

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

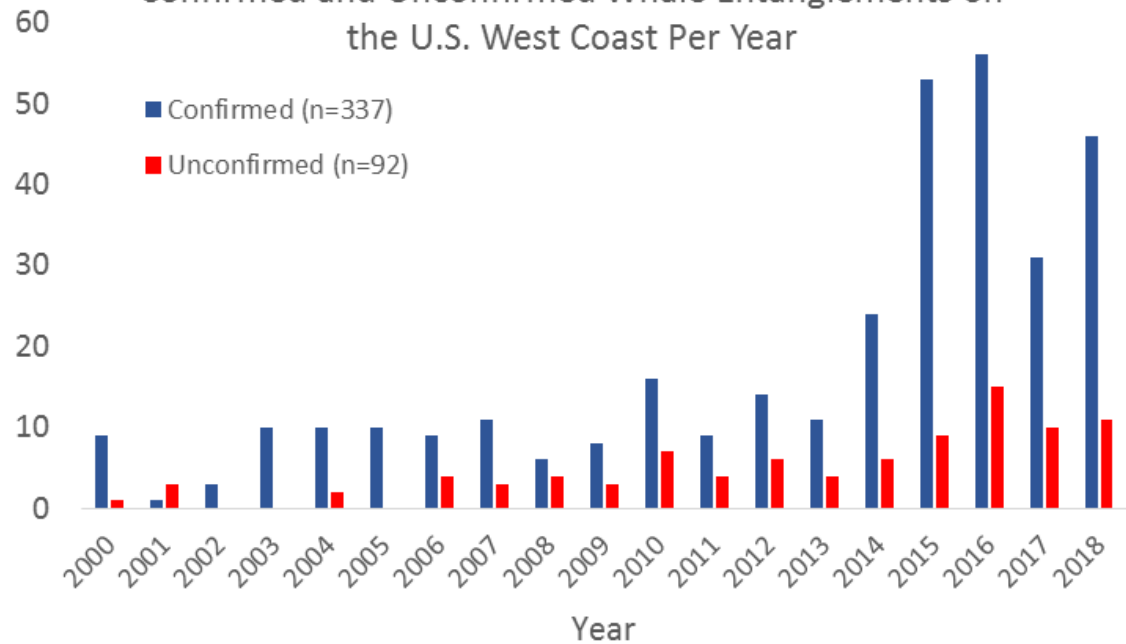
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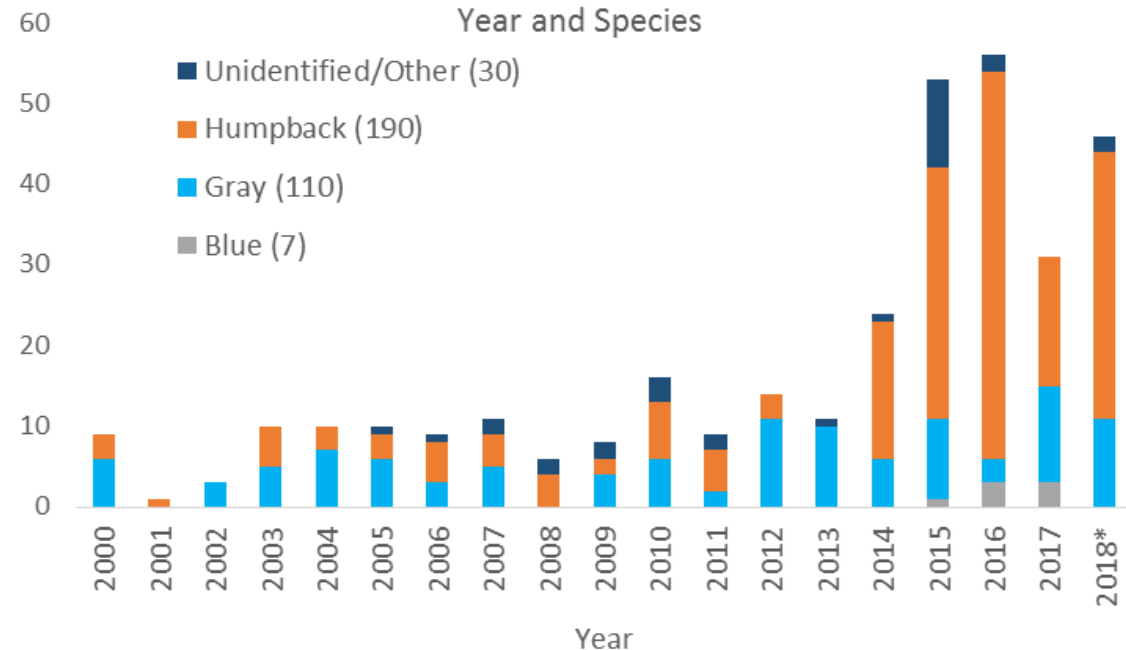
WCR Whale Entanglements

- 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

Confirmed and Unconfirmed Whale Entanglements on the U.S. West Coast Per Year

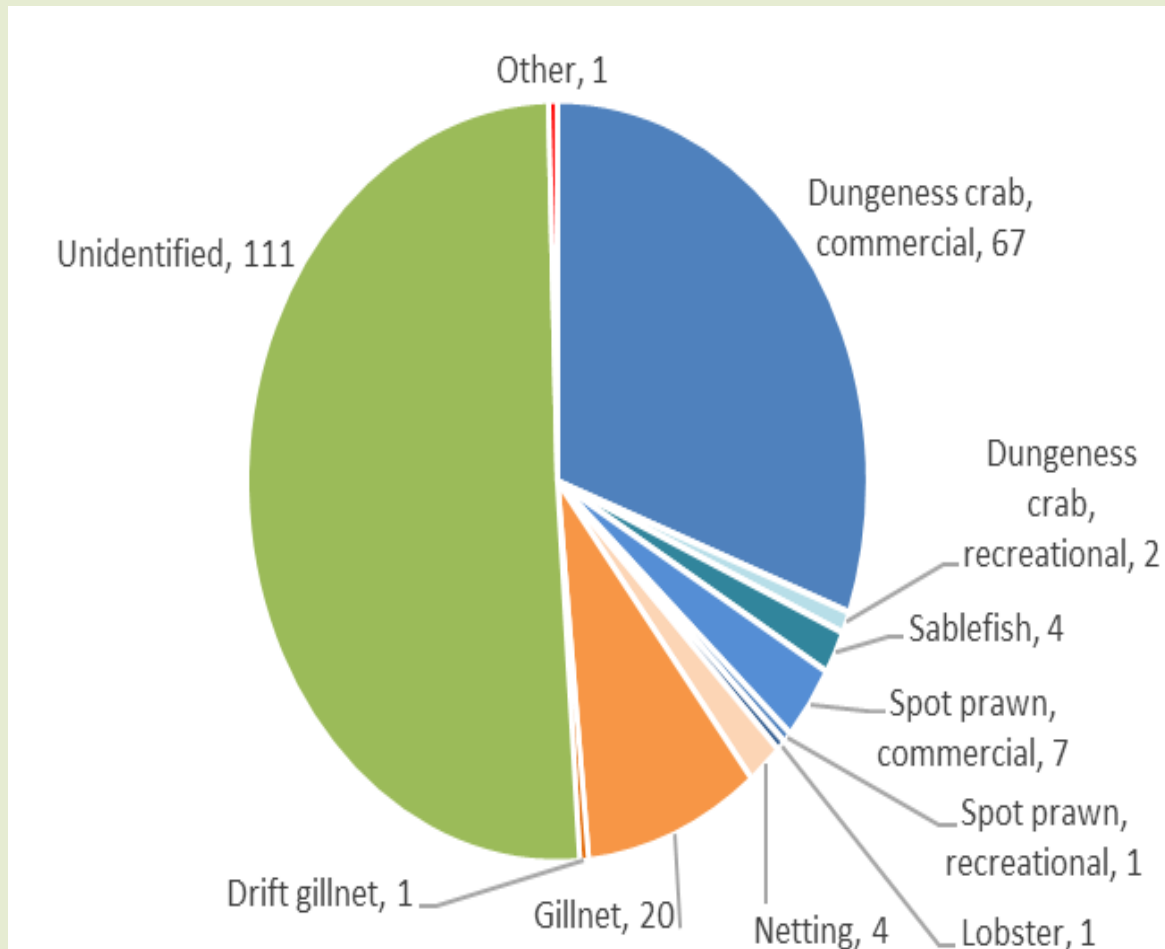


Confirmed Whale Entanglements on the U.S. West Coast Per Year and Species



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

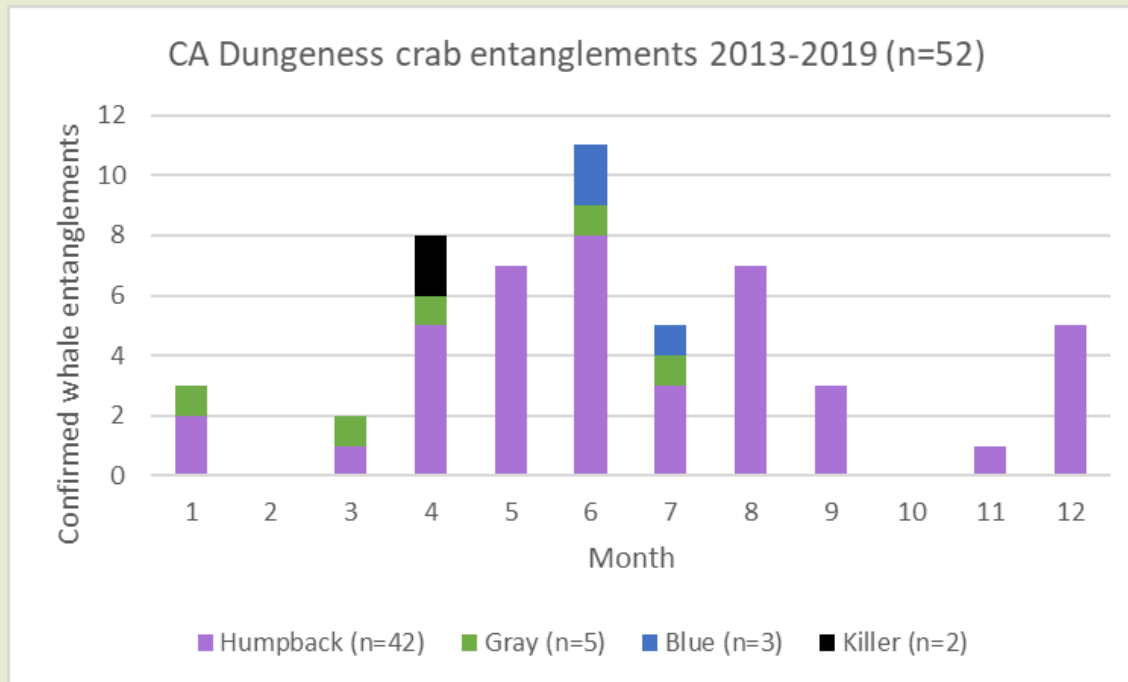
preliminary data through August 23, 2019

- **17 confirmed entangled whales, 1 unconfirmed reports, 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

Set location	Report location							Grand Total
	Cananda	Wa	Or	Nca	Cca	Sca	Mexico	
Wa	1	8	2			1	1	13
Or		2	2		2	1		7
Nca				2	1			3
Cca	1				18	6	2	27
Sca						5		5
Uca			1	2	18	2	3	26
unk		10	9	4	60	55		138
Grand Total	2	20	14	8	99	70	6	219

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?

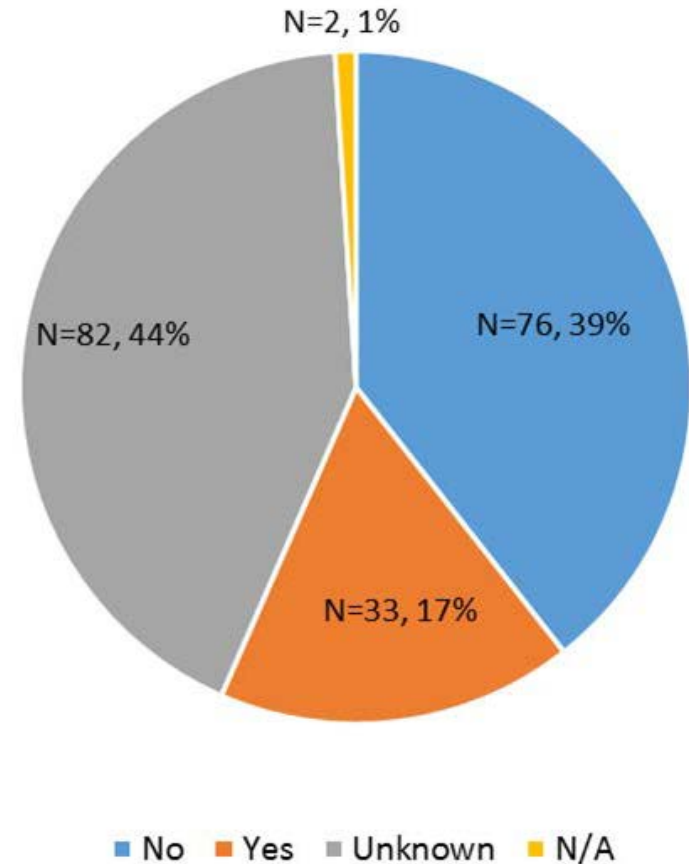
- Management under MMPA – Potential Biological Removal
 - for CA/OR/WA humpback whales is 16.7 **seriously injured or killed** per year (entanglements alone essentially = PBR);
 - CA/OR/WA blue whales is 2.3 **seriously injured or killed** per year (entanglements = 0.96);
 - Pacific Coast Feeding Group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

Is surface gear involved in the entanglement?

Total = 193



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