Entanglements of Large Whales Along the U.S. West Coast

Dan Lawson and Lauren Saez

NMFS West Coast Region
Protected Resources Division
WCR Whale Entanglements

- Dramatic increase in reports since 2014
- Driven by humpback whales, but now including blue whales
- High demand for updates and evaluation of incoming data
- Quality of reporting and data improving
Origins of Entanglements 2013-2018

• Majority of reports have unidentified gear
• When identified, highest is Dungeness crab commercial gear
• Other fisheries include: gillnets, sablefish, spot prawn, lobster and recreational Dungeness crab and spot prawn
• Other types of origins
2019 summary
**preliminary data through August 23, 2019**

- 17 confirmed entangled whales, 1 unconfirmed report, 18 total reports
  - Gray whales: 6 confirmed, 1 unconfirmed, 7 total
  - Humpback whales: 10 confirmed, 10 total
  - Minke whale: 1 confirmed, 1 total

- Confirmed fisheries associated with entanglements: 8 reports
  - Commercial Dungeness crab: 6 total
    - 2 CDFW (2 humpback whale)
    - 1 ODFW (1 humpback whale)
    - 2 WDFW (2 humpback whale)
    - 1 state unknown (1 gray whale)
  - Gillnet: 2 (2 gray whales)

- Reporting location
  - California: 10 confirmed reports, 10 total reports
  - Oregon: 2 confirmed reports, 1 unconfirmed, 3 total reports
  - Washington: 4 confirmed report, 4 total report
  - Mexico: 1 confirmed report (humpback with gear from OR)
California Dungeness Crab Entanglements

- Whales: Mainly humpback whales; gray, blue and killer whales also entangled
- When: Highest months: June (11), April (8), May (7), August (8), July (5), and December (5)
  - 26, 50% of entanglements are reported in the spring (April to June)
  - 12 Dungeness crab entanglements were reported when the season was closed (23%), 40 while the season was open
Report location vs Gear Set location

• Gear set location is largely unknown
• When known (n=81,37%), the highest number of entanglements were associated with gear from central CA (27), and unknown from within CA (Uca) likely Cca or Nca (26)
• When gear set location is known, the entanglement was likely detected in the same region (n=55, 68%) (CCa in Cca was the highest, 18, followed by Uca in Cca 18 + Nca 2)
• Whales can carry gear across many state and countries
  • WA gear has been seen in Canada, southern CA and Mexico
  • Central CA gear has been seen in Canada, southern CA and Mexico
  • Uca gear has been seen in Mexico 3 times

<table>
<thead>
<tr>
<th>Set location</th>
<th>Canada</th>
<th>WA</th>
<th>Or</th>
<th>Nca</th>
<th>Cca</th>
<th>Sca</th>
<th>Mexico</th>
<th>Grand Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wa</td>
<td>1</td>
<td>8</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>13</td>
</tr>
<tr>
<td>Or</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>Nca</td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Cca</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>18</td>
<td>6</td>
<td>2</td>
<td>27</td>
</tr>
<tr>
<td>Sca</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Uca</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>2</td>
<td>18</td>
<td>2</td>
<td>26</td>
</tr>
<tr>
<td>unk</td>
<td>10</td>
<td>9</td>
<td>4</td>
<td>60</td>
<td>55</td>
<td></td>
<td></td>
<td>138</td>
</tr>
<tr>
<td>Grand Total</td>
<td>2</td>
<td>20</td>
<td>14</td>
<td>8</td>
<td>99</td>
<td>70</td>
<td>6</td>
<td>219</td>
</tr>
</tbody>
</table>
What We Think is Happening

- Complex relationship between whale distribution/abundance/behavior, environmental variability/prey distribution, fishing effort distribution, public awareness

- Better documentation and increasing response has increased ability to identify gear (along with trap tags), but still limited

- Trap/pot fisheries identified as the majority entangling gear (when known); Dungeness crab fishery = large co-occurrence

- Whales are getting entangled every way possible - not likely to be easy fix
What Other Issues Are Entanglements Creating?

• Management under MMPA – Potential Biological Removal
  • for CA/OR/WA humpback whales is 16.7 seriously injured or killed per year (entanglements alone essentially = PBR);
  • CA/OR/WA blue whales is 2.3 seriously injured or killed per year (entanglements = 0.96);
  • Pacific Coast Feeding Group gray whales is 3.5 seriously injured or killed (entanglements = .95)

• Humpback and blue whales are protected by the ESA
• Public perception of entanglements and associated fisheries is unpopular – market concerns
• Increased pressure on disentanglement response – inherently dangerous and not really a solution (“saved” 14 humpbacks 2012-2017)
Forensic Review Workshop

- 193 entanglement cases 2013 - mid 2018
- Scoring ~30 questions/aspects
  - ID of gear (info on buoys/tags present)
  - Surface gear extent
  - Location of attachment in gear
  - Gear characteristics (type/color/size/set depth)
  - Indications of multiple sets, lost gear
  - Characteristics of disentangled/dead animals
- Outcomes – coast wide engagement
  - Gear modification (alternatives to connect buoys/lines, ropeless gear)
  - Gear marking (coordinated across fisheries, marking of lines near top?)
  - Gear evaluation (repository, engage fishermen in forensics)
Entanglement Data Process

• Reports come to NMFS WCR PRD via multiple ways
• Response – data collection/disentanglement
• Initial evaluation – reach out to States if appropriate on gear ID*
• Ongoing information collection/evaluation – leads to periodic preliminary updates; FR; WG coordination?
• Annual Summary
• Serious Injury/Mortality and SARS - SWFSC