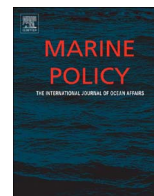




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Comparing stakeholder perceptions with empirical outcomes from negotiated rulemaking policies: Is participant satisfaction a proxy for policy success?



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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.

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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 ≤ PBR and > ZMRG and remained there through 2011 or
= Bycatch fluctuated above and below ZMRG
- 1 = Bycatch ≤ 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.

$$\text{Metric 2} = \text{mean}[(\text{PBR} - \text{Bycatch})/\text{PBR}].$$

- 1.00 implies No bycatch
- 0.90–0.99 implies ≤ ZMRG (because ZMRG = 10% of PBR)
- 0.00–0.89 implies > ZMRG and ≤ 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.

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