Briefing on Provisional Stock Assessment of North Pacific Albacore and Pacific Bluefin Tuna

PFMC Meeting
San Diego, CA
September 13-17, 2004
INTERNATIONAL HMS ORGANIZATIONS

- **NPAW** North Pacific Albacore Workshop (1974)
- **ISC** Interim Scientific Committee for Tuna and Tuna-like Species in the North Pacific (1995)
- **IATTC** Inter-American Tropical Tuna Commission (1950)
- **WCPFC** Commission for the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific (2004)
<table>
<thead>
<tr>
<th>Specifications/Stock</th>
<th>Catch (mt)</th>
<th>Trend</th>
<th>ISC4 Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High</td>
<td>Recent</td>
<td></td>
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<tr>
<td>North Pacific albacore</td>
<td>125,400 (‘76)</td>
<td>91,400 (‘02)</td>
<td>Increasing</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>$F_c &gt; F_{20%} = 0.42$</td>
</tr>
<tr>
<td>Pacific bluefin tuna</td>
<td>34,800 (‘56)</td>
<td>13,100 (‘02)</td>
<td>Decreasing</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>$F_c &gt; F_{\text{max}} = 0.43\sim0.48$</td>
</tr>
</tbody>
</table>
Albacore (*Thunnus alalunga*)

- Maximum size of 60 kg (130 lb)
- Maximum age about 10-12 years old
- Sexual maturity at age 4 years
Movement of North Pacific Albacore from Archival Tagging off the U.S.
Migration Track for North Pacific Albacore from Archival Tagging off Japan
Estimated Stock Parameters for North Pacific Albacore

Stock Biomass

Recruitment
Pacific bluefin tuna (*Thunnus orientalis*)
- Maximum size of 560 KG (1,200 LB)
- Maximum age of 10-15 years old
- Sexual maturity at about age 5 years
Migration Tracks for Pacific Bluefin Tuna from Archival Tags
Catch of Pacific Bluefin Tuna for 1972-2002

Year

Catch (1,000 mt)
Eastern Pacific
Western Pacific
Estimated Stock Parameters for Pacific Bluefin Tuna

- Total Stock Biomass
- Spawning Stock Biomass
- Recruitment
Reference Points for Management
F_{MSY} and F_{Limit} proxies for North Pacific albacore with a “high productivity” regime of about 33 million recruits (age-1 fish) annually.

<table>
<thead>
<tr>
<th>Reference Points</th>
<th>F (per yr)</th>
<th>C (1,000 mt per yr)</th>
<th>B (1,000 mt)</th>
<th>SSB (1,000 mt)</th>
</tr>
</thead>
<tbody>
<tr>
<td>F_{MSY}</td>
<td>F_{40%} = 0.22</td>
<td>C_{MSY} = 94</td>
<td>B_{MSY} = 694</td>
<td>SSB_{MSY} = 306</td>
</tr>
<tr>
<td></td>
<td>F_{35%} = 0.26</td>
<td>C_{MSY} = 100</td>
<td>B_{MSY} = 648</td>
<td>SSB_{MSY} = 268</td>
</tr>
<tr>
<td></td>
<td>F_{30%} = 0.30</td>
<td>C_{MSY} = 105</td>
<td>B_{MSY} = 598</td>
<td>SSB_{MSY} = 228</td>
</tr>
<tr>
<td></td>
<td>F_{0.1} = 0.32</td>
<td>C_{MSY} = 107</td>
<td>B_{MSY} = 581</td>
<td>SSB_{MSY} = 214</td>
</tr>
<tr>
<td>F_{Limit}</td>
<td>F_{20%} = 0.42</td>
<td>C_{Limit} = 114</td>
<td>B_{Limit} = 503</td>
<td>SSB_{Limit} = 153</td>
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<tr>
<td></td>
<td>F_{MAX} = 0.90</td>
<td>C_{Limit} = 121</td>
<td>B_{Limit} = 330</td>
<td>SSB_{Limit} = 40</td>
</tr>
<tr>
<td>No Fishing</td>
<td>F_0 = 0.00</td>
<td>C_0 = 0</td>
<td>B_0 = 1,215</td>
<td>SSB_0 = 762</td>
</tr>
</tbody>
</table>
SUMMARY

• Provisional stock assessments indicate:
  – North Pacific Albacore, $F_c > F_{-20\%}$
  – Pacific Bluefin Tuna, $F_c > F_{-\text{max}}$

• More comprehensive and refined assessments are underway by the NPAW and the Working Group on Bluefin Tuna of the ISC.

• Proxy reference points need to be specified/agreed on and ideally the same ones for all organizations dealing with the stocks.