

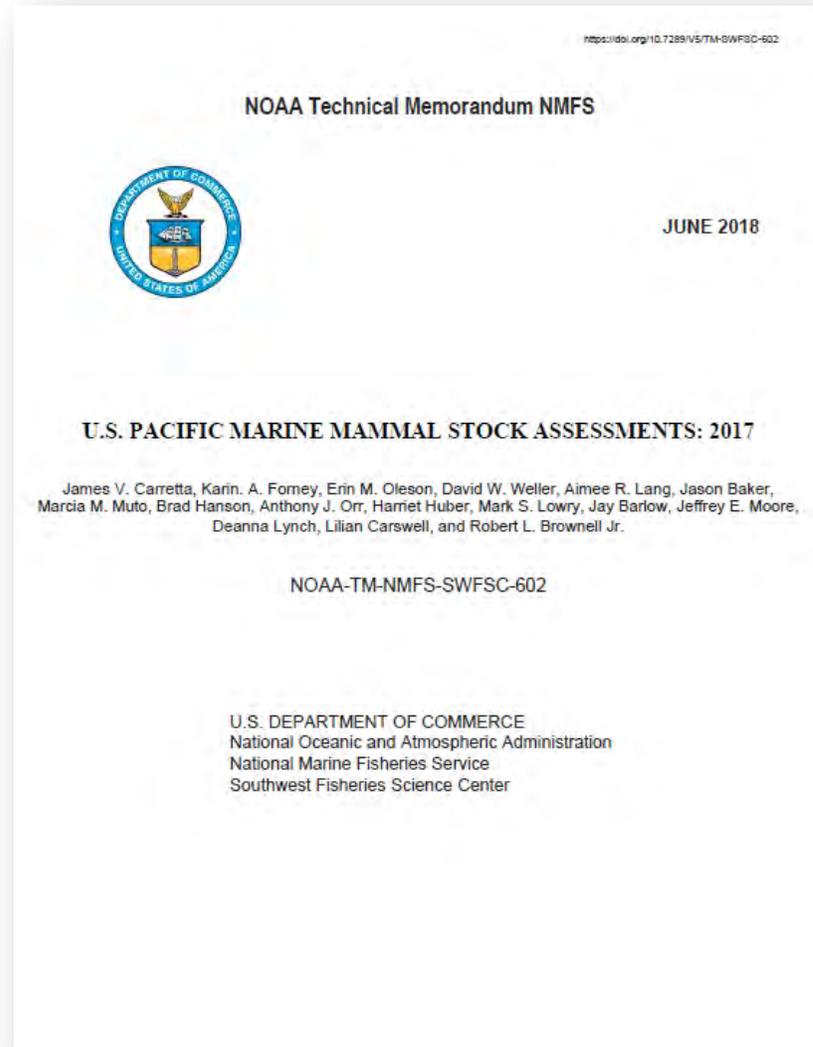
Whale Conservation on the US West Coast:

Decreasing the risk of deadly ship strikes and entanglements in fishing gear

R. Cotton Rockwood and Jaime Jahncke, PhD



Annual whale stock assessment by NOAA



Blue whales

Minimum population = 1,551

Suggested take by U.S. = 2.3 whales

Humpback whales

Minimum population = 1,876

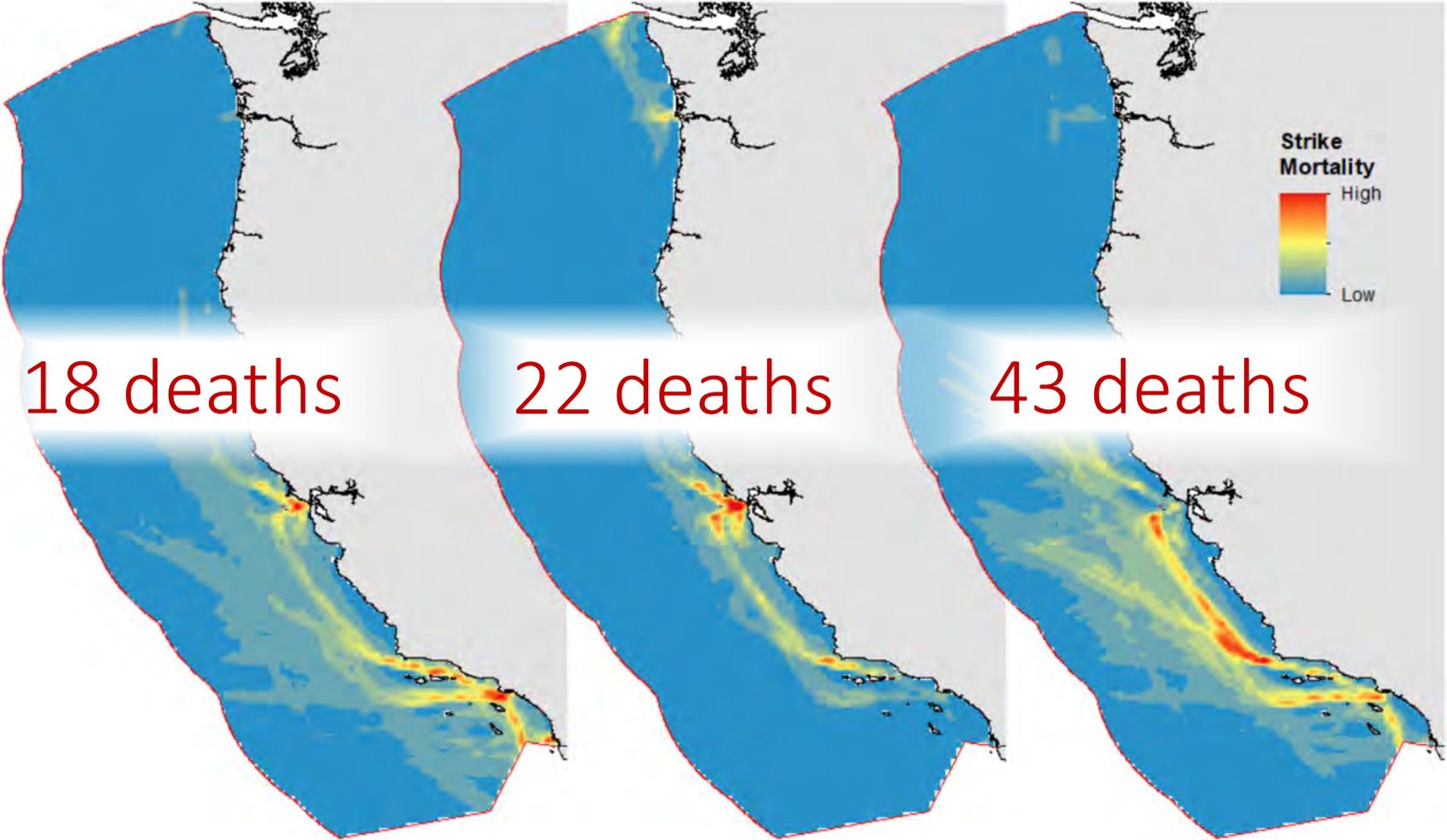
Suggested take by U.S. = 11 whales

Where are whales struck?

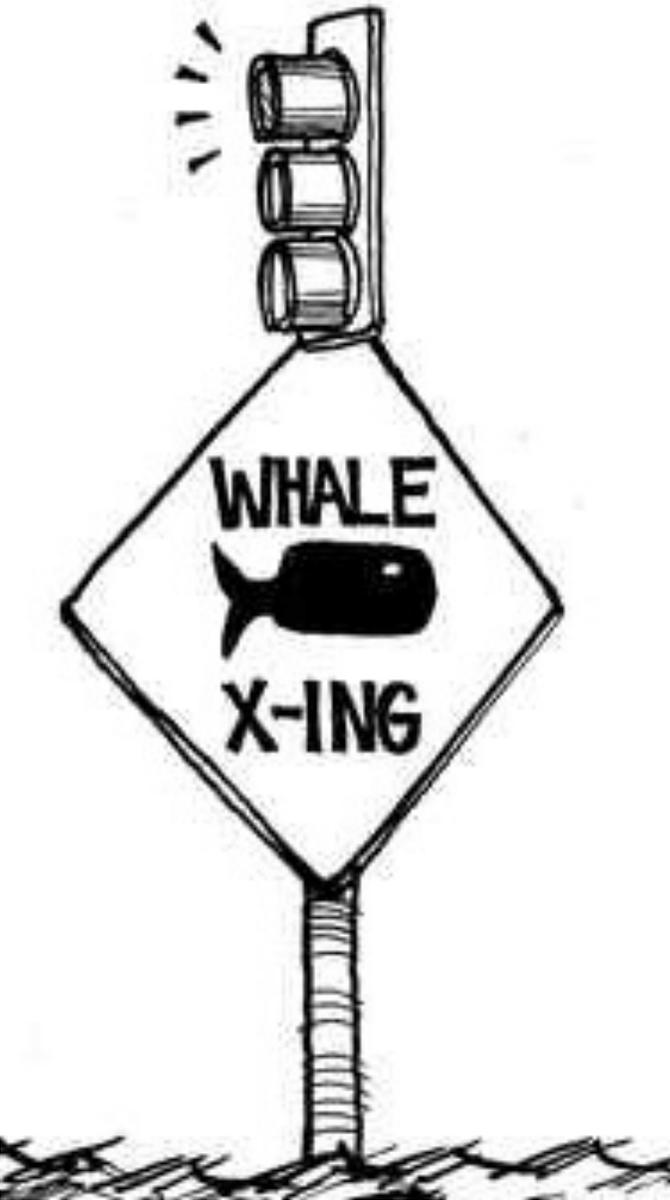
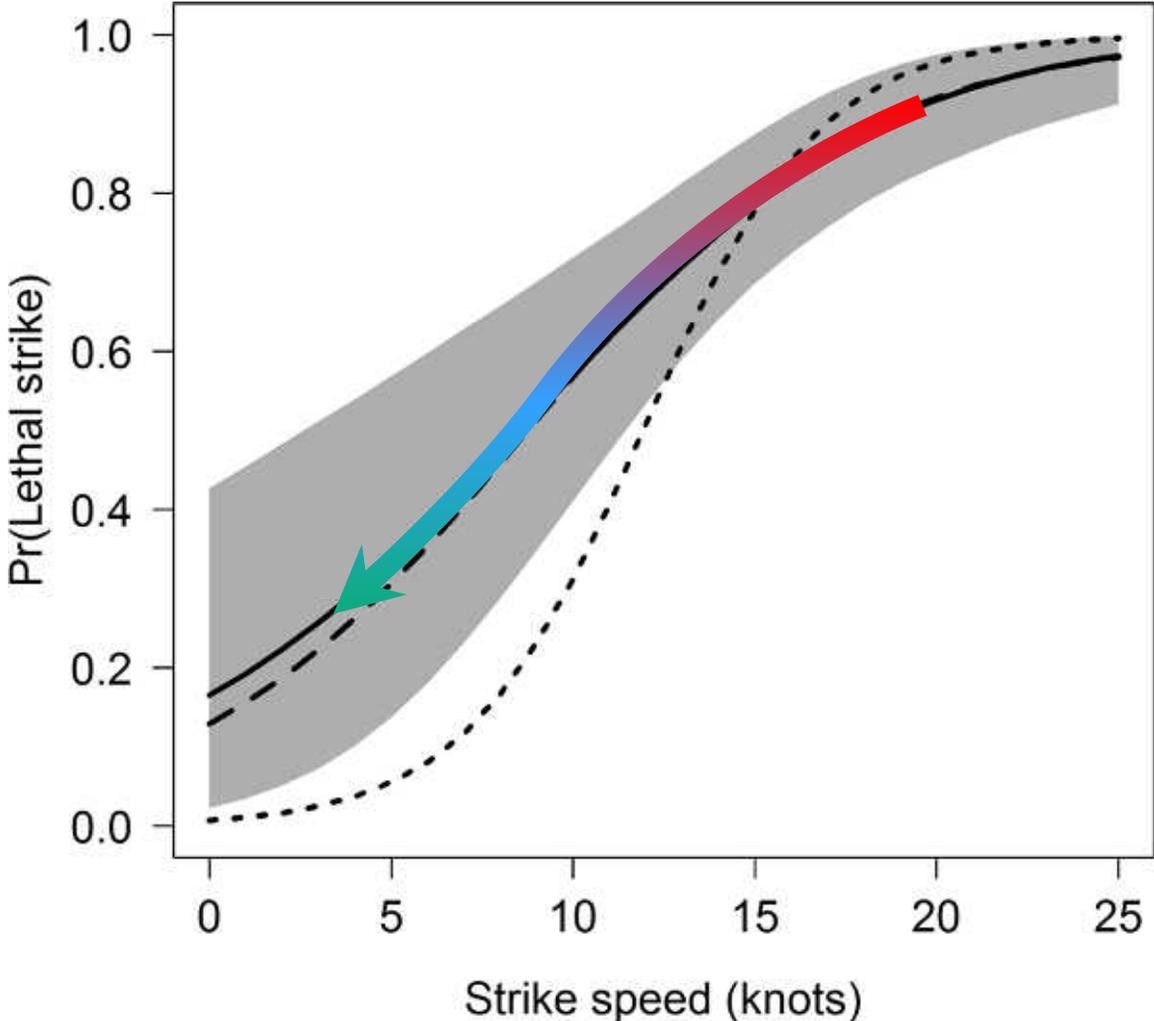
Blue Whale

Humpback Whale

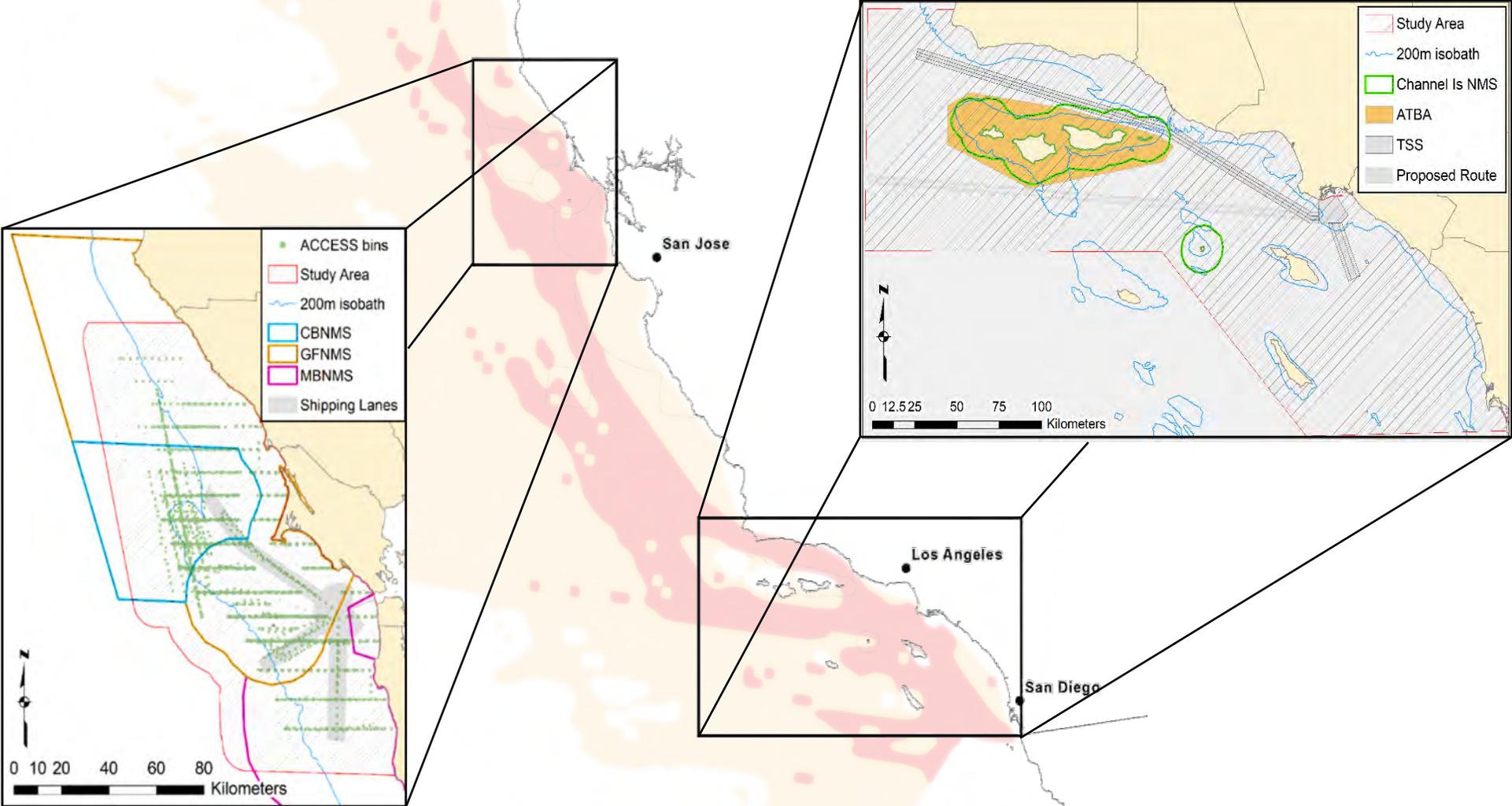
Fin Whale



What can we do?

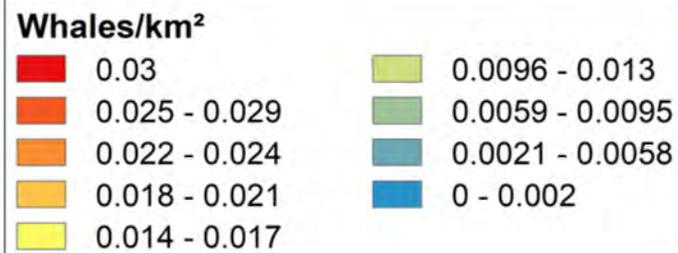
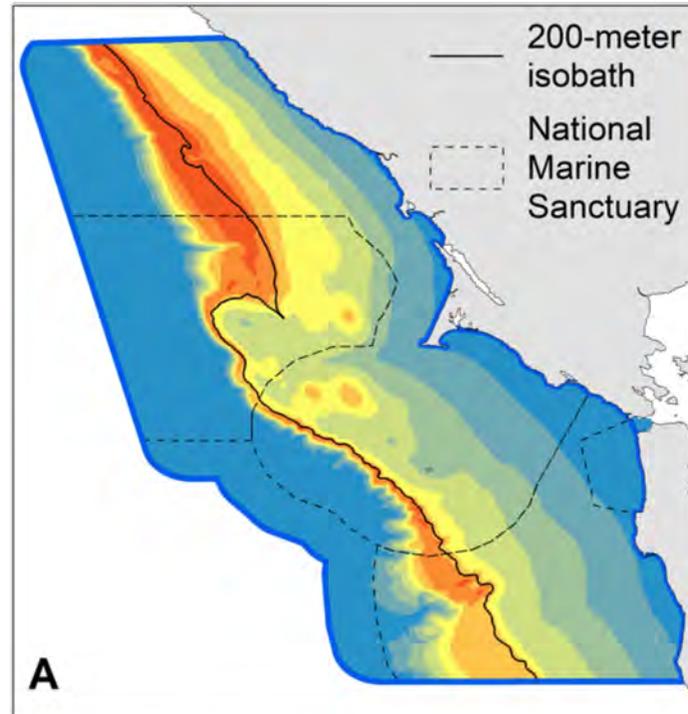


Focus on high-risk regions

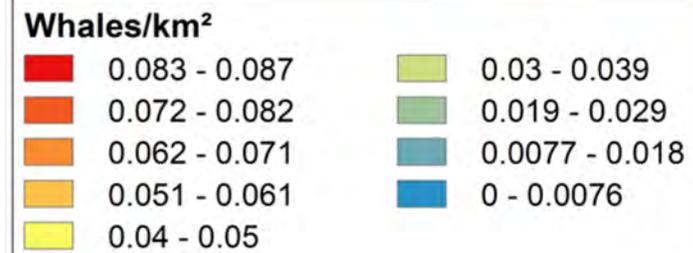
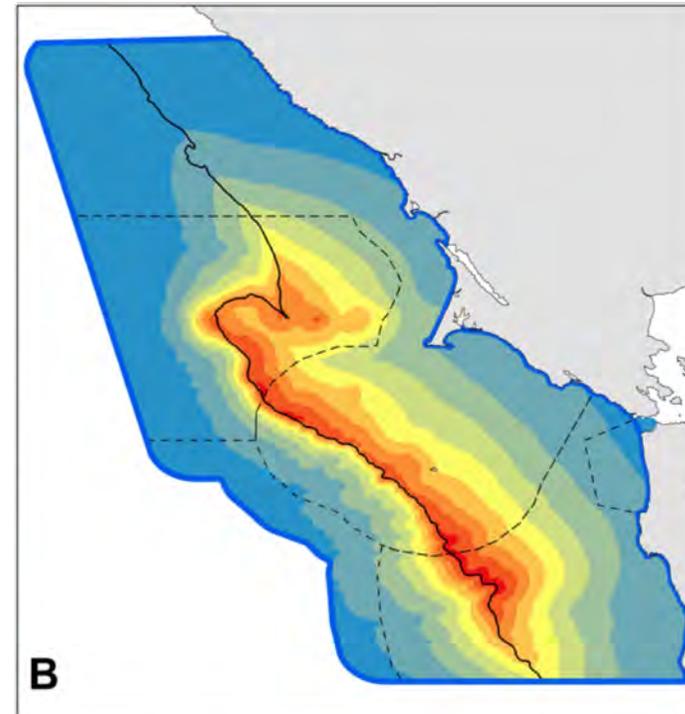


Where are the whales?

Blue Whale



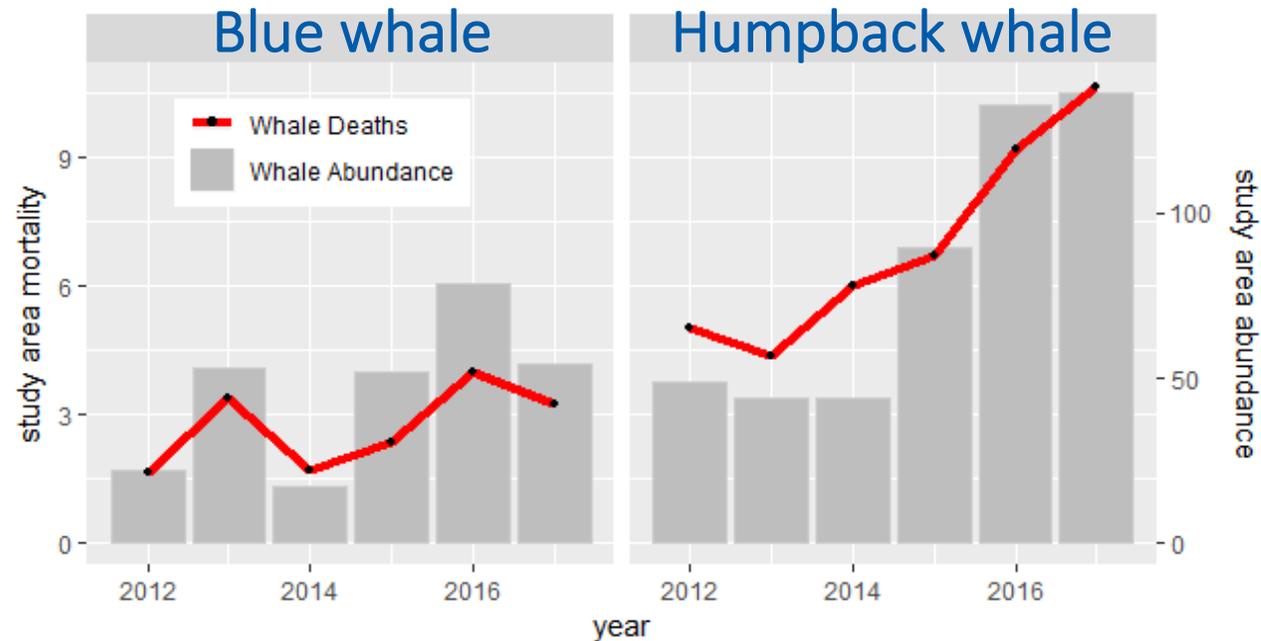
Humpback Whale



Trends in abundance and mortality

Local abundance has increased 2012 → 2017

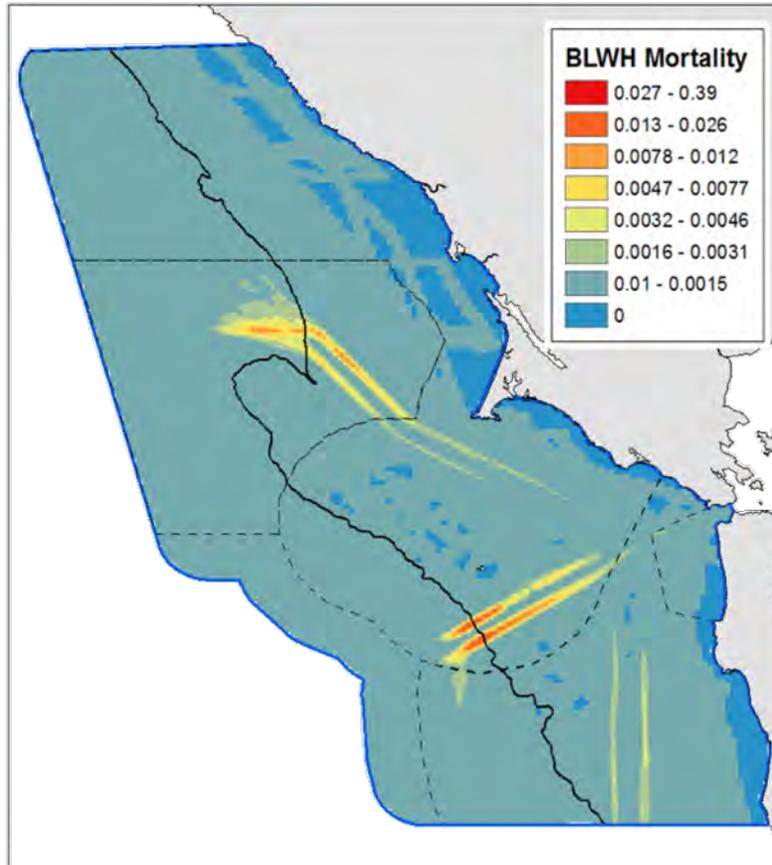
↑ abundance = ↑ strikes



Where are the strikes?

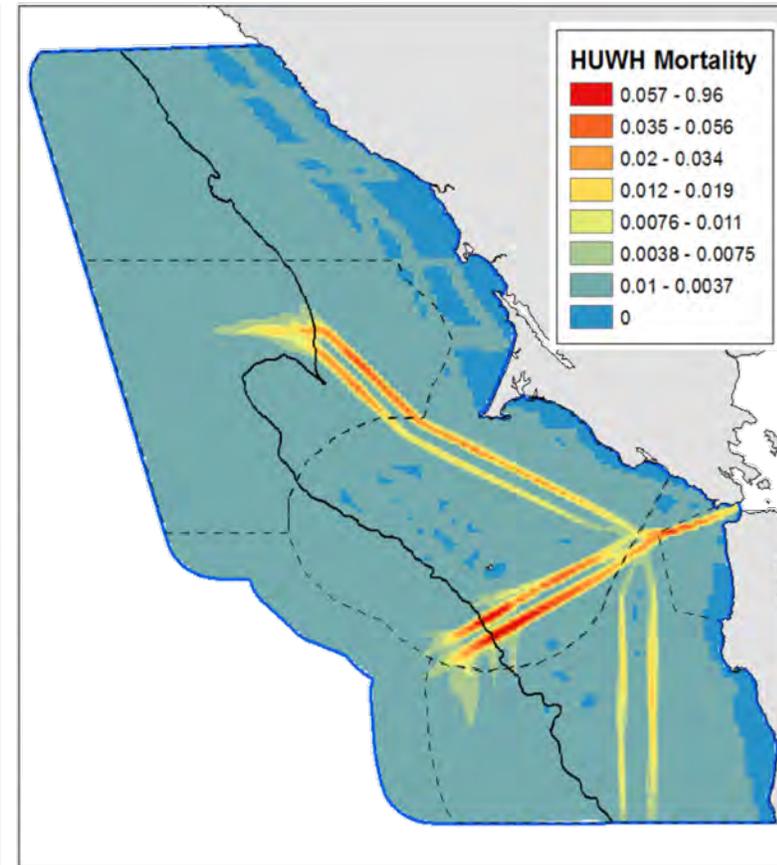
Blue Whale

2.7 deaths.



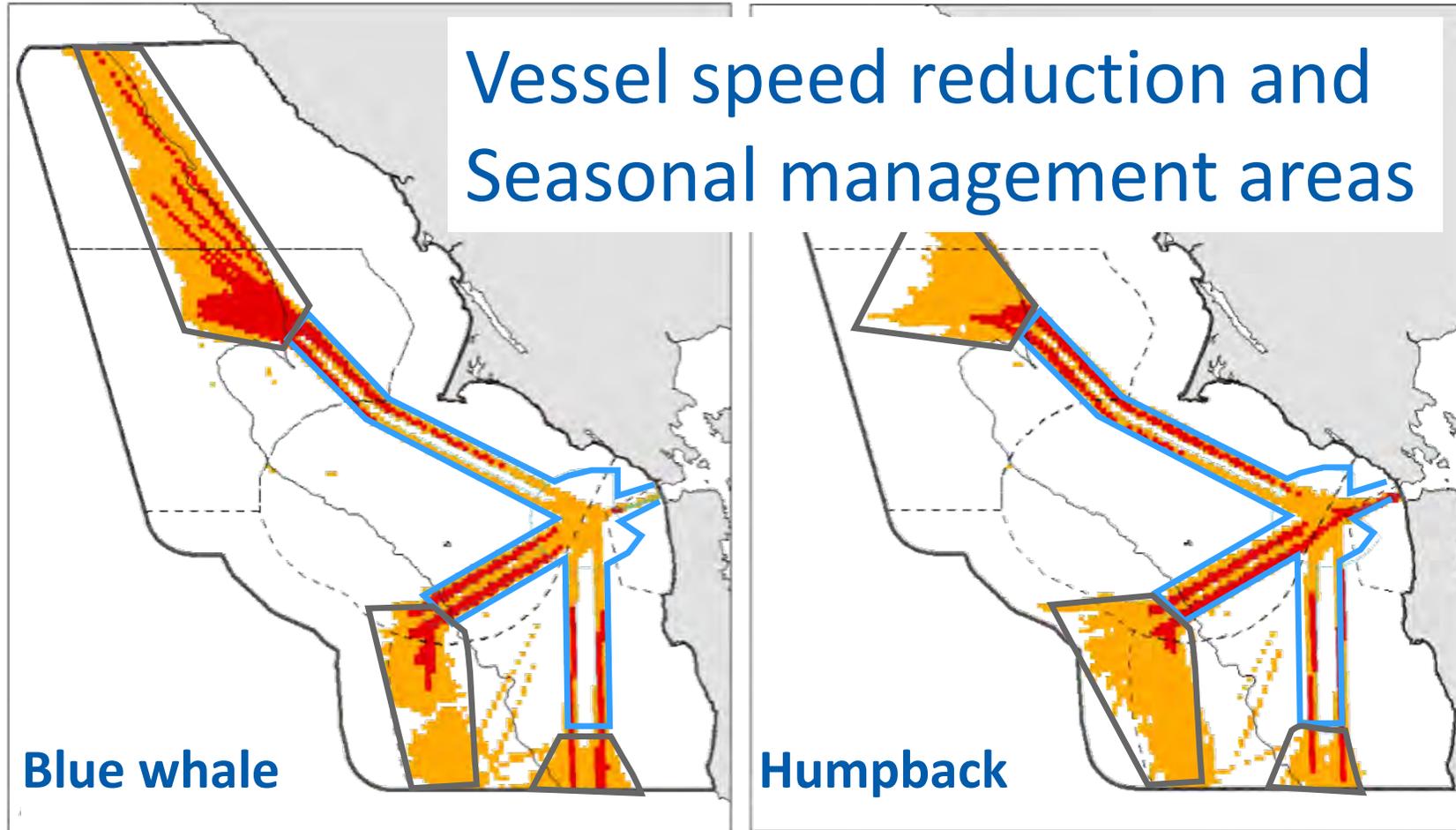
Humpback Whale

7 deaths



--- National Marine Sanctuary
— 200m isobath

Potential management solutions



VSR in Northern vs. Southern California

Northern

		Percent Change	
		Pre-VSR to Active	Inactive- VSR to Active
Year			
BLWH	2015	1.9%	7.7%
	2016	-13.0%	-7.3%
	2017	-10.6%	-4.8%
HUWH	2015	3.1%	8.3%
	2016	-10.1%	-4.6%
	2017	-8.7%	-3.3%

Southern

		Percent Change	
		Pre-VSR to Active	Inactive- VSR to Active
Year			
BLWH	2015	1.4%	4.7%
	2016	-3.5%	0.0%
	2017	-1.0%	2.4%
HUWH	2015	2.7%	5.9%
	2016	-3.6%	-0.1%
	2017	-1.3%	2.0%

Success so far... and targets to improve

13-16% decrease in deaths in 2016 & 2017

Improved cooperation from ships = **23 – 24%**
fewer deaths

Speed limits at ends of the lanes = **30 – 35%**
fewer deaths

Strikes in Southern California

0-4% decrease in deaths in 2016 & 2017

Improved cooperation from ships = **19 – 32%**
fewer deaths

Mortality by vessel type

Northern

Vessel type	Percent Mortality	
	blue whale	humpback whale
Container	63%	59%
Oil	13%	15%
Ro-Ro Cargo	6%	8%
Bulk Dry	6%	6%

Southern

Vessel type	Percent Mortality	
	blue whale	humpback whale
Container	60%	70%
Oil	14%	8%
Ro-Ro Cargo	8%	8%
Bulk Dry	6%	6%



In the last five years, 246 whales were
'confirmed' entangled off US West Coast

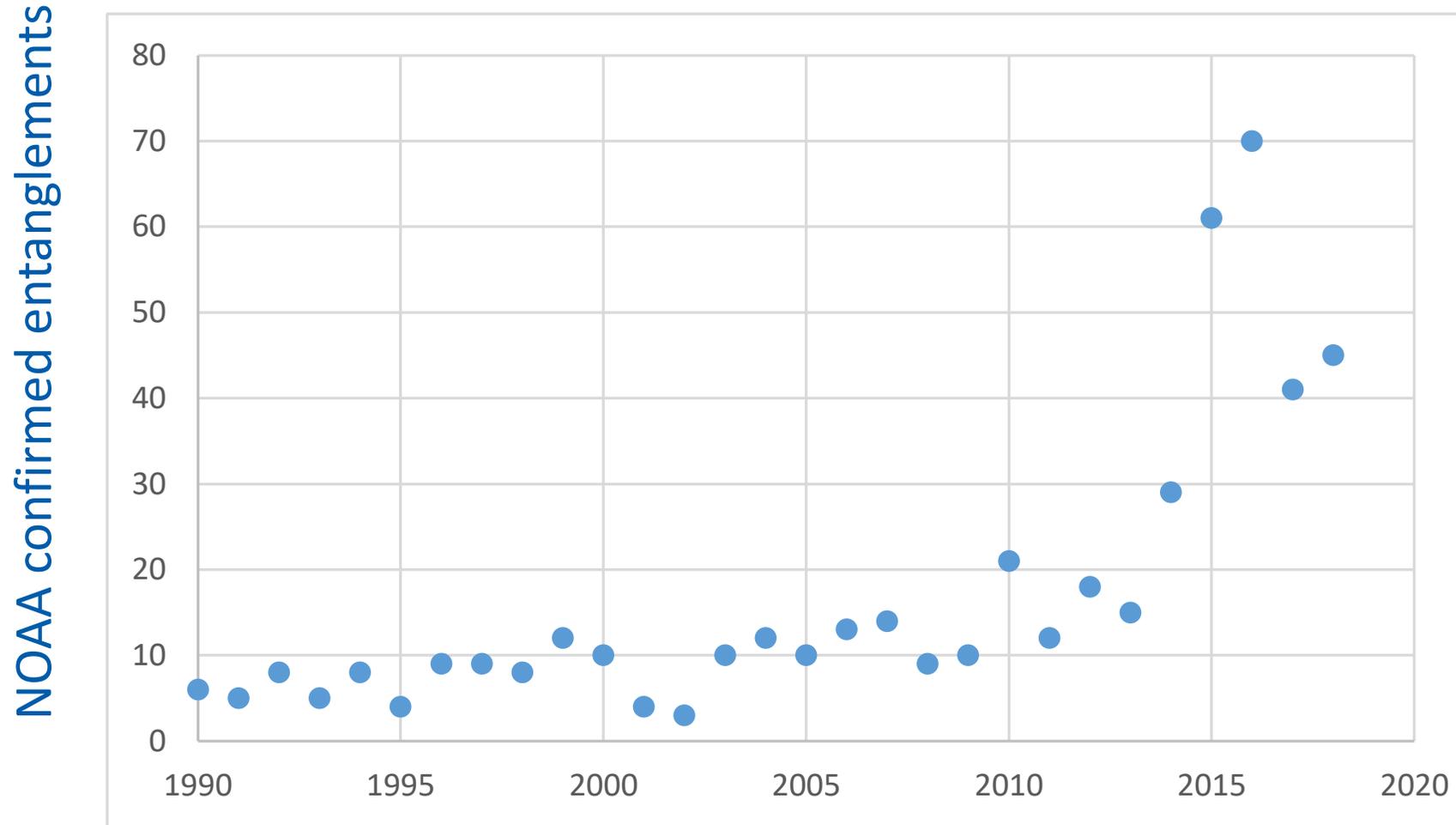
8 blue whales <2.3 annual take
157 humpback whales >11 annual take
1 fin whales



Point Blue

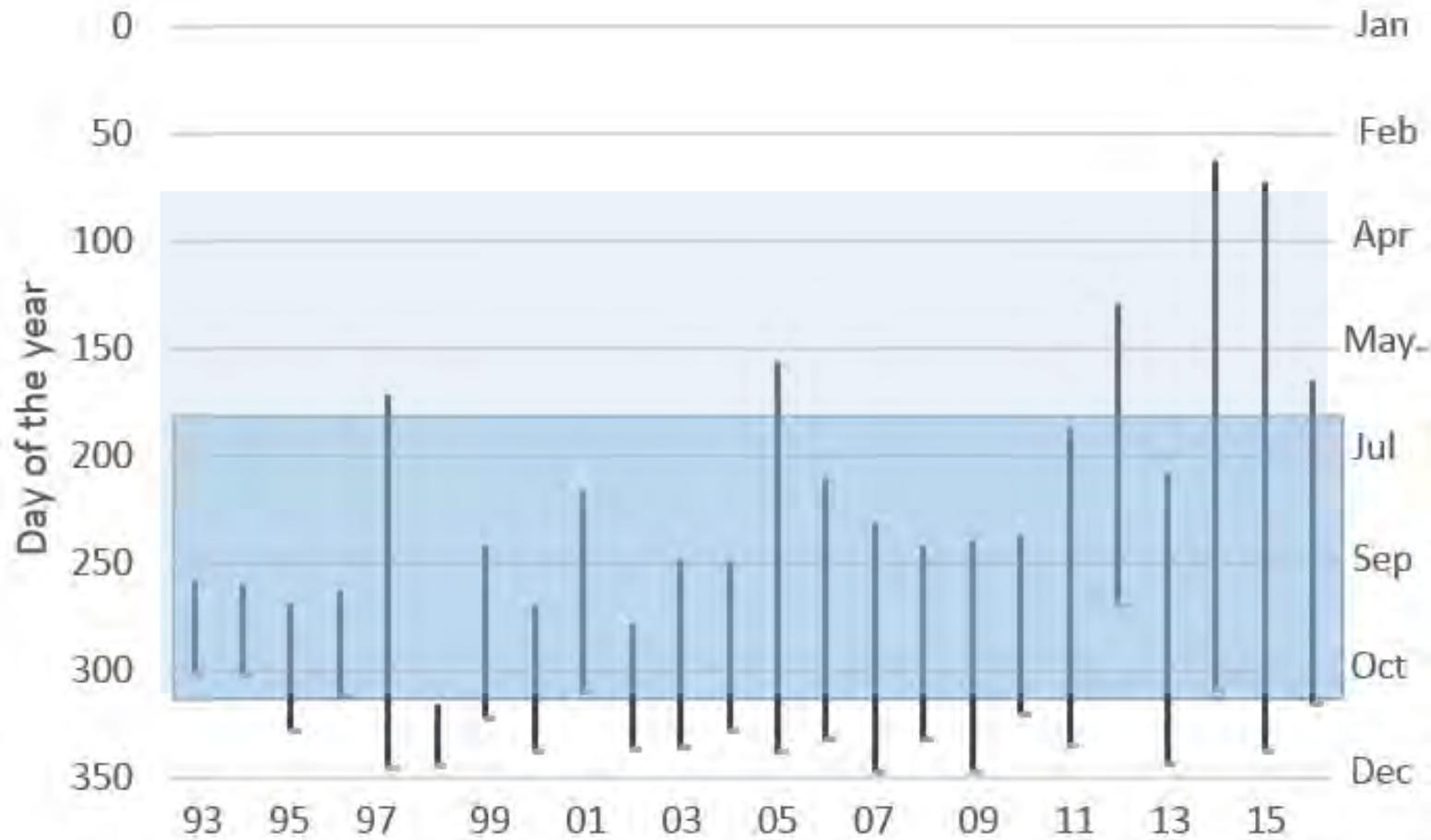
Conservation science
for a healthy planet

Entanglement in fishing gear is increasing



Humpback whales are arriving earlier

Earlier arrival of whales exposes them to fishing gear for a longer period of time



**New
Closure 2020**

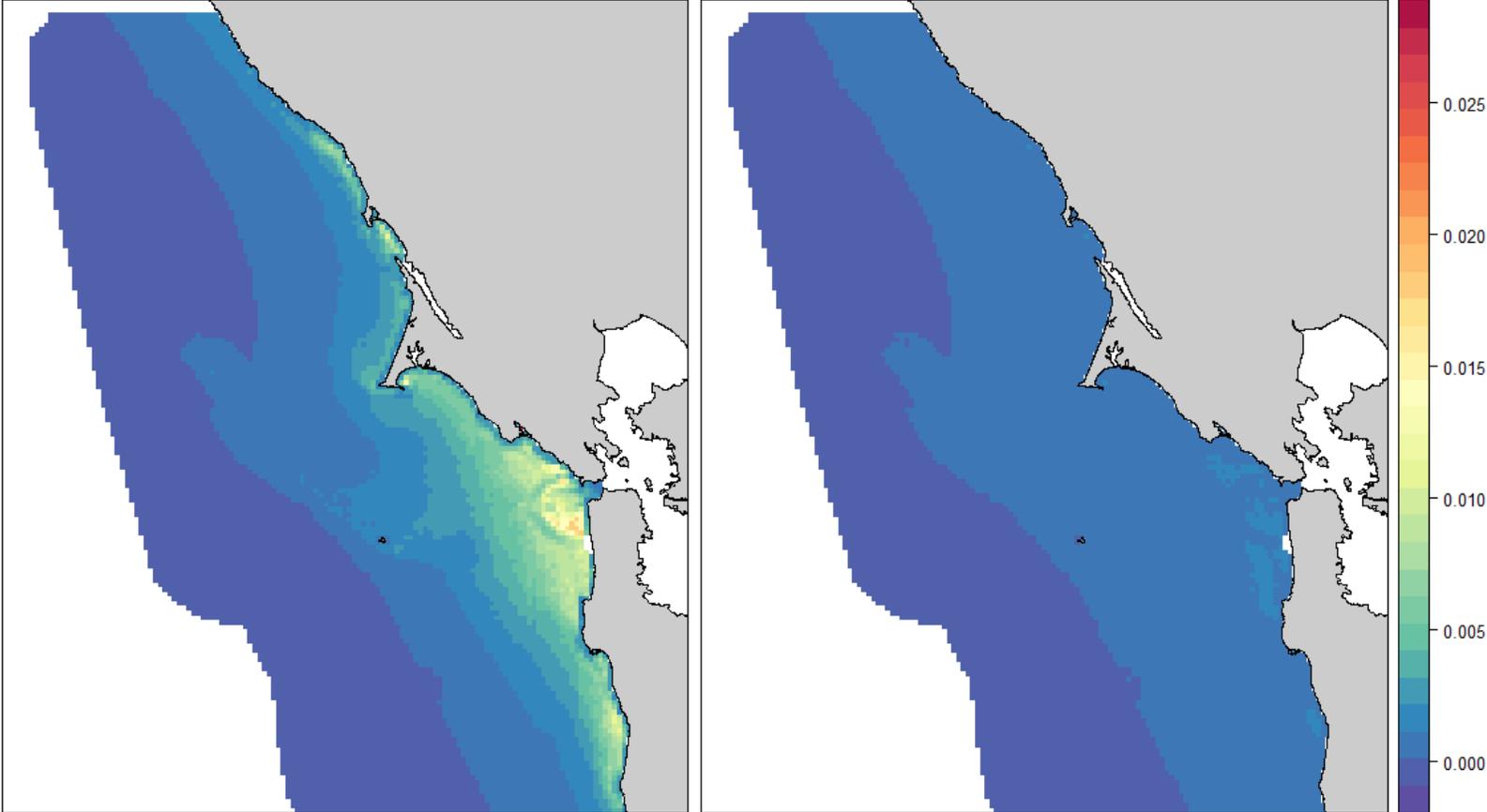
**Crab fishing
CLOSED**

Crab pot gear in warm and cold years

Crab fishers work into May/June during warm years, and retreat early in cold years

Warm/poor productivity years
(2010, 2013)

Cold/good productivity years
(2008, 2009 & 2011)

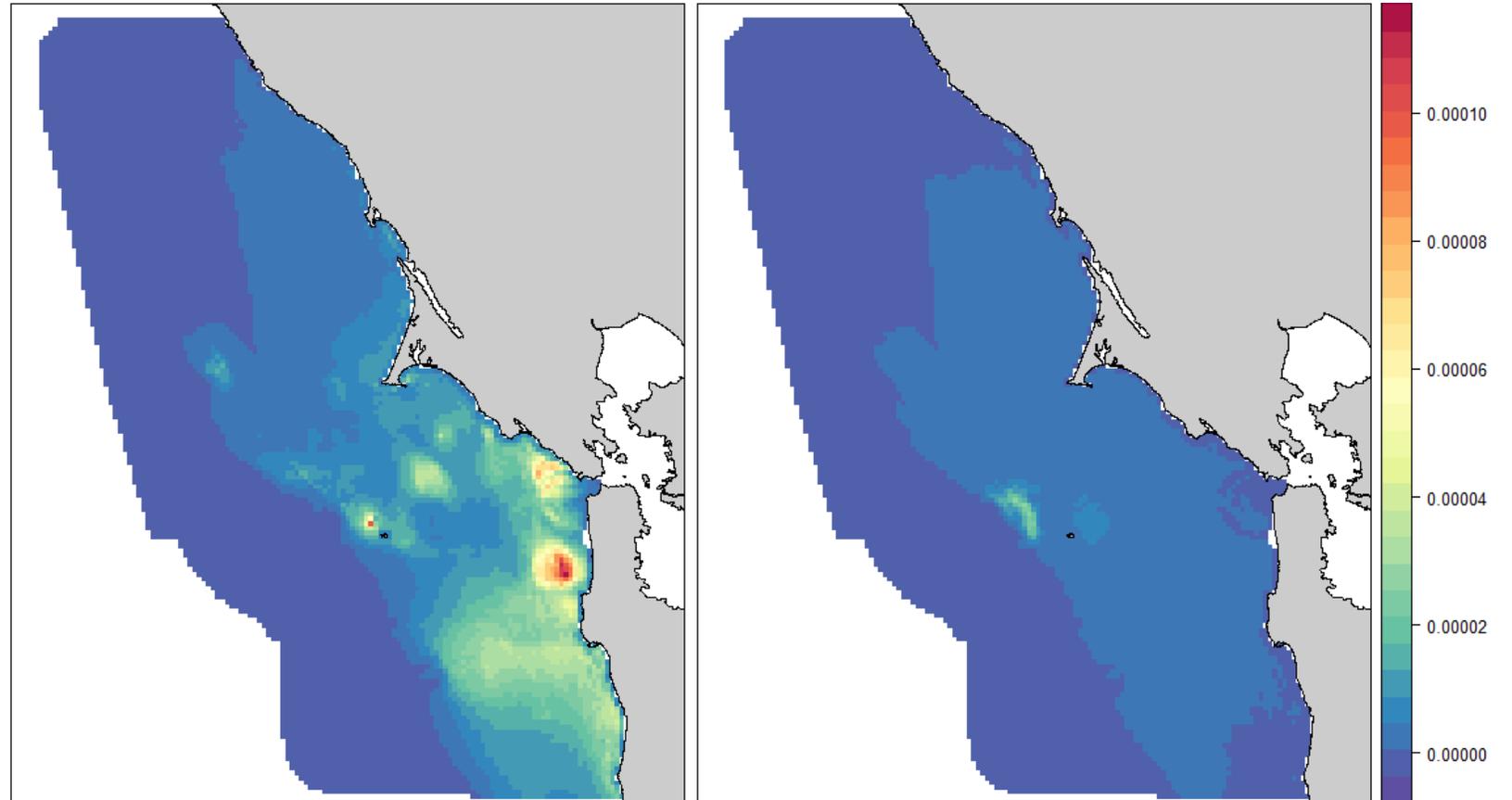
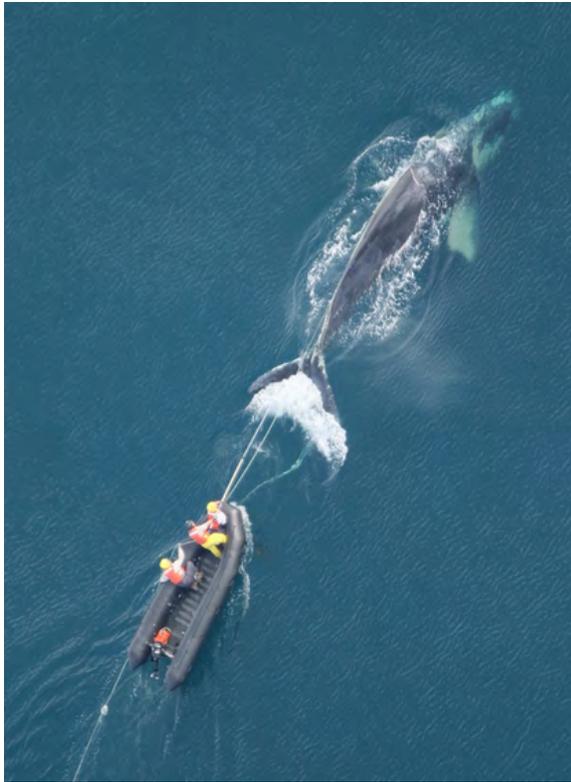


Entanglement risk for humpback whales

Whales at greater risk during warm years, than during cold years

Warm/poor productivity years
(2010, 2013)

Cold/good productivity years
(2008, 2009 & 2011)



Summary recommendations

Recommendations to decrease deadly ship strikes and entanglements

- **Decrease deadly ship strikes**

- Increase vessel cooperation in VSR program through increased outreach or mandatory speed regulations
- Establish seasonal management areas at the end of the lanes and implement VSR in these high-risk regions

- **Decrease risk of entanglements**

- Decrease co-occurrence of whales and crab pot fishing gear by closing the fishing season before whale migration and by limiting fishing effort in high whales use areas

Thank You

Cordell Bank NMS

Greater Farallones NMS

Angell Family Foundation

Battery Powered

Elinor Patterson Baker Trust

Firedoll Foundation

Gordon and Betty Moore Foundation

Moore Family Foundation

Thelma Doelger Trust for Animals

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Point Blue
Conservation
Science



Thank You

Strikes in Southern California

