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Overview:

• Whale Entanglement numbers
• Working Group & Risk Assessment & Mitigation Program (RAMP)
• Data Sources for RAMP
• Gear Innovation and Testing
• Response to Entanglements
# Whale Entanglements:
West Coast Summary

<table>
<thead>
<tr>
<th>Year</th>
<th>Confirmed Entanglements (CA/OR/WA; n=187)</th>
<th>Confirmed Entanglements (CA; n=156)</th>
<th>Confirmed CA Dungeness crab Entanglements* (n=45)</th>
<th>% of CA Entanglements</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>53</td>
<td>48</td>
<td>10</td>
<td>21%</td>
</tr>
<tr>
<td>2016</td>
<td>56</td>
<td>52</td>
<td>22</td>
<td>42%</td>
</tr>
<tr>
<td>2017</td>
<td>32</td>
<td>26</td>
<td>6</td>
<td>23%</td>
</tr>
<tr>
<td>2018</td>
<td>46</td>
<td>30</td>
<td>7</td>
<td>23%</td>
</tr>
<tr>
<td>Totals</td>
<td><strong>187</strong></td>
<td><strong>156</strong></td>
<td><strong>45</strong></td>
<td><strong>29%</strong></td>
</tr>
</tbody>
</table>

* Includes 2 recreational entanglements

Source: NMFS Office of Protected Resources
Whale Entanglements: West Coast Summary

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Whale Entanglements:  
2019 West Coast Summary

13 confirmed entangled whales, 2 unconfirmed reports, 15 total reports
- Gray whales: 6 confirmed, 1 unconfirmed, 7 total
- Humpback whales: 6 confirmed, 1 unconfirmed, 7 total
- Minke whale: 1 confirmed, 1 total

Confirmed fisheries associated with entanglements: 7 reports
- Commercial Dungeness crab: 5 total
  - 1 CDFW (1 humpback whale)
  - 1 ODFW (1 humpback whale)
  - 1 ODFW or PS WDFW (1 gray whale)
  - 2 WDFW (2 humpback whale)
- Gillnet: 2 (2 gray whales)

Reporting location
- California: 7 confirmed reports, 1 unconfirmed, 8 total reports
- Oregon: 2 confirmed reports, 1 unconfirmed, 3 total reports
- Washington: 3 confirmed report, 3 total report
- Mexico: 1 confirmed report (humpback with gear from OR)

Source: NMFS, preliminary data through 8/6/19
Whale Entanglements: Prevention

- Serve on Dungeness Crab Fishery Working Group (led by NMFS, CDFW and includes commercial and rec fishermen and NGOs). Work includes:
  - Development of a Risk Assessment & Mitigation Program (RAMP) to assess entanglement risk to humpback and blue whales from fishing gear, and are conducted pre, mid, late, and post season; four risk factors are # entanglements, forage/ocean conditions, whale concentrations & fishing dynamics
  - Data collection to identify overlap between whale densities and gear locations, to better forecast risk, including whale watch crowd sourcing data, aerial surveys, fishermen observations, ACCESS cruises and other vessel surveys, CENCOOS
  - Gear innovation projects, such as “ropeless” traps
**RAMP PROCESS**

- **Risk Assessment Factor (RAF):**
  - FISHING DYNAMICS
  - WHALE/FORAGE MODEL FORECASTING
  - WHALE CONCENTRATIONS
  - WHALE ENTANGLEMENT STATUS

- **ET is convened when any Risk Factor is elevated**
  - Identify/request additional representation as needed
  - Evaluate available data
  - Discuss management options to address risk
  - Management Measures Toolbox (MMT)

- **Low Risk**
- **Moderate Risk**
- **High Risk**

- **Evaluation Team (ET)**
  - Determine if management action is warranted
  - Relay recommendation(s) to Director

- **Agoenies seek/provide additional information**
- **Request information to verify/clarify situation**

- **ET is NOT convened** if Risk Factors Low; “green” measures resume

- **Agencies/Director**
  - Implement ET fishery management recommendation; Dept. notifies fleet
Data Sources

Whale Watch Operator data

Analysis by NOAA NWFSC
Whale Entanglements:
Data Sources

Vessel Surveys

Large Whales
Included:
BLWH (2)
FIWH (1)
HUWH (79)
UNWH (25)

Not included
KIWH (3)
Gear Innovation & Testing – 2018/2019

Objectives:
• Deploy ropeless gear on crab traps
• Retrieve gear within minutes to test acoustic release and retrieval
• Fishermen’s feedback on what works well, or not, and what needs to be improved
• Develop dialogue between fishermen and gear innovators
• September 6, 2019 Gear Innovation Testing
Gear Testing Results –
May 2018

• Fiomarine:  
  – 4 successful retrievals (60-240 ft)

• Desert Star:  
  – 1 successful retrieval at 60 feet; did not pop up on 2nd attempt at 60 feet. Unit currently lost

• Initial observations  
  – Technologies are simple to use and learn  
  – Gear may move from initial set location  
  – Recoiling/repacking line causes delays  
  – Acoustic release may need multiple attempts  
  – Concerns with visibility, retrieval  
  – Located deployed gear with echosounder
Whale Entanglements:
Response Teams

- Interagency Cooperation coordinated by NMFS