGES TO MAXIMUM SIZE LIMIT COMBINE WITH TUESDAYS CLOSED AND MONDAY OR THURSDAY CLOSURES

- Table 19
- Assumes all Tuesdays closed and all other status quo management measure
- Projected for 26 to 32 inch size limits on one fish
- Projected under various numbers of closed Mondays or Thursdays
 - Specific dates in Table 18
- Projected removals assume closing days will have maximum effect, no shifting of effort to other days
- Removal estimates range from 1.381 Mlb to 1.916 Mlb

**Options Below
Reference Allocation
(2.05 Mlb)?**

Yes

**Options Below 2021
Allocation (1.95 Mlb)?**

Yes



3A – MAXIMUM SIZE LIMITS COMBINED WITH ANNUAL LIMITS

- Table 22
- Assume all other status quo management measures
- Projected for 26 to 32 inch size limits on one fish
- Projected for annual limits of two to four fish
- Annual limits of two to four fish could reduce harvest projections by 14.1% to 3.1%, respectively (Table 21)
- Removal estimates range from 1.770 Mlb to 2.229 Mlb
- Would require a recording requirement
- Past violations of annual limits have included 0.2 – 1.0% of anglers

**Options Below
Reference Allocation
(2.05 Mlb)?**

Yes

**Options Below 2021
Allocation (1.95 Mlb)?**

Yes



3A – MAXIMUM SIZE LIMITS COMBINED WITH ANNUAL LIMITS AND TUESDAY CLOSURES

- Table 23
- Assume other status quo management measures
- Removal estimates range from 1.474 Mlb to 2.229 Mlb

Options Below Reference Allocation (2.05 Mlb)?	Options Below 2021 Allocation (1.95 Mlb)?
Yes	Yes



3A – ONE FISH BAG LIMIT

Wednesdays Opened – UPDATED (Table 24b)			
Mean wt Scenario	Average wt(lb)	Harvest	Removals (Mlb)
Average weight of O32 fish in 2021	23.94	122,052	2.980
Average weight of all fish in 2021 + 36%	18.51	122,052	2.304

- Table 24
- Option of Wednesday closure
- Lots of uncertainty in average weight estimates
- 2% release mortality inflation factor

Options Below Reference Allocation (2.05 Mlb)?

Maybe

Options Below 2021 Allocation (1.95 Mlb)?

No



3A – ONE FISH BAG LIMIT WITH REVERSE SLOT LIMIT AND CLOSURE DAYS

- Table 26 & 27
- Assume other status quo management measures
 - With variable closed Wednesdays
 - With Wednesdays closed and variable closed Tuesdays
 - Lower limits of 35 – 60 inches, upper limits of 60 – 80 inches
- Harvest Forecast same as one fish bag limit no size limit and adjusted for closed days
- 4% release mortality inflation factor

Options Below Reference Allocation (2.05 Mlb)?	Options Below 2021 Allocation (1.95 Mlb)?
Yes	Yes



3A – LENGTH OF FISHING SEASON

Season Dates	Harvest	Removals (Mlb)
May 16 – July 31	127,317	1.761
June 1 – July 31	116,688	1.613

- Table 28
- 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 and trip limits
- Harvest Forecast 116,688 – 127,317* fish
- Projected removals assume closing days will have maximum effect, no shifting of effort to other days

**Options Below
Reference Allocation
(2.05 Mlb)?**

Yes

**Options Below 2021
Allocation (1.95 Mlb)?**

Yes



3A SUMMARY

Management Measures	Options Below Reference Allocation (2.05 Mlb)?	Options Below 2021 Allocation (1.95 Mlb)?
Status quo (two-fish bag limit with a 32-inch maximum size limit on one fish, one trip per vessel and one trip per CHP per day, and a Wednesday closure all year)	No	No
Additional size limits on one fish ranging from 26 to 32 inches combined with one or more Tuesday	Yes	Yes
Additional size limits on one fish ranging from 26 to 32 inches with Tuesdays closed for the entire season combined with one or more Monday or Thursday closures	Yes	Yes
Additional size limits on one fish ranging from 26 to 32 inches combined with annual limits of two to four fish	Yes	Yes
Additional size limits on one fish ranging from 26 to 32 inches combined with annual limits of two to four fish and one or more Tuesday	Yes	Yes
A one-fish bag limit with no size limit with or without a Wednesday closure for the entire season	Maybe	No
A one-fish bag limit with reverse slot limits with lower limits of the protected slot ranging from 35 to 60 inches and upper limits ranging from 60 to 80 inches combined with one or more Wednesday closures or all Wednesdays closed with one or more Tuesday closures	Yes	Yes
A seasonal closure prior to May 16th and after July 31st or prior to June 1st and after July 31st with all days of the week open	Yes	Yes



3A SUMMARY

- Many options available below both the reference allocation and the 2021 allocation
- A lot of uncertainty due to exclusion of 2020 and 2021 HPUE data and continued uncertainty about effort
- Management measures will need to be more restrictive than 2021



ACKNOWLEDGEMENTS

- Bob Powers and Ben Jevons – co-authors, logbook data summaries, and review
- Dr. Jim Hasbrouck – technical advice and review
- Diana Tersteeg and Mike Jaenicke – Southeast data
- Martin Schuster and Marian Ford – Southcentral data
- Countless technicians – halibut measurements and angler interviews
- Sarah Marrinan – Council Staff

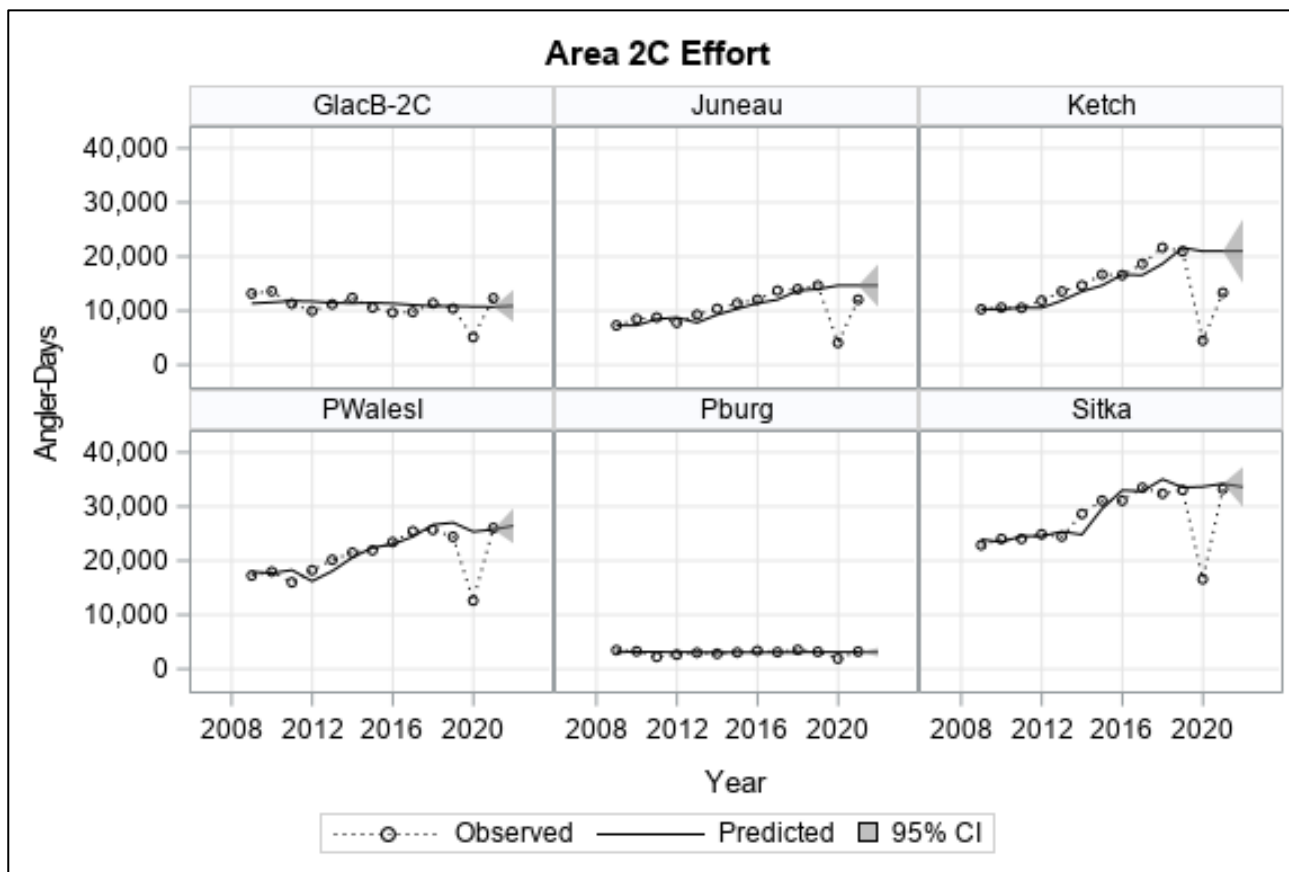
- Funding:
 - State of Alaska General Funds
 - DJ-WB Federal Aid in Fish Restoration
 - Fish and Game Fund



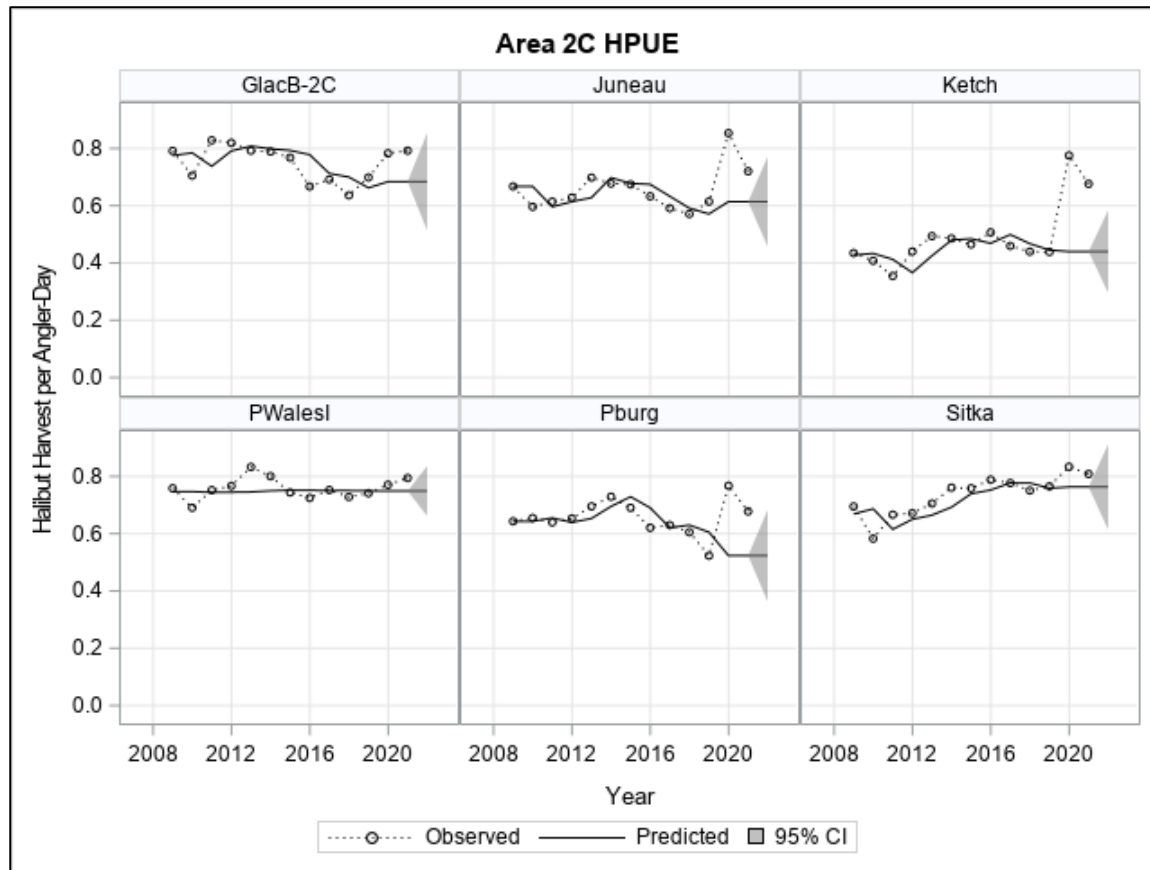
EXTRA SLIDES



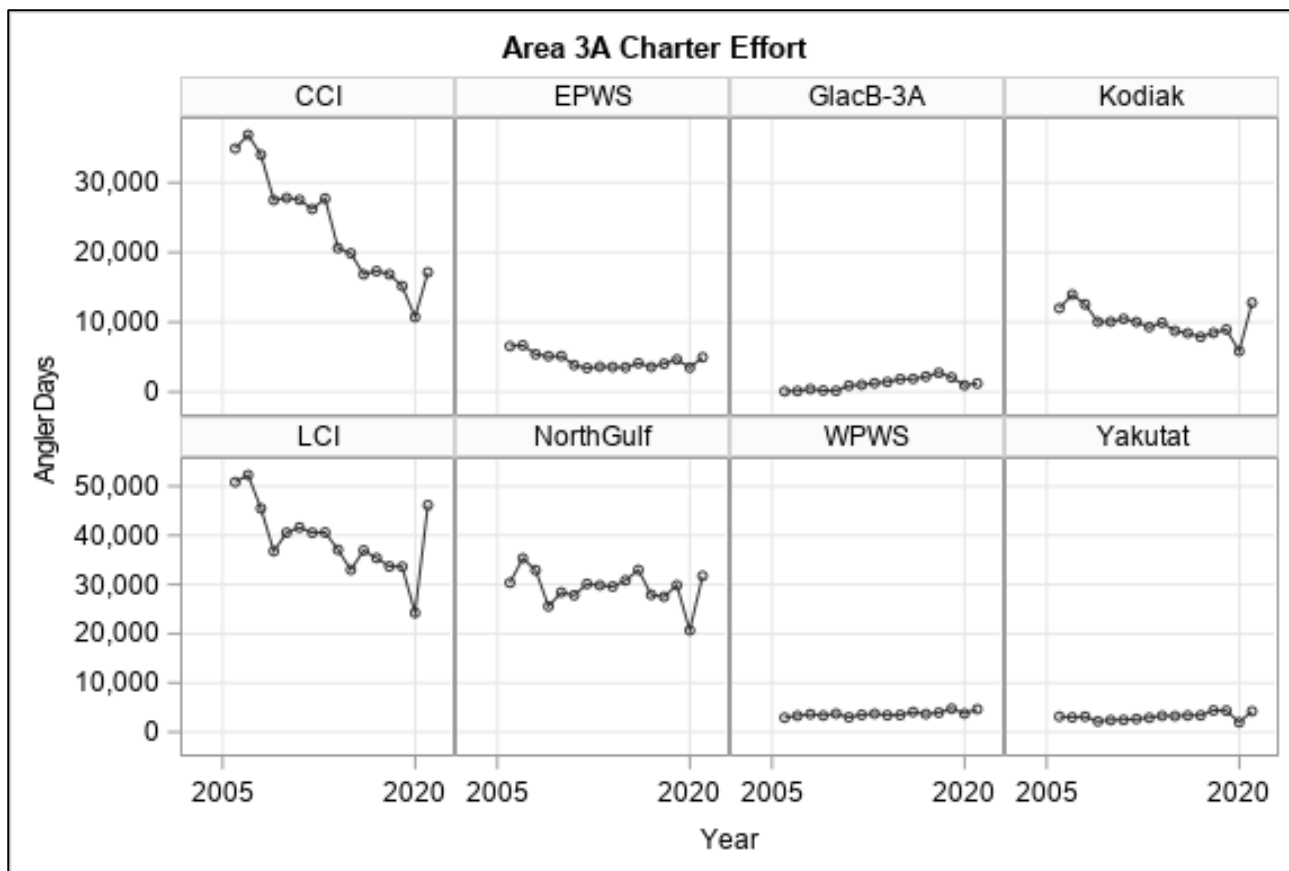
2C EFFORT FORECASTS



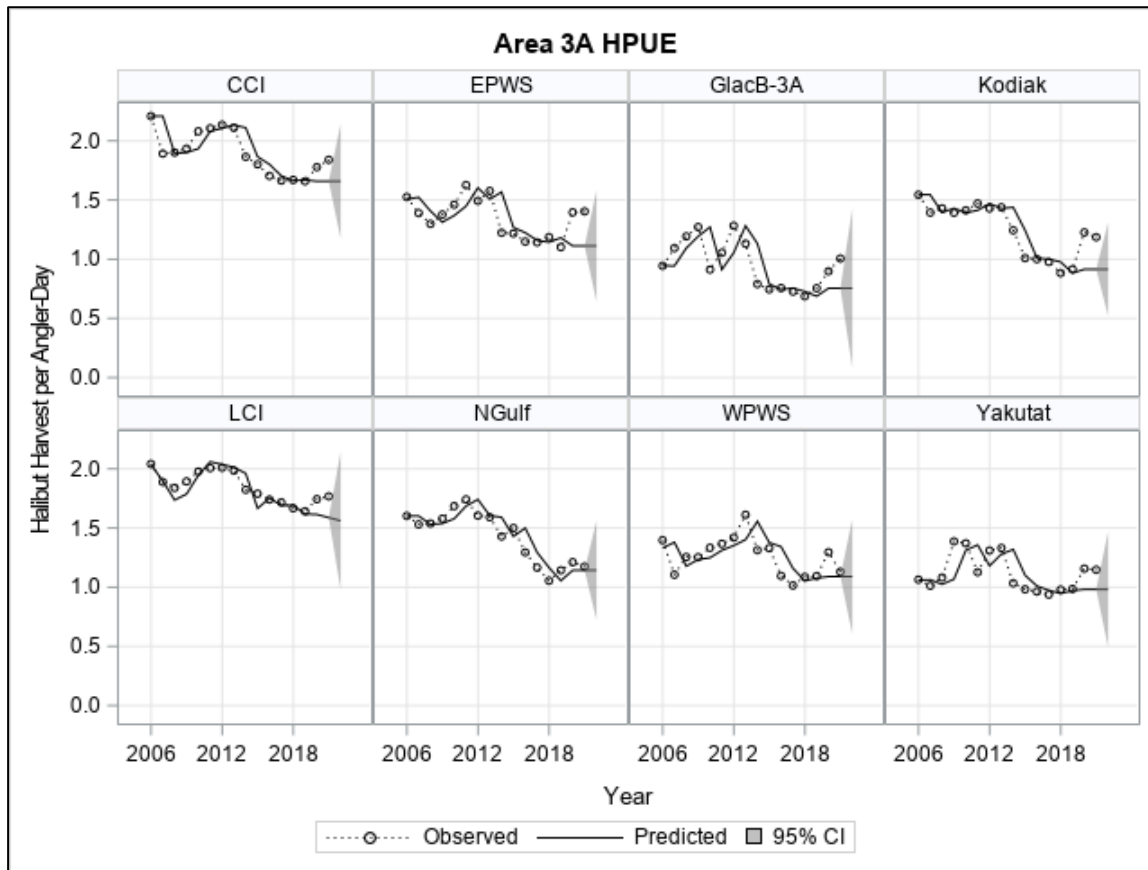
2C HPUE FORECASTS



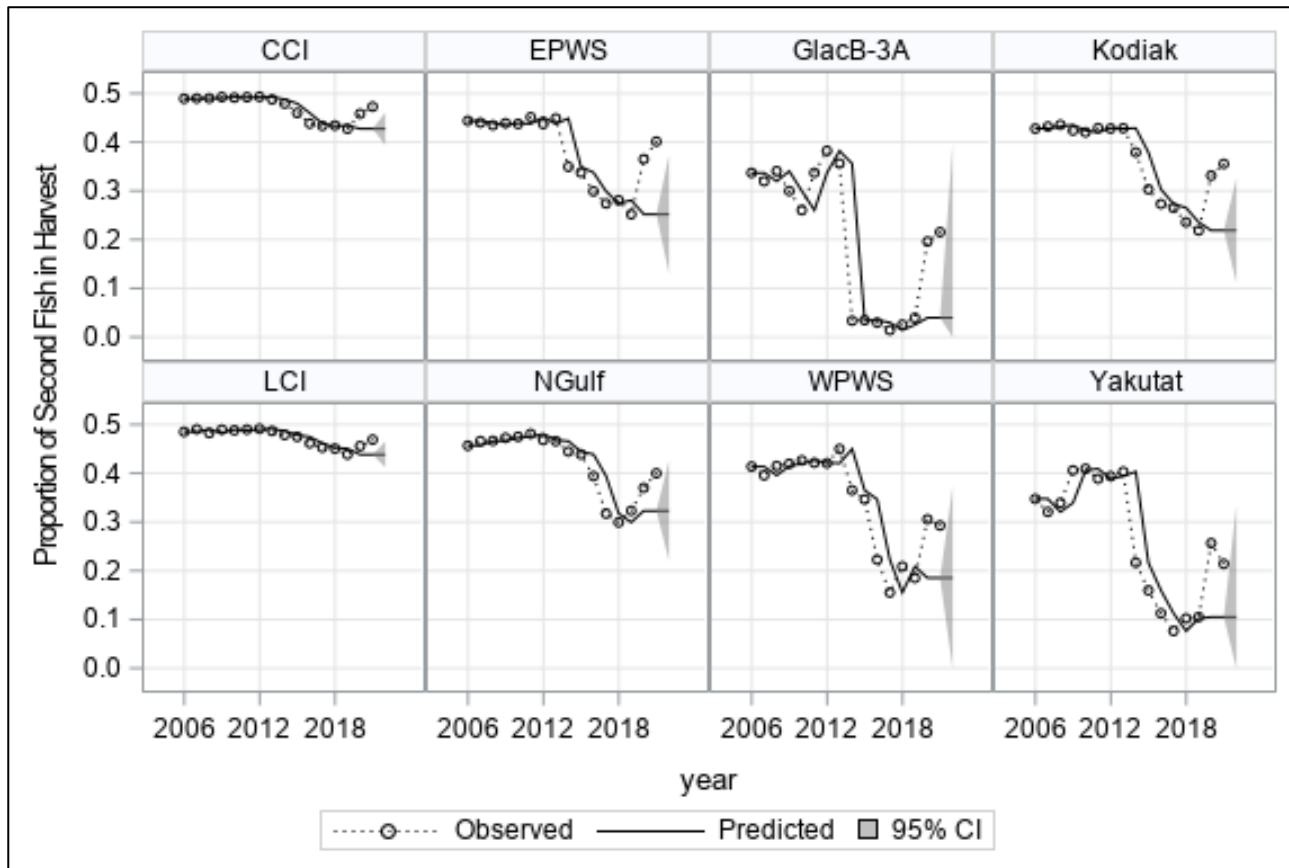
3A EFFORT FORECASTS



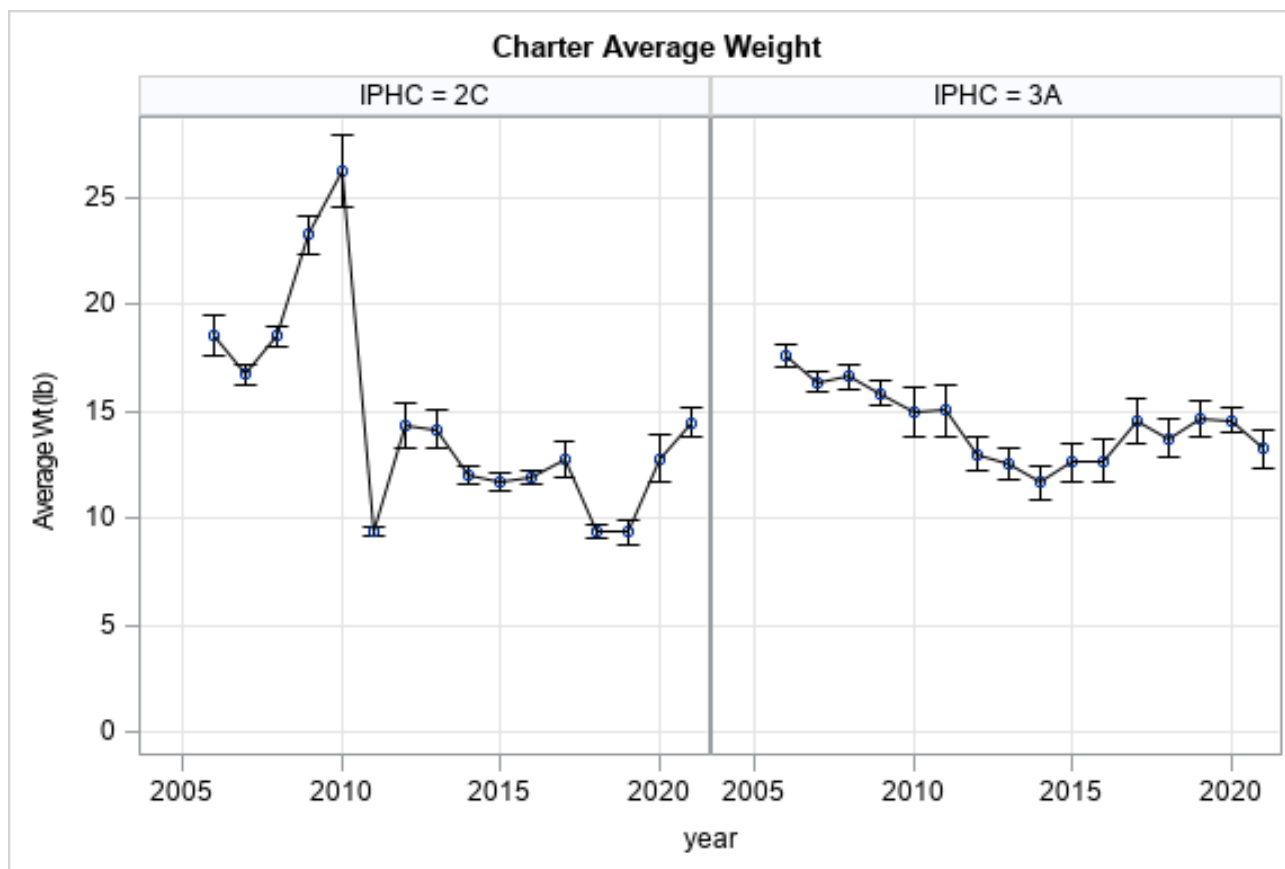
3A HPUE FORECASTS



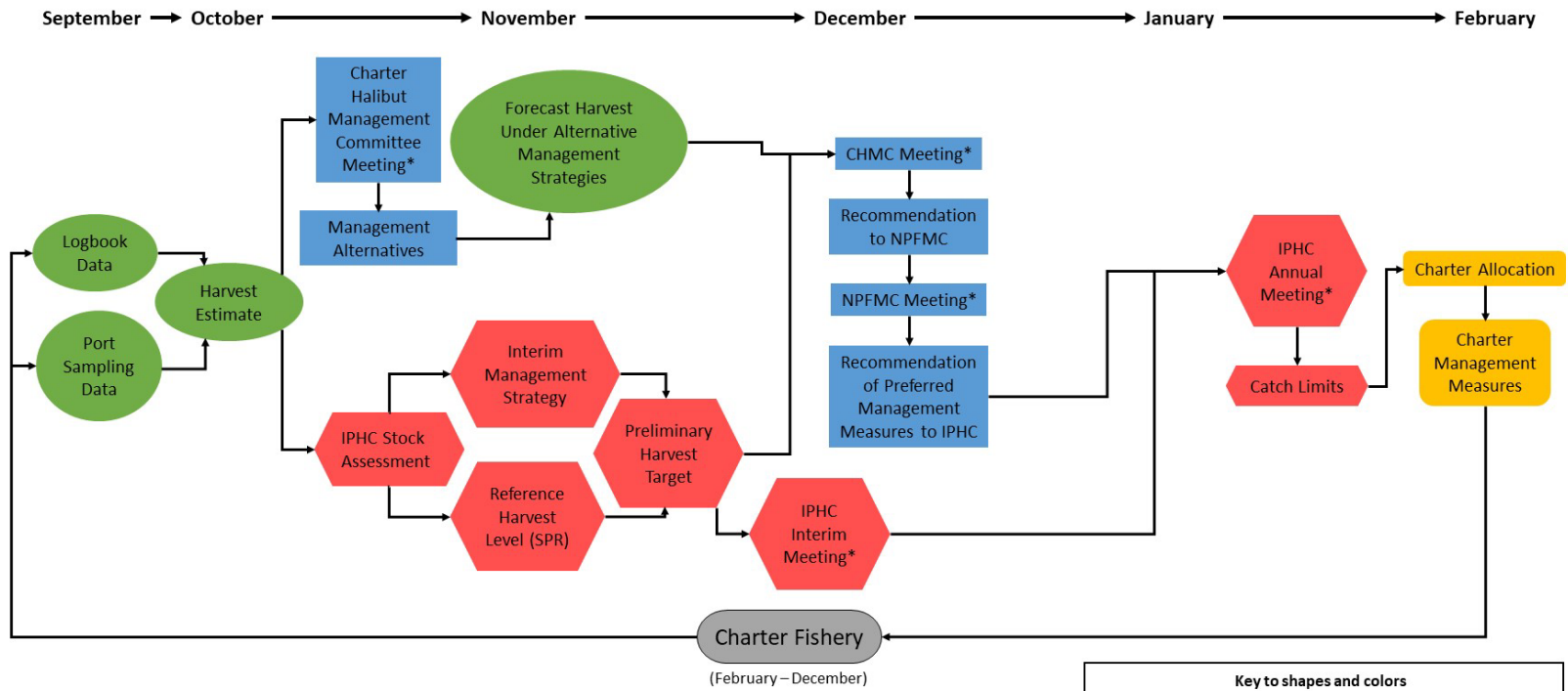
3A PROPORTION OF SECOND FISH FORECASTS



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

