



“Back off, man, I'm a scientist!” When marine conservation science meets policy



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ABSTRACT

There is often a basic tension at the boundary between science and policy – the former seeks unbiased, objective descriptions of reality, while the latter must incorporate various factors in its development, including values, ideologies, economics, biases, and emotions. Problems may arise if, and when, marine scientists who enter the policy arena fail to understand these differing priorities, and we describe some common pitfalls. Various strategies are presented for marine conservation scientists to consider in order to avoid or minimize misunderstandings, especially with the media. Conflict of interest issues and public perception of bias are also addressed, as is misuse of research results and whether scientists have an obligation to correct misrepresentation of their research. Finally, we consider how marine scientists should address the inherent uncertainty in their results when those results are used to develop policy, including the importance of incorporating the Precautionary Principle when making science-based policy.

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1. Introduction

Conservation scientists have long debated whether they should advocate for their science (Lackey, 2007; Noss, 2007; Chan, 2008; Nelson and Vucetich, 2009; Parsons, 2013), but in recent years attitudes have changed. The need for marine conservation scientists and their professional societies to become more engaged with managers and policy-makers is now generally recognized. However, policy is politics and politics is people. This means that when governments determine conservation policy, values, ideologies, economics, biases, and emotions are all factors to consider in the decision-making, with varying degrees of relevance depending on the issue. Politics and policy-makers often (usually) have a different agenda from that of science, which seeks unbiased, objective descriptions of reality. Any marine scientist who chooses to get involved in policy needs to understand this fundamental difference from the outset or problems will ensue. While we encourage more marine scientists to become involved in advocating for science-based policy decisions (see Parsons, 2013), here we offer a summary of the pitfalls that the unprepared may encounter when entering the policy arena.

2. Marine scientists engaging in policy

“Back off, man, I'm a scientist.” Bill Murray as Dr. Peter Venkman in the film *Ghostbusters*

Scientists often believe that in order to make good natural resources policy, all that is needed is good science. For example, in 1998 a researcher posted on the marine mammal science listserv MARMAM that “[a]fter 20 years of work with and around marine mammals I have come to the conclusion that there is only one thing that will save them: research.”

While science is a very important factor in policy-making related to natural resources, in fact it is rarely the most important – and is *never* the only – input that matters. Science can sometimes take a protracted time to produce meaningful results and if only bad policy is made in the meantime, a great deal of damage could result.

Marine scientists who believe that good policy exclusively hinges on science can develop an elevated or unrealistic sense of their own importance – we would go so far as to call it arrogance – which can hinder effective communication in the policy arena. Policy-makers, no more than anyone else, do not like being patronized. Academic arrogance, or even the perception of arrogance, can lead to chronic communications breakdowns.

Moreover, scientists often do not understand that many people,

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including policy-makers, will ignore scientific evidence if it contradicts their core beliefs and values (Redlawsk, 2002; Lewandowsky et al., 2013; Nyhan et al., 2014).

2.1. Policy-makers and science illiteracy

“They say a little knowledge is a dangerous thing, but it's not one half so bad as a lot of ignorance” Pratchett (1987, by Terry Pratchett)

A major current example is the continuing public debate in the United States as to whether climate change even exists (Smith and Leiserowitz, 2012; Schneider, 2009), despite strong scientific evidence that it does and moreover is being caused by human activity (IPCC, 2007; Lovejoy, 2014). Denying scientific facts is not unique to climate change, however (Diethelm and McKee, 2009). There are more egregious examples, such as politicians who do not believe in evolution, ignoring the plethora of data to the contrary.

For example, Representative Paul Broun (R-GA), of the U.S. Congress' House Committee on Science, Space and Technology, once stated that “all that stuff I was taught about evolution and embryology and Big Bang theory, all that is lies straight from the pit of hell” (Associated Press, 2012). Rep. Broun holds a medical degree and thus is one of the few members of Congress who has a science background, yet he believes that the earth is only 9000 years old (Associated Press, 2012). The former chair of the House Committee, (former) Representative Bart Gordon (D-TN), explained that “[the current committee members] see science as a liberal plot, to validate something they don't think is true. And climate change is a good example” (Anonymous, 2013; also see <https://whyevolutionistrue.wordpress.com/2014/12/04/im-no-scientist-colbert-on-republican-climate-change-denialism/>).

Disregard of science in the United States is especially galling, as the US Constitution states that Congress has a duty “to promote the Progress of Science” (Article 1, Section 8). This statement actually comes before Congressional power to declare war and to form a navy. The current state of affairs would certainly horrify the scientists among the founders of the nation, such as Thomas Jefferson and Benjamin Franklin (who was a Fellow of the Royal Society). This is not a uniquely current occurrence, as Isaac Asimov, Boston University biochemistry professor, author, and science advocate (1980), pointed out more than three decades ago:

“There is a cult of ignorance in the United States, and there has always been. The strain of anti-intellectualism has been a constant thread winding its way through our political and cultural life, nurtured by the false notion that my ignorance is just as good as your knowledge.”

However, no matter how many scientific facts are presented to such policy-makers, their deeply held beliefs may cause them to reject those that do not fit within their world view. The likelihood of scientists' changing these firmly held beliefs and values is negligibly small. The incoming chair of the US Congressional Environment and Public Works Committee is an infamous climate change denier, who even published a book called “The Greatest Hoax: How the Global Warming Conspiracy Threatens Your Future” (Inhofe, 2012). To write an entire book on how anthropogenic climate change is not happening requires an author to ignore the vast majority of peer-reviewed science on the issue and disregard the opinion of scientists on a truly enormous scale. Therefore, it may sometimes be necessary to reframe an argument and to present issues to such policy-makers in ways that avoid mention of trigger topics such as climate change or evolution and in terms that

they understand and value, if the goal is to get their acceptance of certain related information. For example, scientists could frame the protection of whales not by extolling the importance of protecting biodiversity or saving a majestic species, but by emphasizing their contribution to tourism revenue generation and the associated benefits to coastal economies (Parsons et al., 2003).

Troublesome scientists

Here are three ‘types’ of scientists who can create difficulties (rather than assist in solutions) when involving themselves in policy debates and discussions.

The Naïve Scientist

These scientists believe that if only policy-makers had the right information, they would make the right decisions. They do not understand the important human and legal dimensions of policy-making and make little attempt to interpret their work in that context. As one researcher stated in an interview, “If all sides devoted their resources to research rather than to lawsuits, we could get some answers, but without them, the lawsuits will continue” (Madin, 2009).

The ‘Ivory Tower’ Scientist

They believe that it is essential for scientists to remain ‘pure’, to stay at arm's length from anything resembling advocacy, even though they may also seek media attention for their work. This may result in essential data not reaching policy-makers, resulting in poor decisions. Or, even worse, their research is mischaracterized or misunderstood and they make no attempt to correct these misinterpretations (see below). As a researcher once told one of the authors (Rose): “I can't be held responsible for the policy implications of my work.”

The ‘Industry’ Scientist

They work directly for special interests, but expect their science (even when not peer-reviewed) to be accepted as objective. They either do not understand their conflicts of interest, or ignore them. As one government scientist emphatically stated in a policy meeting attended by one of the authors (Rose), in response to a comment from a participant that there was disagreement over industry research results, “Only if you disagree with science!”

2.2. Communicating with policy-makers

A number of papers have been written on the skills and training required by conservation biologists (Blockstein, 2002; Jacobson, 1990; Jacobson and Robinson, 1990; Cannon et al., 1996; Jacobson and McDuff, 1998; Inouye and Dietz, 2000; Clark, 2001; Fisher et al., 2009; Muir and Schwartz, 2009; Blickley et al., 2013; Parsons, 2012) and they frequently point out the need to be able to understand policy and communicate with policy-makers. However, scientists are often overconfident in their communication skills, equating good teaching evaluations and conference presentations with wider communication skills. Scientists can completely lose an audience of Congressional aides by explaining in excruciating detail the theory and methodology of their studies, instead of providing a brief summary of research conclusions and public, economic and political implications of their work, about which policy-makers care most (Parsons, 2013). Communications training is important preparation for engaging in the policy arena

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