Draft status of the U.S. petrale sole resource in 2008

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Recruitment deviations
Fishing Mortality

![Graph showing the trend of total hybrid F over the years from 1880 to 2000. The graph indicates a significant increase in fishing mortality from 1960 onwards.]
Model Sensitivity Plots

Spawning Biomass (mt)

1880 1900 1920 1940 1960 1980 2000

Base

No2008survey

HalfNsurvey

Ricker

Spawning Biomass (mt)


No2008survey

Ricker

Base

HalfNsurvey

Depletion

0.00 0.05 0.10 0.15 0.20 0.25 0.30


Ricker

No2008survey

Base

HalfNsurvey
Comparison between 2009 (blue), 2005 (green) and 1999 (red) assessments
Equilibrium Yield Curve
## Base model projection using 40-10 control rule

<table>
<thead>
<tr>
<th>Year</th>
<th>OY (mt)</th>
<th>Depl B0</th>
<th>Depl Bmsy</th>
<th>OY (mt)</th>
<th>Depl B0</th>
<th>Depl Bmsy</th>
<th>OY (mt)</th>
<th>Depl B0</th>
<th>Depl Bmsy</th>
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<tr>
<td>2009</td>
<td>2,433</td>
<td>12%</td>
<td>61%</td>
<td>2,433</td>
<td>12%</td>
<td>61%</td>
<td>2,000</td>
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<tr>
<td>2010</td>
<td>2,393</td>
<td>10%</td>
<td>52%</td>
<td>1,200</td>
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<td>52%</td>
<td>1,200</td>
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<td>2011</td>
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<td>48%</td>
<td>147</td>
<td>12%</td>
<td>63%</td>
<td>226</td>
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<td>311</td>
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<td>75%</td>
<td>529</td>
<td>17%</td>
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<td>1,599</td>
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<tr>
<td>2017</td>
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<td>169%</td>
<td>1,661</td>
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<td>187%</td>
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<td>1,876</td>
<td>36%</td>
<td>191%</td>
<td>1,888</td>
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<td>192%</td>
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Changes from 2005 Model

- Coast-wide model
- All age data used with new analysis of ageing bias and imprecision
- NWFSC survey index, age, and length data used
- Pikitch and WCGOP discard data used
- Updated catch history
- Recruitment and natural mortality parameters estimated
Management performance

![Graphs showing F relative to a 40% of B0 target and Depletion relative to Bmsy.](image-url)
Long term spawning biomass and catch in comparison to MSY based reference points

- Spawning Biomass
- Estimated SSB_MSY
- 50% Estimated SSB_MSY

Graph showing spawning biomass and catch over time with reference to MSY based points.
Alaska Fisheries Science Center’s Trawl Used for the 1977-2004 West Coast Triennial Survey
89/121 PolyNor’ Eastern Trawl

Continuous Disk Footrope – 10” in bosom, 8” in wings

Figure 1. Front opening of the PolyNor’ Eastern. Note: Footrope difference, high rise opening, and steep taper to