Implementation and Effectiveness of CMM 2008-01

Summary and Update of WCPFC-2010-15
WCPFC-2011-TTC7-31

Oceanic Fisheries Programme
Secretariat of the Pacific Community

Presentation Outline

• Implementation of key elements
  – Purse seine effort
  – FAD closure
  – High Seas Pockets closure
  – Longline catch

• Effectiveness
  – Generic projections (modifications to LL catch, PS ASS effort, IDPH catch, OTHER effort)
  – Several specific projections (2009/2010, total vs FAD closures, impact of exemptions)
  – All based on 2011 assessments – updated in WCPFC-2011-TTC7-31
Total PS Effort Estimates
(20N – 20S, excluding PH and ID Domestic purse seiners)

Objective: Limit PS effort to 2004 levels
2001-2004 average 39,557 days
2004 43,987 days
2009 49,597 days
2010 (provisional) 52,085 days

• 2010 effort is a 18% increase on 2004
• Conclusion – CMM has not been effective in restricting total PS effort to the 2001-2004 or 2004 levels

PS Effort 2001-2010
20°N – 20°S, excluding domestic PS effort for ID and PH
Analysis of Purse Seine Set Type Behaviour in 2009 and 2010
SC7-MI-WP-01

• Update on observed purse seine fishing behaviours during the 2009 and 2010 FAD closures
• Catch and effort in 2009-2010 in relation to the FAD closures
• Catch size distribution in 2009-2010 in relation to the FAD closures

Observer Data in FAD Closures

<table>
<thead>
<tr>
<th></th>
<th>2009 (Aug – Sep)</th>
<th>2010 (Jul – Sep)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of observer trips processed to date</td>
<td>155 (45.5%)</td>
<td>159 (32.5%)</td>
</tr>
<tr>
<td>Number of observed fishing and searching days processed to date (Coverage rate)</td>
<td>3,045 (45.5%)</td>
<td>3,246 (32.5%)</td>
</tr>
<tr>
<td>Number of observed sets processed to date (Coverage rate)</td>
<td>3,100 (46.8%)</td>
<td>3,836 (32.2%)</td>
</tr>
<tr>
<td>Number of nights drifting with fish aggregation lights (activity = 14) (% of total)</td>
<td>68 (2.2%)</td>
<td>93 (2.9%)</td>
</tr>
<tr>
<td>Number of days setting or investigating Drifting FADs (SCH_ID = 4) (% of total)</td>
<td>118 (3.9%)</td>
<td>41 (1.3%)</td>
</tr>
<tr>
<td>Number of days reported with any activity related to a drifting FAD (Activity = 9,10,12,23,24,25,26) (% of total)</td>
<td>410 (13.5%)</td>
<td>165 (5.1%)</td>
</tr>
<tr>
<td>Number of days reported as &quot;No fishing, drifting with floating object&quot; (Activity = 12) (% of total)</td>
<td>170 (5.6%)</td>
<td>97 (3.0%)</td>
</tr>
</tbody>
</table>
Catch by Species

**Skipjack**

![Bar chart showing monthly catch by species (tonnes) for Skipjack, with peaks in October and November, and generally lower catches in other months.]

**Yellowfin**

![Bar chart showing monthly catch by species (tonnes) for Yellowfin, with peaks in July and August, and generally lower catches in other months.]

10/26/2011
Catch by Species

Bigeye

Monthly catch by species (tonnes)

2009
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

2010
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

Pre-closure
Closure
Post-closure
Pre-closure
Closure
Post-closure

Average Weight

Average weight of catch (kg)

Pre-closure
Closure
Post-closure

BET
SKJ
YFT

Average Weight

Average weight of catch (kg)

Pre-closure
Closure
Post-closure

BET
SKJ
YFT
Conclusions on FAD Closures

- Incidence of FAD-related activities lower in 2010 (5.1%) compared to 2009 (13.5%)
- Effort remained close to normal levels through both 2009 and 2010 FAD closures
- Total catch below average in 2009 closure, but remained close to normal levels in 2010
- Catches of bigeye were strongly reduced during both closures
- Proportions of associated sets in 2010 closure close to zero, and compliance seems to have improved
- Appears to be reduced FAD usage in months leading up to the closures, and in 2010 following the closure – possibly associated with FAD retrieval and re-deployment
- Average size of fish of all species caught during the closures is significantly larger than in non-closure periods – higher catch value may offset whatever reductions in catch have occurred. Bioeconomic analyses planned.

High Seas Pockets Closure

- Effective 1 January 2010
- Historically about 14% of effort occurred in HSP
High Seas Pockets Closure

- Effectiveness as a bigeye conservation measure relies on that effort being removed from the fishery (MI-WP-05 also refers)
- Purse seine effort increased in 2010 compared to 2009
- Would effort have been even higher without the closure?
High Seas Pockets Closure
2009 Philippines Domestic Purse Seine Effort

Longline Bigeye Catches

2010 reported catch is a 30% reduction on 2001-2004 average

But, considerable uncertainties in 2009 and 2010 catches, e.g. 4,133 mt of CH LL catch in KI EEZ currently not declared by CH or KI
Updated Projections (SC7 Request)

WCPFC-2011-TCC7-31

- Conduct updated projections using 2011 stock assessments
- Ranges of LL, PS, ID/PH and other fisheries catch or effort
- Two spreadsheets
  - Projected recruitment based on 2000-2009 average
  - Projected recruitment from the estimated SRR
- Two sets of results within each spreadsheet for PS effort changes
  - “transfer” – effort shifts between ASS and UNA (FAD closure)
  - “managed” – effort reductions same for ASS and UNA (total closure)
- SC7 suggested to use 2010 catch and effort as a base – we used 2009 due to some ongoing uncertainty in 2010 longline catches
- However, 2010 reported conditions can be identified in the matrix of projections

Projections Design

<table>
<thead>
<tr>
<th>Factor</th>
<th>Options</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Longline catch</td>
<td>1.2, 1.1, 1.0, 0.9, 0.8, 0.7, 0.6, and 0.5 times 2009 catches</td>
<td>8</td>
</tr>
<tr>
<td>Purse seine FAD effort 20N - 20S</td>
<td>1.2, 1.1, 1.0, 0.9, 0.8, 0.7, 0.6, and 0.5 times 2009 effort</td>
<td>8</td>
</tr>
<tr>
<td>Purse seine UNA effort 20N - 20S</td>
<td>Identical reduction as for FAD effort and perfect reallocation of FAD effort changes</td>
<td>2</td>
</tr>
<tr>
<td>Indonesia &amp; Philippines domestic fisheries</td>
<td>1 and 0.7 times 2009 catch</td>
<td>2</td>
</tr>
<tr>
<td>Other fisheries (Pole and line, and purse seine outside 20N - 20S)</td>
<td>1.2, 1.0, and 0.8 times 2009 effort</td>
<td>3</td>
</tr>
<tr>
<td>TOTAL RUNS</td>
<td></td>
<td>768</td>
</tr>
</tbody>
</table>
Results

Projecting 2009 and 2010 Conditions

Bigeye Tuna

<table>
<thead>
<tr>
<th>Year</th>
<th>LL catch</th>
<th>PS FAD effort</th>
<th>ID/PH catch</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>66,833</td>
<td>25,538</td>
<td>17,777</td>
</tr>
<tr>
<td>2010</td>
<td>55,420</td>
<td>17,415</td>
<td>11,897</td>
</tr>
<tr>
<td>%</td>
<td>-17%</td>
<td>-32%</td>
<td>-33%</td>
</tr>
</tbody>
</table>
**Total PS Closures vs FAD closures**

See Table 3 in WCPFC-TCC7-31

![Graph showing Total catch in 2021 vs Months of additional closure](image)

**Effect of Exemptions**

<table>
<thead>
<tr>
<th>Fishery group</th>
<th>CMM 2008-01</th>
<th>No exemptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scalars</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Longline</td>
<td>1.0</td>
<td>0.9</td>
</tr>
<tr>
<td>Purse seine</td>
<td>1.0</td>
<td>0.9</td>
</tr>
<tr>
<td>ID and PH domestic</td>
<td>0.9</td>
<td>0.8</td>
</tr>
<tr>
<td>Other fisheries</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Bigeye F_{2021}/F_{MSY}</td>
<td>1.35</td>
<td>1.17</td>
</tr>
</tbody>
</table>

And see also WCPFC7-2010-15 p. 13
Other Scenarios?

• See the spreadsheets:
• See Peter or me if you need any assistance