Sablefish Discarding Allowance

Discussion Paper for December 2019

Source: https://www.seafoods.com/
Fixed gear fishery

Survey
1. Background – Previous Discussion Papers

Oct 2018

1. Regs not likely to be applicable to year classes of concern
2. Increased yield from size limit not likely
3. DMRs, min size are in use in other jurisdictions
4. Operational flexibility would be gained
5. IFQ accounting will be challenging
6. No room in trawl TAC to absorb IFQ discards
7. Value/lb varies temporally but is consistent spatially
8. Market size comp of landings affected by strong recruitment
1. Background – Previous Discussion Papers

Apr 2019

• Significant observer resources needed
• Proxy DMRs have potential
• On/Off discarding relies on accurate initial year class estimates
• Discarding unlikely to reduce whale depredation
• Gear modifications could reduce catches of small fish
• Exceeding TAC possible under current allocation scheme
• Increased high-grading potential
• Enforcement concerns related to complexity, size limit, IFQ accounting
1. Background - April 2019 Council Motion

- Voluntary versus mandatory release of sablefish
- Single size limits versus area specific size limits
  - Areas to be explored:
    - GOA, BSAI
    - EGOA, CGOA, WGOA, BSAI
- Options for discard accounting relative to ABC and TAC
- The use of proxy DMR options at the initiation of sablefish discarding
  - 12% (Stachura et al), 16% (State of Alaska), 20% (PFMC)
- Use of gear specific DMRs for IFQ fisheries
- Address concerns related to monitoring and enforcement options from:
  - Discards estimated from the survey
  - Discards estimated based on observer and EM data
  - Discards estimated based on logbook reporting
- Implications of these changes on overall stock abundance and allocations to trawl and IFQ fisheries
2. Voluntary versus mandatory

- **Stakeholder (IFQ Committee)**
  - Voluntary discarding maximizes flexibility
    - Encounters with small, marginally valuable fish are not predictable.
    - Financially punitive conditions more frequent for size-based mandatory than no discarding.

- **Analyst (Groundfish Plan Teams)**
  - Voluntary discarding adds to uncertainty.
    - Probability of discarding
    - No uncertainty in catches
    - Significant observer monitoring necessary

- **Enforcement (NOAA OLE)**
  - Voluntary discarding easier to enforce than mandatory length-based
2. Voluntary versus mandatory
2. Voluntary versus mandatory

• Stakeholder (IFQ Committee)
  • Voluntary discarding maximizes flexibility
    • Encounters with small, marginally valuable fish are not predictable.
    • Financially punitive conditions more frequent for size-based mandatory than no discarding.

• Analyst (Groundfish Plan Teams)
  • Voluntary discarding adds to uncertainty.
    • Probability of discarding
    • Assessment currently assumes no uncertainty in catches
    • Significant observer monitoring necessary

• Enforcement (NOAA OLE)
  • Voluntary discarding easier to enforce than mandatory length-based
2. Voluntary versus mandatory

Chatham Strait Fishery
2. Voluntary versus mandatory

- Stakeholder (IFQ Committee)
  - Voluntary discarding maximizes flexibility
    - Encounters with small, marginally valuable fish are not predictable.
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- Analyst (Groundfish Plan Teams)
  - Voluntary discarding adds to uncertainty.
    - Probability of discarding
    - No uncertainty in catches
    - Significant observer monitoring necessary

- Enforcement
  - Voluntary discarding easier to enforce than mandatory length-based
3. Single size limits versus area specific size limits

- Areas to be explored:
  - GOA, BSAI
  - EGOA, CGOA, WGOA, BSAI

- Assumes area-specific demographic difference in population structure
Fixed gear length frequencies all years

- Mean AI = 65.9 cm
- Mean BS = 64 cm
- Mean CG = 66.4 cm
- Mean EY = 69.1 cm
- Mean WG = 64.6 cm
- Mean WY = 68 cm
3. Single size limits versus area specific size limits

• Additional Enforcement concerns to address:
  • What are the geographic boundaries distinguishing size limits?
  
  • Does a vessel have to off-load its catch in the same “size-area” it was collected?
  
  • Can sablefish IFQ vessels directed fish for sablefish across multiple “size-areas” on the same trip? If so, what are the ramifications for catch-accounting?
  
  • Mixed hauls of different sized fish from different areas with different size limits?
4. Accounting under TAC/ABC

Table 7—Final 2019 Sablefish TAC Specifications in the Gulf of Alaska and Allocations to Fixed and Trawl Gear
[Values are rounded to the nearest metric ton]

<table>
<thead>
<tr>
<th>Area/district</th>
<th>TAC</th>
<th>Fixed gear allocation</th>
<th>Trawl gear allocation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Western</td>
<td>1,581</td>
<td>1,265</td>
<td>316</td>
</tr>
<tr>
<td>Central</td>
<td>5,178</td>
<td>4,142</td>
<td>1,036</td>
</tr>
<tr>
<td>West Yakutat</td>
<td>1,828</td>
<td>1,587</td>
<td>241</td>
</tr>
<tr>
<td>Southeast Outside</td>
<td>2,984</td>
<td>2,984</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>11,571</td>
<td>9,978</td>
<td>1,593</td>
</tr>
</tbody>
</table>

Table 10—Final 2019 and 2020 Gear Shares and CDQ Reserve of BSAI Sablefish TACs
[Amounts are in metric tons]

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Bering Sea</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trawl 1</td>
<td>50</td>
<td>745</td>
<td>633</td>
<td>56</td>
<td>997</td>
<td>847</td>
<td></td>
</tr>
<tr>
<td>Hook-and-line/pot gear 2</td>
<td>50</td>
<td>745</td>
<td>596</td>
<td>149</td>
<td></td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>1,489</td>
<td>1,228</td>
<td>205</td>
<td>997</td>
<td>847</td>
<td></td>
</tr>
<tr>
<td>Aleutian Islands</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trawl 1</td>
<td>25</td>
<td>502</td>
<td>427</td>
<td>38</td>
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<td>Hook-and-line/pot gear 2</td>
<td>75</td>
<td>1,506</td>
<td>1,205</td>
<td>301</td>
<td></td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>2,008</td>
<td>1,632</td>
<td>339</td>
<td>672</td>
<td>571</td>
<td></td>
</tr>
</tbody>
</table>
4. Accounting under TAC/ABC

• TAC currently allocated to fixed gear, trawl by subarea
• Currently no set-aside for discards in IFQ fishery
• IFQ discarding could reduce TAC allocations overall or for IFQ vessels only
  • Overall TAC reduction may constrain trawl vessels
4. Accounting under TAC/ABC
4. Accounting under TAC/ABC

![Graph showing catch by gear/TAC from 2014 to 2019]

**BSAI/GOA Groundfish Combined**
- Effort Report for Groundfish Catcher Processors
  - Discontinued June 1, 2019
- Fisheries Outlook: Weekly groundfish fishery summary for the BSAI and GOA
  - 2019 (TXT)
- Forage Fish and Grenadier Catch
- Groundfish by Gear
- Groundfish Retained and Discarded
- Pacific Cod and Pollock Products (Codes)
- Status of Fisheries - AFA Unrestricted Catcher Processors and Non-Exempt Catcher Vessels, Hook-and-Line Gear, Non-AFA Crab Vessels, Pot and Jig Gear, Trawl Gear
  - Current year - 2013
4. Accounting under TAC/ABC

• Within IFQ
  • IFQ TAC – everyone’s IFQ is reduced
    • Set it and forget it
    • Estimate using observer pgm and discard rates
    • Vary by area, based on differential discard levels

• IFQ-specific allowance
  • requires real time reporting of discard mortalities
  • very high monitoring burden
  • transfers complicated
  • special allowance?
## 4. Accounting under TAC/ABC

<table>
<thead>
<tr>
<th>Year</th>
<th>Gear</th>
<th>BSAI</th>
<th>GOA</th>
<th>Combined</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Discard</td>
<td>%Discard</td>
<td>Catch</td>
</tr>
<tr>
<td>2015</td>
<td>H&amp;L</td>
<td>14</td>
<td>2.9%</td>
<td>489</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>5</td>
<td>3.5%</td>
<td>153</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>20</td>
<td>3.1%</td>
<td>642</td>
</tr>
<tr>
<td>2016</td>
<td>H&amp;L</td>
<td>77</td>
<td>18.5%</td>
<td>415</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>9</td>
<td>1.9%</td>
<td>466</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>86</td>
<td>9.7%</td>
<td>881</td>
</tr>
<tr>
<td>2017</td>
<td>H&amp;L</td>
<td>47</td>
<td>17.2%</td>
<td>273</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>173</td>
<td>13.2%</td>
<td>1,307</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>220</td>
<td>13.9%</td>
<td>1,580</td>
</tr>
<tr>
<td>2018</td>
<td>H&amp;L</td>
<td>73</td>
<td>21.1%</td>
<td>348</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>396</td>
<td>20.7%</td>
<td>1,911</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>469</td>
<td>20.8%</td>
<td>2,258</td>
</tr>
<tr>
<td>2019</td>
<td>H&amp;L</td>
<td>110</td>
<td>34.7%</td>
<td>318</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>1,479</td>
<td>46.7%</td>
<td>3,167</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>1,589</td>
<td>45.6%</td>
<td>3,485</td>
</tr>
<tr>
<td>2010-2018 mean</td>
<td>H&amp;L</td>
<td>39</td>
<td>5.1%</td>
<td>758</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>68</td>
<td>9.0%</td>
<td>762</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>107</td>
<td>7.0%</td>
<td>1,520</td>
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4. Accounting under TAC/ABC

• Assessment does not include uncertainty in catches
• Allowance introduces uncertainty in probability of discarding
  • Assumed discards based on rate
• Risk matrix
  • Supposed to address unquantifiable risk
  • Does not address area-based uncertainty
• Logbooks not an option
• Apportionment
4. Accounting under TAC/ABC

Author recommended 2020 ABC (with whale depredation adjustments)

<table>
<thead>
<tr>
<th>Area</th>
<th>AI</th>
<th>BS</th>
<th>WG</th>
<th>CG</th>
<th>WY*</th>
<th>EY*</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019 ABC</td>
<td>2,030</td>
<td>1,501</td>
<td>1,659</td>
<td>5,246</td>
<td>1,765</td>
<td>3,179</td>
<td>15,380</td>
</tr>
<tr>
<td>2020 ABC</td>
<td>2,537</td>
<td>1,876</td>
<td>2,074</td>
<td>6,558</td>
<td>2,206</td>
<td>3,974</td>
<td>19,225</td>
</tr>
<tr>
<td>2016-2018 avg. depredation</td>
<td>16</td>
<td>19</td>
<td>105</td>
<td>91</td>
<td>45</td>
<td>94</td>
<td>370</td>
</tr>
<tr>
<td>Ratio 2020:2019 ABC</td>
<td>1.25</td>
<td>1.25</td>
<td>1.25</td>
<td>1.25</td>
<td>1.25</td>
<td>1.25</td>
<td>1.25</td>
</tr>
<tr>
<td>Deduct 3 year adjusted average</td>
<td>-20</td>
<td>-23</td>
<td>-132</td>
<td>-113</td>
<td>-56</td>
<td>-118</td>
<td>-462</td>
</tr>
<tr>
<td><strong>2020 ABC</strong></td>
<td><strong>2,517</strong></td>
<td><strong>1,853</strong></td>
<td><strong>1,942</strong></td>
<td><strong>6,445</strong></td>
<td><strong>2,150</strong></td>
<td><strong>3,856</strong></td>
<td><strong>18,763</strong></td>
</tr>
<tr>
<td>Change from 2019 ABCw</td>
<td>25%</td>
<td>24%</td>
<td>23%</td>
<td>24%</td>
<td>29%</td>
<td>23%</td>
<td>25%</td>
</tr>
</tbody>
</table>

* Before 95:5 hook and line: trawl split shown below. ** ABCw is the author recommended ABC that accounts for whales.
5. Use of proxy discard mortality rate options at the initiation of sablefish discarding

- The use of proxy DMR options at the initiation of sablefish discarding
  - 12% (Stachura et al)
  - 16% (State of Alaska)
  - 20% (PFMC)

- DMR generate sablefish “saving”
<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>100% (Status Quo)</td>
<td>1-3 lbs</td>
<td>911</td>
<td>904</td>
<td>854</td>
<td>698</td>
<td>851</td>
<td>1474</td>
<td>1128</td>
</tr>
<tr>
<td></td>
<td>&gt; 3 lbs</td>
<td>15919</td>
<td>15624</td>
<td>12995</td>
<td>12134</td>
<td>10690</td>
<td>11386</td>
<td>6918</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>16830</td>
<td>16528</td>
<td>13849</td>
<td>12832</td>
<td>11541</td>
<td>12860</td>
<td>8046</td>
</tr>
<tr>
<td>12% (Stachura et al.)</td>
<td>1-3 lbs</td>
<td>109.32</td>
<td>108.48</td>
<td>102.48</td>
<td>83.76</td>
<td>102.12</td>
<td>176.88</td>
<td>135.36</td>
</tr>
<tr>
<td></td>
<td>&gt; 3 lbs</td>
<td>15919</td>
<td>15624</td>
<td>12995</td>
<td>12134</td>
<td>10690</td>
<td>11386</td>
<td>6918</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>16028.32</td>
<td>15732.5</td>
<td>13097.5</td>
<td>12217.8</td>
<td>10792.1</td>
<td>11562.9</td>
<td>7053.36</td>
</tr>
<tr>
<td>16% (State of Alaska)</td>
<td>1-3 lbs</td>
<td>145.76</td>
<td>144.64</td>
<td>136.64</td>
<td>111.68</td>
<td>136.16</td>
<td>235.84</td>
<td>180.48</td>
</tr>
<tr>
<td></td>
<td>&gt; 3 lbs</td>
<td>15919</td>
<td>15624</td>
<td>12995</td>
<td>12134</td>
<td>10690</td>
<td>11386</td>
<td>6918</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>16064.76</td>
<td>15768.6</td>
<td>13131.6</td>
<td>12245.7</td>
<td>10826.2</td>
<td>11621.8</td>
<td>7098.48</td>
</tr>
<tr>
<td>20% (PFMC)</td>
<td>1-3 lbs</td>
<td>182.2</td>
<td>180.8</td>
<td>170.8</td>
<td>139.6</td>
<td>170.2</td>
<td>294.8</td>
<td>225.6</td>
</tr>
<tr>
<td></td>
<td>&gt; 3 lbs</td>
<td>15919</td>
<td>15624</td>
<td>12995</td>
<td>12134</td>
<td>10690</td>
<td>11386</td>
<td>6918</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>16101.2</td>
<td>15804.8</td>
<td>13165.8</td>
<td>12273.6</td>
<td>10860.2</td>
<td>11680.8</td>
<td>7143.6</td>
</tr>
</tbody>
</table>
### Table 5

Percent reduction in landed Sablefish as a result of DMRs.

<table>
<thead>
<tr>
<th></th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>12% (Stachura et al.)</td>
<td>-4.76</td>
<td>-4.81</td>
<td>-5.43</td>
<td>-4.79</td>
<td>-6.49</td>
<td>-10.09</td>
<td>-12.34</td>
</tr>
<tr>
<td>16% (State of Alaska)</td>
<td>-4.55</td>
<td>-4.59</td>
<td>-5.18</td>
<td>-4.57</td>
<td>-6.19</td>
<td>-9.63</td>
<td>-11.78</td>
</tr>
<tr>
<td>20% (PFMC)</td>
<td>-4.33</td>
<td>-4.38</td>
<td>-4.93</td>
<td>-4.35</td>
<td>-5.90</td>
<td>-9.17</td>
<td>-11.22</td>
</tr>
</tbody>
</table>

### Table 6

Sablefish savings in sold weight (1,000 lbs.).

<table>
<thead>
<tr>
<th></th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>12% (Stachura et al.)</td>
<td>801.68</td>
<td>795.52</td>
<td>751.52</td>
<td>614.24</td>
<td>748.88</td>
<td>1297.12</td>
<td>992.64</td>
</tr>
<tr>
<td>16% (State of Alaska)</td>
<td>765.24</td>
<td>759.36</td>
<td>717.36</td>
<td>586.32</td>
<td>714.84</td>
<td>1238.16</td>
<td>947.52</td>
</tr>
<tr>
<td>20% (PFMC)</td>
<td>728.80</td>
<td>723.20</td>
<td>683.20</td>
<td>558.40</td>
<td>680.80</td>
<td>1179.20</td>
<td>902.40</td>
</tr>
</tbody>
</table>
6. Use of gear specific DMRs for IFQ fisheries

• Use of gear specific DMRs for IFQ fisheries
  • 7% (halibut in pots 2018)
  • 4% (halibut in pots 2019)
  • 2% (hypothetical)
### Table 8

#### HAL - Percent reduction in landed Sablefish

<table>
<thead>
<tr>
<th>DMR</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>12% (Stachura et al.)</td>
<td>-8.20</td>
<td>-10.70</td>
</tr>
<tr>
<td>16% (State of Alaska)</td>
<td>-7.83</td>
<td>-10.22</td>
</tr>
<tr>
<td>20% (PFMC)</td>
<td>-7.46</td>
<td>-9.73</td>
</tr>
</tbody>
</table>

#### Pots - Percent reduction in landed Sablefish

<table>
<thead>
<tr>
<th>DMR</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>2% (Hypothetical DMR)</td>
<td>-38.68</td>
<td>-36.18</td>
</tr>
<tr>
<td>4% (2019 halibut)</td>
<td>-37.89</td>
<td>-35.45</td>
</tr>
<tr>
<td>7% (2018 halibut)</td>
<td>-36.70</td>
<td>-34.34</td>
</tr>
</tbody>
</table>
## Table 9

<table>
<thead>
<tr>
<th>HAL - Sablefish savings in sold weight (1,000 lbs.)</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>DMR</td>
<td>2017</td>
<td>2018</td>
</tr>
<tr>
<td>12% (Stachura et al.)</td>
<td>914.6</td>
<td>1359.4</td>
</tr>
<tr>
<td>16% (State of Alaska)</td>
<td>873.0</td>
<td>1297.6</td>
</tr>
<tr>
<td>20% (PFMC)</td>
<td>831.5</td>
<td>1235.8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pots - Sablefish savings in sold weight (1,000 lbs.)</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>DMR</td>
<td>2017</td>
<td>2018</td>
</tr>
<tr>
<td>2% (Hypothetical DMR)</td>
<td>546.4</td>
<td>667.1</td>
</tr>
<tr>
<td>4% (2019 halibut)</td>
<td>535.2</td>
<td>653.5</td>
</tr>
<tr>
<td>7% (2018 halibut)</td>
<td>518.5</td>
<td>633.1</td>
</tr>
</tbody>
</table>
7. Concerns related to monitoring and enforcement options

- Address concerns related to monitoring and enforcement options from:
  - Discards estimated from the survey
  - Discards estimated based on logbook reporting
  - Discards estimated based on observer and EM data
Discards estimated from the survey

• Alaska Fisheries Science Center Longline survey
  • Survey depth range approximately 200 – 1000 m
  • Intent to survey all sablefish habitat in GOA and BSAI
  • Sample entire population structure (entire size and age range)

• Directed Longline Fishery
  • Driven by economics
  • Fish in areas with older and larger fish
Discards estimated from the survey

- Fishery in Gray
- Survey in Black
- Males – dotted lines
- Females – solid lines
Discards estimated from the survey

• Challenges
  • Differences in selectivity would add increased uncertainty into stock assessment model
  • Real-time estimates not available
  • Pot gear?
Discards estimated based on logbook reporting

- Currently, data collected by observers and vessel captains
- No specific data on weight or viability
- Real-time data not available
Discards estimated based on observer and EM data

• Key Issues
  • Bias – Observer Data
  • Discard Bias and CAS
  • Account Management
Discards estimated based on observer and EM data

- Bias – Observer Data
  - Weight Estimation

\[
\text{Number of fish in a set} \times \text{Average Species-Specific Weight} = \text{Total catch weight}
\]

\[
\text{Total catch weight} \times \text{Proportion of fish discarded} = \text{Discarded weight}
\]

\[
\text{Discarded weight} \neq \text{Retained weight}
\]

\[
\text{Weight distribution}
\]
Discards estimated based on observer and EM data

- Bias – Observer Data
  - Weight Estimation
  - Electronic Monitoring

<table>
<thead>
<tr>
<th>Observed Fleet</th>
<th>EM Fleet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average</td>
<td>Average</td>
</tr>
<tr>
<td>Species-Specific Weight</td>
<td>Species-Specific Weight</td>
</tr>
</tbody>
</table>
Discards estimated based on observer and EM data

- Bias – Observer Data
  - Weight Estimation
  - Electronic Monitoring
  - Voluntary versus Mandatory size limit
Discards estimated based on observer and EM data

• Bias – Observer Data
• Discard Bias and Catch Accounting System
Discards estimated based on observer and EM data

• Bias – Observer Data
• Discard Bias and Catch Accounting System
• Account Management
Discards estimated based on observer and EM data

• Observer and EM data conclusions
  • Observer: Need information on length and weight of discards

• EM: New method would be needed
8. Impacts on Population

• YPR (Lowe et al. 1991) showed no benefit to stock
• Hypothetical scenarios
  • ABC to be caught each year
  • Discards did not contribute to ABC.
    • Impacts likely less than in the forecasts
    • Discarding small sablefish would increase fishing pressure on older fish
• ABC declines very rapidly initially, especially for a larger size limit.
• SSB declines
• Fishing mortality on older fish is greater than current.
8. Impacts on Population

- Hypothetical scenarios
  - ABC to be caught each year
  - Discards did not contribute to ABC.
    - Impacts likely less than in the forecasts
8. Impacts on Population

Comparison of ABC trajectories at DMR ages

- BASE
- 3/0.2
- 3/1
- 5/1
- 5/0.5
- 5/0.12
- 3/0.5
- 5/0.2
- 3/0.12
8. Impacts on Population

Comparison of SSB trajectories at DMR ages
8. Impacts on Population

![Graph showing millions of 15+ year olds from 2019 to 2027. The baseline (BASE) line is consistently above all other lines, indicating a higher number of 15+ year olds compared to other scenarios.](image-url)
8. Impacts on Population

Increase in fishing mortality on older ages

- **5/0.12**
- **3/0.20**
8. Impacts on Population

• Hypothetical scenarios
  • ABC to be caught each year
  • Discards did not contribute to ABC.
    • Impacts likely less than in the forecasts
• Discarding small sablefish would increase fishing pressure on older fish
  • ABC declines very rapidly initially, especially for a larger size limit.
  • SSB declines
  • Fishing mortality on older fish is greater than current.
Conclusions

• Wide range of offsetting issues
  • Trading in low value catch for potentially improved prospects
  • Gains in catch value needed to make up for catch that is discarded
  • Adaptation to on-the-water conditions
  • Variables that contribute to discarding decision

• Challenges
  • monitoring and reporting mechanisms
  • data quality
  • managing the fishery
    • in-season
    • specifications
    • real-time accounting
      • vessel-by-vessel basis
Conclusions

• Special provision?
  • onboard methods
    • quantity, weight, length, and release condition
    • tagging program to improve DMR estimation
    • hook-and-line and pot gear
    • multiple area
    • vessel classes.
  • Restrict to operations able to support vessel-level monitoring criteria

• Alternatively, ...
  • Everyone in IFQ program agrees to a general reduction
    • Reduction minimizes cost
    • Reduction includes various provisions to account for risk