

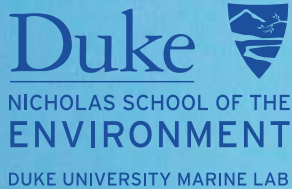
Do Marine Mammal Take Reduction Plans Reduce Bycatch?

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Objectives

- How are TRTs performing?
- What determines their performance?



FAILURE



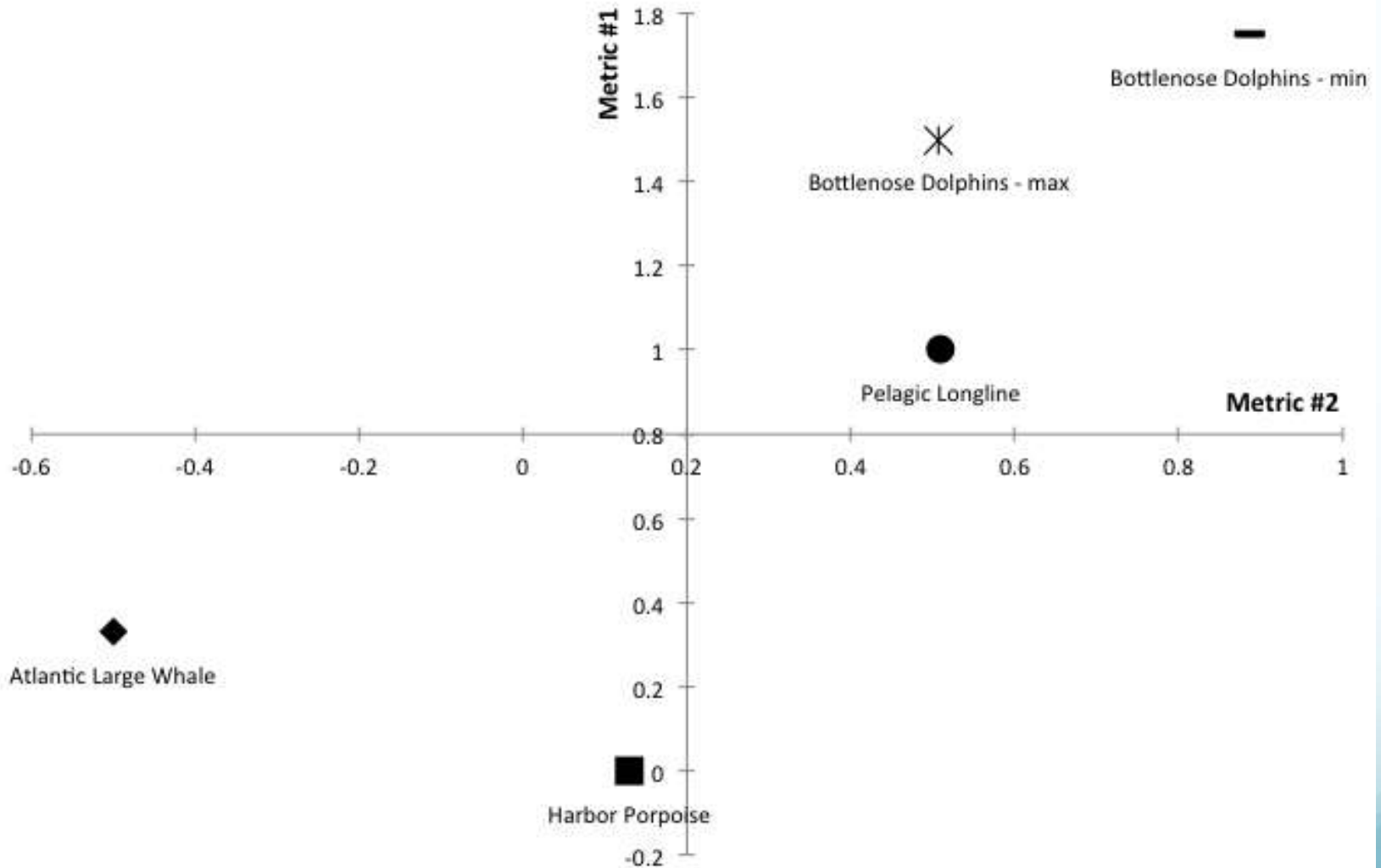
SUCCESS

Ecological Performance

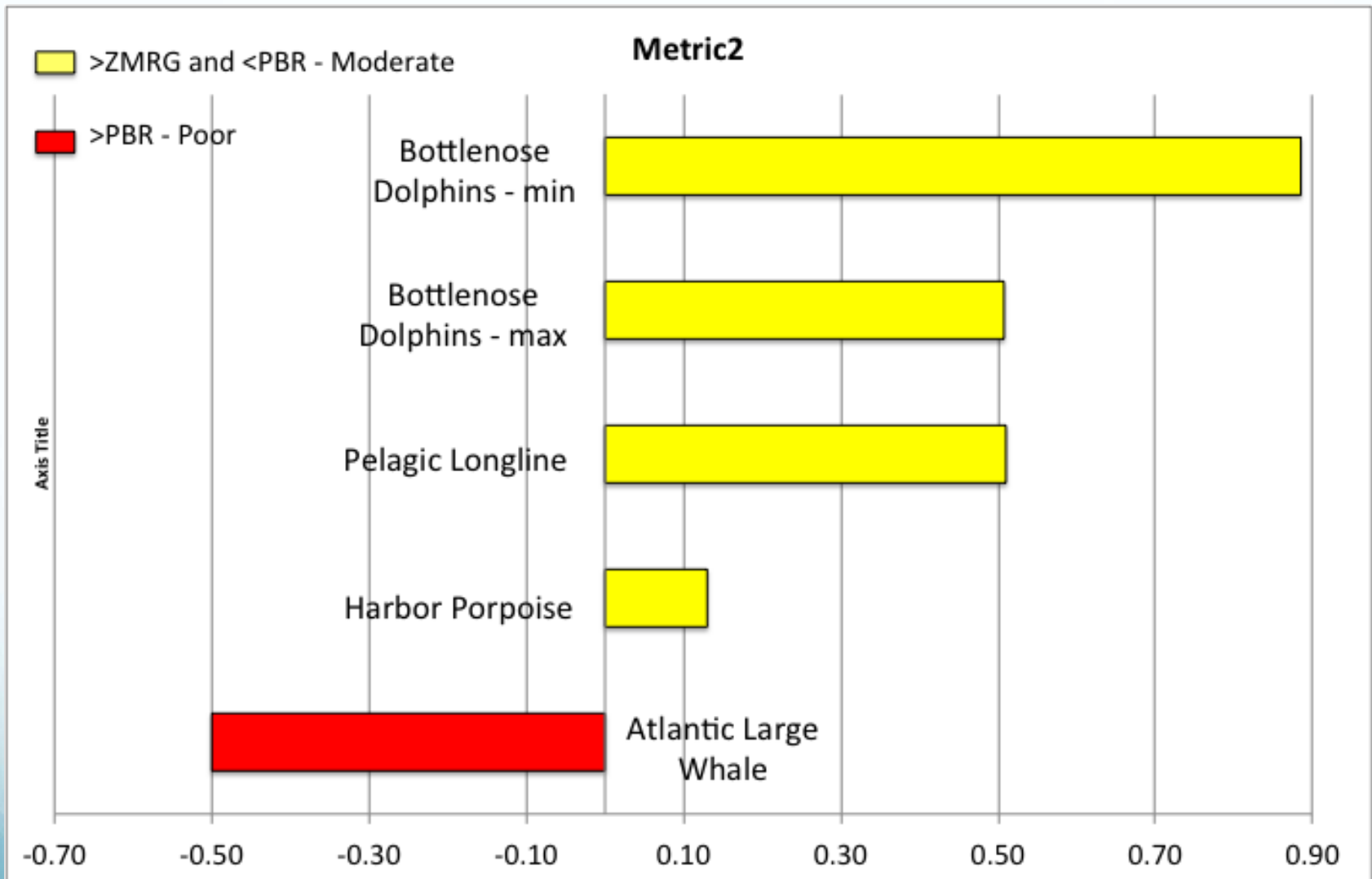
- Take Reduction Plans
 - Atlantic Large Whale
 - Bottlenose Dolphin*
 - Harbor Porpoise
 - Pelagic Longline
- Data – SARs (1989-2013)
 - Compared bycatch to PBR and ZMRG



Ecological Performance



Ecological Performance



Ecological Performance

Team	Metric #1 Rank	Metric #2 [(PBR-BC)/PBR]	Metric #2 Interpretation
BD - min	1.75	0.89	< PBR and > ZMRG
BD - max	1.50	0.51	< PBR and > ZMRG
PL	1.00	0.51	< PBR and > ZMRG
ALW	0.33	-0.50	> PBR
HP	0.00	0.13	< PBR and > ZMRG

Why? - Covariates

Take Reduction Team	PBR in 2011	Size (members + alternates)	Age (Months)	No. Amendments	U.S. Geographic Region
Atlantic Large Whale	3.1	82	221	29	Northeast
Bottlenose Dolphin	39.6	60	158	2	Southeast
Harbor Porpoise	625	42	227	2	Northeast
Pelagic Longline	143	26	115	0	Southeast

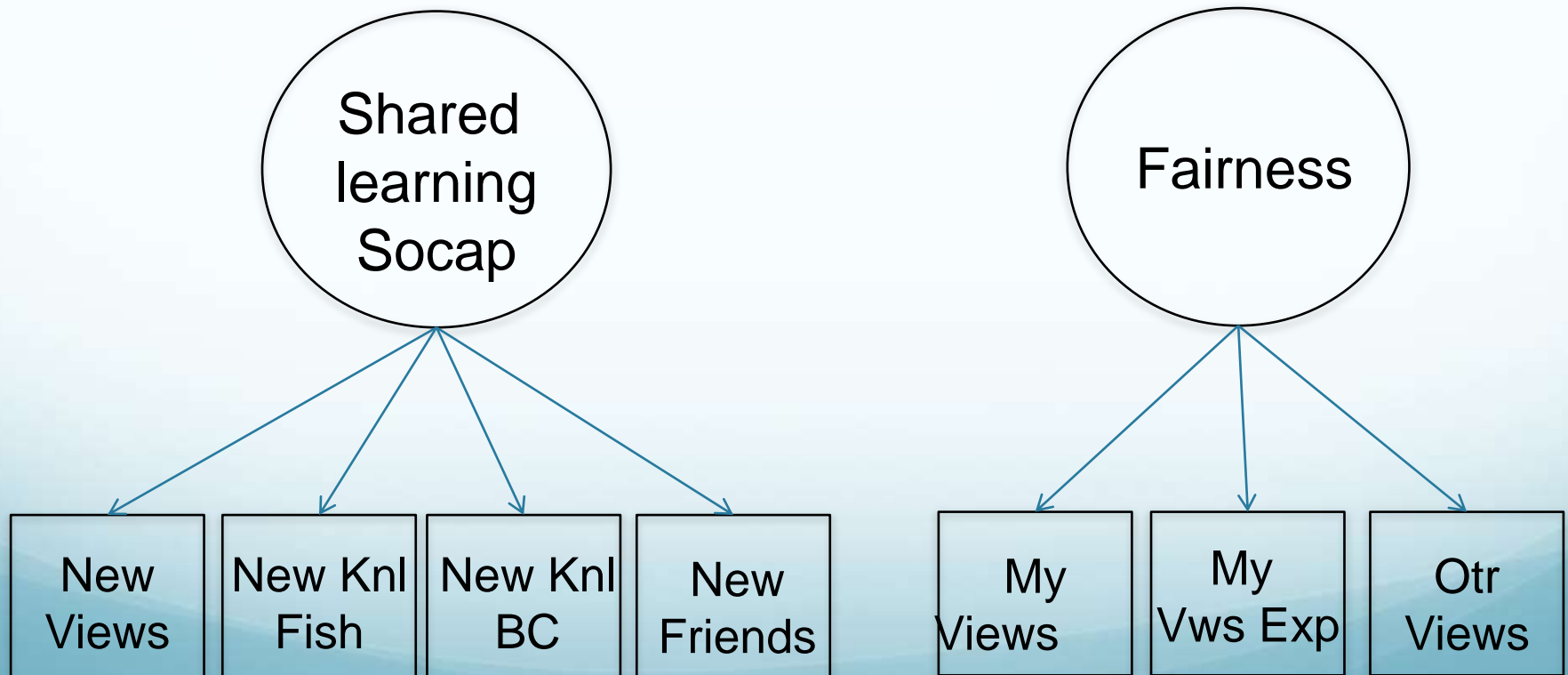
Why? - Ingredients for Successful Participatory Processes

- Team membership
- Shared learning
- Repeated interactions
- Facilitated negotiations
- Consensus-based decisions



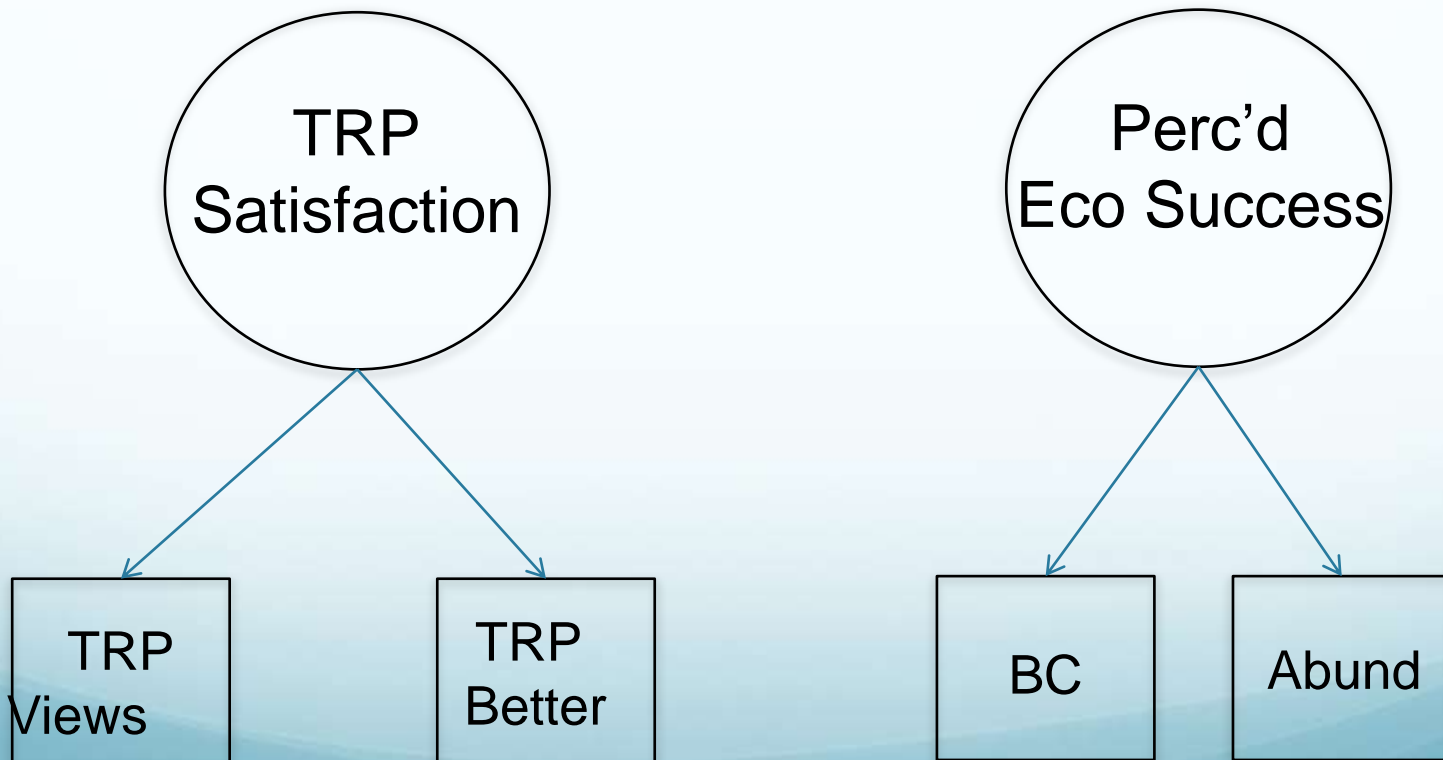
Social Factors

Ingredients - membership, **shared learning**, **repeated interactions**, **facilitator**, consensus

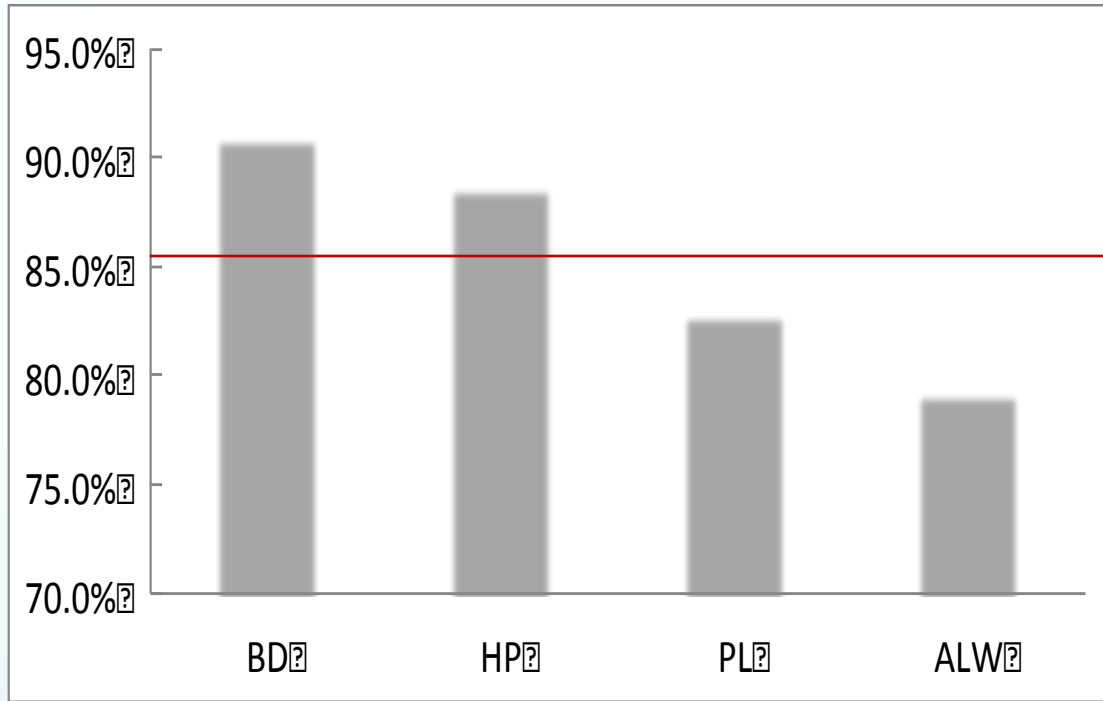


Social Factors

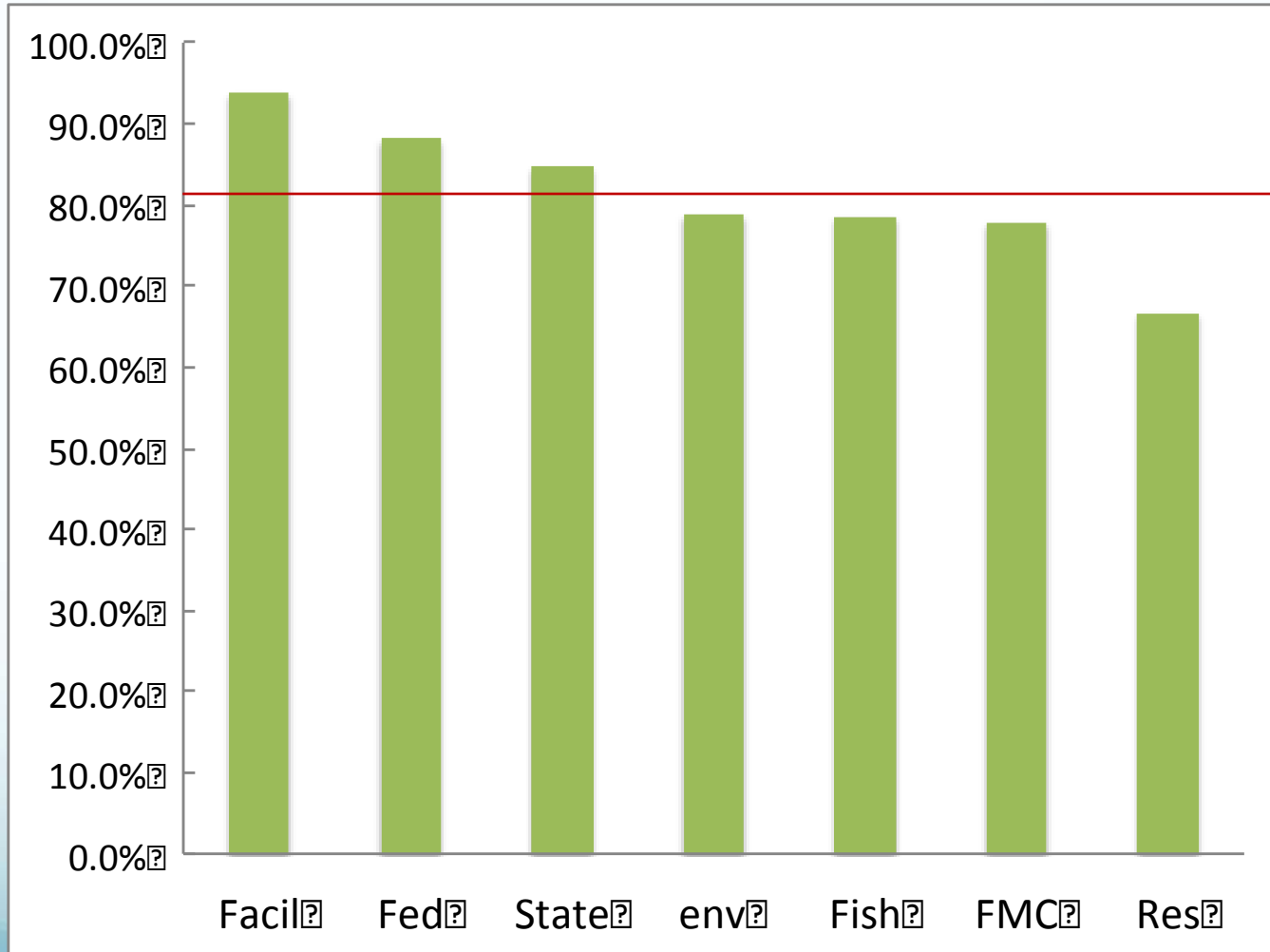
Ingredients - membership, shared learning, repeated interactions, facilitator, **consensus**



Social Factors – Shared Learning and Social Capital



Social Evaluation – Shared Learning and Social Capital



Social Factors – Social Capital Membership

“I think teams benefit from having a certain amount of that membership that has institutional memory, but I also think that it gets stale if there's never any new blood coming in...So I think the strongest teams have both elements. They have an institutional memory that's important and also new blood coming in.” –Environmentalist

“... We need to have people who use the gear, who are on the water, who could speak to the way the gear is operated, and the way they interact with gear and animals. And if that doesn't happen also I think the process will fall apart.”

–Researcher

Social Factors – Social Capital

Team Size

ALW – size

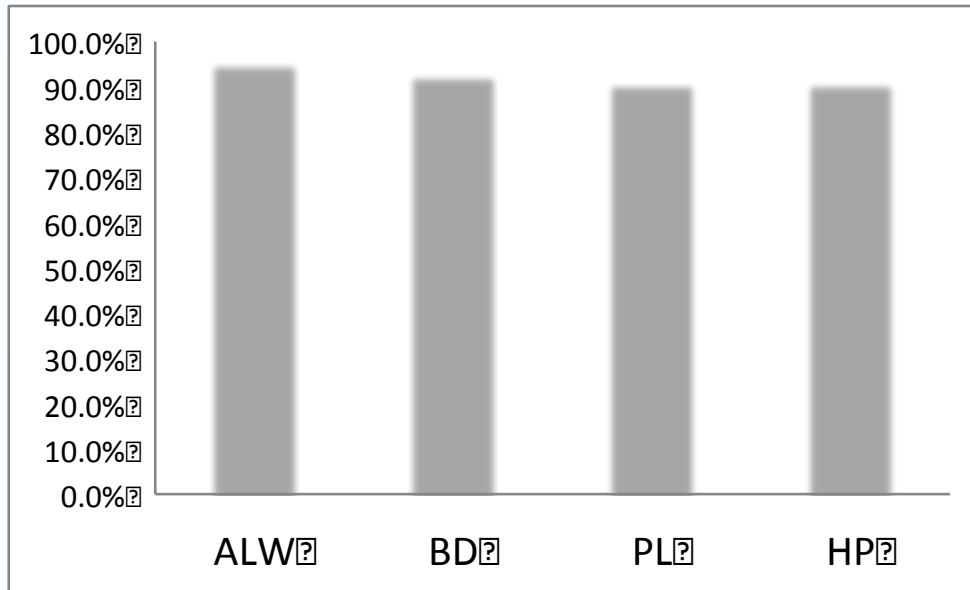
“It’s so large that ...you don’t get some sort of intimate camaraderie going because of the sheer number of people... I think that some people shut down because of the size of the group. ...They feel intimidated... It should be called the LARGE Atlantic Large Whale Take Reduction Team.” — Fisheries Manager

Repeated Interactions

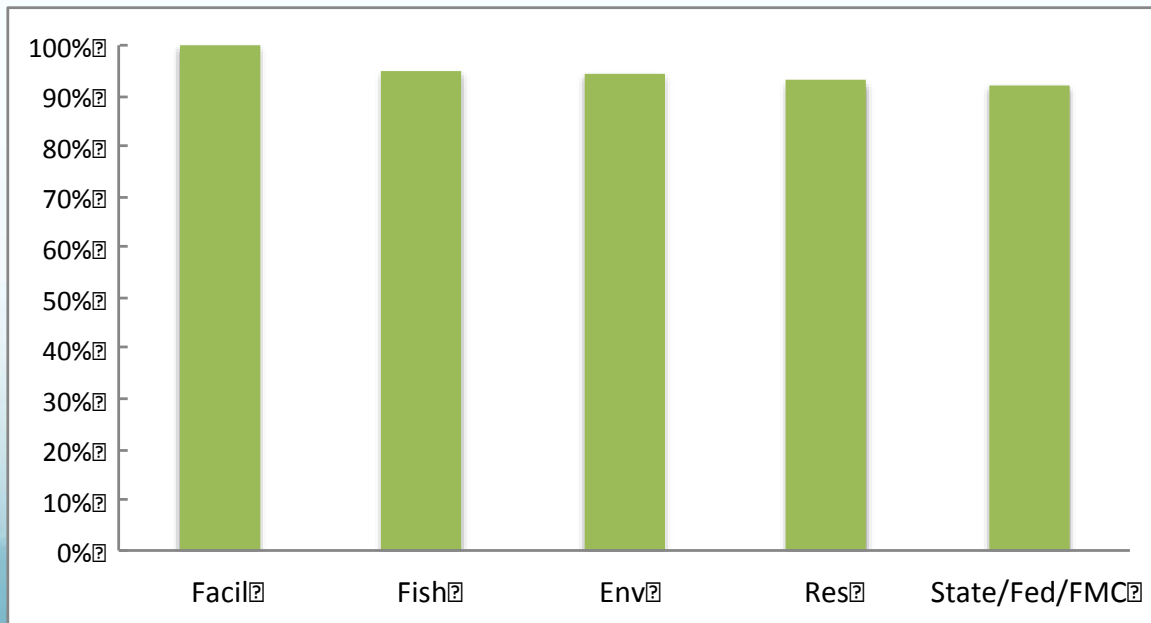
“...rather than having an abstract idea of what that person represented, you were dealing with a person and all of the complexities and emotions and so forth and so on, that comes with face-to-face dealings. So I think it’s much harder to maintain kind of an abstract distrust of somebody when you’re working with them and that distrust doesn’t really manifest...”

—Fisherman

Social Factors - Fairness



91%–95%



92%–100%

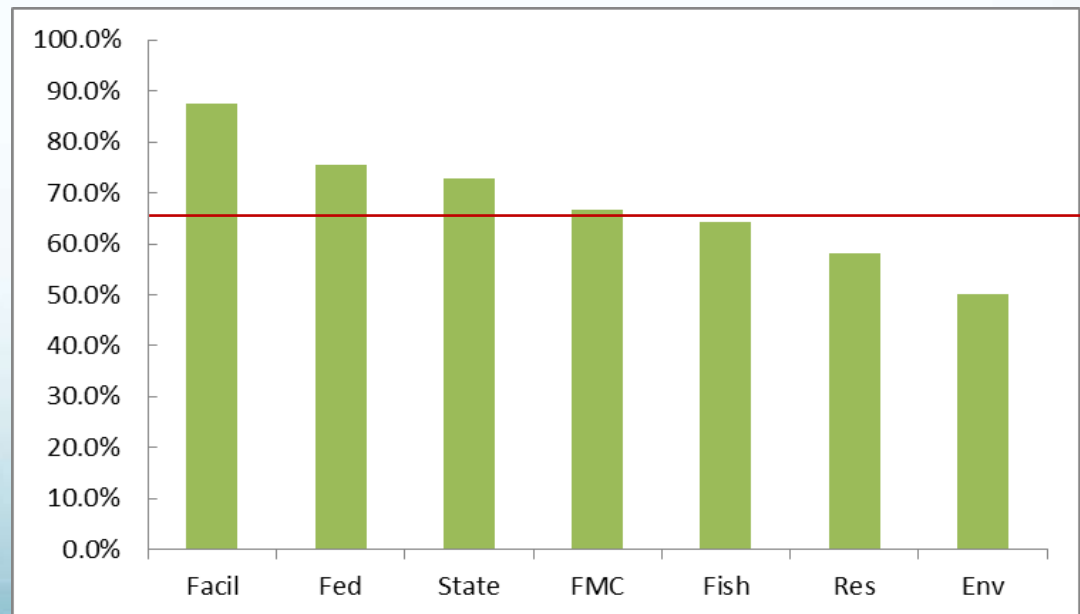
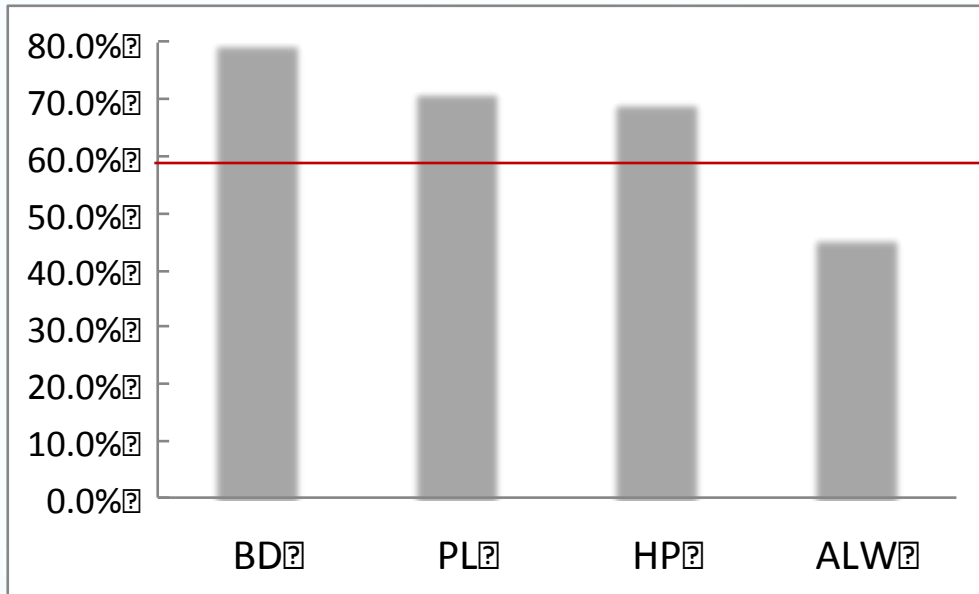
Social Factors - Fairness

“Everyone has their chance to speak. And if you don’t speak...that’s your fault.” –Fisherman

“I think the moderators have been very good in recognizing people and letting them speak.” –Federal employee

“...I think that they helped tremendously in keeping the process moving in a direction and not getting hung-up whenever it did breakdown and you get emotional about some particular issue.” –Fisherman

Social Factors – TRP Satisfaction



Social Factors – TRP Satisfaction

Plan Better than if NMFS created it

“...the federal people would do more than just like a scalpel, they would use a broad sword.” –Fisherman

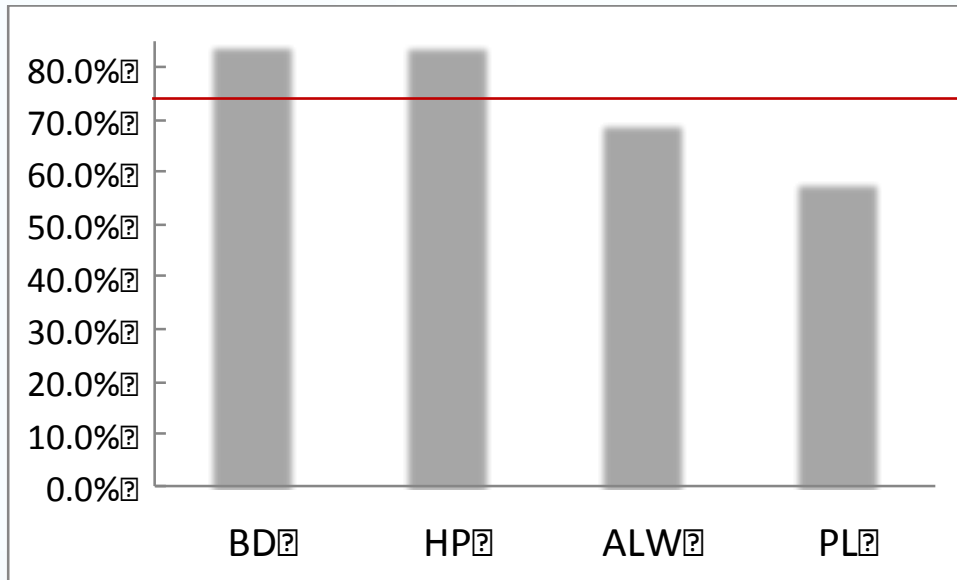
“...I must also say that the process of stakeholder-driven rulemaking and an emphasis on consensus (with the threat of NMFS writing the regs if consensus was not reached) are very powerful tools and they should be used more in federal rulemaking, especially for complex issues that have potential to have significant effects on communities. Involving stakeholders in discussions with regulators, NGO, and scientists helps create a process whereby different needs, values, and perspectives are taken into account and people can work together to solve tough problems.” –Federal employee

Social Factors – TRP Satisfaction

Feeling listened to - ALW

“I mean this is the way that they should be doing it, getting the perspective of the industry and the scientists, the state managers, but I don't think that they're really listening to us.... the large whale plan, we're in such a quandary with lack of data and the need to do something, that they are just shooting with whatever they've got and I just don't think they are thinking clearly. So I think that large whale plan is pretty unfair...” –State manager

Social Factors – Perceived Ecological Success



Social Factors – Perceived Ecological Success

ALW

“Unfortunately I don't think it [the Atlantic Large Whale Plan] has been particularly effective, in the sense that we've done what, 20 rulemakings, or however many? ...I also think that the effectiveness of the plans really gets down to the charge that NMFS gives the team, and in that case their charge was astronomical. It was reducing bycatch of three stocks in a gazillion fisheries, in, you know, the entire East Coast, and it was, it was really daunting. And it's a huge job.” –Federal employee

BD

*“I mean for most of the bottlenose stuff, the bycatch has in fact dropped substantially, just with the restrictions placed on the methods of fishing. –
Environmentalist*

Social Factors - Summary

SOCAP	FAIR	TRP SAT
BD	ALW	BD
HP	BD	PL
PL	PL	HP
ALW	HP	ALW

Social Evaluation - Summary

Ecological Outcome	Perceived Ecological Outcome
BD – min & BD – max	BD
PL	HP
ALW	ALW
HP	PL

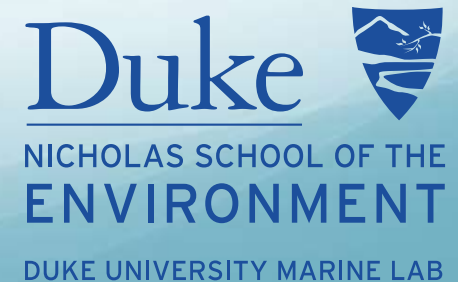
Conclusions

- Perceived and actual success vary somewhat across teams
- TRTs have the necessary ingredients for success – implementation varies
- To what extent does plan implementation affect both perceived and actual ecological success?
- SARs – long-term monitoring

Many Thanks!



- Funding
 - Kenan Institute for Ethics
 - Marine Mammal Commission
 - Duke Graduate School
- Focus group, survey beta testers, survey respondents, interview subjects



Ecological Outcomes - Methods

- Metric #1
 - **0** = Bycatch >PBR
 - **1** = Bycatch <PBR and >ZMRG, and remained there through 2011
 - **2** = Bycatch <ZMRG, and remained there through 2011
- Metric #2 = **mean[(PBR-Bycatch)/PBR]**
 - **1** = No bycatch
 - **0.9-0.99** = \leq ZMRG
 - **0-0.89** = >ZMRG and \leq PBR
 - **<0** = >PBR

Ecological Outcomes - Covariates

Dependent Variable	Covariate	Estimate	p-value	R ²
Metric 1	NE U.S.	-1.11	0.000	0.85
Metric 2		-0.76	0.000	0.76

N=5



Perceived Outcomes – Survey response rate

Mode	N	No. responses	Response rate
Web	209	130	62%
Mail	25	9	36%
Total	234	139	59%

No. Responses (All)	139
No. Responses (4 EC Teams)	112
% Total Responses	81%

Perceived Outcomes – Survey responses for 5 Eco Teams

	Total
# individuals	112
# individuals on > 1 team	54
% individuals on >1 team	48%
Total # responses (records in database)	201

	ALW	BD	HP	PL	Total
# respondents	65	53	54	29	201
# respondents on > 1 team	43	37	48	21	
% respondents on >1 team	66%	70%	89%	72%	
Total # responses (records in database)	65	53	54	29	201

Perceived Outcomes - Interviews

Affiliation	ALW	BD	HP	PL	Total
Environmentalists	3	2	3	2	3
Facilitators	2	1	1	1	3
Federal Employees	3	3	3	3	3
Fishing Interests	2	2	2	1	6
Fisheries Managers	1	1	1	1	2
Researchers	1	2	1	1	3
State Managers	2	1	2	1	2
Total	14	12	13	10	22
Missing	0	0	0	0	0

Social and Ecological Evaluation Pelagic Longline Plan

- Not strategic at first
- PBR recently lower due to stock ID
- Stakeholders not thinking about Risso's dolphins
- *“The biggest problem there is enforcement, and at-sea enforcement... It's very difficult to determine how long a pelagic longline is 'cuz they set a buoy here, they set a buoy here, on each end possibly, and then you get, you know, bows in the set due to currents and bottom topography or whatever.”* —State manager

Social and Ecological Evaluation Harbor Porpoise Plan

“...just thinking about the numbers in the Harbor Porpoise Plan, we are nowhere near...the number of takes that we had back in whatever, '94, '95, '96. Whenever those plans started [takes] were way higher than what we have now.” –State Manager

“We devised a plan that worked. So that was a success.” –
Researcher

“But with harbor porpoises... the mortality rate's going down” –
State manager

“It is a LOT better than since the 90's but is up and down since about 2001 when it has bounced from ZMRG to over 1,000 animals w/in a couple of years and then back and forth.”—
Environmentalist (written comments from survey)