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# Summary of the 2021 data and stock assessment results

Alaska Bycatch Review Task Force



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**RESEARCH**

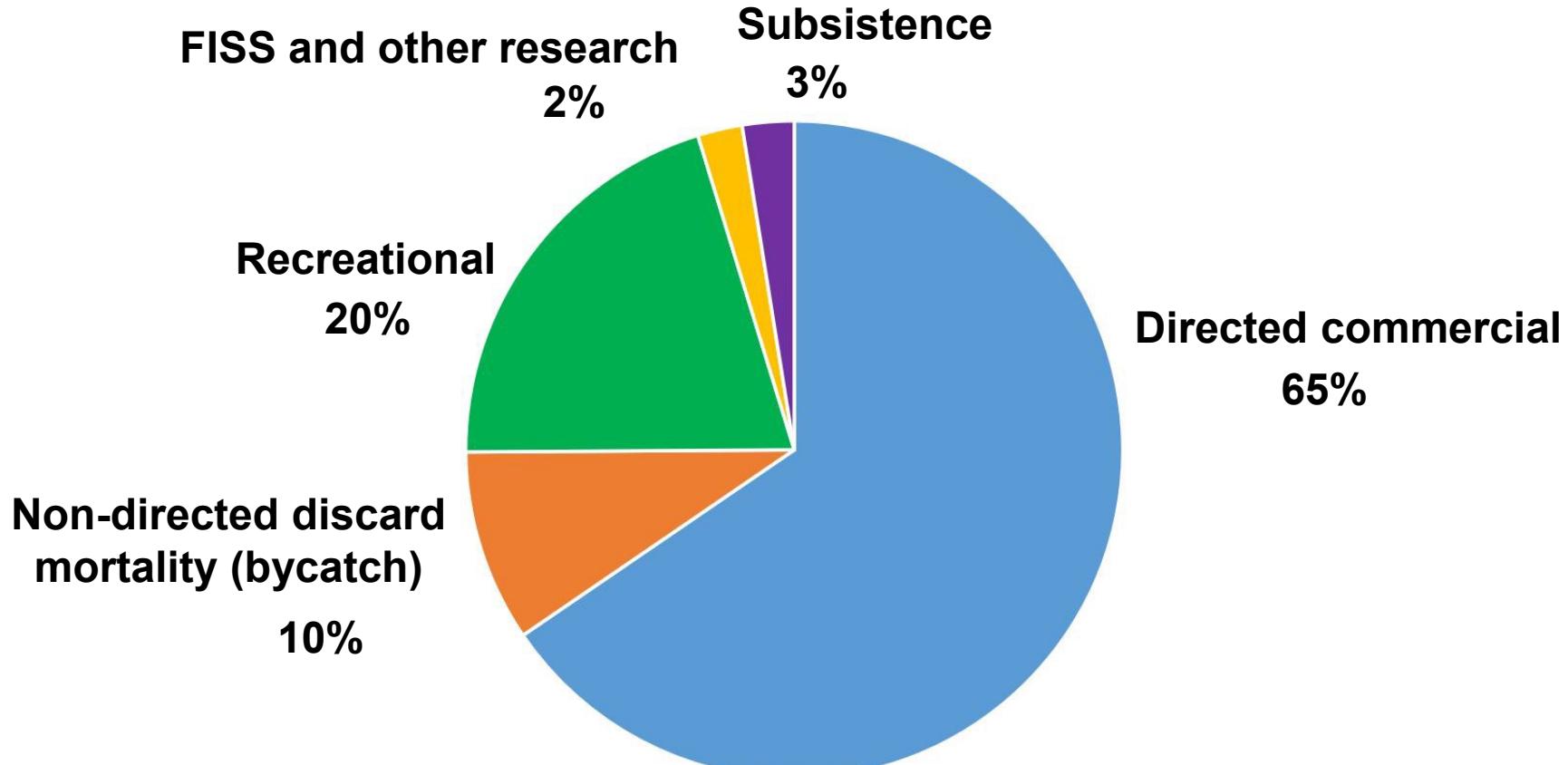
3 May 2022

# Material from IPHC's 98<sup>th</sup> Annual Meeting

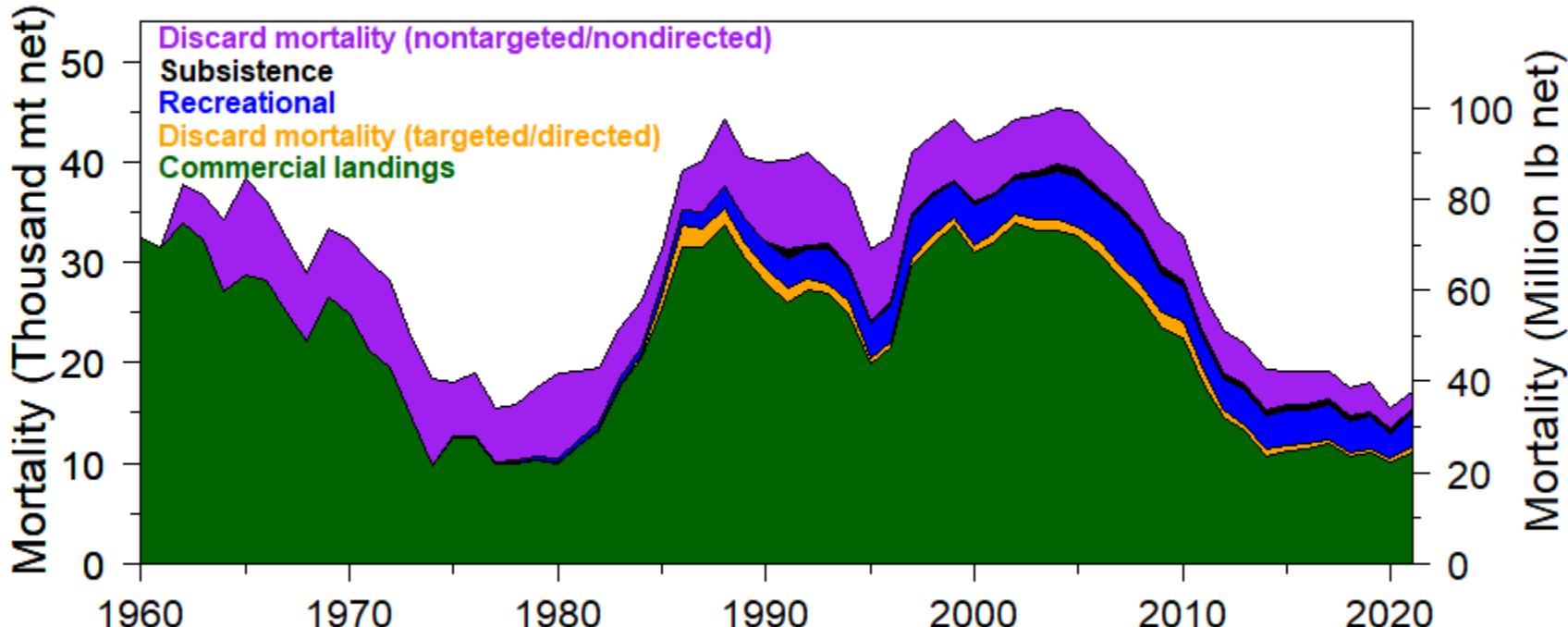
- <https://www.iphc.int/venues/details/98th-session-of-the-iphc-annual-meeting-am098>
- On-line meeting material includes:
  - Fishery data overview
  - Fishery Independent Setline Survey (FISS)
    - Design and implementation
    - Analysis of trends
  - Stock assessment and harvest decision table for 2022
  - Biological research plan
  - Management Strategy Evaluation (MSE) program update
  - Economic Impact Assessment
  - Final meeting report
  - ...



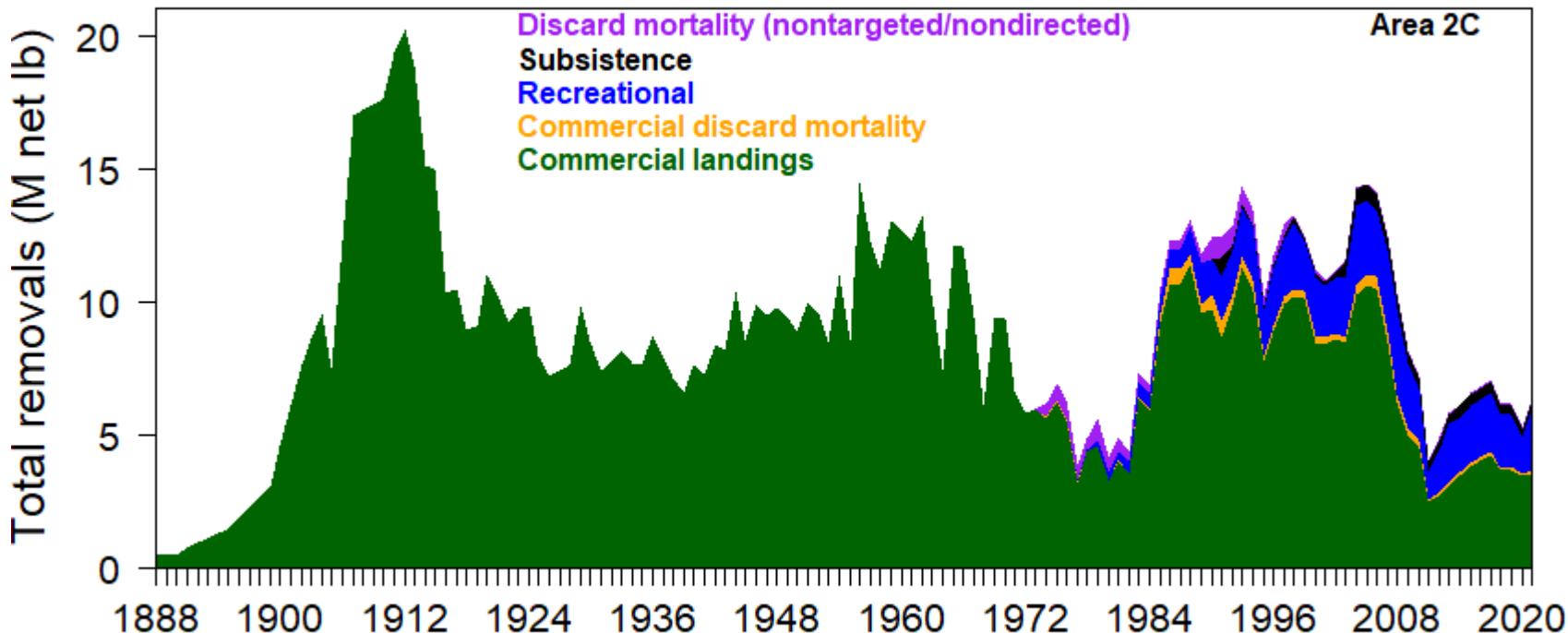
# 2021 Pacific Halibut Mortality



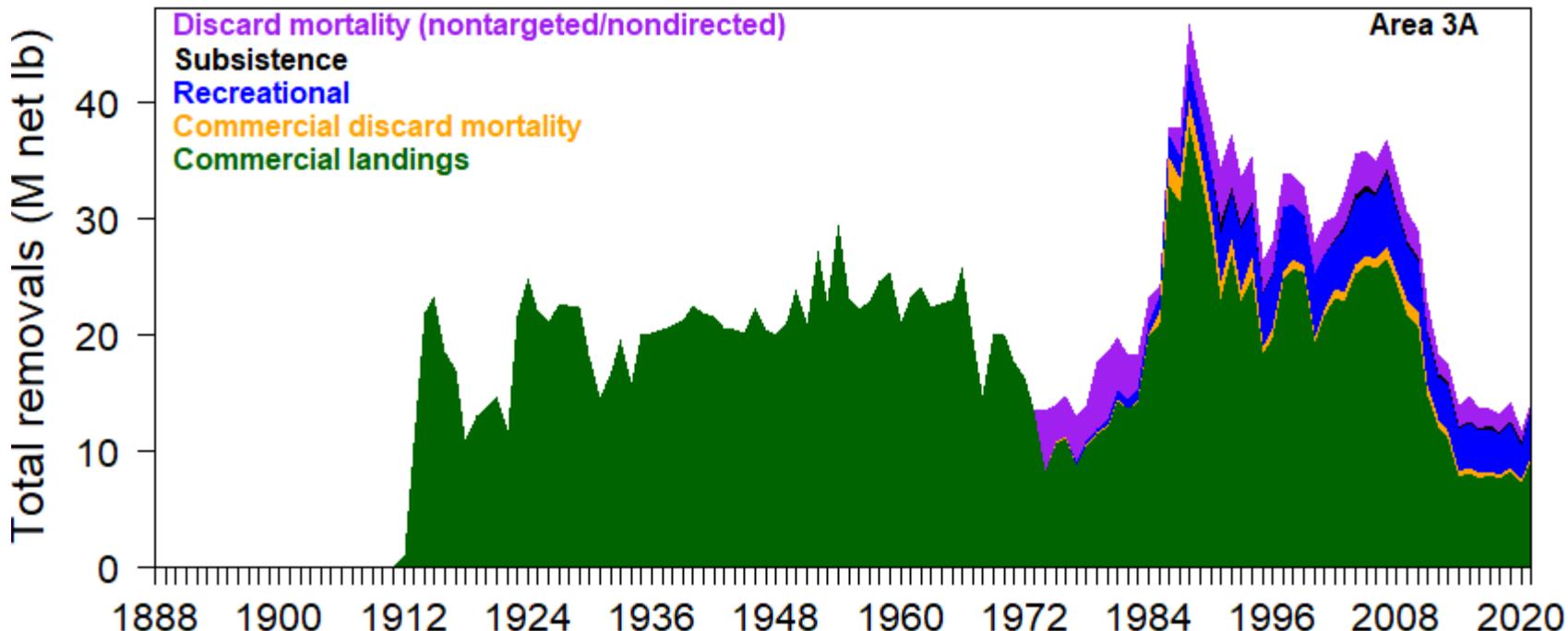
# Historical mortality



# Historical mortality: 2C



# Historical mortality: 3A



# 2021 Non-directed Commercial Discard Mortality

1 January to 31 December

**TOTAL – 1,721 tonnes (3.79 million pounds)**

**CANADA**

– **112 tonnes (0.25 million pounds)**

**U.S.A. – WA, OR AND CA**

– **44 tonnes (0.10 million pounds)**

**U.S.A. – AK**

– **1,564 tonnes (3.45 million pounds)**

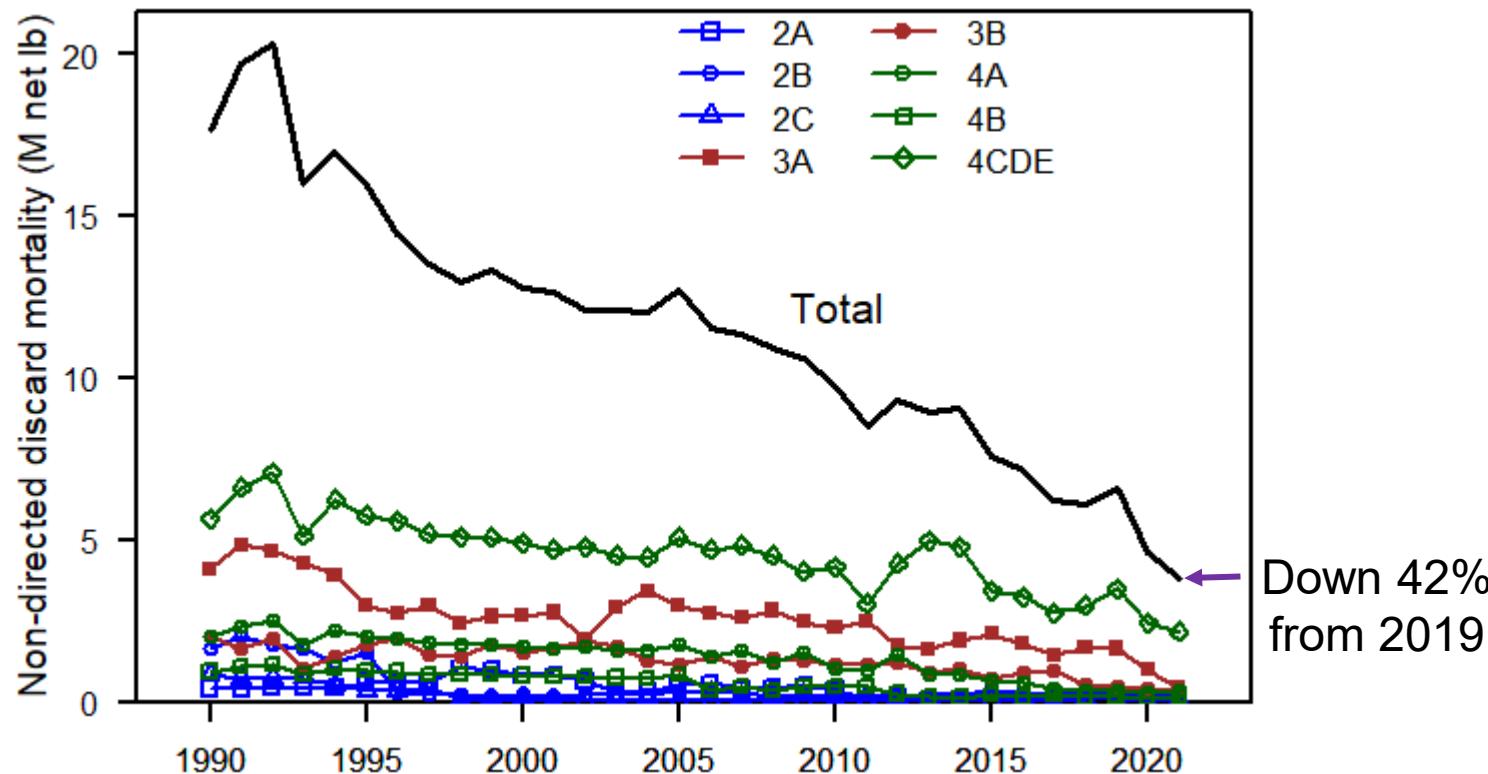


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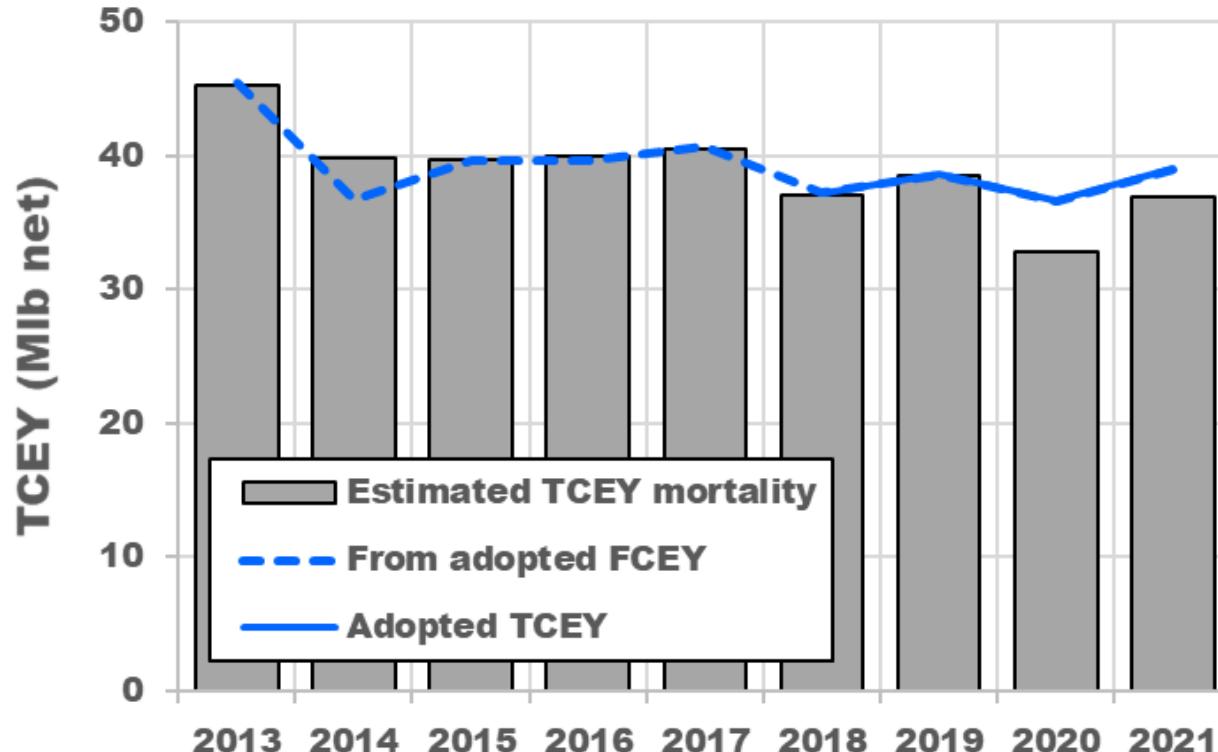
IPHC

Slide 7

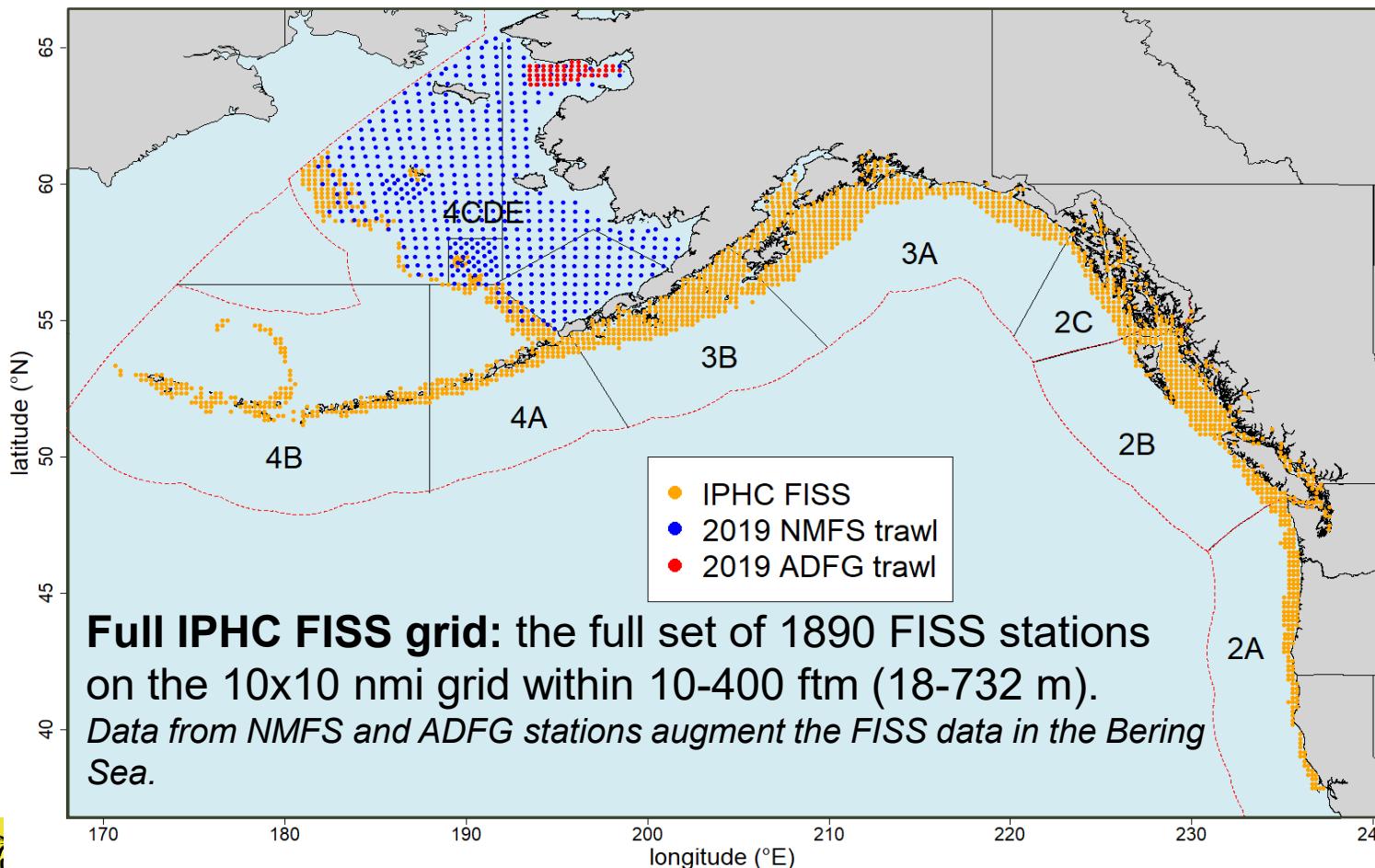
# Recent non-directed discard mortality



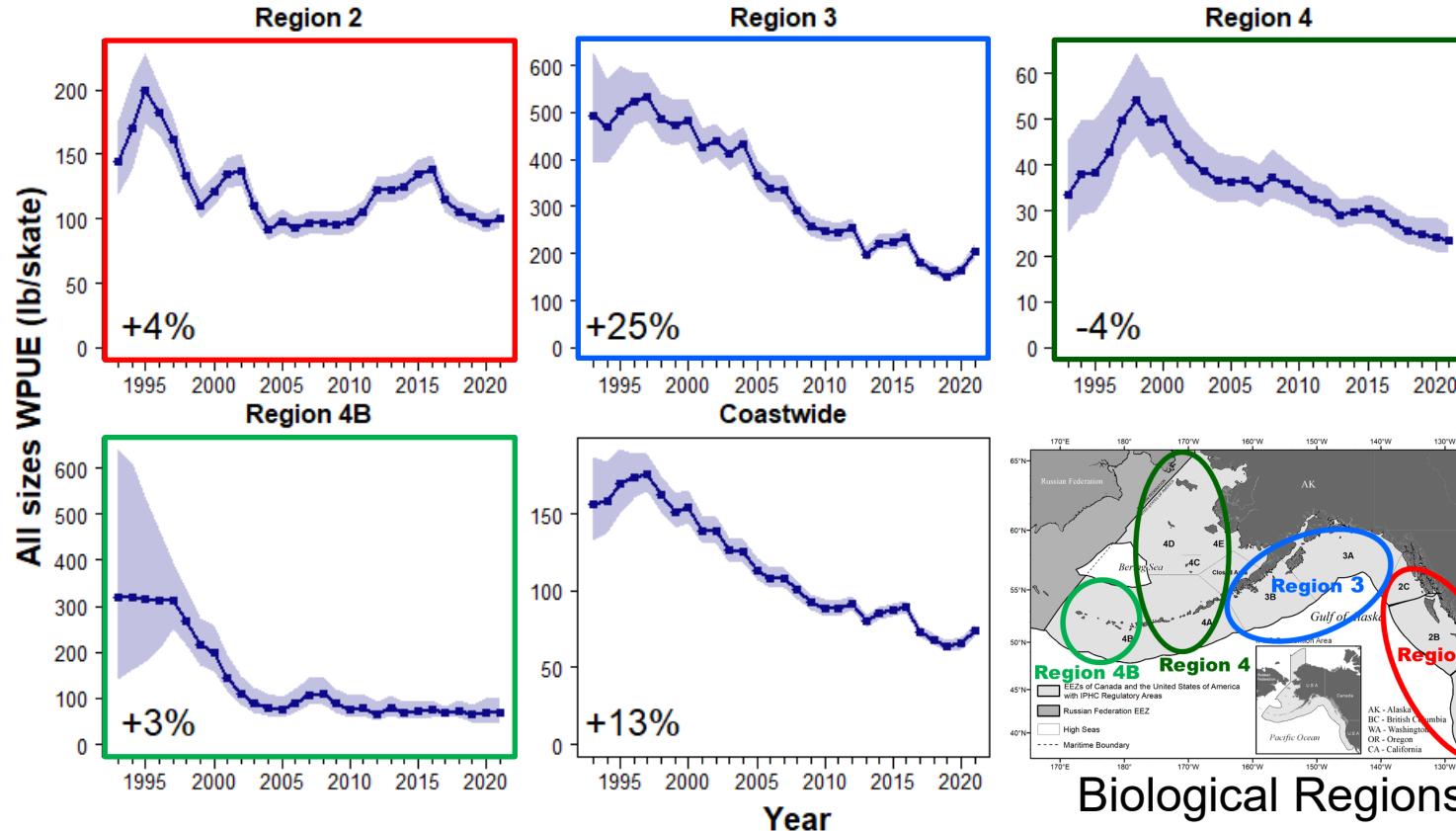
# Coastwide mortality limit (TCEY) comparison



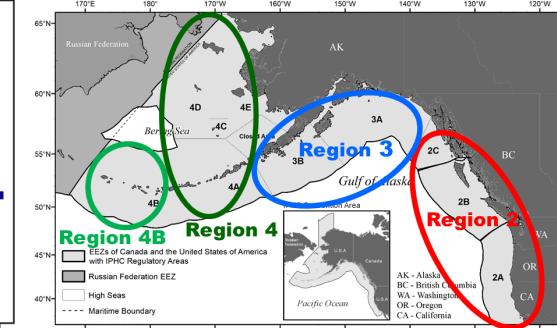
# Fishery Independent Setline Survey (FISS)



# Modelled survey trends (all sizes WPUE)



Biological Regions



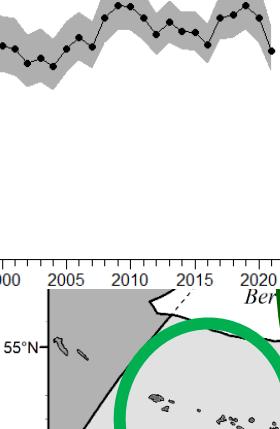
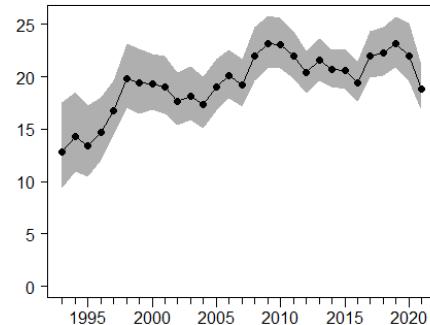
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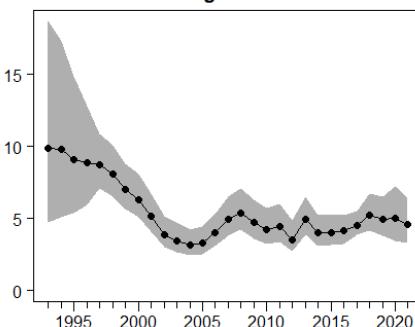
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# Stock distribution (% of biomass)

Region 4



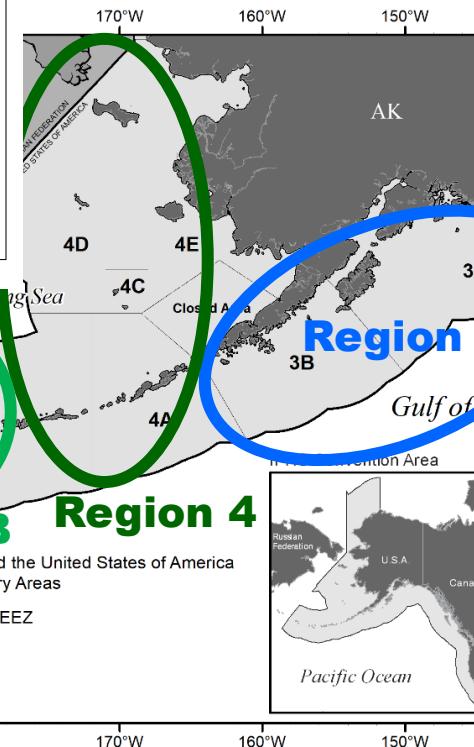
Region 4B



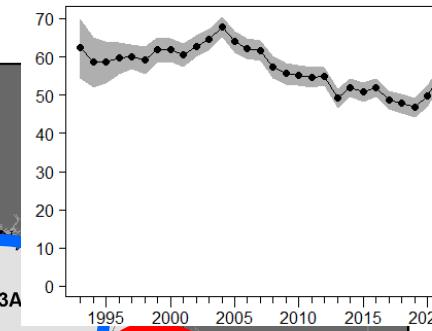
Canada and the United States of America  
IC Regulatory Areas

Federation EEZ

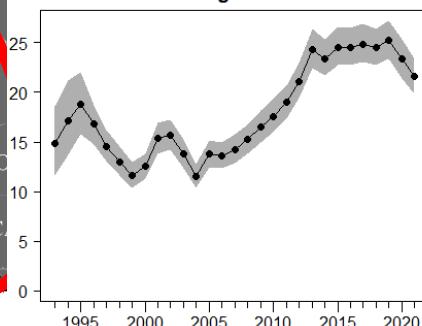
as  
Boundary



Region 3



Region 2



Region 2

AK - Alaska  
BC - British Columbia  
WA - Washington  
OR - Oregon  
CA - California

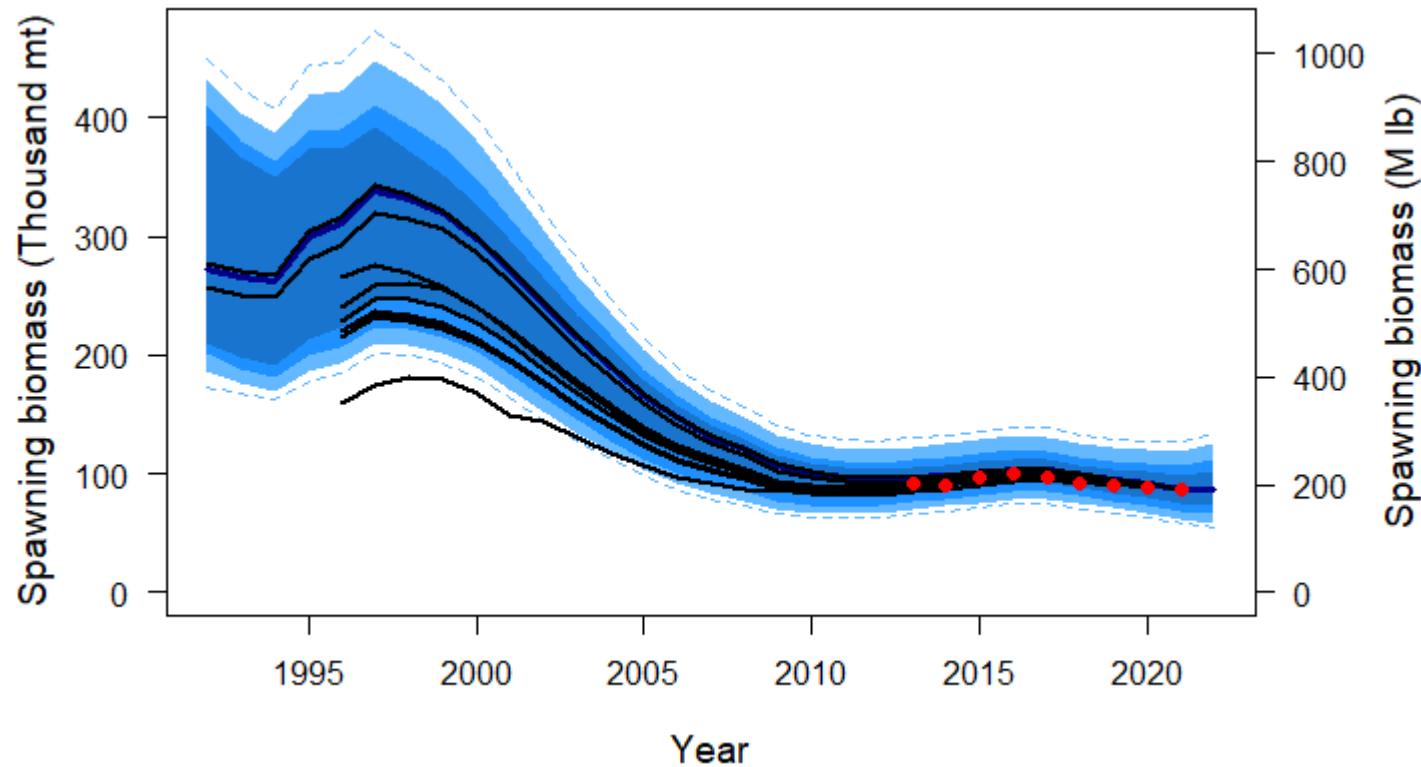


# The 2021 assessment

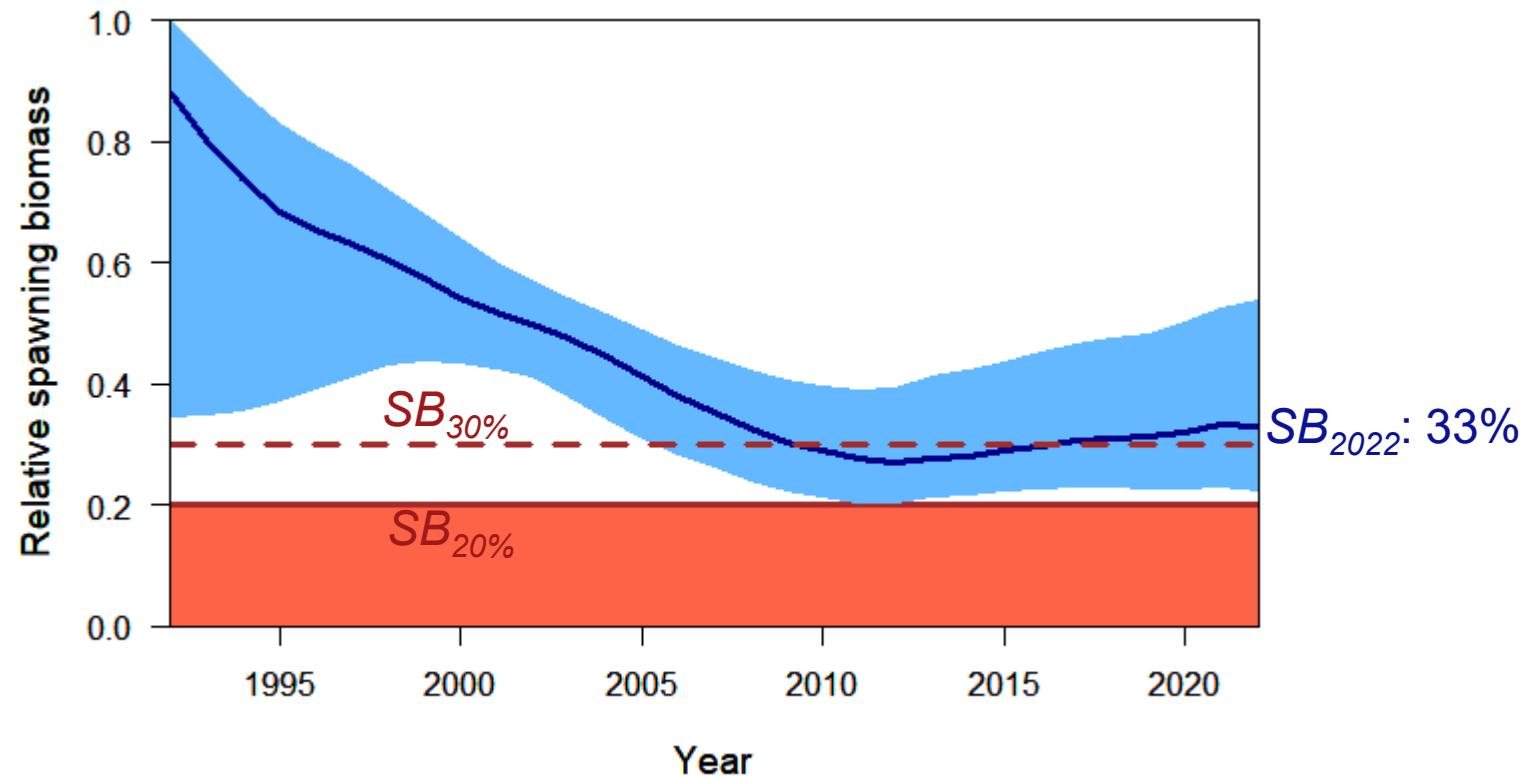
- 2<sup>nd</sup> update to the full assessment in 2019 (full assessment coming in 2022)
- No major changes in structure or methods
- Incremental changes reviewed by the SRB in June and September
- All data updated for 2020 (where needed) and added for 2021



# Comparison with previous assessments



# Spawning biomass relative to unfished

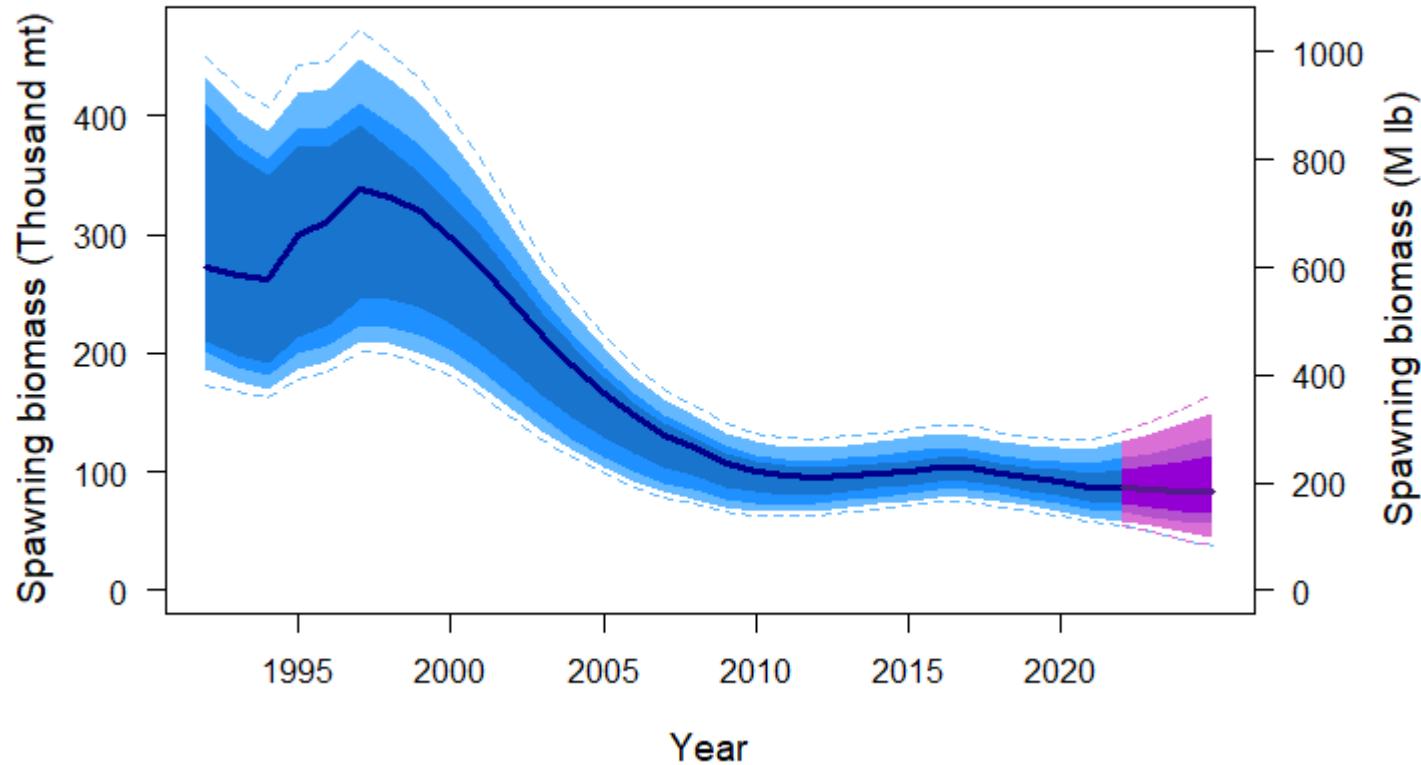


# Decision table

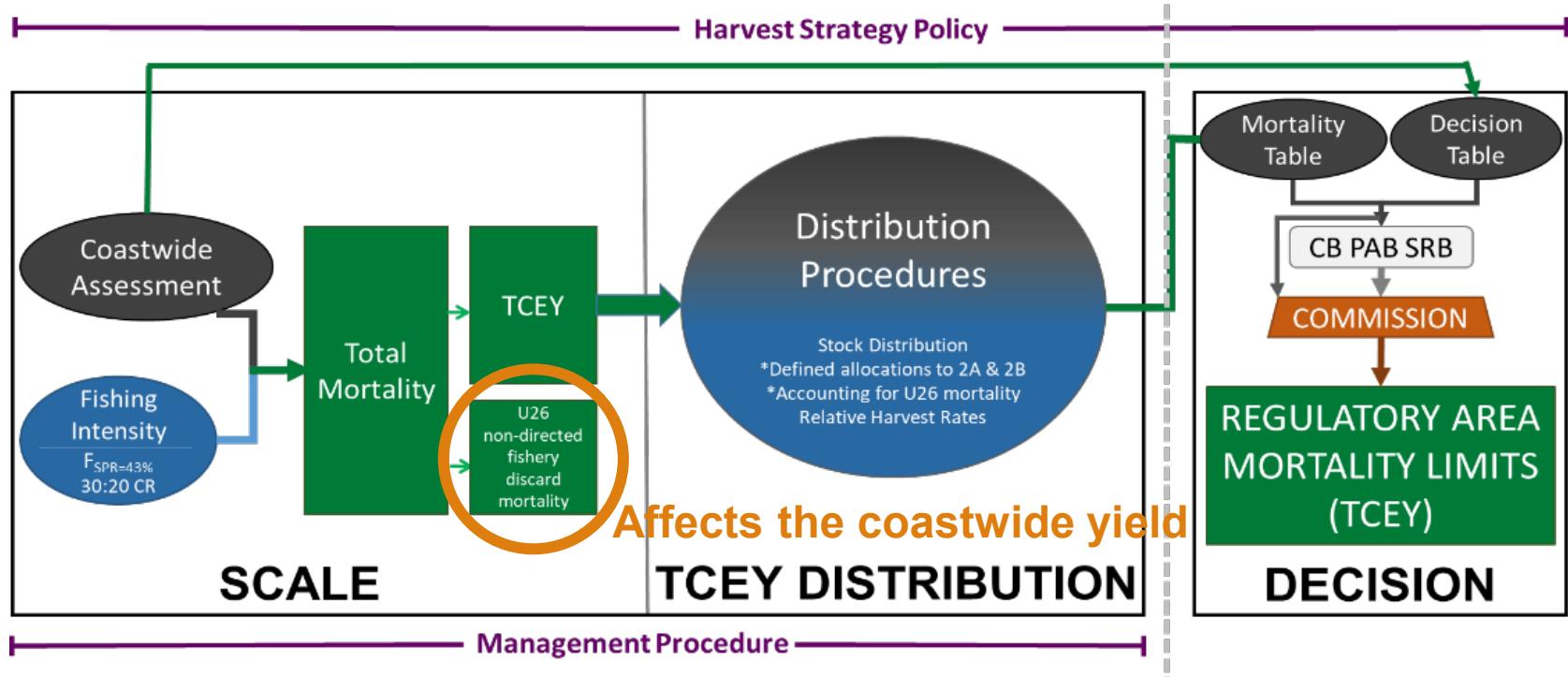
- Risk-benefit trade-offs:
  - Yield vs. probability of stock and fishery trend and status decreases
- Metrics relative to the interim management procedure:  $F_{43\%}$  with an  $SB_{30\%}:SB_{20\%}$  control rule



# Projections: reference level (41.2 Mlb TCEY)



# Current Interim Harvest Strategy Policy



# 2021-2022 Interim management procedure

- Implemented in the [2022 mortality projection tool](#)
- Baseline:  $F_{43\%}$ , 30:20 control rule, O32 stock distribution, relative harvest rates of 1.0 (2A-3A), 0.75 (3B-4CDE)
- Adjustments:
  - 2A = 1.65 Mlb TCEY
  - Coastwide TCEY % in 2B =  $0.7*20\% + 0.3*\text{baseline}$
  - 2B formula (above) +50% of 2B TCEY change due to accounting for U26 non-directed discard mortality in Alaska

(See [IPHC-2022-AM098-INF02](#) for more information)



# Interim Management Procedure: baseline

	<u>2A</u>	<u>2B</u>	<u>2C</u>	<u>3A</u>	<u>3B</u>	<u>4A</u>	<u>4B</u>	<u>4CDE</u>	<u>Total</u>
<b>O32 Stock Distribution</b>	<b>1.8%</b>	<b>12.0%</b>	<b>11.3%</b>	<b>33.6%</b>	<b>18.8%</b>	<b>6.9%</b>	<b>5.7%</b>	<b>10.0%</b>	<b>100%</b>
<b>HR</b>	<b>1.0</b>	<b>1.0</b>	<b>1.0</b>	<b>1.0</b>	<b>0.75</b>	<b>0.75</b>	<b>0.75</b>	<b>0.75</b>	<b>NA</b>
<b>TCEY Distribution</b>	<b>2.0%</b>	<b>13.4%</b>	<b>12.6%</b>	<b>37.5%</b>	<b>15.7%</b>	<b>5.8%</b>	<b>4.8%</b>	<b>8.3%</b>	<b>100%</b>

2021 observed stock distribution → 2022 TCEY distribution



# Interim Management Procedure: adjustments

	<u>2A</u>	<u>2B</u>	<u>2C</u>	<u>3A</u>	<u>3B</u>	<u>4A</u>	<u>4B</u>	<u>4CDE</u>	Total
<b>O32 Stock Distribution</b>	<b>1.8%</b>	<b>12.0%</b>	<b>11.3%</b>	<b>33.6%</b>	<b>18.8%</b>	<b>6.9%</b>	<b>5.7%</b>	<b>10.0%</b>	<b>100%</b>
HR	1.0	1.0	1.0	1.0	0.75	0.75	0.75	0.75	NA
<b>TCEY Distribution</b>	<b>2.0%</b>	<b>13.4%</b>	<b>12.6%</b>	<b>37.5%</b>	<b>15.7%</b>	<b>5.8%</b>	<b>4.8%</b>	<b>8.3%</b>	<b>100%</b>
<b>Adjusted</b>	<b>1.65</b>	<b>18.0%</b>		<i>Depends on total TCEY</i>					



# Interim Management Procedure: adjustments

	<u>2A</u>	<u>2B</u>	<u>2C</u>	<u>3A</u>	<u>3B</u>	<u>4A</u>	<u>4B</u>	<u>4CDE</u>	Total
<b>O32 Stock Distribution</b>	<b>1.8%</b>	<b>12.0%</b>	<b>11.3%</b>	<b>33.6%</b>	<b>18.8%</b>	<b>6.9%</b>	<b>5.7%</b>	<b>10.0%</b>	<b>100%</b>
HR	1.0	1.0	1.0	1.0	0.75	0.75	0.75	0.75	NA
<b>TCEY Distribution</b>	<b>2.0%</b>	<b>13.4%</b>	<b>12.6%</b>	<b>37.5%</b>	<b>15.7%</b>	<b>5.8%</b>	<b>4.8%</b>	<b>8.3%</b>	<b>100%</b>
<b>Adjusted</b>	<b>1.65</b>	<b>18.0%</b>	<i>Depends on total TCEY</i>						
<b>Final % from total TCEY</b>	<b>4.0%</b>	<b>18.3%</b>	<b>11.5%</b>	<b>34.4%</b>	<b>14.4%</b>	<b>5.3%</b>	<b>4.4%</b>	<b>7.6%</b>	<b>100%</b>
<b>TCEYs</b>	<b>1.65</b>	<b>7.56</b>	<b>4.75</b>	<b>14.19</b>	<b>5.94</b>	<b>2.18</b>	<b>1.80</b>	<b>3.15</b>	<b>41.22</b>

2B includes 0.14 Mlb accounting for U26 non-directed discards in AK



# Reference TCEYs

	<u>2A</u>	<u>2B</u>	<u>2C</u>	<u>3A</u>	<u>3B</u>	<u>4A</u>	<u>4B</u>	<u>4CDE</u>	Total
2020	<b>1.65</b>	<b>5.80</b>	<b>4.97</b>	<b>9.80</b>	<b>2.94</b>	<b>2.26</b>	<b>1.27</b>	<b>3.22</b>	<b>31.90</b>
2021	<b>1.65</b>	<b>7.00</b>	<b>5.16</b>	<b>14.12</b>	<b>3.12</b>	<b>2.51</b>	<b>1.47</b>	<b>3.98</b>	<b>39.00</b>
2022	<b>1.65</b>	<b>7.56</b>	<b>4.75</b>	<b>14.19</b>	<b>5.94</b>	<b>2.18</b>	<b>1.80</b>	<b>3.15</b>	<b>41.22</b>

# Adopted TCEYs

2020	<b>1.65</b>	<b>6.83</b>	<b>5.85</b>	<b>12.20</b>	<b>3.12</b>	<b>1.75</b>	<b>1.31</b>	<b>3.90</b>	<b>36.60</b>
2021	<b>1.65</b>	<b>7.00</b>	<b>5.80</b>	<b>14.00</b>	<b>3.12</b>	<b>2.05</b>	<b>1.40</b>	<b>3.98</b>	<b>39.00</b>
2022	<b>1.65</b>	<b>7.56</b>	<b>5.91</b>	<b>14.55</b>	<b>3.90</b>	<b>2.10</b>	<b>1.45</b>	<b>4.10</b>	<b>41.22</b>



# Adopted limits: 2022 detailed results

	<b>2A</b>	<b>2B</b>	<b>2C</b>	<b>3A</b>	<b>3B</b>	<b>4A</b>	<b>4B</b>	<b>4CDE</b>	<b>Total</b>
<b>Commercial discards</b>	<b>0.07</b>	<b>0.21</b>	<b>NA</b>	<b>NA</b>	<b>0.19</b>	<b>0.07</b>	<b>0.05</b>	<b>0.04</b>	<b>0.62</b>
<b>O26 Non-directed discards</b>	<b>0.09</b>	<b>0.21</b>	<b>0.07</b>	<b>0.72</b>	<b>0.35</b>	<b>0.24</b>	<b>0.12</b>	<b>1.96</b>	<b>3.76</b>
<b>Recreational</b>	<b>NA</b>	<b>0.03</b>	<b>1.09</b>	<b>1.58</b>	<b>0.01</b>	<b>0.01</b>	<b>0.00</b>	<b>0.00</b>	<b>2.71</b>
<b>Subsistence</b>	<b>NA</b>	<b>0.41</b>	<b>0.29</b>	<b>0.18</b>	<b>0.01</b>	<b>0.01</b>	<b>0.00</b>	<b>0.04</b>	<b>0.94</b>
<b>Total non-FCEY</b>	<b>0.16</b>	<b>0.85</b>	<b>1.45</b>	<b>2.48</b>	<b>0.55</b>	<b>0.34</b>	<b>0.17</b>	<b>2.04</b>	<b>8.03</b>
<b>Commercial discards</b>	<b>NA</b>	<b>NA</b>	<b>0.14</b>	<b>0.41</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>0.54</b>
<b>Recreational</b>	<b>0.60</b>	<b>1.01</b>	<b>0.82</b>	<b>2.11</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>4.54</b>
<b>Subsistence</b>	<b>0.03</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>0.03</b>
<b>Commercial landings</b>	<b>0.86</b>	<b>5.70</b>	<b>3.51</b>	<b>9.55</b>	<b>3.35</b>	<b>1.76</b>	<b>1.28</b>	<b>2.06</b>	<b>28.08</b>
<b>Total FCEY</b>	<b>1.49</b>	<b>6.71</b>	<b>4.46</b>	<b>12.07</b>	<b>3.35</b>	<b>1.76</b>	<b>1.28</b>	<b>2.06</b>	<b>33.19</b>

Commission mortality limits

Catch Sharing Plans

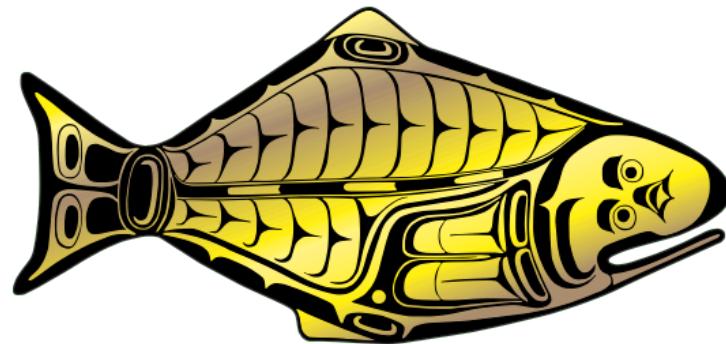


<b>4C FCEY</b>	<b>0.92</b>	
<b>4D FCEY</b>	<b>0.92</b>	
<b>4E FCEY</b>	<b>0.22</b>	

<b>TCEY</b>	<b>1.65</b>	<b>7.56</b>	<b>5.91</b>	<b>14.55</b>	<b>3.90</b>	<b>2.10</b>	<b>1.45</b>	<b>4.10</b>	<b>41.22</b>
<b>U26 Non-directed discards</b>	<b>0.00</b>	<b>0.03</b>	<b>0.00</b>	<b>0.29</b>	<b>0.07</b>	<b>0.08</b>	<b>0.01</b>	<b>0.74</b>	<b>1.23</b>
<b>Total</b>	<b>1.65</b>	<b>7.59</b>	<b>5.91</b>	<b>14.84</b>	<b>3.97</b>	<b>2.18</b>	<b>1.46</b>	<b>4.84</b>	<b>42.45</b>



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