TurtleWatch - reducing protected species interaction?

Earth Observations for Tuna Fisheries Workshop
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The 18°C winter isotherm identifies the North Pacific Transition Zone (NPTZ), which is associated with as the Transition Zone Chlorophyll Front (TZCF).
North Pacific Ocean DPS and Hawai‘i shallow set longline MCHs

Loggerhead sea turtle (Caretta caretta)

<table>
<thead>
<tr>
<th></th>
<th>% in</th>
<th>Sets</th>
<th>H/(km²/hr)</th>
<th>Interactions</th>
<th>Per set</th>
<th>Per effort</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1</td>
<td>27.1</td>
<td>9166</td>
<td>810.39</td>
<td>143</td>
<td>0.016</td>
<td>0.18</td>
</tr>
<tr>
<td>Q2</td>
<td>21.8</td>
<td>5680</td>
<td>700.54</td>
<td>17</td>
<td>0.003</td>
<td>0.02</td>
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<tr>
<td>Q3</td>
<td>32.4</td>
<td>744</td>
<td>91.53</td>
<td>5</td>
<td>0.007</td>
<td>0.05</td>
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<tr>
<td>Q4</td>
<td>5.8</td>
<td>2306</td>
<td>153.71</td>
<td>27</td>
<td>0.012</td>
<td>0.18</td>
</tr>
</tbody>
</table>
Seasonal movement of loggerhead and SSLL

![Graph showing seasonal movement of loggerhead and SSLL with markers and shaded areas representing different months. The graph includes a box plot indicating SSLL sets with specific temperature ranges for each quarter.]
Loggerhead temperature distribution by size (SCL)
Quarterly temperature distribution of tags, sets and intercepts
Swordfish catch rate by SST with loggerhead intercepts
Swordfish Q1 catch rate by 1°C temperature band
Loggerhead interactions and distance to TurtleWatch band vs. proximity to cap

- Proportion of Loggerhead cap
- km to 17.5-18.5°C
- # of Loggerhead Interactions

Beyond a single metric?

Dynamic ocean management?
Multiple species?
Earth observations for sustainable tuna management and biodiversity

**Models of interactions**
- Even with rare events predictive models can be developed – simple to complex.
- The utility of these models will depend on the spatial correlation in the data.

**Multiple Species?**
- There may be synergistic options that reduce interactions with multiple species.
- There may not be.

**Target species catch rate**
- How will effort redistribute?
- How will this redistribution impact target species catch rates?

**Dynamic observations?**
- Consider the nature of the input data carefully.
- What time scale do predictions need to be made on?