



Large Whale Entanglements on the West Coast: Past, Present, and Future



NOAA
FISHERIES

West Coast
Region

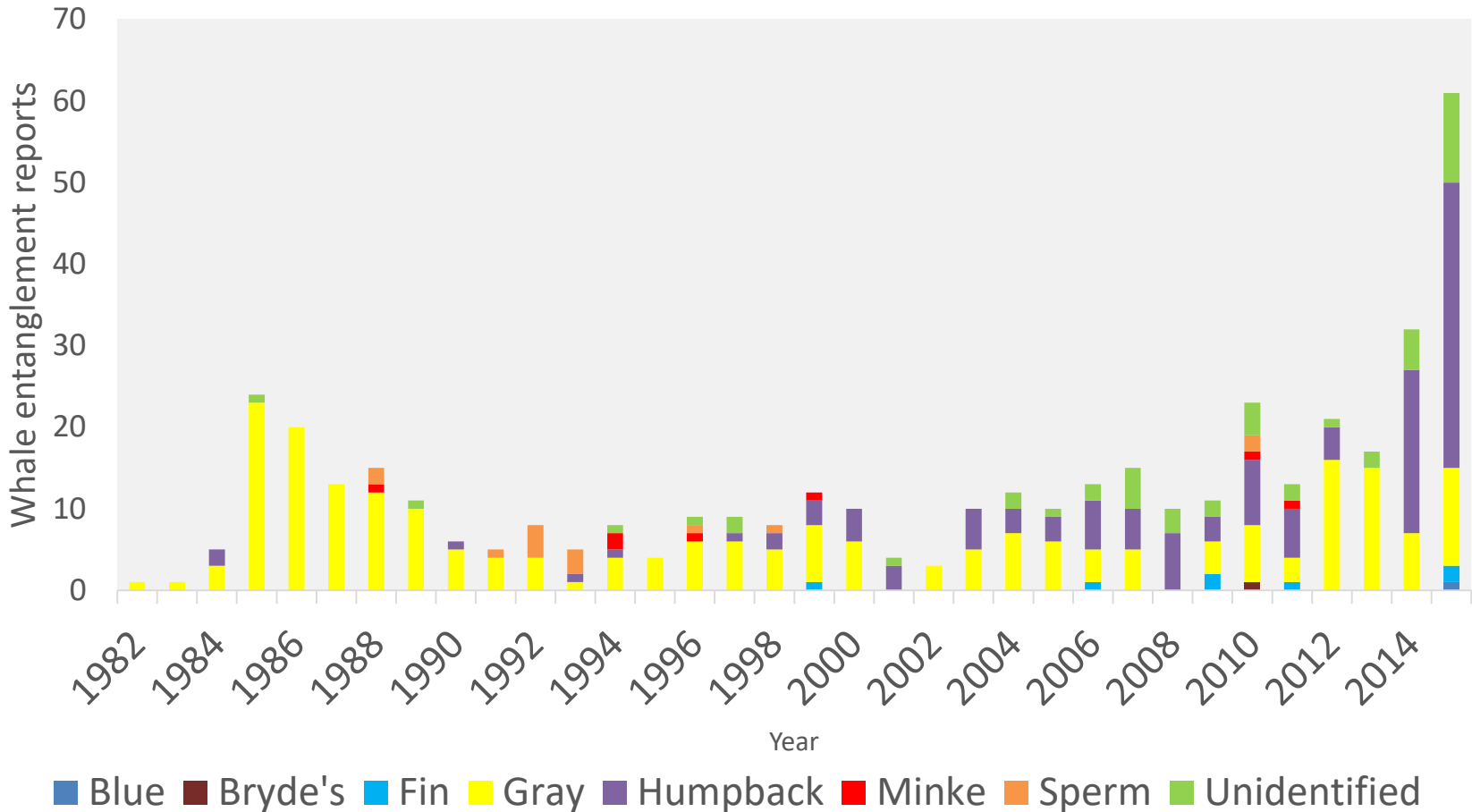
Penny Ruvelas
Branch Chief, Protected Resources Division

Pacific States Marine Fisheries Commission Annual Meeting
September 26-27, 2016

Presentation Outline

- What's been happening?
- What does it all mean?
- What are we doing about it?
- What's next?

U.S. west coast whale entanglement reports



Comparing 1982-2013, 2014, 2015 and 2016: Whale entanglement reports by month and species (through Sept 16)

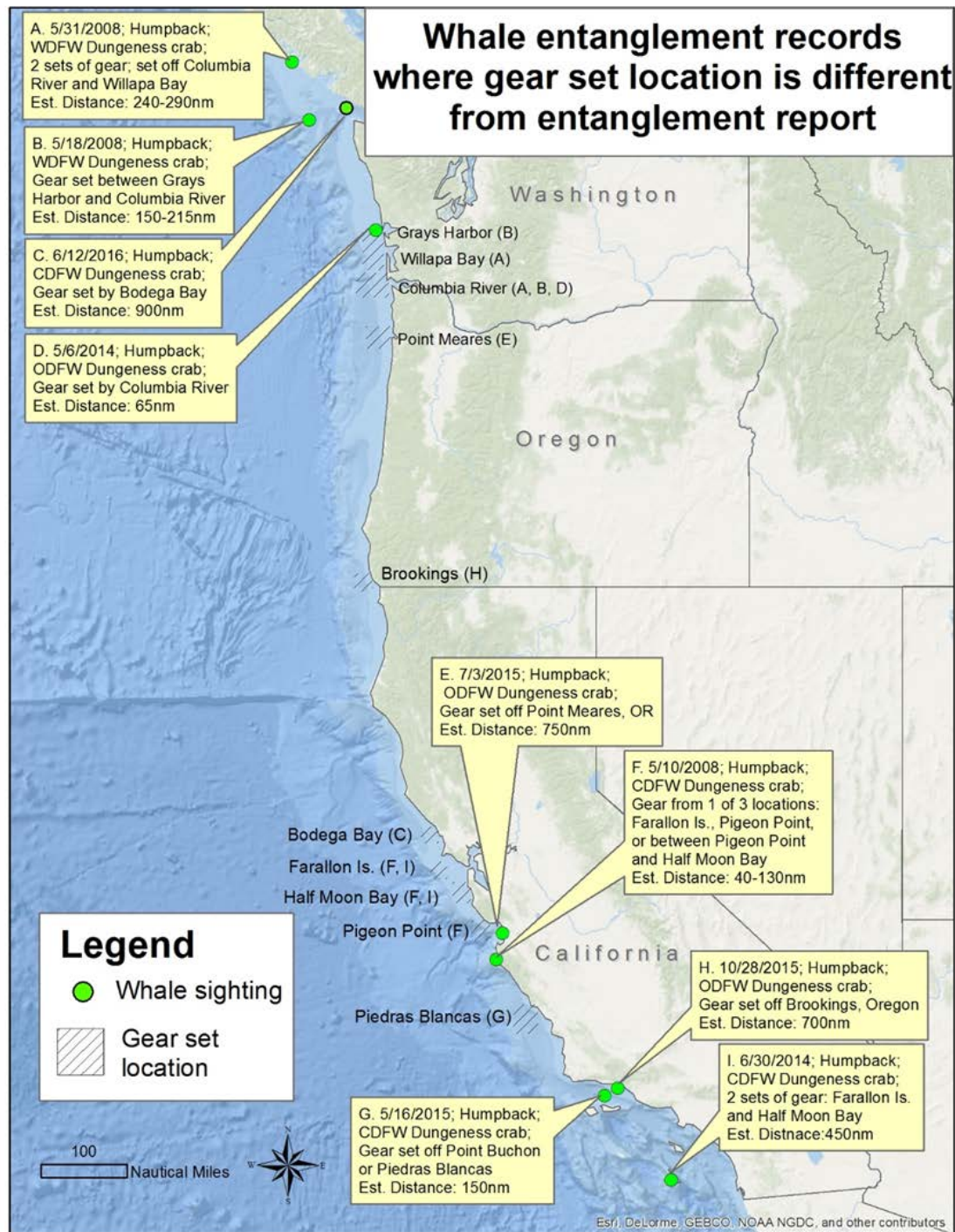
Month	Humpback				Gray				Other*			
	82-13	2014	2015	2016	82-13	2014	2015	2016	82-13	2014	2015	2016
January	1	0	2	1	26	1	0	0	1b, 1F, 3U	0	0	0
February	1	0	2	2	20	0	2	1	1U	0	1F	0
March	1	0	1	1	53	0	4	0	1S, 4U	1U	1U	0
April	1	1	0	6	50	1	0	2	1M, 2U	1U	1K	1K, 1U
May	11	3	4	10	22	2	1	0	1U	2U	3U	5U
June	4	3	5	9	7	0	0	0	1F, 2M, 3U	0	0	1B, 1U
July	7	1	5	1	9	1	1	0	1F, 7U	0	0	2B
August	20	2	2	12	9	0	1	0	2M, 5U	0	2U	2B
September	4	7	6	1+?	3	2	2	0+?	1S, 2U	1U	1B, 2U	2U+?
October	8	2	6	NA	4	0	0	NA	1S, 3U	0	1F	NA
November	5	1	2	NA	2	0	0	NA	2F, 1M, 4S	0	3U	NA
December	3	0	0	NA	4	0	1	NA	1M, 7S	0	0	NA

*B= Blue Whale, b= Bryde's Whale, F= Fin Whale, K= Killer Whale, M= Minke Whale, S= Sperm Whale, U= Unidentified Whale

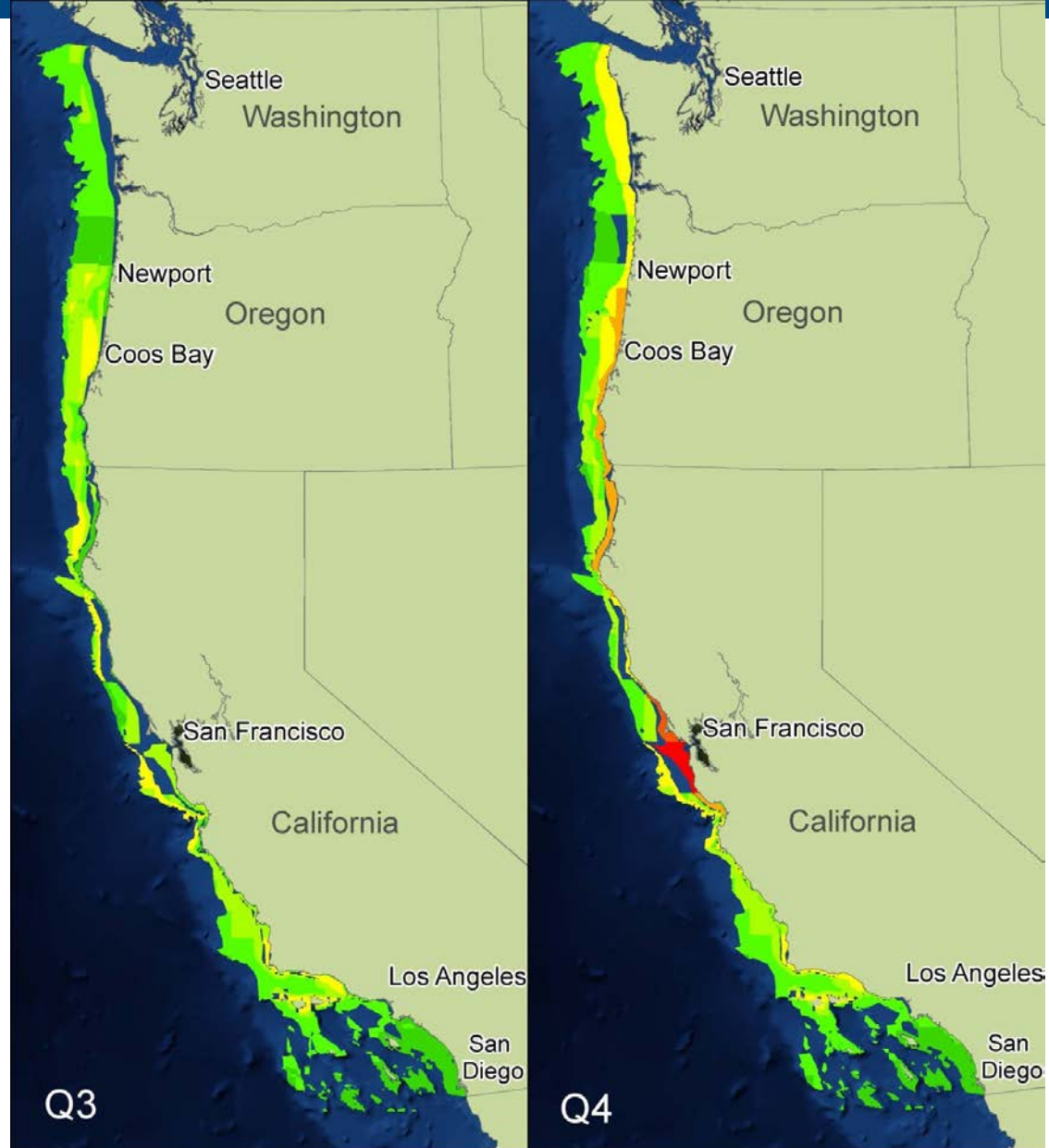
Sources of Entanglements

- In **2014**: of the 32 reports, 11 were identified as fishing gear, 1 weather buoy, and 20 were not able to be identified to a specific source
 - Dungeness crab: 4 confirmed (2 CA, 1 OR, 1 trap attached: state unknown)
 - Gillnet: 1
 - King crab, suspected: 1
 - Sablefish: 1
 - Spot prawn: 4
- In **2015**: of the 62 reports, 23 were identified as fishing gear and 39 were not able to be identified to a specific source
 - Dungeness crab commercial (confirmed): 10
 - Set gillnet and tribal gillnet: 5 confirmed, several others suspected
 - Dungeness crab recreational: 1
 - Spiny lobster: 1
- In **2016 (through Sept 16)**: of the 61 reports, 37 were identified as fishing gear and 24 were not able to be identified to a specific source
 - 18 California Dungeness crab
 - 4 Dungeness crab gear
 - 1 gillnet
 - 2 sablefish
 - 3 spot prawn
 - 9 unidentified trap/pot

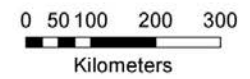
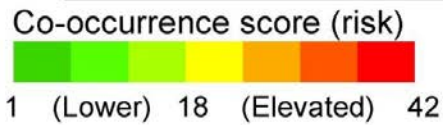
Not just California's issue



Where the whales *generally* are:



Humpback Whale - All Fixed Gear Fisheries



What's Going On?

- Rates of entanglement of all species, or certain species, may have increased
 - Changes in gear or practices?
- Overlap between fisheries and large whales may have increased
 - Variability in environmental conditions, species presence, etc.
- Awareness and reporting of the issue has increased

Regardless, the entanglements are a concern

What do the entanglements mean for the whales?

- All marine mammals are protected by the MMPA against take
- Some are also protected by the ESA
- In either case, our goals are to maintain the species at viable or functioning population levels – and to recover them to those levels if they are depleted.
- Not all of the entanglements lead to death or serious injury to the animal.

What are we doing about it?

- ~2008: List of Fisheries identified various fixed gear fisheries (sablefish, spot prawn, and Dungeness crab fisheries) as Category II fisheries based on entanglement reports
- 2011: Fixed Gear Guide published for CA/OR/WA fixed gear fisheries (Trap/pot, gillnet, and longline/set line)
 - http://www.westcoast.fisheries.noaa.gov/publications/protected_species/marine_mam_mals/fixed_gear_guide_final_12.14.11.pdf
- 2013: Understanding Co-occurrence of large whales and fixed gear fisheries off the U.S. West Coast
 - http://www.westcoast.fisheries.noaa.gov/publications/protected_species/marine_mam_mals/noaa-tm-nmfs-swr-044_final.pdf
- Fall 2013: Workshop held in Portland to share findings, discuss issues. Some States and some fishing industry reps were present.
- Fall 2014: Held informal meetings in Newport and Astoria, Oregon to conduct more outreach directly to fishing community



What are we doing about it?

- Summer of 2015, State of California convened working group to address whale entanglements in CA Dungeness crab fishery (most commonly ID source of recent entanglements) – ongoing this summer
 - CDFW, commercial and recreational fishermen, several NGO's, NMFS WCR and SWFSC staff
 - Ongoing discussion of the problem, key informational needs, avenues that State and industry can pursue to address the issue, and establish connections with stakeholders willing to work together now
 - Developed a “Best Practices Guide” and other voluntary recommendations to avoid entanglements
 - Looking at potential gear modification and fishing practices recommendations to the State
 - Discussing information gaps (co-occurrence, fishing effort)
 - Developing further outreach and education
 - Developing collaborative and cooperative relationships



What else are we working on?

- Outreach to other fisheries
- Improving data management
- Whale science improvements
- BREP proposals

- Improving our response capabilities (and documentation)

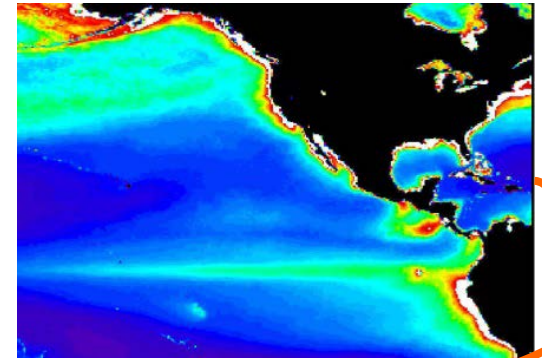


“Whale Science”

- NMFS has the opportunity now to provide leadership and scientific expertise to help fixed gear fisheries across the U.S. west coast address this emerging threat
- We are thinking about science products targeted toward use by management and stakeholders to minimize entanglement risk:
 - Improve understanding of conditions that influence whale/gear co-occurrence
 - Develop tools that can be used to predict conditions likely to lead to increased entanglements
 - Accurately assess population level impacts of increased entanglement

For example...

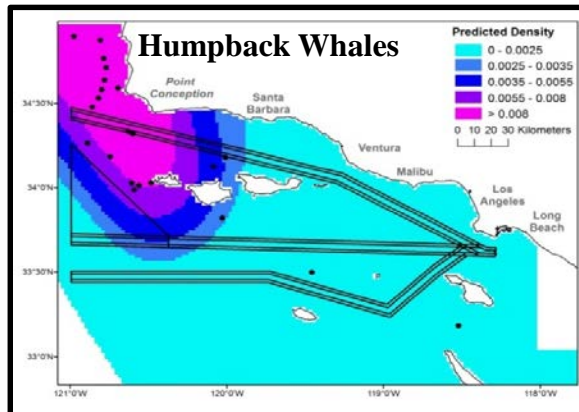
Use survey data to estimate and forecast density



Habitat Modeling

Marine Mammal Data 1991-2014:

- Ship and aerial surveys
Southwest Fisheries Science Center



Ecosystem Data 1991-2014 :

- In situ oceanographic and prey data
Southwest Fisheries Science Center
- Modeled data

Bycatch Reduction Engineering Program

- Two Proposals Funded!

Pete Nelson @ H.T. Harvey & Associates

- document how the gear used in the commercial Dungeness crab fishery “behaves” under a range of environmental conditions – working loads and line profiles
- document regional or situational differences in how the gear is configured (i.e., for different depths, currents, etc.) – survey
- establish a basis for gear and fishing practice modifications led by the industry.

Bycatch Reduction Engineering Program

Pacific States Marine Fisheries Commission

- After information is collected, a 2-day workshop will be held with a wide range of stakeholders to share findings and other information
- Outcomes will be to generate and prioritize ideas for new gear and practices to minimize whale entanglement.
- Fishermen will then test gear modifications prioritized at the workshop during regular crabbing operations.

What's coming next?

- CHANGE is the only constant, and change has to happen
- Our goal: reduce fishery interactions to levels that are not harmful to protected resources



Thank you!

