



# Marine “Conservation”: You Keep Using That Word but I Don’t Think It Means What You Think It Means

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## INTRODUCTION

What exactly does “doing conservation” or “incorporating conservation” into ocean science mean? Although today it is often coupled with the sustainable use of natural resources, by definition, conservation traditionally involves the preservation, protection, or restoration of the natural environment or natural ecosystems (Soulé and Wilcox, 1980). In other words, if the conservation intervention is successful then the ecosystem should reflect a better (or perhaps, more commonly, a “less worse”) state as a result. In this context, is simply conducting science conservation? Are outreach and advocacy conservation—whether through old school print and TV/radio broadcasts or through social media such as blogs or building a Twitter following? The field of modern marine conservation is an interdisciplinary one (e.g., van Dyke, 2008; Parsons and MacPherson, 2016) with a landscape that is populated with individuals engaged in science, education, social marketing, economics, resource management, and policy.

But how are we measuring our impact considering this diverse field? How do we know that the ecosystems toward which we direct our conservation efforts are “better” or at least “less worse” than they would be without them? Conservation needs to be more than just “being busy” or “feeling” that we are having an impact. And shouldn’t we strive to ensure that conservation is not just conversation? How do we connect our actions to ecosystem responses in meaningful time frames?

This paper summarizes the results of a focus group discussion session on this topic held at the 2016 International Marine Conservation Congress, St John’s, Newfoundland. It aims to assess ways to measure positive effects of marine conservation efforts beyond the “feel good” aspect to demonstrable impact.

## When Has Marine Conservation Been Achieved?

For many scientists and academics, they consider that they have contributed to conservation when they have published a paper in a peer-reviewed journal. However, readership of scientific articles is infamously low, with even highly-cited articles probably read only by a few hundred people, with the average article more likely read by just one or two academics (Parsons, 2013). Certainly, the likelihood that a conservation practitioner in the field reads the article is slim, with the likelihood of a policy-maker reading it even slimmer (Rose and Parsons, 2015). If the article is not open access and hidden behind a “paywall,” the chance of being read by those that need to know the information declines substantially. Other common ways by which academics claim their conservation work will extend its reach and readership include outputs such as: conference presentations, workshops, posters, flyers, and producing a website. However, scientists rarely actually gauge the level of audience engagement, comprehension or remembrance of their work. Even if the public does remember the information, does it have any effect? Does additional knowledge lead to a motivation to act on that knowledge?

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Human behavior, in particular damaging and unsustainable practices, is ultimately the root of all conservation problems, so perhaps changing human behavior is a better way of producing tangible conservation (Schultz, 2011; Verissimo, 2013). However, many scientists assume that simply providing facts and information, or increasing “awareness” will lead to behavior change. The assumption that providing more information will lead to positive human behavior changes is what is referred to as the “deficit model” (Wynne, 1982). However, two decades of studies demonstrate that the deficit model does not work (Kahan, 2014). Awareness raising alone rarely leads to behavior change, as there may be other social, psychological, financial, physical or political barriers that limit such change (Wakefield et al., 2010; McKenzie-Mohr et al., 2011). Thus, simply measuring metrics such as increases in knowledge about an issue is not enough to assume conservation occurs, but actually measuring an increase in tangible pro-conservation behavior is.

Another metric to assess conservation success might be whether a species is downlisted, e.g., from “vulnerable” to “least concern.” However, there are many factors that might affect such downlisting. For some species, downlisting might be politically rather than scientifically motivated, as downlisting species might remove restrictions on activities or development. For example, Greenwald et al. (2012) noted that recommendations to decrease endangered species protection were much more likely to be approved than calls for increased protection. Moreover, agencies may stall listing, or remove resources and prevent scientific assessment, so that species may not seem to be in decline (Parsons et al., 2015). This is a chronic problem with “data deficient” species—although many of these species may, in fact, be threatened, there is little political incentive to allocate resources to assess species, as it may mean actions need to be taken to comply with the law and development hindered, or even prohibited (Parsons, 2016).

Data deficiency further exacerbates whether one can tell if a conservation intervention has been successful or not. In order to assess the impact on the species or habitat, expensive surveys might be required to ascertain whether ranges or numbers have increased. Without the designation of survey funds, gauging success might be impossible. Data deficient species rarely get as much funding as threatened species (Parsons, 2016).

Conservation professionals are increasingly using a “theory of change” approach in order to both plan and monitor intervention efforts and impacts. In a conservation application, a theory of change is a process-oriented approach to analyzing the complex ecological, social, and political systems in which we work, and for planning actions we think will influence parts of the system in a positive way (van Es et al., 2015). In its simplest form, it is a logic model that asserts that a desired conservation outcome can be achieved through the implementation of a set of nested activities. But employing a deliberate theory of change approach should not be considered a magic bullet. It can be used as poorly or as well as any other approach. In particular, it can be challenging to implement in every situation, because it requires a commitment to take a reflective, critical, and honest approach to answer difficult questions about how

our efforts might influence change. This is especially true given the ecological and political realities, uncertainties, and complexities that surround all conservation initiatives (Vogel, 2012). Nevertheless, conservation planning and measurement would benefit from the deliberate and reflective methods that theory of change thinking can provide.

There is also the problem of how to tease out which specific intervention had an impact. A species might be increasing in numbers, but which of the many conservation interventions is responsible, if any, for this increase? Who or what does one credit with the conservation “win”? What if a “win” is claimed by an NGO, but the success was not actually the result of their intervention, but was due to something else? Ego, and the need to be successful, might lead to interventions being continued that actually have little impact, whereas those that do have an impact might not be supported. Moreover, a specific conservation intervention might be succeeding, but the positive effects might be overshadowed by failures elsewhere. Conservation is often like many people working together to put together a large puzzle. We are all working at finishing the puzzle, contributing our individual pieces, working on our small areas. However, in order to succeed, we must never forget the larger picture.

What if the positive effects of an intervention do not rapidly appear, or are subtle? What if the positive effects of an intervention are not perceived by conservation practitioners because they fail to see day-to-day improvements, because they are “too close to the problem” and incremental changes do not register? This is a syndrome that has been informally described as the “weeping angel effect” (for an explanation of “weeping angels,” see Wikipedia, 2017). With species that have low reproductive output, measurable increases in population sizes might not be seen for decades. However, grant-giving agencies often want to see tangible results and significant effects as the result of their grant. Conservation effects typically take longer than the one to three-year funding windows of grant-giving bodies. Changing ingrained behavior in a population does not happen overnight, yet many funding agencies expect conservationists to build Rome in a day. In fact, the whole academic system is geared to short time frames (for example, the tenure track system) within which significant results must happen—a time frame that is unlikely to match the time frames of nature.

Funding agencies and universities are not alone in thinking like this: politicians may expect to see significant and tangible results before the next election cycle, which may be within as few as 2 years. Politicians want to win the election, but not necessarily “win” in the conservation issue. For them, a success might not be whether a species actually improves in its status, but rather whether supporting an issue will gather them more votes in the short term. Being seen to be doing something might be more important than any actual success, particularly if the risk of being targeted by environmental advocates in the media could tarnish re-election chances.

Conservation tends to concentrate limited resources on the species that are most threatened. However, earlier interventions may actually be more effective. Calling the plumber in to fix a leaking faucet is much cheaper than calling in a builder after

the sodden roof has collapsed. Early, low cost interventions on species that are not yet threatened may be the most cost-effective way to make conservation interventions, but the system is by and large set up to try to conserve species on the brink of extinction where threats may be so grave, or so expensive to address, that failure is more likely to be the outcome.

### Conservation Is People

One metric for conservation success that is rarely measured is the creation of local champions who can continue conservation efforts within countries. Too frequently, conservation scientists have a “parachute research” approach to conservation; that is, they go into countries, conduct research until their funding runs out, and then leave. Upon leaving, conservation projects that have been set up often collapse due to a lack of local resources, expertise, or capacity. One could consider that a major conservation objective has been achieved if foreign conservationists leave a country and a cadre of well-trained, enabled local conservation champions remain, with an associated support structure, who can ensure the long-term success of conservation projects.

An objective for conservationists should be to put themselves out of a job in other countries, because they have created a high level of local capacity such that foreign researchers and conservationists are no longer required. We need to value human capital ... not just natural capital.

### A Way Forward in the Interim

In trying to measure conservation success, are developing metrics working against us, making us work toward objectives that are not really promoting conservation? Many working in conservation are scientists, and science is often too focused on metrics and measurements. Measuring conservation, and our collective efforts around programmatic—as well as ecosystem—monitoring and evaluation, is ultimately an exercise in looking for things we can measure. But conservation might not so easily (or cheaply) be measured. Moreover, do we “count things” to try to prove our success even as conservation fires burn out of control—or is putting out these fires as they occur more important? Perhaps so, but in the meantime, we live in a world where funders and universities require us to measure success.

A way forward might be to have more non-traditional publications and journals that allow authors to write about case studies and techniques—even those that might not be successful—so other conservationists can learn from mistakes as well as successes. Credit should be given to “real world” citations, such as the use of research in an Endangered Species Act or IUCN listing, or the designation of a marine protected area, or the development of a more sustainable fishing gear type. Academic journals for conservation rarely have high impact factors, and conservation scientists fare poorly in competition against micro- and molecular- biologists, who have more high-impact journals. Publishing in *Science* and/or *Nature* is often the apex of a researcher’s career, and to cope with interest, these journals have developed offshoots (such as “*Nature Climate Change*”). A new “*Nature Conservation*” journal would doubtless be extremely popular with researchers and practitioners alike, and would likely be widely read and utilized.

Professional conservation societies (such as the Society for Conservation Biology) could set up a system whereby the above “real world” impacts count as metrics for researchers, e.g., a “C index” for “real world” conservation impact? This is not to minimize or downplay any one set of contributions. But the distinction between a theoretical contribution or commentary on conservation, vs. a “real world” or “on-the-ground” intervention, is worth making. Such an approach would better organize a conservation landscape that is populated by a great deal of activity and white noise, yet not necessarily effecting positive outcomes.

The rising stars of conservation should not be penalized because they are doing “too much conservation,” instead of applying for a grant with high overheads for their university or publishing a paper few will read. Most importantly, we do not want to dissuade or criticize conservation researchers because they avoided something traditional (such as publishing an ecological science paper in a top tier journal) in order to pursue something innovative, non-traditional, or unorthodox (such as launching a social media campaign or developing an app to try to change the public’s behavior). A diversity of conservation challenges must be met with a greater diversity of responses from scientists and conservationists. These novel methods may succeed where other traditional approaches have failed. In conservation, one sometimes cannot easily predict what will become a huge success. Therefore, regardless of whether the attempt succeeds or not, “outside of the box” approaches to conservation should be rewarded and not punished.

To conclude, one of the workshop delegates recounted an African story, which neatly encapsulated the feelings of many at the meeting:

*One day a terrible fire broke out in a forest—a huge woodlands was suddenly engulfed by a raging wild fire. Frightened, all the animals fled their homes and ran out of the forest. As they came to the edge of a stream they stopped to watch the fire and they were feeling very discouraged and powerless. They were all bemoaning the destruction of their homes. Every one of them thought there was nothing they could do about the fire, except for one little hummingbird.*

*This particular hummingbird decided it would do something. It swooped into the stream and picked up a few drops of water and went into the forest and put them on the fire. Then it went back to the stream and did it again, and it kept going back, again and again and again. All the other animals watched in disbelief; some tried to discourage the hummingbird with comments like, “Don’t bother, it is too much, you are too little, your wings will burn, your beak is too tiny, it’s only a drop, you can’t put out this fire.”*

*And as the animals stood around disparaging the little bird’s efforts, the bird noticed how hopeless and forlorn they looked. Then one of the animals shouted out and challenged the hummingbird in a mocking voice, “What do you think you are doing?” And the hummingbird, without wasting time or losing a beat, looked back and said, “I am doing what I can.”*

Our activities to promote conservation may be criticized by others as being too little or insignificant in the larger scale

of problems. To those critics, we must respond like the hummingbird: “I am doing what I can.”

## AUTHOR CONTRIBUTIONS

All authors were coordinators for a workshop at the 2016 IMCC meeting during which this paper was developed. RM collated notes from the workshop and edited and contributed to the text. EP wrote the text, based on the notes by RM. AV edited and contributed to the text.

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