

# MMPA stock assessments: Is Potential Biological Removal protocol providing what we need for management and conservation?

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# Outline

1. MMPA objectives
2. PBR and TRT definitions
3. NMFS Funding context
4. PBR Summary statistics by Region
5. Take Home Points

# Marine Mammal Protection Act

- Goal of Act is to manage populations so they do not go below their **Optimum Sustainable Population** (OSP)–
- What does “OSP” mean? A range of populations between MNPL and K (i.e., right side of the production curve)

# Potential Biological Removal (PBR) Level

- Simulation analyses used to “tune” model output to meet policy standards
- Use of 20<sup>th</sup> percentile of abundance estimates achieves policy standard
- Codified into law by Congress in 1994
- $PBR = 0.5R_{max} * N_{min} * RF$
- Used to set upper annual limit on bycatch, while maintaining zero mortality rate goal

# Regime to Govern MM-F Interactions: Role of Take Reduction Team (TRT)

- One of major hurdles in getting Congress and industry to accept PBR “regime” was what to do when PBR was exceeded
- Immediate closure of fishery was not acceptable
- Needed a soft landing → TRT
- 18 months to figure out the problem
- TRT members include constituents

# NMFS PR Budget

- 1994 - \$14M of new funds to implement new regime to govern MM-Fish Interactions
- Initially funding allocated from OPR based on national RFP for surveys and obs programs
- Within a decade, all/most funding had been permanently transferred to Centers/Regions
- No additional new initiatives have been funded for PBR governance nationally, as was the case for fish stock assessment (i.e., EASA)

# Comparison between 1996 and 2015

	STOCKS		% OF STOCKS WITH PBR LEVELS	
	1996	2015	1996	2015
Gulf of Mexico	26	63	38%	40%
Atlantic	31	55	84%	65%
Alaska	37	51	65%	67%
West Coast	37	43	??	83%
HI & W. Pacific	20	125	??	26%
Overall	151*	337	??	48%

# Summary of Information Provided to Managers

	Number of stocks in 2015	% with PBR	# stocks with takes reported	Obs Programs for Cat II fisheries?
Gulf of Mexico	63	40%	14	Yes
Atlantic + Carib.	55	65%	32	Yes
Alaska	51	67%	43 (29 subsistence)	Fed – yes State - canceled
West Coast	43	83%	30	Yes
Hawaii & W. Pacific	125	26%	9	Yes
Total	337	48%	128	Yes



# 2015 Atlantic data

	# stocks	# stocks with PBR	# stocks with takes	# stocks with Takes > PBR	Trend data by stock
Pinnipeds	4	1	4	0	0
Mysticetes	6	6	3	2	2
Odontocetes	43	29	23	0	0
Other	2	2	2	1	1

# Take Home points from “above”

- The percentage of stocks with a quantitative assessment of trend is less than 5% (2015)
- Initial focus of PBR protocol was on managing fishery interactions; current focus on stocks with significant anthropogenic removals (i.e., bycatch, subsistence, ship strikes)
- Only 65% of stocks in Atlantic Region have PBR estimates – inadequate funding!!
- How can you meet stewardship goals of MMPA with inadequate data?

# List of Fisheries: Then and Now

	Category I		Category II		Category III	
	1996	2015	1996	2015	1996	2015
Gulf of Mexico + Carib. <sup>1</sup>	1	1	0	4	16	18
Atlantic <sup>1</sup>	4	4	6	19	40	37
Alaska <sup>2</sup>	0	0	13	15	38	61
Pacific <sup>2</sup>	2	1	5	8	40	46
Hawaii + W Pac.	0	1	0	3	21	33

# Annual evaluation of stock assessment quality: Examples of scoring

## Stock identification

## Abundance

**Level 0 :** No information (qualitative or otherwise) available

**Level 1 :** Structure inferred from analyses undertaken for other purposes (e.g., distribution, differences in trends, differences in life history)

**Level 2 :** Structure inferred from an analysis specifically aimed at investigating population differentiation (e.g., pollutants, stable isotopes, genetics, tagging)

**Level 3 :** Structure inferred from an integrative analysis of at least two lines of evidence of the type listed under Level 2

**Level 4 :** Estimates of dispersal rate that include estimates of uncertainty.

**Level 0 :** No information (qualitative or otherwise) available

**Level 1 :** Minimum count, abundance estimate, or index count

**Level 2 :** Unbiased estimate of abundance (CV>=30%)

**Level 3 :** Unbiased estimate of abundance (CV<30%) with seasonally OR geographically-explicit density

**Level 4 :** Seasonal and geographic-specific density estimate

INADEQUATE

ADEQUATE



# Summary

- PBRs take advantage of our ability to estimate  $N_{min}$  and stock structure for a majority of stocks, and use default values for productivity
- Regime to govern fishery-marine mammal interactions requires both an estimate of PBR and bycatch information
- Possible new approach of PBR and trend data, with more effort to observe Cat II fisheries
- Need to set priorities nationally. This is very, very hard for NMFS

# Questions and Comments?

- What happens if you don't have a PBR?
- What happens if you don't have bycatch information?
- Why weren't trend data included in the initial formulation of the PBR regime to govern marine mammal fishery interactions?
- How are trend data used in the PBR regime?
- How are stranded animals or ship-struck animals included in the PBR regime?



Thank you

# NMFS Budget Support: 2005 and 2015

	2005	% of total	2015	% of total
MM/Turtles/Other	\$75.5M	11%	\$178.7M	22%
Fish	\$297.9M	44%	\$428.2M	52%
Total NMFS ORF	\$676.5M		\$822.1M	

	2005	2015	\$\$2015 / \$2005
<b>PR</b>	\$75.5M	\$178.7M	143%
<b>SF</b>	\$297.9M	\$428.2M	237%



$$\text{PBR} = \text{Nmin} * 0.5\text{Rmax} * \text{RF}$$

- PBR requires estimate of Nmin and Take for each stock
- Developed to require minimum data needs (productivity term has default value, if needed. RF set at 0.1 if Endangered, 0.5 if Threatened or Depleted, 0.1 if at OSP with some flexibility)
- Abundance estimates less than 8 years old
- Take estimates from observer program data or stranding data
- Intended use was to govern marine mammal – fishery interactions
- Goal was to prevent fishery interactions from leading to depletion or preventing recovery