

Presentation to the Pacific Fishery Management Council

**Marine Mammal Hard Caps in the  
Large-Mesh Drift Gillnet Fishery**

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Marine Mammal Commission



# Marine Mammal Commission

- Independent federal agency created in 1972 by Marine Mammal Protection Act (MMPA)
- Goal: Protect and conserve marine mammals and their environment using best available science
- Role: Oversight of domestic and international policies and actions related to marine mammals and their habitat



# Marine Mammal Commission

- 3 Commissioners (marine mammal scientists) appointed by the President
- 9 Scientific advisors
- 10 Program staff



# My Background

- Seabird and marine mammal ecology 20 years
- Fisheries science and management 15 years
- Marine mammal / fisheries interactions 12 years
- Commission staff science director 5 years
- Commission staff lead on fisheries interactions and ecosystem issues 5 years
- Member of NMFS's Pacific Ocean Cetacean Take Reduction Team (POCTRT) 8 years



# Marine Mammal Bycatch

- Fisheries bycatch largest source of human-caused mortality for most marine mammals
- Commission commends PFMC for:
  - engaging on minimizing marine mammal bycatch, and
  - developing alternative gear types or fishing methods with lower bycatch rates (e.g., DSBG)





# Hard Cap Issues

- NMFS's Take Reduction process
- MSA vs MMPA
- Conservation/Incentive Value



# MMPA Bycatch Assessment Framework

- Mortality and Serious Injury (MSI)
- Two Biological Reference Points
  - Potential Biological Removal (PBR) level:  
“maximum number of animals that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population”
    - $PBR = N_{min} * 1/2 R_{max} * F_R$
  - Zero Rate Mortality Goal (ZMRG):  
“insignificant bycatch levels approaching a zero MSI rate”
    - Defined in regulations as 10% of PBR
- Assessment of MSI relative to PBR and ZMRG used to trigger management action(s)



# MMPA vs MSA

	MMPA	MSA
Bycatch Mitigation	Mandates bycatch reduction	Sec 303(b)(12), a discretionary provision: FMPs may include measure to conserve non-target species
Targets	Reductions linked to biological reference points with time limits	No references points or timeframe
Process	TRP process	No process specified





# Take Reduction Process

- The MMPA requires the development of a Take Reduction Plan when a marine mammal stock's  $MSI > PBR$ , or it is ESA listed
- A Take Reduction Team drafts a plan within 6 months, which is then finalized and implemented by NMFS
- The MMPA requires that  $MSI$  be reduced to below  $PBR$  within 6 months, and to below  $ZMRG$  within 5 years

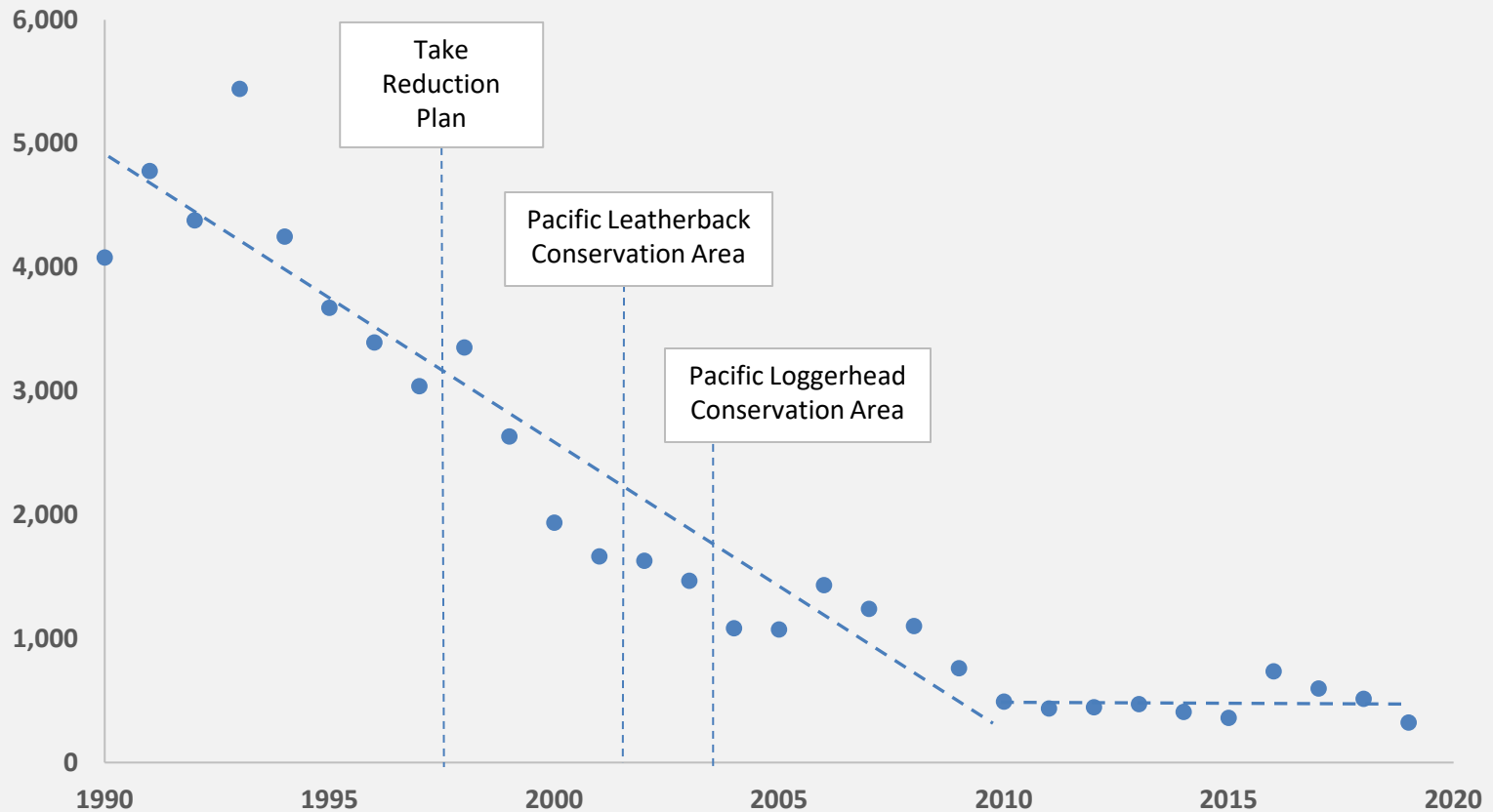


# Conservation / Incentive Value

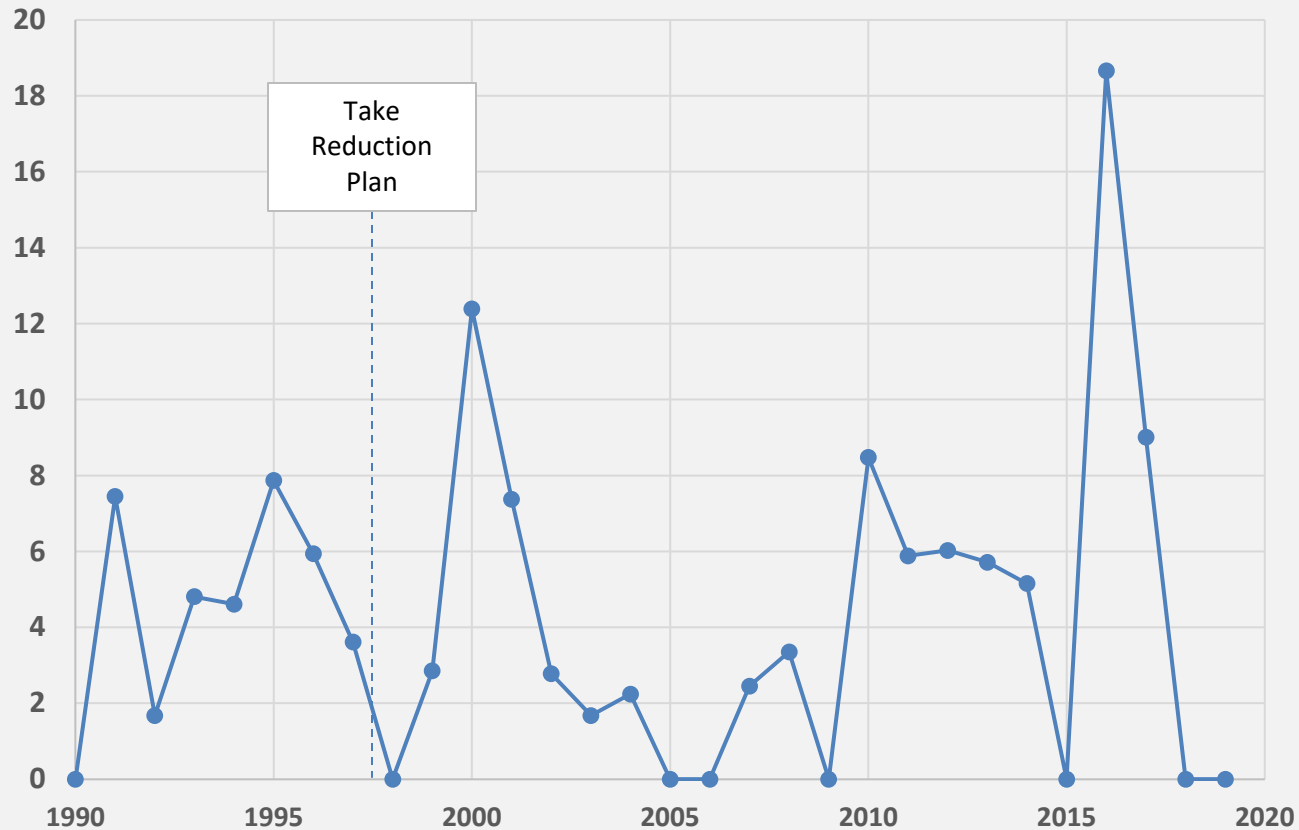
	Observed Bycatch Totals		
	1990 - 2000	2001 - 2019	2015-2019
deep divers (beaked, sperm and pilot whales)	54	5	0
baleen whales (4 spp, 2 endangered)	8	4	1
ESA listed species (sperm, fin, humpback whales)	11	3	0
porpoises	469	186	40
Pinnipeds (California and Steller's sea lions)	231	107	7



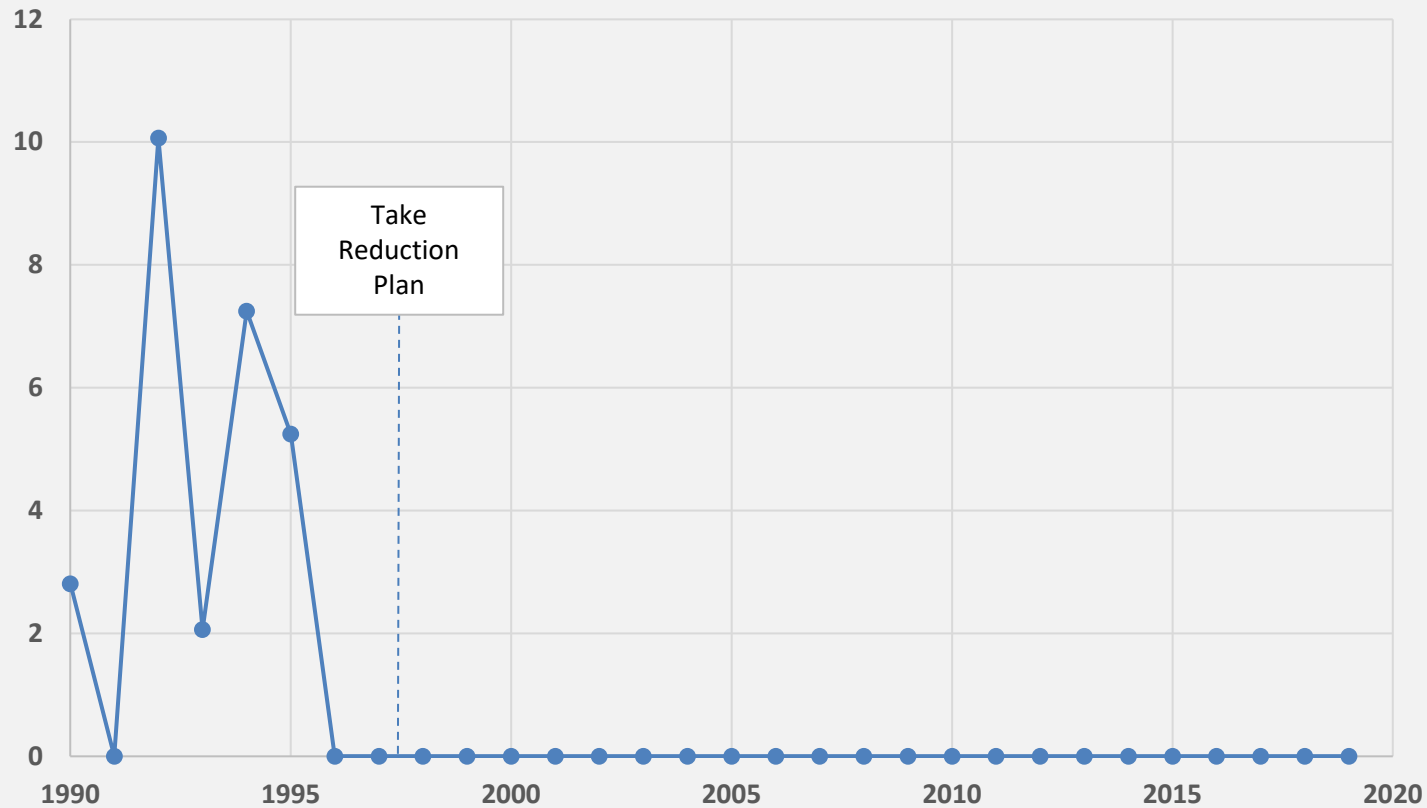
# Annual DGN Fishing Effort (sets)



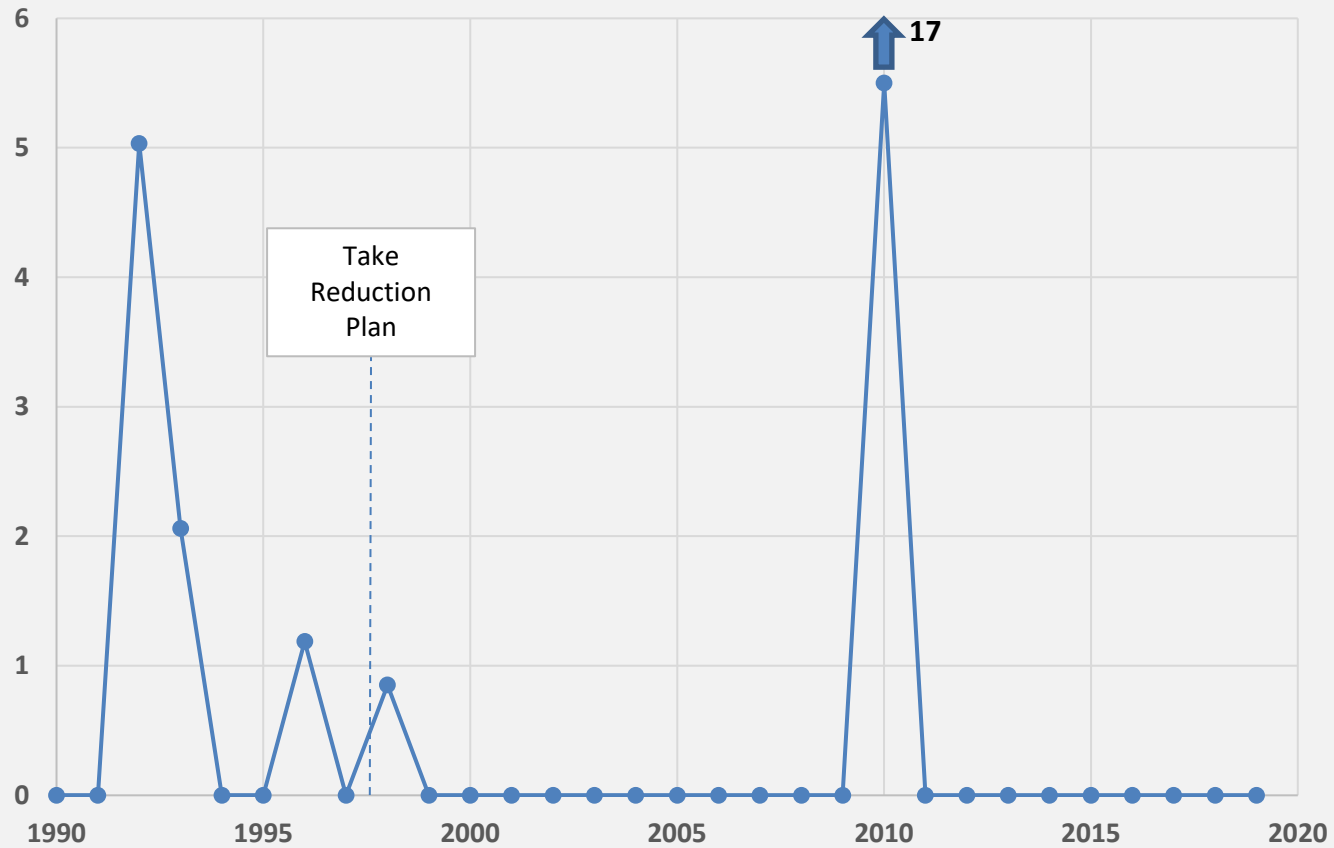
# Observed Northern Right Whale Dolphin BPUE



# Observed Beaked Whale BPUE



# Observed Sperm Whale BPUE



# MSI as Percentage of PBR

	MSI as percentage of PBR	
	1990 - 2000	2015-2019
Sperm Whale	188%	4.8%
Short-finned Pilot Whale	130%	6.2%
Northern Right-Whale Dolphin	45%	4.0%
Cuvier's Beaked Whale	29%	0.44%
Minke Whale	23%	1.5%
Fin Whale	23%	0.00%
Risso's Dolphin	20%	5.3%
Bottlenose Dolphin	17%	1.6%
Humpback Whale	12%	0.07%
Pacific White-sided Dolphin	11%	0.62%
Short-beaked Common Dolphin	5.8%	0.40%
Pygmy Sperm Whale	4.3%	0.00%
Long-beaked Common Dolphin	4.2%	0.41%
Northern Elephant Seal	3.5%	0.07%
Dall's Porpoise	1.9%	0.24%
California Sea Lion	1.3%	0.07%
Gray Whale	0.26%	0.57%

Bycatch > PBR
PBR > Bycatch > ZMRG (10% of PBR)
Bycatch < ZMRG
Bycatch < 1% of PBR



# Very Rare Events

	PBR	Mean MSI (2015-2019)	Mean Number of Years between Bycatch Events
Fin Whale	2.1	0.00	-
Humpback Whale	17	0.02	25
Sperm Whale	2.0	0.12	5 – 6
Short-finned Pilot Whale	5.7	0.28	3 – 4
Bottlenose Dolphin	8.5	0.18	5 – 6





# Recommendations

- Clarify the marine mammal bycatch mitigation role of the MSA and what it adds to the MMPA criteria and processes
- Collaborate with the POCTRT in developing MSA bycatch reduction measures
- Consider measures other than hard caps (e.g., dynamic time-area closures of co-occurrence hot spots)
- Treat common and rare bycatch-event species differently

