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Comparing stakeholder perceptions with empirical outcomes from negotiated rulemaking policies: Is participant satisfaction a proxy for policy success?

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ABSTRACT

Evaluation of natural resource management policies often is made difficult by lack of robust or long-term data on the resource. In the absence of empirical data, natural resource policy evaluation may rely on expert or stakeholder perception of success as a proxy, particularly in the context of policies that depend on multi-stakeholder engagement or negotiated rulemaking. However, few formal evaluations have compared empirical ecological outcomes with stakeholder perception. This study compares stakeholder perceptions of policy outcomes with ecological outcomes from a long-term, ecological dataset as part of the U.S. Marine Mammal Protection Act's Take Reduction Planning process. Structural Equation Models revealed that stakeholder perceptions were significantly and positively related to positive ecological outcomes. Also, perceived success and ecological performance rankings of the Take Reduction Plans were comparable for three of the five plans examined. This analysis suggests that for this particular policy instrument, stakeholder perception aligns well with ecological outcomes, and this positive relationship is likely the result of a commitment and support for stakeholder education and engagement. However, even within a single policy analysis, there was variability suggesting that the relationship between stakeholder perceptions and policy outcomes must continue to be evaluated. This study suggests that stakeholder perception can be an accurate reflection of ecological outcomes, but not necessarily a predictor of them.

1. Introduction

The U.S. federal government involves the public in regulation of natural resources along a continuum of engagement. At one end lies the command and control method wherein an administrative agency proposes regulations, releases them for public comment, modifies those rules in response, and implements final rules. At the other end of the continuum, stakeholders work directly with administrative agencies to devise regulations through consensus-based, multi-party negotiation, referred to as negotiated rulemaking [1,2]. Various environmental agencies in the U.S. have embraced the latter approach, including the Environmental Protection Agency, Department of the Interior, and National Oceanic and Atmospheric Administration (NOAA) [3].

Assessing the efficacy of a policy in relation to program goals is fundamental to policy evaluation [4]. One critical metric of resource policy evaluation is whether the policy resulted in the intended goal, which is to improve resource condition, quality and quantity. However, for policies that are designed to protect natural resources, long-term resource monitoring data often are lacking. In lieu of direct data on the resource, other evaluations for environmental policies generated by multi-stakeholder programs may focus solely on the success of the negotiation process, while others focus on outputs or agreements resulting from the negotiation. Other evaluations focus on participant satisfaction with the process, which affects satisfaction with the outputs [5,6]. Participant satisfaction, however, may not be a good measure, proxy, or indicator of successful ecological outcomes [3,7–11]. Coglianese [9]

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points out that to avoid cognitive dissonance, stakeholders involved in intensive participatory processes such as negotiated rulemaking, may have a more positive view of the outcomes than is warranted by the outcomes themselves [5]. To date, few studies have considered how well stakeholder perceptions align with empirical trends [3,9,11,12]. In other words, few studies have examined whether stakeholder perceptions of mission success or failure are accurate.

One negotiated rulemaking program administered by NOAA is mandated by the Marine Mammal Protection Act of 1972 (MMPA 16 U.S.C. 1361 *et seq*.). This negotiated rulemaking process, called Take Reduction Planning, develops plans that are designed to reduce harmful interactions between marine mammals and commercial fisheries (16 U.S.C. 1387).

The Take Reduction Planning program of the MMPA requires both long-term monitoring and negotiated rulemaking to mitigate the incidental capture of marine mammals in fisheries (bycatch). A recent study of the MMPA Take Reduction process found that the policy led to measurable empirical reductions in marine mammal bycatch, often referred to as takes [13]. To better understand the relationship between perceived and empirical ecological outcomes, this study quantitatively and qualitatively compares empirical ecological outcomes of marine mammal Take Reduction Plans [13] in relation to stakeholder's perceived outcomes [5]. This study serves to characterize the strength of the relationship between perceived and actual ecological success, directly informing the suitability of participant perceptions as a reliable proxy for empirical policy success.

2. Background: Marine Mammal Act Take Reduction Planning

Multi-stakeholder Marine Mammal Take Reduction Teams are charged with devising a consensus-based Take Reduction Plan comprising regulatory and non-regulatory measures to mitigate marine mammal bycatch (16 U.S.C. 1387(f)(6)(A)(i)). Take Reduction Teams consist of environmentalists, members of the fishing industry (fishermen, lobbyists, and industry group representatives), scientific researchers, members of Regional Fisheries Management Councils and Commissions, and state and federal managers (16 U.S.C. 1387(f)(6)(C)). Take Reduction Team meetings are facilitated by trained, professional, neutral, third parties. If the team is unable to achieve consensus, the MMPA requires the federal agency charged with implementing the statute (typically NOAA's National Marine Fisheries Service, or NMFS) to create a Take Reduction Plan (16 U.S.C. 1387(f)(7)(A)(ii)). The short-term goal of a Take Reduction Plan is to reduce bycatch to below the stock's Potential Biological Removal (PBR) within six months of implementing the Plan (16 U.S.C. 1387(f)(2)). PBR is the maximum number of animals that can be removed from a particular population of marine mammals (known as a stock) by human-related causes while allowing the stock to reach or maintain its optimum sustainable population (16 U.S.C. 1362(20)). The long-term goal is to reduce bycatch to insignificant levels approaching zero (ZMRG), which is defined as 10% of PBR, within five years of implementation of the Take Reduction Plan (50 CFR §229).

Since 1996, NMFS has convened nine Take Reduction Teams (Table 1), which have evolved into seven active Take Reduction Teams and produced six active Take Reduction Plans (http://www.nmfs.noaa.gov/pr/interactions/trt/teams.htm). Teams range in size and age (Table 1). The oldest teams were formed in 1996, while the most recent team was established in 2010 (http://www.nmfs.noaa.gov/pr/interactions/trt/teams.htm).

Table 1
Marine mammal Take Reduction Teams, team size, and age. Data gathered from http://www.nmfs.noaa.gov/pr/interactions/trt/teams.htm. The * denotes teams for which ecological data are not available.

Marine Mammal Take Reduction Team	Team Size (members + alternates	Team Age (Months)
Atlantic Large Whale	82	221
Bottlenose Dolphin	46	158
Harbor Porpoise	42	227
Pacific Offshore Cetaceans	17	227
Pelagic Longline	26	115
Atlantic Offshore Cetaceans*	18	62
Atlantic Trawl Gear*	34	100
False Killer Whale*	27	59

3. Methods

3.1. Quantitative comparison

3.1.1. Empirical ecological outcomes

Quantitative metrics of ecological outcomes from the Take Reduction planning process were based on findings from a recent paper [13], which evaluated the ecological outcomes or success of the Take Reduction planning process of the MMPA. Using data from Marine Mammal Stock Assessment Reports, McDonald et al. [13] ranked the ecological outcomes of five Take Reduction Plans (Atlantic Large Whale, Bottlenose Dolphin, Harbor Porpoise, Pacific Offshore Cetaceans, and Pelagic Longline) by comparing marine mammal bycatch to the short- and long-term goals of PBR and ZMRG. Below are the calculations for the two metrics used to evaluate ecological success as described in McDonald et al. [13].

Metric 1 is a simple categorical measure of whether or not bycatch was reduced and maintained below PBR or ZMRG. Ranks of all stocks managed under a plan were averaged to determine a mean rank. Stocks that were below ZMRG prior to implementing a plan were excluded.

-1	= Bycatch $>$ PBR or
	= Bycatch fluctuated above and below PBR
0	= Bycatch $\le$ PBR and $>$ ZMRG and remained there through 2011 or
	= Bycatch fluctuated above and below ZMRG
1	= Bycatch $\le$ ZMRG, and remained there through 2011

Metric 2 is the mean of the annual difference in bycatch from PBR divided by PBR itself. Ranks of all stocks managed under a single plan were averaged to determine mean rank and, as above, stocks that were below ZMRG prior to implementation of a plan were excluded.

Metric 2 = mean[(PBR-Bycatch)/PBR].

1.00	implies No bycatch
0.90 – 0.99	implies $\le$ ZMRG (because ZMRG = 10% of PBR)
0.00 – 0.89	implies $>$ ZMRG and $\le$ PBR
$<$ 0.00	implies $>$ PBR

3.1.2. Perceived ecological success

To quantify the perceived ecological success of the Take Reduction Plans, surveys were administered online (N=219) and through the U.S. mail (N=25) to all Take Reduction Team participants (past and present) to capture their perceptions of the ecological outcomes of the marine mammal Take Reduction Plans.

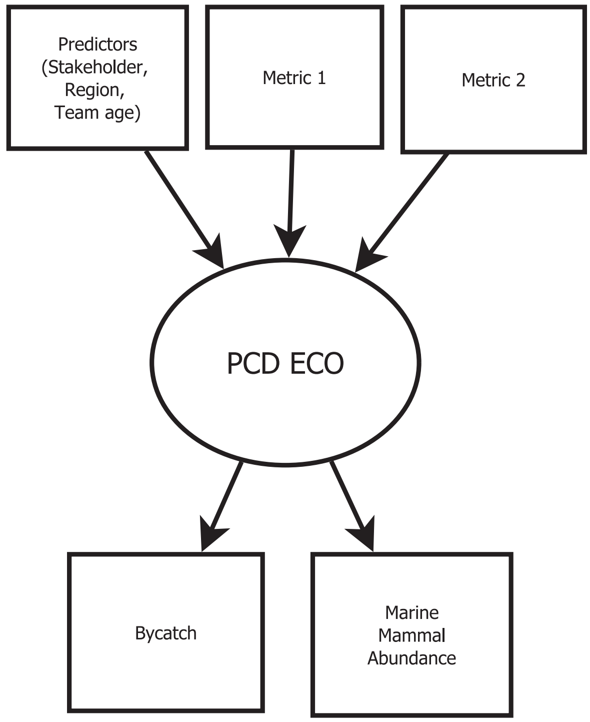

Fig. 1. Structural Equation Model (SEM) #2 from McDonald and Rigling-Gallagher [5] of perceived ecological outcomes of marine mammal Take Reduction Plans. Circles depict latent variables and squares depict both measurement indicators (at the tip of the arrows at the bottom) and independent predictors (at the base of the arrow at the top). Tested models incorporated Metrics 1 and 2 as causal indicators, which suggests that perceived outcomes are influenced by empirical outcomes in addition to the independent predictors.

McDonald and Rigling-Gallagher [5] describe the methods used to create and administer the survey. Two, seven-point Likert-scale questions examined participant views of the ecological outcomes. Responses ranged from "made much worse" to "made much better." One question asked about the effects of Take Reduction Plans on marine mammal bycatch while the other asked about effects on abundance of marine mammal stocks (see Appendix).

3.1.3. Quantitative comparison: Structural Equation Models (SEMs)

Three Structural Equation Models (SEMs) with latent variables were created to analyze the survey data using MPlus, v 6.1 [14]. Detailed descriptions of Structural Equation Models in general and the models described herein are presented in McDonald and Rigling-Gallagher [5]. To compare the ecological data with the survey data, Structural Equation Model #2 described in McDonald and Rigling-Gallagher [5] was used, which illustrates stakeholder opinions about the outcomes of Take Reduction Plans (Perceived Ecological Success; Fig. 1).

Models that incorporated ranks from the ecological evaluation (Metrics 1 and 2) were tested as causal indicators of the latent variable Perceived Ecological Success (PCD ECO). This structure suggests that the empirical outcomes influence perceived outcomes. In other words, perceived outcomes are, in part, a reflection of empirical outcomes. These models are the most logical because empirical ecological outcomes should drive perceptions of those outcomes rather than the reverse [6]. For empirical outcomes to significantly affect perceived outcomes, a feedback loop must exist between marine mammal bycatch and abundance data and the perceptions of members of the Take Reduction Teams. Such a feedback loop could occur in Teams that have existed for long periods and have had a chance to evaluate the outcomes of their plans. A lack of significance or poor model fit would indicate

Table 2
Results of the ecological rankings for Metrics 1 and 2 and Perceived Ecological Success (from the frequency of survey responses of made slightly better to made much better). Bycatch of bottlenose dolphins was split into minimum and maximum estimates, but perceived success was for the entire Bottlenose Dolphin Take Reduction Plan.

Take Reduction Team	Metric #1	Metric #2	PCD ECO
Bottlenose Dolphin – min	0.75	0.89	84.4%
Bottlenose Dolphin – max	0.50	0.51	
Pacific Offshore Cetaceans	0.20	0.51	90.0%
Pelagic Longline	0.00	0.51	58.0%
Atlantic Large Whale	−0.67	−0.50	69.0%
Harbor Porpoise	−1.00	0.13	84.3%

that there is little to no feedback of the monitoring data to the team members. Perceived outcomes, however, cannot affect or alter empirical outcomes. Thus, models that tested Metrics 1 and 2 as measurement indicators of Perceived Ecological Success (suggesting that perceived outcomes could be used as a proxy for empirical outcomes) were rejected due to very poor model fit or fatal errors.

3.2. Qualitative comparison

The perceived ecological success of each Take Reduction Plan was ranked based on the response frequencies to the questions about the effects of the Take Reduction Plans on marine mammal bycatch and abundance. For both questions combined, the average frequency of the combined responses of "made slightly better," "made somewhat better," and "made much better" were calculated and each team was ranked relative to each other based on these average frequencies. Those ranks were then compared to Metrics 1 and 2 from the ecological analysis to identify similarities and discrepancies (Table 2).

4. Results

4.1. Ecological analyses

The full database, including both social and ecological data contained 212 records. The empirical ecological effectiveness of marine mammal Take Reduction Plans varied considerably across teams (Table 2) [13]. Relative rankings among the plans also differed slightly between Metrics 1 and 2 (Table 2). Metric 1 ranked the Bottlenose Dolphin and Pacific Offshore Cetaceans plans as the two highest (most effective ecologically). Metric 2 ranked the Bottlenose Dolphin plan (minimum bycatch estimate[1]) as ecologically best, but three plans were tied for the second highest - Bottlenose Dolphin (maximum bycatch estimate[1]), Pacific Offshore Cetaceans, and Pelagic Longline. Both metrics ranked the Atlantic Large Whale and Harbor Porpoise plans as least successful ecologically, but their rank orders were reversed (Table 2).

The regression coefficients of the significant predictors (team size and northeastern US) for empirical ecological success (Metrics 1 and 2) were negative (Table 3). This suggests that large teams and those in the northeastern U.S. were less successful at reducing bycatch than plans created by smaller teams and in other geographic regions. The covariate predictors accounted for a very large

[1] The Stock Assessment Reports for the bottlenose dolphin stocks described bycatch levels in terms of minimum and maximum potential values due to uncertainty regarding the stock identity of dolphins taken as bycatch in gillnet fisheries. Thus, separate rankings were conducted with these minimum and maximum values.

Table 3
Significant regression coefficients for the covariate predictors of Metrics 1 and 2 using the database that combined social and ecological data (N=212).

Dependent Variable	Independent Predictor	Estimate	P-value	RR^2
Metric 1	NE U.S.	−2.18	0.000	0.87
Metric 2	Size	−0.02	0.000	0.90
	NE U.S.	−1.00	0.000	

proportion (87–90%) of the variance in Metrics 1 and 2 (Table 3). The combined database that included both social and ecological data (N=212) resulted in slightly different regression coefficients than those calculated from the database that only contained records from the ecological analyses described in McDonald et al. [13].

4.2. Survey results

The response rate for the survey (web+mail) was 59% [5]. The number of responses by team varied and mirrored team size; the Atlantic Large Whale team had the most and the Pacific Offshore Cetaceans had the fewest. Most respondents were experienced with the Take Reduction Planning process; almost half of the respondents were members of more than one team and two-thirds had participated in four or more meetings or webinars per team [5].

Most (77%) members of the five teams believed that bycatch and abundance were at least slightly better as a result of Take Reduction Planning, and nearly half (49%) thought they were somewhat or much better. Members of the Pacific Offshore Cetaceans Team reported the highest perceived ecological success (90%), while members of the Pelagic Longline team had the lowest average ratings (58%) (Table 2).

4.3. Qualitative comparison

The ecological analyses ranked the Bottlenose Dolphin and Pacific Offshore Cetaceans Take Reduction Plans as the two most successful and the Atlantic Large Whale and Harbor Porpoise Plans as the two least successful (Table 2). Perceived ecological success was similar to empirical ecological success - the Pacific Offshore Cetaceans and Bottlenose Dolphins teams ranked highest and the Atlantic Large Whale ranked as second lowest (Table 2). The Harbor Porpoise plan ranked among the bottom two in the ecological evaluation, but it ranked third highest in perceived ecological success, on par with the Bottlenose Dolphin plan with 84% of respondents indicating bycatch and abundance were at least slightly better as a result of implementing the Take Reduction Plan (Table 2). Ecologically, the Pelagic Longline Take Reduction Plan ranked in the middle, but stakeholders ranked it as the least successful among the teams with active Take Reduction Plans (Table 2).

4.4. Quantitative comparison: SEM results

4.4.1. Latent variable model

The best fitting model included one latent variable representing perceived ecological success (PCD ECO), which was regressed on covariate predictors that included the Take Reduction Team identity, team size and age, stakeholder affiliation, U.S. geographic region, and the causal indicators Metrics 1 and 2 (from the ecological evaluation). To improve model fit, only those covariates and causal indicators that were significant were retained. This included Metric 2 (from the ecological evaluation), team age, researchers, and environmentalists (Table 4, Fig. 2).

Team age and Metric 2 had positive regression coefficients (Table 4). Members of older teams viewed the Take Reduction Plans as more effective than members of younger teams, and increases in empirical ecological success (as measured by Metric 2) improved the perceived ecological success. Significant predictor variables of Metric 2 that were identified in the regression analysis of the ecological data (team size and northeastern U.S.) were included in the model as indirect predictors of Perceived Ecological

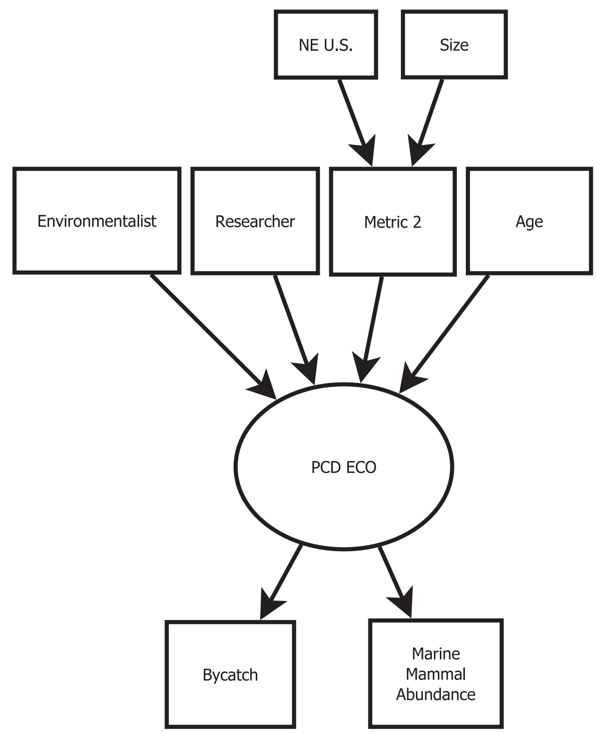

Fig. 2. : Structural Equation Model fusing Perceived Ecological Success (PCD ECO) as the latent variable (circle) and empirical ecological success a causal indicator of PCD ECO (Metric 2). It depicts team size and the northeastern U.S. as predictors of Metric 2. Measurement indicators included Take Reduction Plan effects on marine mammal bycatch and abundance. Error terms were omitted for clarity.

Table 4
Structural model statistics, measurement model statistics, and Structural Equation Model fit indices. PCD ECO= perceived ecological success.

Structural Model					Measurement Model			SEM Fit Statistics					
Latent Variable	R^2	Predictor	Regression Coefficient	Two-tailed p-value	Measurement Indicator	Factor Loadings (λ)	Reliability (r^2)	χ^2 DIFF test	χ^2 DIFF df	χ^2 DIFF p-value	RMSEA	CFI	TLI
PCD ECO	0.287	Metric 2	1.20	0.001	BYCATCH*	1.00	0.998	0.142	1	0.7064	0.000	1.000	1.007
		Age	0.02	0.000	ABUNDANCE	0.80	0.703						
		Researchers	−1.08	0.001									
		Environmentalists	−1.86	0.003	*scaling indicator (λ =1.0)								

Success (PCD ECO, Table 3, Fig. 2). The other significant, independent predictors of perceived outcomes (researcher and environmentalist) had negative regression coefficients (Table 4). Members of these groups believed the Take Reduction plans did not substantially reduce bycatch or increase marine mammal abundance. The independent predictors and causal indicators explained 29% of the variance in the latent variable perceived ecological success (PCD ECO, Table 4).

4.4.2. Measurement model

PCD ECO was measured by two, seven-point Likert scale questions about effects of the Take Reduction Team process on marine mammal bycatch and marine mammal abundance ("made much worse" to "made much better," see Appendix). Bycatch was the scaling indicator (Figs. 1 and 2).

The factor loadings for both measurement indicators (marine mammal bycatch and abundance) on perceived ecological success (PCD ECO) were significant, with high reliabilities (Table 4). This result indicates that stakeholder opinions about the impact of the Take Reduction Plans on both marine mammal bycatch and stock abundance are good indicators of overall perceived ecological success of the plans. In other words, a change in perceived ecological success would directly affect perceived impacts on both bycatch and abundance. The latent variable, PCD ECO, explains a substantial portion of the variance in both indicators (bycatch and abundance), and the internal consistency of the responses to each question about effects on bycatch and abundance was high. Model fit was excellent as measured by the chi-square difference test, Root Mean Square Error of Approximation, Comparative Fit Index, and Tucker-Lewis Index (Table 4).

5. Discussion

This study characterized, both quantitatively and qualitatively, the relationship between the perceived and empirical ecological outcomes of a policy instrument that governs regulations and voluntary measures created by multi-stakeholder negotiation. This relationship has been discussed theoretically [6] but the paucity of long-term, environmental datasets has precluded direct comparisons of empirical and perceived ecological outcomes. This study revealed that for the Marine Mammal Protection Act, empirical and perceived success were largely aligned. These results suggest, however, that perceived outcomes are not an indicator of or proxy for empirical outcomes, but rather a manifestation of them. This validates a conceptual model of watershed partnerships discussed in Lubell and Leach [6] that showed "actual effectiveness" directly influencing "perceived effectiveness."

Using qualitative metrics of perceived and empirical ecological success, results exhibited close alignment between stakeholder perception and empirical trends for three of the five Take Reduction Plans (Pacific Offshore Cetaceans, Bottlenose Dolphin, and Atlantic Large Whale, Table 2). The quantitative comparison using Structural Equation Models to merge ecological and sociological data, also supported the alignment of perceived and empirical trends, and helped elucidate that empirical ecological success directly influenced perceived ecological success (Figs. 1 and 2). In other words, empirical changes in marine mammal bycatch relative to PBR and ZMRG significantly influenced stakeholder perceptions of Take Reduction Plan success or failure. In this case, this alignment is causative. Take Reduction Team meetings spend at least one-third of their agenda discussing and reviewing recent empirical data. NMFS holds webinars to impart new information between the in-person meetings, and immediately prior to Take Reduction Team meetings, the agency provides team members with dossiers of background materials. They include information about marine mammal bycatch, distribution and abundance estimates, compliance and enforcement, results of gear testing experiments, and outputs from working groups. As a result, 85% of participants in Take Reduction Planning believed they were better informed about current trends in marine mammal bycatch and the fisheries that interact with marine mammals [5]. By keeping Take Reduction Team members updated on empirical information and focusing on shared learning, NMFS has reinforced the positive relationship between empirical and perceived ecological outcomes.

These data suggest that empirical success informs perceived success because of a strong and direct line of communication to participants. However, these data also suggest that, in the absence of a feedback loop to stakeholders about the state of the environment, perceived ecological outcomes may not be an accurate proxy for empirical outcomes. Even in the presence of this strong information loop, the two were not always aligned, as evidenced by the discrepancy between perceived and empirical outcomes for the Pelagic Longline and Harbor Porpoise Take Reduction Teams. For the Pelagic Longline plan, this disconnect had to do with lack of attention to all the species covered by the team's plan during Team negotiations, and the belief by the team participants that the plan was not enforceable [5]. Although this survey did not inquire specifically about perceptions regarding plan implementation, the perceived lack of enforceability of the plan likely affected participant views about its effectiveness. For the Harbor Porpoise Take Reduction Plan, these data suggest that other factors can lead to a disconnect between empirical and perceived outcomes. In this case, the presence of long-term, repeated interactions, trust, and social capital as well as success early in the team's history seem to have led the participants to believe in success that has not been documented by the monitoring program [5,15].

6. Conclusions

This research is the first to compare the ecological outcomes of regulations generated by negotiated rulemaking with stakeholder perceptions about those outcomes, both quantitatively and qualitatively. This comparison is only possible because of a rigorous, long-term marine mammal monitoring program provided in the Stock Assessment Reports (http://www.nmfs.noaa.gov/pr/sars/species.htm). Despite its limitations, without the Stock Assessment Reports, there would be no ability to measure the empirical ecological effectiveness of the MMPA, which underscores the importance of creating and maintaining long-term, ecological monitoring programs.

Previous analyses revealed that the Marine Mammal Protection Act was effective at meeting its intended goal of reducing bycatch [13]. Structural Equation Models provided a useful framework to quantitatively relate ecological and sociological data. Analyses from this study demonstrate that for this policy instrument, stakeholder perception was an accurate reflection of ecological outcomes, but not a predictor of them. Based on the MMPA experience, the strong link between stakeholder views and environmental outcomes stems from a strong communication pathway wherein management agencies keep stakeholders informed about the status of the resource [6]. It is likely that the emphasis that the NMFS places on empirical information and keeping stakeholders informed about bycatch, marine mammal stocks, and fisheries supports this relationship.

However, in the absence of this feedback loop, a disconnect between perceived and empirical outcomes may occur. Lubell and Leach [6] found that a number of output variables including implementation, monitoring, and cooperation influence both perceived and empirical outcomes. In the absence of empirical information, these third order outputs can help inform perceived effectiveness. For the MMPA, however, the influence of empirical outcomes on perceived outcomes is significant. Thus, perceived outcomes may not necessarily be an accurate proxy for empirical outcomes. Reliable evaluation of environmental policies should therefore include both monitoring of empirical outcomes and an information pathway linking the monitoring information to stakeholders.

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Appendix A

Partial Survey – background and perceived ecological effectiveness questions only.

Please indicate all TRTs of which you are/were a participant or facilitator (check all that apply). Please answer the appropriate block for every TRT on which you serve(d). The block number for each team is listed next to the team name.

TRT

ALWTRT Atlantic Large Whale Take Reduction Team (ALWTRT) – ***go to Block 1***
ATGTRT Atlantic Trawl Gear Take Reduction Team (ATGTRT) – ***go to Block 2***
BDTRT Bottlenose Dolphin Take Reduction Team (BDTRT) – ***go to Block 3***
FKWTRT False Killer Whale Take Reduction Team (FKWTRT) – ***go to Block 4***
HPTRT Harbor Porpoise Take Reduction Team (HPTRT) - includes the former Gulf of Maine and Mid-Atlantic Harbor Porpoise TRTs – ***go to Block 5***
POCTRT Pacific Offshore Cetacean Take Reduction Team (POCTRT) – ***go to Block 6***
PLTRT Pelagic Longline Take Reduction Team (PLTRT) – ***go to Block 7***
AOCTRT Atlantic Offshore Cetacean Take Reduction Team (AOCTRT) - disbanded in 2001 – ***go to Block 8***

I represent(ed) the following sector(s) at the negotiation table of the____ Take Reduction Team meetings (check all that apply).

AFFIL

RES Academic/scientific community
FISH Fishing Industry (includes processors)
ENV Environmental/conservation
STATE State agency representative
FED Federal agency representative
FMC Interstate Fishery Management Council
FACIL Facilitator
OTHER Other. Please specify ____________________

Please select the number of ____ Take Reduction Team meetings and/or webinars you have attended

MEETINGS

1 None

2 1-3

3 4 or more

If None Is Selected, Then Skip To End of Block 1

Please indicate how the ____ **TRT** has impacted the issues below.

PCD ECO	**1** Made much worse	**2** Made somewhat worse	**3** Made slightly worse	**4** No Effect	**5** Made slightly better	**6** Made somewhat better	**7** Made much better	**8** I Don't Know	Comments (optional)
BC Marine mammal bycatch	❍	❍	❍	❍	❍	❍	❍	❍	
ABUND Abundance of marine mammal stocks	❍	❍	❍	❍	❍	❍	❍	❍	

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