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Assessing real progress towards effective ocean protection

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A B S T R A C T

The United Nations' target for global ocean protection is 10% of the ocean in Marine Protected Areas (MPAs) by 2020. There has been remarkable progress in the last decade, and some organizations claim that 7% of the ocean is already protected and that we will exceed the 10% target by 2020. However, currently only 3.6% of the ocean is in implemented MPAs, and only 2% is in implemented strongly or fully protected areas. Here we argue that current protection has been overestimated because it includes areas that are not yet protected, and that areas that allow significant extractive activities such as fishing should not count as 'protected.' The most rigorous projections suggest that we will not achieve the 10% target in truly protected areas by 2020. Strongly or fully protected areas are the only ones achieving the goal of protecting biodiversity; hence they should be the MPA of choice to achieve global ocean conservation targets.

1. Introduction

The United Nations' Convention on Biological Diversity (CBD) established a target of 10% of the ocean to be protected by 2020 ('Aichi Target 11'). UN Sustainable Development Goal 14 (SDG 14) adopts and reinforces this commitment. Many scientists argue that the 10% target is a first milestone for global ocean protection, not an endpoint, because a wealth of scientific studies suggest that at least 30% of the ocean should be protected to achieve the desired benefits for conservation of biodiversity [1]. Echoing the need for greater protection, the IUCN World Conservation Congress in 2016 recommended the goal of protecting 30% of the ocean in 'highly protected' areas by 2030. In the spirit of transparency and accountability, we pose the question, "Is the global community on track to achieve these goals?"

The good news is that there has been remarkable progress in the last decade. For almost all of the 20th Century, Marine Protected Areas (MPAs) covered less than 0.1% of the surface area of the ocean. Over the last decade, a number of countries have established more and larger MPAs, tilting the trajectory of area protected steeply upward [2]. Moreover, the Sustainable Development Goals have elevated biodiversity and protected areas into a broader set of goals focused not only on conservation but also on complementary integrated approaches to development that promote human wellbeing.

The bad news is that as countries' rush to meet their 10% targets by 2020, there has been scant attention given to what is being counted as 'protected'. Here we go beyond the numbers reported by countries and focus on what *is being* counted vs. what *should be* counted. We argue that the numbers reported by many countries and tallied as official UN statistics are in fact misrepresentations for two reasons. First, they include announcements of either the intent to create an MPA or the designation of an MPA, neither of which constitutes actual, implemented, on-the-water protection. Second, they include areas that are not truly protected because they allow significant extractive activities that undermine biodiversity conservation. We expand on both of these points below, then propose what we believe *should be* counted based on scientific evidence.

2. Current protection has been overestimated

In June 2017, the Executive Secretary of the CBD claimed at the United Nations Ocean Conference that, based on reports from member countries, 5.7% of the ocean was already protected, and that we are on track to exceed the 10% target by 2020 (https://www.cbd.int/doc/press/2017/pr-2017–06-05-mpa-pub-en.pdf). Similarly, the United Nations Environment Program's World Conservation Monitoring Centre (WCMC) and the International Union for the Conservation of Nature

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(IUCN) claim that 6.97% of the ocean was covered by protected areas in 2017 (https://protectedplanet.net/marine). The problem is that the numbers announced by the CBD and WCMC/IUCN lump together three distinct stages in the process of creating a protected area: (1) announcement of an intent or commitment to create an MPA; (2) legal designation of an MPA; and (3) actual implementation of an MPA. We assert that only the last stage should count as 'protection' because until something changes on or in the water, the habitats and species therein are not really protected. This is akin to allowing someone who announces they will lose weight to immediately report that they achieved their target weight. An announcement is a great place to start, but is no guarantee that the goal will, in reality, be achieved. In a similar fashion, legally designating an MPA that will conserve biodiversity is progress to be celebrated, but it does not guarantee implementation of changes in management required for actual protection. In fact, there are numerous examples of commitments or legal designations that have not resulted in implementation, such as the 620,000 km^2 Kermadec Ocean Sanctuary in New Zealand, and the 1.3 million km^2 Coral Sea Natural Park in New Caledonia.

In stark contrast to the CBD announcements, the most accurate and widely accepted tally of all MPAs that have been implemented as of January 2018 is only 3.6% of the global ocean (mpatlas.org) (Fig. 1). An additional 1.6% of the ocean has been designated as protected, but not yet implemented. An additional 2.1% would be protected if various proposals by conservation organizations and commitments by countries were fulfilled. It is heartening to see progress in all three categories, but in the spirit of transparency and accountability, neither of the latter two categories should count as currently protected until they are truly protected.

If all of the announced and planned MPAs as of January 2018 were implemented, by 2020, 7.3% of the ocean would be in implemented MPAs. While the global community should indeed celebrate this progress, it falls short of the 10% commitments.

3. Only strongly or fully protected areas achieve the goal of protecting biodiversity

CBD Aichi Target 11 falls under Strategic Goal C: "To improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity," making clear the intent the signatories had for this target. Extractive activities tend to *degrade* biodiversity instead of *improve* it – except if non-native species harmful to local ecosystems are being removed. Areas that allow anything more than very minimal fishing or other extractive activities cannot safeguard the biodiversity in a given place, and these should not count towards the CBD target. They can have other important goals such as making fishing more sustainable, but that is not the same as biodiversity protection.

Unfortunately, the term 'MPA' is currently being used so loosely that it no longer connotes meaningful protection. As currently used, the term is a catchall bucket that contains everything from fully protected marine reserves to an area in which only one species is protected or one activity is disallowed. Even fishery management areas are counted as "protected" by some countries when in reality these areas would not be expected to conserve biodiversity based on their stated goals.

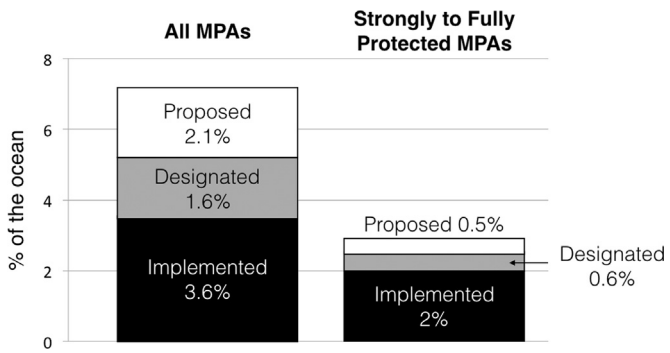

Fig. 1. Percentages of the ocean in different stages of MPA creation (proposed, designated but not implemented, implemented) for all MPAs and for only Strongly to Fully Protected MPAs, as of January 2018. Source: mpatlas.org.

There is abundant evidence that no-take fully protected areas are the most effective type of MPA for restoring and protecting biodiversity. Commonly called 'marine reserves', fully protected areas can on average increase total fish biomass by over 600%, organism size by over 25%, and species richness by over 20% relative to unprotected areas nearby [3,4]. In contrast, MPAs that allow some or a lot of fishing (called 'partially protected areas') typically do not even double fish biomass compared to unprotected areas, and leave many vulnerable species at continued risk [4,5].

In addition, marine reserves help restore the interactions among species and the complexity of ecosystems through a chain of ecological effects, once the abundance of large animals and habitat-structuring species recovers sufficiently. Marine reserves are not immune to all the effects of climate change, but evidence to date indicates that reserves with complex, intact ecosystems often better resist and recover from disturbances compared to unprotected areas [6].

Evidence clearly shows that partially protected MPAs do not deliver the same biodiversity and conservation benefits as fully protected areas. They can and often do, however, provide other useful outcomes for fishery management and conflict avoidance or resolution where multiple uses occur. For example, partially protected areas can help restore the abundance of some commercial species by banning specific fishing gears, or prevent habitat destruction by excluding bottom trawling. But because these areas are tools to manage fisheries or other uses, they should be called "marine managed areas," not "Marine Protected Areas". They help manage fishing better, but do not allow for full ecosystem recovery.

Although marine reserves may be established to protect ecosystems within their boundaries, they have also been shown to enhance local fisheries and create jobs and new incomes through ecotourism [7], while also serving as insurance against management mistakes and uncertainty [8,9]. For all of these reasons, fully protected marine reserves or strongly protected areas should be the tools of choice to achieve the CBD's and the SDG's targets for global protection and conservation of ocean ecosystems.

4. MPAs that don't provide real protection should not count as "protected areas"

Many MPAs (whether announced, designated, or implemented) are in fact not truly protected. To date, only 2% of the global ocean is fully or strongly protected (Fig. 1). ('Fully protected' is defined as an area where all fishing, mining, oil and gas or any other extractive activity or destructive activities such as dumping are prohibited; 'strongly protected' refers to an area where only minimal recreational or artisanal fishing occurs.) Countries and UN bodies should not assert that more protection exists than is real and verifiable. To claim the world is close to the UN target is false and counterproductive. To prevent confusion and error, the IUCN produced a set of guidelines in 2012 stating that "spatial areas which may incidentally appear to deliver nature conservation but do not have stated nature conservation objectives should not automatically be classified as MPAs" [10]. These include areas that are primarily fishery management areas, i.e., areas set aside for other purposes but which also have conservation benefit (e.g., military training areas, communications cable or pipeline protection areas, shipping lanes), and large areas (e.g., countries or regions) where individual species are protected by law (e.g., whales).

For example, the United Kingdom (excluding its overseas territories) claims to protect 23% of its seas in 293 MPAs (http://jncc.defra.gov.uk/page-4549). Yet only three of them – 7.5 km^2 out of the 750,000 km^2 Exclusive Economic Zone – are fully protected. Most provide no

protection at all from damaging activities like bottom trawling and dredging [11]. At the Our Ocean conference in Malta in October 2017, Spain also claimed to protect 13% of its seas (https://www.ourocean2017.org/our-ocean-commitments). However, less than 1% of Spain's EEZ is fully protected from fishing, and most areas only 'protected' as Natura 2000 sites have no management plan or special regulations that provide any significant protection to the marine fauna.

The effectiveness, representativeness, and potential for connectivity are all important for evaluating progress towards the Aichi target [12]. The ocean needs all types of MPAs, from large to small, from remote to adjacent to inhabited areas [13]. Because the world is so far behind achieving the target, every MPA that truly protects an area for the conservation and/or restoration of biodiversity at all levels should count.

The 10% target is not impossible. After all, this last decade saw over an order of magnitude increase in strongly protected areas (from < 0.1–2%) [2] Nonetheless, a significant effort must continue if we are to reach the goal.

In the end, it is the on- and in-the-water protection that really counts. Areas that are nothing more than lines on a map, without any implemented conservation regulation or management plan, should not count and should not be accepted in national or global tallies until they are truly protected. Fully protected marine reserves are the best bet for achieving ocean protection and should be accurately tallied to assess progress. It goes without saying that enforcement of protected areas is crucial.

Sustainable use of areas outside truly protected areas (i.e., most of the ocean) is of equal importance to protection of habitats and biodiversity within protected areas. But it is not productive to conflate the two goals of biodiversity protection and sustainable fisheries. The two are complementary and both are needed to achieve the UN Sustainable Development Goal 14 (as well as other SDG goals). The existence of biological, ecological, and social interactions between protected areas and fisheries or other extractive activities provides ample opportunity for the integrated approaches called for in SDG 14, but that does not mean a 'fishery management area' is a 'protected area'.

5. Conclusion

If the world is to achieve the United Nations' target of 10% of the ocean protected by 2020, countries need to implement what has been committed, enact what has been suggested, and create new fully protected areas. There needs to be greater clarity of terms and increased transparency and accountability of achievements. The authors of this paper pledge to work together with colleagues around the world to help clarify and harmonize the language and approaches to achieve the Aichi and SDG targets and goals in a manner that truly protects marine biodiversity while supporting sustainable development. Research from around the world shows that fully and strongly protected areas can deliver more benefits to local communities and nearby fisheries than the general status quo of overexploitation [7]. This suggests that sustainable development requires more areas set aside as an investment for the future (in addition to better management of fisheries around them) and as insurance against uncertainties and human errors. To meet their commitment to biodiversity protection, nations of the world should accelerate the creation, implementation, and enforcement of genuine protected areas within their exclusive economic zones and in the high seas.

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References

[1] B.C. O'Leary, M. Winther-Janson, J.M. Bainbridge, J. Aitken, J.P. Hawkins, C.M. Roberts, Effective coverage targets for ocean protection, Conserv. Lett. 9 (2016) 398–404.
[2] J. Lubchenco, K. Grorud-Colvert, Making waves: the science and politics of ocean protection, Science 350 (2015) 382–383.
[3] S.E. Lester, B.S. Halpern, K. Grorud-Colvert, J. Lubchenco, B.I. Ruttenberg, S.D. Gaines, et al., Biological effects within no-take marine reserves: a global synthesis, Mar. Ecol. Progress. Ser. 384 (2009) 33–46.
[4] E. Sala, S. Giakoumi, No-take marine reserves are the most effective protected areas in the ocean, ICES J. Mar. Sci. (2017).
[5] S. Giakoumi, C. Scianna, J. Plass-Johnson, F. Micheli, K. Grorud-Colvert, P. Thiriet, et al., Ecological effects of full and partial protection in the crowded Mediterranean Sea: a regional meta-analysis, Sci. Rep. 7 (2017) 8940.
[6] C.M. Roberts, B.C. O'Leary, D.J. McCauley, P.M. Cury, C.M. Duarte, J. Lubchenco, et al., Marine reserves can mitigate and promote adaptation to climate change, Proc. Natl. Acad. Sci. USA 114 (2017) 6167–6175.
[7] E. Sala, C. Costello, D. Dougherty, G. Heal, K. Kelleher, J.H. Murray, et al., A general business model for marine reserves, PLoS One 8 (4) (2013) e58799, http://dx.doi.org/10.1371/journal.pone.0058799.
[8] U.R. Sumaila, Protected marine reserves as fisheries management tools: a bioeconomic analysis, Fish. Res. 37 (1998) 287–296.
[9] T. Lauck, C.W. Clark, M. Mangel, G.R. Munro, Implementing the precautionary principle in fisheries management through marine reserves, Ecol. Appl. (1998) 8.
[10] J. Day, N. Dudley, M. Hockings, G. Holmes, D. Laffoley, S. Stolton, et al., Guidelines for Applying the IUCN Protected Area Management Categories to Marine Protected Areas, IUCN, Gland, Switzerland, 2012, p. 36.
[11] A.A. Plumeridge, C.M. Roberts, Conservation targets in marine protected area management suffer from shifting baseline syndrome: a case study on the Dogger Bank, Mar. Pollut. Bull. 116 (2017) 395–404.
[12] P. Jones, E. De Santo, Viewpoint–is the race for remote, very large marine protected areas (VLMPAs) taking us down the wrong track? Mar. Policy 73 (2016) 231–234.
[13] C.M. Roberts, Selecting marine reserve locations: optimality versus opportunism, Bull. Mar. Sci. 66 (2000) 581–592.